London Business School

Accounting Information and Debt Markets

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London Business School is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

Abstract

This thesis contains five chapters. The first chapter provides an introduction and the last chapter a brief conclusion. In the second chapter, I examine the impact of litigation contingency disclosure in a 10K/Q filing on a defendant firm's choice of debt, and its effect on the design of a public debt contract. I find that defendant firms that withhold information about litigation contingencies are more likely to access the private debt market, while those disclosing litigation contingencies tend to borrow from the public debt market. When firms access the public debt market, the disclosure of litigation contingency is associated with higher yields and a higher likelihood of including default clauses that pertain to court judgments in the bond indentures. However, conditional on disclosure, firms with a higher level of disclosure are rewarded with lower yields.

The third chapter empirically tests the certification hypothesis by studying the roles of reputable auditors and bank underwriters in the design of bond contracts. It provides evidence that reputable auditors and underwriters help corporate bond issuers obtain lower bond yields. The effect of reputable auditors on the yields is greater than that of reputable underwriters in terms of economic magnitude and significance, consistent with auditors' multiple roles as information intermediaries, monitors, and insurance providers. The presence of reputable auditors and underwriters also affects bonds' nonpricing terms. Firms that hire reputable auditors obtain longer term bonds, whereas those that engage reputable underwriters can issue larger bonds.

The fourth chapter examines the importance of default clauses in debt contracts and investigates the determinants of these contractual features. Default clauses are contractual provisions in debt contracts that specify the events that trigger the repayment of the debt principal and the transfer of control rights to debtholders. This chapter provides evidence that the restrictiveness of default clauses in both loan and bond contracts predict firm bankruptcies one and two years ahead, indicating that these clauses are not boilerplate. We also find that firms with higher expected costs of bankruptcy, as proxied by firm-specific intangible assets at the time of debt issuance, receive fewer restrictive default clauses. This effect is particularly strong in the case of bond agreements.

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1 Introduction

This thesis explores the role of accounting information in debt markets in three chapters. In the second chapter, entitled "Litigation Contingency Disclosure and Debt Contracting", I study the effect of disclosure related to pending lawsuits—litigation contingency disclosure—on debt contracting. Specifically, I examine the impact of litigation contingency disclosure on a defendant firm's choice of debt and its effect on the design of public debt contracts. Consistent with the theory positing that firms with higher disclosure costs prefer to communicate proprietary information to private lenders, I find that defendant firms that withhold information about litigation contingencies are more likely to access the private debt market, while those disclosing litigation contingencies tend to borrow from the public debt market. When firms access the public debt market, the disclosure of litigation contingencies is associated with higher risk premiums and the inclusion of default clauses that pertain to court judgments in their bond agreements. However, conditional on the disclosure of litigation contingencies, public debt holders reduce the risk premium for firms with a higher level of disclosure. These results suggest that public debt holders relate the disclosure decision to the materiality of a litigation contingency, while they associate the disclosure level with the reduction of information uncertainty regarding the contingency. Overall, I demonstrate that the disclosure of litigation contingencies in 10K/Q filings is of great importance to public debt holders, echoing the FASB's proposals to enhance litigation contingency disclosure in order to assist investors in accessing the likelihood, timing, and magnitude of future cash outflows associated with litigation contingencies.

The third chapter—"The Role of Reputable Auditors and Underwriters in the Design of Bond Contracts"—examines the role of capital market intermediaries in certifying the accounting information for borrowing firms.[1] Several theoretical articles suggest that underwriters and auditors use their reputation capital as a bonding mechanism to credibly certify information about the future prospects of the issuing firms, thereby helping to improve firms' financing terms when raising external financing (i.e., the Certification Hypothesis). In this chapter, we empirically test the certification hypothesis in the primary bond market by combining the role of auditors and

[1] "The Role of Reputable Auditors and Underwriters in the Design of Bond Contracts" is joint work with Florin P. Vasvari (London Business School) and has been published in the Journal of Accounting, Auditing & Finance (2012).

underwriters. Specifically, we study the effect of reputable auditors and bank underwriters on the design of bond contracts. Consistent with the certification hypothesis, we show that reputable auditors and underwriters not only assist bond issuers in obtaining lower bond yields but also help issuers borrow more and for longer periods. The nature of reputable auditors' and underwriters' job responsibilities determines the different magnitudes and ways in which they provide benefits for the issuing firms. Our results provide a more complete picture of how different capital market intermediaries affect the pricing and nonpricing terms of bonds.

The fourth chapter, entitled "Default Clauses in Debt Contracts", explores the importance of default clauses in debt contracts.[2] Default clauses are contractual provisions that allow the acceleration of debt repayments and the transfer of control rights to debtholders. Using a comprehensive and novel database of default clauses, we provide evidence that the expected cost of default, proxied by firm-specific intangible assets, is an important determinant of the restrictiveness of default clauses. Specifically, bondholders set less restrictive default clauses when contracting with firms with higher default costs because of their high renegotiation costs and lower claim priorities against borrowing firms. We contribute to the finance literature by demonstrating that the expected cost of default plays an important role in the design of debt contracts. We also add to the growing body of literature investigating the design of multidimensional debt contract terms by documenting another important feature of debt contracts –-default clauses.

The fifth chapter concludes the thesis.

[2] "Default Clauses in Debt Contracts" is joint work with Ningzhong Li and Florin P. Vasvari (London Business School). This paper is part of an AXA research project.

2 Litigation Contingency Disclosure and Debt Contracting[3]

[3] I thank Eli Amir, Pat Akey Jr, Jose Carabias, Maria Correia, Atif Ellahie, Francesca Franco, Anya Kleymenova, Ningzhong Li, Xi Li, Clemens Otto, Scott Richardson, Haresh Sapra, Lakshmanan Shivakumar, Irem Tuna, Oktay Urcan, Florin Vasvari, Li Zhang, and seminar participants at the INSEAD Finance PhD workshop, the 11th London Business School Trans-Atlantic Doctoral Conference, London Business School, Singapore Management University, Georgetown University, HEC Paris, University of Toronto, Temple University, McGill University, and Arizona State University for helpful comments and suggestions. All errors are my own.

2.1 Introduction

The United States is a highly litigious country. Between 2000 and 2009, close to three-quarters of all U.S. public firms were sued at least once in a federal district court.[4] These lawsuits have the potential to be very costly; they can entail significant legal claims, disrupt a firm's normal business operations, and damage its reputation. For instance, litigation related to asbestos exposure and targeted at more than 8,400 corporate defendants has bankrupted at least 85 firms and has the potential to cost defendants $200 billion to $265 billion in total (Carroll et al. 2005; White 2004). These costs are material to lenders, who require adequate information to assess the likelihood, timing, and amount of future losses associated with pending lawsuits.

In this paper, I examine the role of the disclosure related to pending lawsuits—litigation contingency disclosure—that a defendant firm provides via 10K/Q filings in debt contracting. I focus on this disclosure's role in debt markets for several reasons. First, lawsuits that lead to monetary damages represent contingent off-balance-sheet liability for a defendant firm. As fixed claimants of the firm, debt holders care more about the downside risk than do equity holders. Second, the presence of litigation claims increases bankruptcy costs. With few exceptions, plaintiffs are treated as unsecured creditors in the case of bankruptcy (Bebchuk and Fried 1996).[5] The existence of such competing and unsecured claims increases the coordination costs among creditors, lengthens the time spent in default, and reduces the amount that can be paid out to unsecured creditors (Helwege 1999). Third, debt agreements allow for multidimensional contractual features that do not exist in equities. Debt contracts permit greater contractual flexibility that can take potential litigation contingencies into account not only by adjusting yields but also by changing nonpricing terms such as issue size, maturity, covenants, and default clauses. In particular, debt agreements can add a default clause that pertains to court judgments. This clause provides debt holders with the right to demand an early repayment of the principal amount if, after a certain grace period, firms are unable to pay plaintiffs the damages awarded by a court. Finally,

[4] Data Source: Audit Analytics and Compustat.

[5] The U.S. Bankruptcy Code gives full priority to certain unsecured claims over general unsecured claims within the following categories: (1) post-bankruptcy administrative claims, (2) claims arising after the commencement of an involuntary bankruptcy, (3) wage and other compensation-related claims, up to $4,000 per individual, (4) employee benefit claims, (5) claims of farmers and fishermen, (6) customer claims up to $18,000, (7) claims for alimony or child support, (8) government tax claims, and (9) claims of the FDIC and other financial regulatory agencies (11 U.S.C. 507 (a) (1994)). These priority claims are subordinated to secured claims. All other unsecured claims share pro rata in any remaining assets.

despite the existence of a rich literature that examines how disclosure quality affects equity valuation, limited evidence exists about the role of disclosure in determining debt choices and valuing debt instruments (Armstrong, Guay and Weber 2010, Beyer et al 2010).

My analysis centers on a hand-collected dataset of litigation contingency disclosures in 10K/Q filings. To verify whether a firm is involved in a pending lawsuit, I use a litigation dataset from Audit Analytics that covers the universe of all lawsuits filed against public U.S. firms in federal district courts since the year 2000.[6] Using a text search program, I identify whether a defendant firm discloses a pending lawsuit in its 10K/Q filing. For firms that disclose relevant lawsuits, I manually code the disclosed information using an index based on the items proposed by the Financial Accounting Standards Board's (FASB) Exposure Drafts regarding the disclosure of certain loss contingencies.[7]

Conditional on accessing the debt markets, I find that defendant firms that disclose information about litigation contingencies are associated with a higher likelihood of issuing public debt. This is consistent with the theories that argue firms facing higher disclosure costs prefer to communicate private information to a small group of private lenders and borrow from the private debt market (Bhattacharya and Chiesa 1995, Yosha 1995). To verify whether firms that withhold litigation information indeed have higher proprietary costs of disclosure, I estimate the factors that affect decisions to disclose information about litigation contingencies. Consistent with the theoretical predictions, I find that firms with higher proprietary costs of disclosure due to the legal process and product market competition are less likely to disclose litigation information.

Next, I investigate the impact of litigation contingency disclosures on the design of debt contracts. Focusing on firms that access the public debt market, I find strong evidence that public debt holders take the disclosure of litigation contingencies into account when setting both pricing and nonpricing terms. More specifically, bond risk premiums are positively associated with the decision to disclose litigation contingencies,

[6] Audit Analytics collects information about corporate lawsuits from Public Access to Court Electronic Records (PACER), Stanford Securities Class Action Clearinghouse, and press releases. The coverage of the litigation data set is from 2000 until the present, and the lawsuits covered are primarily those filed with federal district courts across the U.S.

[7] In July 2008 and August 2010, the Financial Accounting Standards Board (FASB) proposed two Exposure Drafts regarding disclosures of certain loss contingencies (No. 1600-100 and No. 1840-100) that aim to enhance disclosure requirements of contingent liabilities particularly those arising from litigation.

suggesting that public debt holders relate the disclosure of litigation contingencies to the potential material loss of the lawsuit. Furthermore, the bond indentures of firms that disclose litigation contingencies are more likely to include a default clause that pertains to court judgments, which documents that public debt holders demand specific contractual mechanisms to minimize the potential losses that could arise from litigation.

However, I find that firms that disclose litigation contingencies mitigate the increase in bond yields by providing more extensive disclosures. Specifically, conditional on disclosing litigation contingencies, firms with a higher level of disclosure are rewarded with lower yields. This result is consistent with theories positing that more disclosure reduces the uncertainty associated with firm value and in turn leads investors to require less price protection (Diamond and Verrecchia 1991, Verrecchia 2001, Duffie and Lando 2001). This finding is also in line with the empirical literature on voluntary disclosure, which suggests that higher disclosure quality lowers the cost of capital (i.e., Botosan 1997, Sengupta 1998, Botosan and Plumlee 2002).

A potential concern regarding this finding is that a firm's overall disclosure quality might be positively correlated with the disclosure level of litigation contingencies. This potential correlated-omitted variable biases the estimate of the litigation contingency disclosure level downward. To mitigate this concern, I implement a two-stage least squares estimation that uses the litigation stage as an instrument for the disclosure level. The negative effect of the disclosure level on bond yields is robust to this estimation.

The results also remain largely unchanged when I use alternative measures of the level of litigation contingency disclosure. Specifically, I reconstruct the disclosure scores by eliminating the descriptive disclosure items or focusing only on the items related to the potential loss and impact of lawsuits. The effect of the disclosure level on yields remains negative and significant, providing support for the interpretation that the disclosure level regarding litigation contingencies contains new information that can reduce the uncertainty associated with the potential loss from the lawsuits.

I further explore the cross-sectional variation of the impact of the disclosure level on the bond yields. I find that the negative effect of the disclosure level on the yield is more pronounced for firms that do not issue management forecasts. This is consistent with the prior literature which finds that management forecasts provide value-relevant information to debt holders and that 10K/Q disclosure plays a more

important role when firms lack alternative information sources and face a more uncertain information environment (Botosan 1997, Shivakumar et al. 2011).

Furthermore, the different information generation process in the private debt market allows me to perform a falsification test for the role of litigation contingency disclosures in 10K/Q filings in the public debt market. Specifically, I analyze whether litigation contingency disclosures affect the terms of private debt contracts for which private debt holders can use the borrower's private information instead of public disclosures to determine. In contrast with the importance of litigation contingency disclosures in the public debt market, I find no evidence that the decision to disclose litigation contingencies or the level of their disclosure has effects on loan spreads or the inclusion of default clauses related to litigation in private debt contracts.

This paper makes several contributions to the literature. First, the paper enhances our understanding of the role of disclosure in debt markets. By documenting the consequences of disclosures of litigation contingencies, it demonstrates the importance of these disclosures in the design of debt contracts. In particular, the finding that litigation contingency disclosure is related to the inclusion of default clauses complements the literature that documents the debt pricing effects of disclosure by highlighting an additional contractual channel that protects the interests of lenders (e.g., Sengupta 1998, Shivakumar et al. 2011).

Second, the paper sheds light on the current debate over whether or not the FASB should enhance the disclosure requirements related to litigation contingencies. Despite corporate counsels' concern that the expanded disclosure may impair attorney-client privilege and disadvantage a defendant firm's defense position, my paper provides evidence that more detailed disclosure potentially provides economic benefits by reducing the firms' borrowing costs.

Third, to the best of my knowledge, this paper is the first to provide a comprehensive investigation of the determinants and consequences related to the disclosure of all types of corporate lawsuits. Prior research focuses on the disclosure of environmental lawsuits brought by government agencies or employment discrimination litigation, and it ignores the majority of lawsuits that firms participate in (Barth and McNichols 1994, Blacconiere and Patten 1994, Barth, McNichols and Wilson 1997, Li, Richardson and Thornton 1997, Campbell, Sefcik and Soderstrom 2003, Hennes 2008).

The remainder of the paper proceeds as follows: Section 2.2 discusses the related literature and the motivation for the hypotheses. Section 2.3 describes the

measures and data. Section 2.4 presents empirical results for the choice of debt analysis, and Section 2.5 presents the results for the design of bond contracts. Section 2.6 presents additional analysis. Section 2.7 concludes.

2.2 Prior literature and hypothesis development

2.2.1 Prior literature

A significant body of accounting literature examines the role of disclosure quality in equity markets. Prior literature typically links disclosure quality with the cost of equity either through the pricing of estimation risk or information quality (e.g., Brown 1979, Barry and Brown 1984, 1985, Lambert, Leuz and Verrecchia 2007). However, little is known about the role of disclosure quality in debt markets. In particular, the literature has not examined the impact of disclosure with regard to corporate events that are of first-order importance for the choice of debt and the design of debt contracts. Nevertheless, two streams of literature provide the economic rationale for this study.

The first stream examines the role of accounting information releases in credit markets. These studies provide evidence that the secondary bond market and the credit default swap market respond in a significant manner to releases of earnings announcements, management guidance, and analyst recommendations (i.e., Easton, Monahan and Vasvari 2009, Elkamhi et al. 2011, Shivakumar et al. 2011). My paper differs from these studies because it focuses on how disclosure quality affects the choice of debt and the design of debt contracts at origination.

The second stream of literature investigates how the characteristics of accounting numbers affect the choice of debt and the design of debt contracts (e.g., Ahmed et al. 2002, Bharath, Sunder, Sunder 2008, Zhang 2008, Ball, Bushman and Vasvari 2008, Beatty, Weber and Yu 2008). For example, Bharath, Sunder, and Sunder (2008) find that firms with poor accounting quality (represented by a higher level of discretionary accruals) prefer private over public debt to avoid adverse selection costs in the public debt market, and that accrual quality has differential impacts on the pricing and nonpricing terms of private and public debt. Zhang (2008) shows that conservative borrowers are more likely to violate debt covenants, and lenders offer lower interest rates to conservative borrowers. My paper differs from this literature because it focuses on the role of certain disclosures (i.e., those related to litigation contingencies) rather than the characteristics of reporting numbers in choosing the type of debt and the

design of debt contracts. An exception is Sengupta (1998), who shows that firms with higher disclosure quality ratings from financial analysts have a lower cost of debt. Using the same disclosure quality ratings, Dhaliwal, Khurana and Pereira (2010) show that firms with lower ratings exhibit a higher level of privately placed debt. My paper extends these studies by exploring the effect of litigation contingency disclosures not only on debt spreads but also on the inclusion of default clauses in the debt contracts.

2.2.2 Hypothesis development

Public and private debt markets have different institutional features. For example, public debt issues are typically held by a dispersed group of investors and entail high renegotiation costs, while private debt agreements are reached among a small number of lenders and therefore facilitate monitoring and renegotiation of contract terms. The different characteristics of debt holders in these two markets also have theoretical implications for a firm's cost of information disclosure and its financing decisions. Specifically, when issuing public debt, firms are required to provide detailed documentation, audited financial information, and a legal counsel's opinion to the public. To the extent that firms might have proprietary information and its release would damage the competitive advantage in the product market, they might prefer to communicate the information to a small group of private lenders instead and rely on private debt financing (Bhattacharya and Chiesa 1995, Yosha 1995).[8]

Furthermore, in determining whether or not to disclose litigation contingencies to the public, defendant firms also face a unique proprietary cost of disclosure arising from the legal process. Specifically, firms might fear that disclosing too much information weakens their defense position and helps plaintiffs extract higher litigation claims. Detailed disclosure can also invite additional, similar lawsuits from previously uninformed parties. Although this proprietary cost of disclosure applies to all defendant firms, the effect is likely to be stronger for firms with "deep pockets" whose litigation claims are typically higher (Alexander 1991). As such, these firms have incentives to withhold information regarding litigation contingencies.

Nevertheless, communicating information only to private debt holders also comes at a cost. Specifically, private debt holders can use their information monopoly to extract rents from the firm and in turn increase borrowing costs (Rajan 1992). This

[8] Specifically, the disclosure of litigation contingencies may reveal that the defendant firm has weak cash flow position due to potential litigation losses and/or its manager's attention is diverted from normal business operation to the lawsuit. In turn, its competitor might take advantage of the situation by implementing aggressive marketing and sales strategies or even trying to take over the firm.

adverse effect of borrowing from private debt holders is particularly strong for firms with significant future financing needs, that is, firms with high-growth opportunities (Bharath, Sunder, Sunder 2008).

Taken together, these arguments suggest that firms with higher costs of disclosure due to the product market competition and legal considerations are less likely to disclose litigation information in 10K/Q filings and are more likely to access the private debt market. Conversely, firms with lower costs of disclosure are likely to disclose litigation contingencies in public filings and are also more likely to access the public debt market. Therefore, I test the following hypothesis:

H1: The decision to disclose litigation contingencies is associated with a higher likelihood of accessing the public debt market.

Conditioning on accessing the public debt market, the effect of litigation contingency disclosures on debt terms hinges on the public debt holders' perceptions of the mandatory and voluntary components of the disclosure. Statement of Financial Accounting Standards (SFAS) No. 5 requires firms to disclose pending lawsuits when there is at least a reasonable possibility that a material loss might occur. In addition, Regulation S-K Item 103 provides a clear materiality threshold by specifying that a firm should describe pending litigation if the potential damage exceeds ten percent of its current assets on a consolidated basis. These requirements suggest that the disclosure of the lawsuit is only necessary when the potential loss associated with the lawsuit is material and possible.[9] Furthermore, Kothari, Shu, and Wysocki (2009) argue that, because of career concerns, managers tend to withhold bad news up to the point at which it becomes too costly for them to do so.[10] Taken together, the disclosure of litigation contingencies potentially contains value-relevant information regarding the materiality of the loss associated with a pending lawsuit, and positively relates to the risk premium on public debt.

Public debt holders can obtain information about litigation contingencies from other information sources such as press releases or court documents. However, press releases or court documents typically comprise only descriptive information about lawsuits such as when and where the lawsuits are filed and who are the participating

[9] In addition, the American Institute of Certified Public Accountants (AICPA) has similar guidelines on the disclosure of certain significant risks and uncertainties that includes litigation contingencies (AICPA Statement of Position 94-6).

[10] Firms might receive comment letters from the Securities and Exchange Commission (SEC) if they do not provide litigation contingency disclosures in accordance with Regulation S-K Item 103. For instance, on June 13, 2011, the SEC issued a comment letter to eBay Inc. for failure to mention in its 10K/Q filings a material patent infringement lawsuit brought by XPRT Ventures.

parties. To the extent that managers have superior private information and public debt holders are uncertain about the expected loss of pending lawsuits, the disclosure of litigation contingencies under the accounting rules potentially provides additional information about the materiality and likelihood of the litigation outcomes.

If public debt holders associate the decision to disclose litigation contingencies with material and reasonably possible litigation losses, they might demand higher ex-ante yields from firms that do so. This is because the payoffs for holding a bond can be replicated by taking a long position on the firms' assets and a short position on a call option on those assets (Black and Scholes 1973, Merton 1973). If the firm's assets are worth less than the face value of the bond and litigation liabilities, then the stockholders can allow the call option to expire and default. Ultimately, public debt holders and plaintiffs bear the economic loss equal to the difference between the face value of the liabilities and the value of the assets.

Bond indentures also include various nonpricing provisions and restrictions such as issue size, maturity, covenants, and default clauses that protect public debt holders' interests. In particular, bond contracts can contain default clauses that pertain to court judgments that give bondholders the right to demand the repayment of the principal if the firm is unable to pay its litigation losses. On the one hand, these clauses are powerful contractual mechanisms that serve as an early signal of increased default risk.[11] On the other hand, these clauses can be costly to both issuing firms and bondholders. For issuing firms, defaulting on a small amount of a litigation claim can trigger a large amount of debt repayment; for bondholders, due to dispersed ownership, renegotiation is costly in the case of actual default. However, if bondholders perceive a firm's involvement in a lawsuit as severe, the benefits of including default clauses can exceed the costs of doing so. Consequently, investors might demand the inclusion of these in the indentures. Thus, I expect firms that disclose litigation contingencies to have a higher likelihood of adding default clauses related to court judgments in bond contracts.

Taken together, I test the following hypothesis:

[11] For example, the indenture in the Registration Form S3 of Standard Pacific Corp., August 1st, 2005, specifies that the following event would trigger default: "Entry of a final judgment for the payment of money against the company or any restricted subsidiary in an amount of 5 million dollars or more which remains undischarged or unstayed for a period of 60 days after the date on which the right to appeal such judgment has expired or becomes subject to an enforcement proceeding."

H2a: The decision to disclose litigation contingencies is positively associated with bond yields and the likelihood of including default clauses that pertain to court judgments.

Despite the stringent materiality threshold for disclosing litigation contingencies, substantial discretion remains about what specific information to disclose. The level and content of such disclosures are not well-specified by accounting standards. For example, SFAS No. 5 only vaguely requires firms to disclose the nature of litigation and an estimate of a possible loss or a range of losses, or to state that such an estimate cannot be made. Indeed, the FASB recently expressed increasing levels of concern over the insufficient level of litigation contingency disclosures, and proposed two exposure drafts to enhance litigation disclosure (No. 1600-100 and No. 1840-100).

The discretion over what information to disclose allows voluntary disclosure incentives, as identified by the prior theoretical literature, to have an effect. For example, the prior literature argues that more disclosure reduces the uncertainty about firm value that in turn alleviates the adverse selection costs and investors' demand for price protection (Diamond and Verrecchia 1991, Verrecchia 2001). In the setting of a secondary corporate bond market, Duffie and Lando (2001) posit that more accurate accounting information reduces the uncertainty associated with asset values and that credit spreads decrease with the precision of accounting information. To the extent that the increased level of disclosures related to litigation contingencies decreases the uncertainty about the likelihood, timing, and amount of future cash flows associated with pending lawsuits, there should be a negative association between the level of disclosure and bond yields.

This negative association is also supported by early theories which suggest that firms voluntarily disclose favorable news and withhold unfavorable news if there are proprietary costs from disclosure or if investors are uncertain of the kind of private information that managers hold (Verrecchia 1983, Dye 1985, Jung and Kwon 1988). Public debt holders charge a lower risk premium if they perceive that firms disclose a high level of litigation contingencies because they have a lower likelihood of withholding unfavorable information related to pending lawsuits.

Although these disclosure theories provide no direct inference on the effect of the disclosure level on the inclusion of default clauses related to court judgments, more detailed disclosure about litigation contingencies is likely to decrease the uncertainty associated with default risk. As such, the high disclosure level of litigation contingencies

substitutes for the role of default clauses by providing timely information about the likelihood of default.

Therefore, I hypothesize that:

H2b: Conditional on disclosure, firms with a higher level of litigation contingency disclosures are rewarded with lower bond yields and a lower likelihood of including default clauses that pertain to court judgments.

2.3 Measures and data

2.3.1 Disclosure measures

I construct two measures related to the disclosure of litigation contingencies: *Disclosure Indicator* and *Dscore*. *Disclosure Indicator* is an indicator variable that identifies whether a firm discloses a lawsuit in its 10K/Q filing. *Dscore* measures the level of the disclosure of litigation contingencies. Note, however, that all firms in my sample are involved in a lawsuit and thus can disclose litigation contingencies. Therefore, *Disclosure Indicator* = 0 or *Dscore* = 0 does not indicate firms that do not participate in a lawsuit, but rather firms that do not disclose any information about a pending lawsuit.

To create the variable *Disclosure Indicator*, I follow three steps. First, I start with a litigation data set from the Audit Analytics database to focus on a sample of firms sued in a U.S. federal district court between the years 2000 and 2008.[12] Using basic litigation information from the Audit Analytics' litigation data set as inputs (i.e., case title, instituted date, plaintiff name, and court name), I search each defendant's 10K/Q filings over the period that the lawsuit is ongoing by using a text search algorithm. Each time the program finds any of the input keywords, it prints the ten lines before and sixty lines after the keyword. The disclosure of these lawsuits can last up to 2008 by which time all lawsuits in my sample are resolved. Second, to ensure that the retrieved information corresponds to the lawsuit in question, I manually check the extracted lines and exclude irrelevant disclosures. In the last step, I assign the value of one or zero to the variable *Disclosure Indicator* for each firm-quarter observation based on whether the lawsuit is described in the text extract.

[12] I choose corporate lawsuits instituted between 2000 and 2008 for three reasons. First, the litigation data are extensively available in the Audit Analytics database only from 2000 onward. Second, collecting the level of disclosure of litigation contingencies requires the manual coding of each defendant firm's relevant disclosures in its 10K/Q filings over the entire period during which the lawsuit is ongoing, a period that typically lasts for several years. Third, to ensure the completeness of each firm's disclosure of litigation contingencies over time, I impose the restriction that all lawsuits in the sample have been resolved by the time I collect the data. In summary, all lawsuits in my sample were originally filed between the years 2000 and 2003. However, I also follow up with the disclosures of new lawsuits of these firms between 2004 and 2008.

The second disclosure variable, *Dscore,* captures the disclosure content and amount of disclosed information. To construct this variable, I first develop a checklist of disclosure items based on the 2008 and 2010 FASB's Exposure Drafts on the Disclosure of Certain Loss Contingencies (No. 1600-100 and No. 1840-100) and sample readings of litigation disclosures in the footnotes of 10K and 10Q filings (see details in Appendix 2.2). FASB provides these items as guidance to enhance the disclosure level of loss contingencies, in particular, litigation-related contingencies. They fall into four categories: (1) facts about the lawsuit, such as the date on which it was instituted, its docket number, and the name of the plaintiff;[13] (2) the contentions of the parties that includes the legal or contractual basis of the plaintiff's claim and the type of compensation the plaintiff is seeking; (3) the evolution of the lawsuit, such as its current status and the next steps of the case; and (4) the potential loss and impact of the lawsuit including the estimated loss and insurance coverage.

I then read through the lines extracted by the text search program and assign a score of one or zero to each of the above items within each category (except for the nonfinancial impact of the lawsuit[14]), depending on whether a firm provides the relevant information in its 10K/Q filings. Last, I compute the variable *Dscore* as the sum of the individual scores for each item. A higher disclosure score thus implies a higher level of disclosure. This approach for constructing the disclosure score is similar to Botosan (1997) and Zechman (2010).

A common problem with self-constructed disclosure scores is that the construction involves the researcher's subjective assessment of the disclosed information. To minimize the subjectivity in creating the litigation disclosure score, I rely on the disclosure items proposed by the FASB's Exposure Drafts on Disclosure of Certain Loss Contingencies and apply stringent identification rules to classify the individual items (see the detailed rules in Appendix 2.2). Furthermore, I follow the approach in Bens (2002) and use a group of security analysts and lawyers to verify the objectivity of the identification rules related to the disclosure items. Specifically, I involve ten MBA students and accounting faculty at London Business School with prior work experience as analysts and/or lawyers. I provide these individuals with the detailed

[13] Docket number refers to the unique number that a court clerk assigns to each case. This number remains with the case until or if it is resolved and helps identify and search for information about the case.
[14] A firm might discuss the nonfinancial impact of the lawsuit from different perspectives, such as the effect of the lawsuit on the design of products, the loss of customers, and the diversion of management attention. I assign a score of one to each of these aspects and add each one to obtain a total score for the item related to the nonfinancial impact of the lawsuit. As such, the item captures the details of the nonfinancial impact of the lawsuit (see Item IV(c) in Appendix 2.2).

rules on how to identify the items contained in the score. I split them into two groups and asked each of them to read a sample of five litigation disclosures, with every five participants having the same sample of disclosures. After obtaining their scores, I estimated the correlations of the scores for the same litigation disclosures. The mean of the pair-wise correlations is 0.80 for the items and 0.93 for the aggregate scores after removing the lowest and highest correlations. The high correlation of the litigation disclosure scores assigned by the different participants suggests that the construction of the disclosure score does not involve an excessive subjectivity.

Panel A of Table 2.1 provides the frequency of each disclosure item in the overall sample. Firms are more likely to disclose descriptive information about the lawsuits, such as a case filing date, name of the court, name of the plaintiff, and the types of compensation that the plaintiff is seeking, than to disclose proprietary information, such as the contention of the defense, anticipated timing of resolution, and the estimated loss. This disclosure pattern is consistent with corporate counsels' fear that plaintiffs might leverage proprietary information to obtain higher litigation claims.[15]

Panel B of Table 2.1 presents the Standard Industrial Classification (SIC) two-digit industry average of the two disclosure variables *Disclosure Indicator* and *Dscore*. The percentage of firms that disclose litigation contingencies varies substantially across different industries. For instance, in Building Materials & Gardening Supplies, none of the firms in the sample discloses information about the lawsuits. In contrast, firms in the Stone, Clay, & Glass Products Industry have greater propensity to disclose litigation contingencies. The differences between these two groups are statistically significant at the five percent level. Furthermore, the industry average of the disclosure score is calculated conditional on disclosing litigation contingencies. The minimum of the average disclosure score at the industry level is 6.60 and the maximum of the industry average score is 10.33.

2.3.2 Data and sample statistics

To examine the role of litigation contingency disclosures in choosing the type of debt and the design of debt contracts, I match the disclosure sample constructed in the previous section with private debt and public debt issues during the period from 2000

[15] The FASB's Exposure Drafts on loss contingencies disclosures have generated immense concerns among corporate counsels (i.e., Letter of Comment No. 16, 19, 29, 36 on the FASB 2008 Exposure Draft; and also Letter of Comment No. 41, 283, 284), so that the FASB has had to delay the implementation of these drafts. The corporate counsels generally argue that certain disclosure requirements would violate attorney-client privileges and force firms to disclose prejudicial information that could undermine their defensive position.

to 2008. The private debt sample consists of bank loans from the DealScan database provided by the Loan Pricing Corporation, while the public debt sample includes public bonds from the Mergent Fixed Income Securities Database (FISD). These two databases contain details of a bank loan's or public bond's interest rate, size, maturity, and other debt characteristics. However, the databases do not provide information about default clauses. Thus, I manually search and document information about default clauses related to court judgments in the original private debt agreements and bond prospectuses. Private debt agreements are typically included as exhibits in 10K, 10Q, and 8K SEC filings, while bond prospectuses are typically filed with the Securities and Exchange Commission (SEC) on registration forms such as S3 and 424B.[16] Under both private debt agreements and bond prospectuses, a section titled as "event(s) of default" usually specifies the definitions of events that trigger defaults.

I exclude loan and bond issues originated by financial institutions because their capital structure differs systematically from that of other firms. I then match the loan and bond sample with firm variables in the fiscal year prior to the loan or bond initiation from the Compustat database. I winsorize the sample at the top and bottom 1% to remove outliers. The final sample contains 1,676 loans obtained by 590 firms and 949 bonds issued by 271 firms.

Figure 2.1 presents the timeline for a defendant firm's disclosure about a litigation contingency in its 10K/Q filing and its decision to access the loan or bond markets. The defendant firm chooses to borrow from the debt markets while its lawsuit is still pending. The decision on whether or not to disclose information about this lawsuit occurs before the firm decides which debt market to access.

Table 2.2 reports the summary statistics for the loan and bond samples and compares the firm characteristics across these two samples. The mean of *Disclosure Indicator* is 0.21 for the loan sample that indicates, in 21 percent of all cases, firms disclose litigation contingencies. In contrast, the mean of *Disclosure Indicator* is 0.24 for the bond sample. The difference is statistically significant at the one percent level.

[16] An issuer can submit several registration forms for the same bond issue. I code the default clauses in the final registration form as it contains the most complete information regarding a bond issue.

2.4 The choice of public versus private debt

2.4.1 Main results

In H1, I posit that defendant firms that disclose information about litigation contingencies are more likely to access the public debt market. To test this hypothesis, I follow Bharath, Sunder, and Sunder (2008) and use the following probit estimation:

$$\begin{aligned}\text{Public Bonds} = \alpha &+ \beta_1 \text{Disclosure Indicator} + \beta_2 \text{Expected Loss} + \beta_3 \text{Number of Lawsuits} \\ &+ \beta_4 \text{Market-to-Book} + \beta_5 \text{ Accrual Quality} + \beta_6 \text{Firm Size} + \beta_7 \text{Z-score} \\ &+ \beta_8 \text{Leverage} + \beta_9 \text{ROA} + \beta_{10} \text{Tangibility} + \beta_{11} \text{Capital Market Access} \\ &+ \beta_{12} \text{Term Spread} + \lambda \text{Industry Fixed Effects} + \varepsilon \qquad (1)\end{aligned}$$

The dependent variable takes the value of one if a firm borrows from the public bond market and zero if it accesses the loan market. The main independent variable of interest is *Disclosure Indicator* that equals one if the firm discloses information about litigation contingencies and zero if it withholds this information. All control variables come from the prior literature. For instance, Bharath, Sunder, and Sunder (2008) argue that firms with higher discretionary accruals have greater information asymmetry between borrowers and lenders and consequently prefer to use private debt to avoid adverse selection costs. Therefore, I add a variable *Accrual Quality* to control for this effect. I also add *Term Spread* to account for macroeconomic conditions that might affect the supply of corporate bonds (Greenwood, Hanson and Stein 2010). All standard errors are clustered at the firm level to adjust for heterogeneity and within-firm correlation.

Table 2.3 reports the results from the regressions that estimate the relation between litigation contingency disclosure and the choice of debt. Column (1) provides univariate evidence on the positive relation between a firm's decision to disclose information about litigation contingencies and its propensity to access the public debt market. Column (2) shows that the coefficient estimate on the variable *Disclosure Indicator* is positive and statistically significant, which suggests that firms disclosing information about litigation contingencies are more likely to access the public debt market. In terms of marginal economic significance, the coefficient of 0.286 on the variable *Disclosure Indicator* translates into an increase of seven percent in the propensity to use public debt rather than private lending.

While bank loans represent the majority of private debt in the U.S., there are also other forms of private debt such as privately placed bonds. In column (3), I add privately placed bonds to bank loans and examine the choice of public bonds versus

private debt (i.e., bank loans and privately placed bonds). The effect of the disclosure of litigation contingencies is robust to this specification. Specifically, the coefficient of *Disclosure Indicator* is still positive and statistically significant at the ten percent level.

In the previous analyses, I focus on the effect of litigation contingency disclosure on the choice of debt – conditioning on accessing the debt markets. In the last column of Table 2.3, I use a different benchmark and examine whether firms disclosing litigation contingencies are more likely to borrow from the public debt and equity markets compared to the private debt market. Specifically, I add defendant firms that issue public equity. The dependent variable in this regression takes the value of one if a defendant firm either enters the public debt or equity market and zero if it borrows from the private debt markets. As column (4) shows, the coefficient estimate on *Disclosure Indicator* remains positive and statistically significant, which provides strong support for the argument that firms with lower proprietary costs of disclosure tend to disclose litigation contingencies in public filings and borrow from public investors. This is also consistent with Tang (2009), which shows that firms with higher proprietary costs due to product market competition are more likely to choose private placements instead of public offerings.

2.4.2 A validity test

Theory suggests (Bhattacharya and Chiesa 1995, Yosha 1995) that firms prefer to access the private debt market if information disclosure costs are higher. This costly information disclosure typically arises from competition in the product market. Disclosing too much information to existing or potential competitors can harm a firm's competiveness. Furthermore, in the setting of litigation contingency disclosure, firms with deeper pockets have stronger incentives to withhold litigation information to avoid the extraction of higher litigation claims by plaintiffs. To verify that firms withholding information about litigation contingencies face higher proprietary cost of disclosure, I estimate the determinants of a firm's decision to disclose litigation contingencies using the following probit regression:

$$\text{Disclosure} = \alpha + \gamma_1 \text{Hindex} + \gamma_2 \text{Net Tangible Assets} + \lambda \text{Other Controls} + \varepsilon \quad (2)$$

I use the Herfindahl index (*Hindex*) to measure the proprietary costs of disclosure in the product market calculated at the two-digit SIC level. Following the legal literature (Alexander 1991), I use the firm's net tangible assets level (*Net Tangible Assets*) to capture the degree of deep pockets and the proprietary cost of disclosure

arising from the legal process. Other control variables come from the prior disclosure literature. Table 2.4 shows that the coefficients of the Herfindahl index and the net tangible assets are both negative and statistically significant at the one percent level that suggests firms in more monopolistic industries and those with deeper pockets are less willing to disclose litigation contingencies. These results provide strong support for the argument that firms withholding litigation contingencies have higher proprietary costs for disclosure, and these costs incentivize them to avoid public lenders and borrow from a small group of private lenders.

2.5 Litigation contingency disclosure and the design of bond contracts

In this section, I explore the effects of litigation contingency disclosure on bond terms.

2.5.1 Research design

To test the impact of litigation contingency disclosure on the yield and the inclusion of default clauses that pertain to court judgments, I estimate the following model:

$$\text{Bond Terms} = \alpha + \beta_1 \text{Disclosure Variable} + \beta_2 \text{Expected Loss} + \beta_3 \text{Number of Lawsuits} + \gamma \text{Firm Controls} + \lambda \text{Bond Controls} + \nu \text{Industry and Year Fixed Effects} + \varepsilon \quad (3)$$

The dependent variable is *Yield Spread* or an indicator variable *Court Judgment* that identifies the inclusion of default clauses pertaining to court judgments in the indentures. The yield spread is the difference between the bond's yield at issuance and the yield of a treasury bill with matched maturity. It represents the risk premium that investors require to hold the issuer's bond, taking into account the effect of business cycles.

The independent variables of interest are *Disclosure Indicator* or *Dscore*. In the event that a firm participates in multiple lawsuits at the issuance date, *Disclosure Indicator* takes the value of one if the firm discloses at least one of the lawsuits. *Dscore* is the maximum disclosure score that the firm provides for different lawsuits.[17] Note that all firms included in the regressions are participating in ongoing or pending lawsuits, so all firms can decide to disclose information about these lawsuits.

[17] The results are similar if I define *Dscore* as the average disclosure score for different lawsuits.

To test whether the disclosure of litigation contingencies in 10K/Q filings provides additional information to investors beyond other information sources, I add the variable *Expected Loss* to capture investors' expectation of the loss associated with a pending lawsuit.[18] *Expected Loss* is defined as the abnormal stock market return around the lawsuit filing date (0, 1) multiplied by -1. The higher the value of the *Expected Loss*, the higher the expected loss related to the lawsuit. Moreover, I include *Number of Lawsuits* to examine whether bondholders set more restrictive terms if firms are involved in multiple lawsuits.

I also control for firm- and bond-specific variables that explain cross-sectional differences in bond terms beyond the effect of litigation contingency disclosure. For example, Minton and Schrand (1999) show that a higher level of cash flow volatility is associated with a higher cost of debt. Thus, I include *Cash Flow Volatility* as a control variable. I also add each bond's maturity and size to the regressions that estimate the impact of litigation contingencies on yield spreads, as potential losses to bond investors increase with the time horizon of repayments and the offering amounts. Rating agencies provide professional assessments of each firm's credit risk to the bondholders. Nevertheless, the factors that determine credit ratings are likely to be confounded with the variables that explain yield spreads. To mitigate this concern, I regress credit ratings on the same set of firm and bond variables as in the yield-spread regression and include the residuals obtained from these regressions as an additional control variable in the yield-spread regression.

To account for possible shifts in debt financing over time caused by changes in general capital market conditions, I include year fixed effects in all bond-term regressions. Furthermore, I add industry fixed effects to control for any unobserved, time-invariant industry characteristics. Standard errors are clustered at the firm level to adjust for heterogeneity and within-firm correlation.

Table 2.5 provides the summary statistics for the bond sample. The observations are at the bond-issue level. Conditional on the disclosure of litigation contingencies, the average disclosure score is 6.84. The average yield spread for the bond issues in the sample is about 177 basis points, and the average maturity of the bond issues is 11 years. The rating values are assigned as a decreasing function of credit

[18] I use expected loss associated with a lawsuit instead of the realized loss for two reasons. First, to the extent that the disclosure of litigation contingencies may affect the outcome of the lawsuit, including the realized loss in the regression will introduce the bad control problem and bias the estimates on *Disclosure Indicator* or *Dscore* (Angrist and Pischke 2009). Second, due to data limitation, I can only observe the realized loss at the aggregate level for lawsuits that involve multiple defendants.

ratings: the higher the credit rating, the lower the rating value. For example, a rating of AAA corresponds to a rating value of one. Furthermore, conditioning on participating in pending lawsuits, only six percent of the bonds in the sample have a default clause that pertains to court judgments.

2.5.2 The effect of the decision to disclose litigation contingencies

Table 2.6 reports the results for the regressions on the association between bond terms and the decision to disclose litigation contingencies. Specifically Panel A of Table 2.6 presents the results for the effect on the yield spread. The dependent variables in these regressions are yield spreads in percentage points. In column (1), I estimate the effect of *Disclosure Indicator* on the yield spread in a reduced form. In this reduced form regression, I only include firm characteristics as well as industry and year fixed effects. This mitigates the concern that the different bond features, such as the offering yield and maturity, are simultaneously determined and might therefore produce biased estimates when added as explanatory variables (Qian and Strahan 2007). Consistent with H2a, the coefficient of *Disclosure Indicator* is positive and statistically significant at the five percent level, which indicates firms that disclose litigation contingencies are associated with higher yields.

In column (2), I further control for bond-specific variables. The coefficient of *Disclosure Indicator* remains positive and is statistically significant at the one percent level. In terms of economic significance, the estimation results imply that if a firm discloses litigation contingences, it experiences an increase of 13 basis points in yield spreads, which is about seven percent of the average yield spread. Bondholders' negative reaction to the disclosure of litigation contingencies is consistent with the information content of the mandatory disclosures. Firms are only required to disclose litigation contingencies if the potential loss is material and reasonably possible. Hence, bondholders might associate a firm's decision to disclose litigation contingencies with the possibility that an ongoing lawsuit is severe and likely to entail significant costs for the firm. As a result, bondholders require a higher risk premium to hold bonds issued by these firms. Note that this effect of the decision to disclose litigation contingencies on the yield spread exists over and above shareholders' ex ante expectation of the losses associated with the lawsuits (represented by *Expected Loss*).

A potential concern is that firms might self-select to disclose or withhold information about litigation contingencies. In column (3) of Panel A in Table 2.6, I use a Heckman two-step selection model to correct for this self-selection bias. In the first

stage, I estimate the determinants of litigation contingency disclosure, using the same specification as the validity test in Section 4. The estimation results are also similar to those in Table 2.4. From the first-stage regression, I obtain the inverse Mills ratio and include it in the second stage. Further, after controlling for the self-selection bias, the effect of the variable *Disclosure Indicator* on the yield spread becomes less significant both economically and statistically. Note that the fact that the estimated effect of the variable *Disclosure Indicator* is smaller actually supports the hypothesis that bondholders infer additional information from the firms' decisions to disclose litigation contingencies. This is because the self-selection correction can be viewed as a way of testing private information (Li and Prabhala 2007). Conditional on the observable factors, the self-selection correction term (i.e., the inverse Mills ratio) represents the managers' private information that affects the decision to disclose litigation contingencies. To the extent that this decision conveys managers' private information about the potential litigation outcome, its effect should be mitigated or even absorbed by the inclusion of the self-selection correction term. Indeed, in column (3), the coefficient of the inverse Mills ratio is positive and statistically significant at the five percent level, while the coefficient of the variable *Disclosure Indicator* becomes less pronounced.

Next, I examine the effect of the decision to disclose litigation contingencies on the presence of default clauses specifically related to court judgments. Panel B of Table 2.6 presents the corresponding results. Column (1) provides evidence in a reduced form that the disclosure decision has a positive relation to the inclusion of default clauses. In column (2), after controlling for firm and bond characteristics, the coefficient of *Disclosure Indicator* is positive and statistically significant at the one percent level. This result suggests that firms disclosing litigation contingencies are more likely to add a default clause that pertains to court judgments in their bond indentures. In terms of economic magnitude, the decision to disclose litigation contingencies is associated with an increase of a six percent likelihood of including the clause. Furthermore, consistent with the role of the self-selection correction term in testing private information, the effect of the disclosure decision on the presence of default clauses is partially mitigated by the self-selection correction in column (3).

In an untabulated analysis, I examine further whether the disclosure decision impacts other nonpricing terms such as bond size, maturity, and the number of covenants in the indentures. I find no evidence that the decision to disclose litigation contingencies affects these terms. This is consistent with the argument that nonpricing

terms might substitute for each other and excessive contractual restrictions are inefficient.

Taken together, my results provide consistent evidence that bondholders take a firm's decision to disclose litigation contingencies into account. The disclosure of litigation contingencies is associated with a higher risk premium and a higher propensity to add default clauses that pertain to court judgments.[19]

2.5.3 The effect of the disclosure level of litigation contingencies

In the previous section, I show that the decision to disclose litigation contingencies signals that the potential outcomes about litigation contingencies are material and reasonably possible and that bondholders in turn demand higher yields and the addition of default clauses related to court judgments. However, conditional on disclosure, firms have considerable discretion about the disclosure level. To the extent that more detailed disclosure reduces the uncertainty associated with a pending lawsuit, bondholders might adjust the bond terms accordingly. To test the implication of the disclosure level on bond terms, I hold the decision to disclose any litigation contingency constant and focus exclusively on the level of disclosure in the sample of firms that disclose litigation contingencies.

Panel A of Table 2.7 presents the results for the regressions that estimate the effect of the level of litigation contingency disclosure on the yield spread. Despite the small sample size, column (1) shows that the effect of the disclosure level measured by *Dscore* is negative and statistically significant in the reduced form regression. In the full regression in column (2), the coefficient estimate on the variable *Dscore* remains negative and statistically significant at the one percent level. Thus, bondholders appear to reward firms that disclose more information by demanding lower yields. In fact, the disclosure of one additional item is associated with a reduction of 16 basis points in the yield spread. This is consistent with both empirical and theoretical literature showing that more detailed disclosure can reduce the uncertainty associated with the firms' value, and thereby reduce the adverse selection cost and investors' demand for price protection (Diamond and Verrecchia 1991, Verrecchia 2001). This result can also be interpreted as bondholders associating a higher level of disclosure with a lower likelihood of

[19] Despite a higher yield and a higher likelihood of including default clauses that pertain to court judgment in bond indentures, there are still benefits for defendant firms to access the bond market, such as larger borrowing amount, and less restrictive contractual terms compared to the loan market. For example, loan contracts can add a default clause which would trigger default as long as a borrowing firm has pending litigation.

withholding unfavorable news and therefore demanding lower yields (Botosan 1997, Botosan and Plumlee 2002).

A potential concern about this analysis is that a firm's overall disclosure level might be positively related to its disclosure level of litigation. This relation would confound the effect of the litigation contingency disclosure level on the yield. To mitigate this problem, I use the litigation stage as an instrumental variable and implement a two-stage least square estimation (2SLS). The litigation stage is likely to satisfy the two necessary conditions for a good instrument. First, as the litigation process develops, more information about each party's evidence is released. In particular, following the discovery stage,[20] both sides often have more information about the relative strengths and weaknesses of each side's case (Friedenthal et al., 2005). Thus, firms might be prone to disclose more information as the litigation evolves. Second, the litigation stage is unlikely to have a direct impact on the yield. This is because the litigation process is a complicated procedure governed by federal or state laws. The ruling of judges or the opinions of juries is relatively exogenous to a firm's yield.

Because I do not directly observe the specific stage of the litigation in my data, I measure it as the difference between the disclosure date and the lawsuit filing date. Column (3) of Panel A in Table 2.7 reports the results for the first-stage estimation. The coefficient of the litigation stage is positive and statistically significant at the one percent level, consistent with the view that firms are likely to disclose more details about litigation contingencies as the litigation evolves. Furthermore, the partial R^2 of the first stage is 0.11 that implies the disclosure score and the litigation stage are highly correlated. The partial F-statistic is 10.97, larger than the necessary size of the F-statistic developed by Stock et al. (2002), suggesting that the variable *Litigation Stag*e is not subject to the weak instrument problem.[21] In the second stage, consistent with the ordinary least squares (OLS) results, the coefficient estimate on the *Dscore* remains negative and statistically significant at the five percent level.

[20] There are typically four litigation stages. The first stage is pleading, which involves the filing of a complaint or petition in which plaintiffs set forth allegations against the defendant. Discovery is the second stage in which each party can obtain evidence from the opposing party. A trial occurs when parties come together to present information before a judge, and the judge aims to achieve a resolution to the dispute. Finally, an appeal is the process in which parties request a formal change to the decision reached in the trial.

[21] Stock et al. (2002) develop the suggested critical F-statistics for a different number of instruments. In the case of one instrument, the F-statistic should be at least 8.96 to ensure that the instrument is not weak.

Next, I explore whether the disclosure level of litigation contingencies is also related to the presence of default clauses that pertain to court judgments. Panel B of Table 2.7 reports the corresponding results. Neither the OLS nor the 2SLS results provide evidence that the disclosure level has an effect on the presence of such clauses. This result is not surprising because disclosure theories typically point to the role of disclosure in reducing the cost of capital (i.e. Lambert, Leuz and Verrecchia 2007). Furthermore, as mentioned in Section 2, the inclusion of default clauses related to court judgments is very costly as it can incur significant bankruptcy costs for both issuing firms and bondholders. Firms weigh the potential costs against the benefits in determining whether or not to include these clauses. Conditional on the inclusion of these clauses as a result of the material and likely reasonable loss associated with pending lawsuits, the benefits of the disclosure level have to be sufficiently large in order to outweigh the costs of having theses clauses.

Taken together, conditional on disclosing litigation contingencies, firms that disclose a higher level of litigation contingencies are rewarded with lower yields. This inference is drawn after taking into account the presence of mandatory disclosure requirements and potential omitted variables, which suggests a causal link between the disclosure level and the yield.

2.6 Robustness checks

2.6.1 Alternative disclosure scores

In Section 5, I interpret the negative relation between the disclosure level and the yield, as more disclosure decreases the information uncertainty associated with the potential outcome, timing, and likelihood of pending lawsuits. In this section, I test the robustness of this interpretation by exploring alternative ways to define the disclosure level.

Bondholders might obtain information about pending lawsuits from other public sources such as press releases or court records. These information channels typically provide basic facts about the lawsuits. To demonstrate that the disclosure of litigation contingencies in 10K/Q filings indeed provides new information content to bondholders, I redefine the disclosure score by eliminating items that belong to the facts category such as the case filing date, the name of the court, docket number, and the name of the plaintiff. Column (1) of Table 2.8 presents the results using this alternative score. The coefficient estimate on this alternative score is negative and

statistically significant at the five percent level, consistent with the interpretation that bondholders value extra information content in the disclosure level.

Furthermore, certain items in the disclosure score are more relevant than others to the estimation of potential losses associated with litigation contingencies. For instance, firms might provide an extensive discussion on the potential nonfinancial impact of the lawsuits. In the example of Deltagen Inc. (Please see Appendix 2.1), the firm provided detailed information about the consequences of a patent infringement lawsuit filed against them that included how the lawsuit would affect the product redesign process, market competitiveness, as well as the firm's relation with the customers. Such detailed disclosure could facilitate bondholders' predictions of the potential impact of the lawsuit on the firm's business and operating results. Moreover, firms might also provide more quantitative information about the lawsuit, such as an estimated loss amount, or a range of estimates, and whether or not they have insurance coverage on pending lawsuits. To the extent that investors place greater weight on quantitative information, the effect of the disclosure level on the yield should be stronger for items that fall into these categories. In column (2) of Table 2.8, I reconstruct the disclosure score by only focusing on the last category of the disclosure score *Potential Loss and Impact*. Consistent with expectations, the coefficient of this alternative disclosure score is negative and statistically significant at the one percent level. Moreover, the disclosure of an additional item in the category of *Potential Loss and Impact* leads to a reduction of 18 basis points in the yield, about ten percent of the average yield spread in the sample.

2.6.2 Management forecasts and the disclosure level of litigation contingencies

To further explore whether the reduction in information uncertainty associated with the firm value causes the negative relation between the disclosure level of litigation contingencies and the yield, I examine the effect of the disclosure level across firms facing different degrees of information uncertainty. To do so, I split the sample into firms that issue management forecasts versus those that do not. I choose the issuance of management forecasts as a proxy for information uncertainty based on the prior literature. In particular, Shivakumar et al. (2011) provide strong evidence that credit markets react significantly to management forecast news. To the extent that bondholders obtain more timely information from management forecasts, they rely less on the disclosures in the 10K/Q filings. Specifically, managers may take potential losses arising from litigation into account when forming forecasts of future cash flows or

earnings. In contrast, if firms do not provide management forecasts, bondholders are likely to be more uncertain about the firm value and depend more on the information in the 10K/Q filings. Consistent with the substitution effect between management forecasts and disclosures in the 10K/Q filings, I find that the negative relation between the disclosure level of litigation contingencies and the yield is mainly driven by the sample of firms that do not issue management forecasts. As Table 2.9 shows, the coefficient estimate of the disclosure score is negative and statistically significant at the five percent level in the subset of firms that do not provide management forecasts.

2.6.3 A falsification test

So far, I show that litigation contingency disclosure plays a role in the design of public debt contracts. In contrast to public debt holders, private debt holders, in particular banks, are likely to have access to the proprietary information of a borrowing firm (James 1987; Lummer and MacConnell 1989), and consequently might depend less on the publicly disclosed information of the borrowing firm in setting contract terms. This different information generation process allows me to create a falsification test for the prediction that litigation contingency disclosure matters to public debt holders. Specifically, if private debt holders rely more or exclusively on private information communication with borrowers, public disclosures such as litigation contingency disclosures in 10K/Qs should have weaker or no effects on the terms in private debt contracts.

To implement this falsification test, I examine the impact of the decision to disclose litigation contingencies and the level of litigation contingency disclosure on the contractual terms in private debt contracts by using the following model:

$$\text{Loan Terms}=\alpha+\beta_1\text{Disclsure Variable}+\beta_2\text{Expected Loss}+\beta_3\text{Number of Lawsuits} +\gamma\text{Firm Controls}+\lambda\text{Loan Controls}+\nu\text{Industry Fixed Effect} \quad (4)$$

The dependent variables are loan terms such as loan spreads, and default clauses that pertain to litigation events such as court judgments. In addition to the default clauses on court judgments, private debt contracts can include a default clause related to pending litigation. This clause enables the lender to demand repayment of the debt if the borrowing firm is participating in lawsuits for a certain grace period, providing more stringent protection for debt holders compared to the default clauses that pertain to court judgments. I add loan-specific features such as performance pricing, loan types (i.e., term loan, revolver greater than one year, revolver less than one year, and 364-day

facility), and loan purposes (i.e., corporate purposes, debt repayment, working capital, takeover, etc.) as control variables in the regressions.

Table 2.10 presents the results for the regressions that estimate the disclosure decision and the level of disclosure on the loan spread, and the likelihood of adding default clauses related to court judgments and pending litigation. Across the loan terms, the decision to disclose litigation contingencies and the associated disclosure level do not have any effect on setting the contractual terms in the private debt market that implies private debt holders do not attach significant importance to public disclosures of litigation contingencies. This is consistent with the argument that private debt holders tend to have access to proprietary information of the borrowing firms and thus rely less on public information in determining contractual terms. On the contrary, public debt holders take the disclosure of litigation contingencies in 10K/Q filings into account in setting contractual terms because they do not have private information on borrowers and depend exclusively on public disclosures.

2.7 Conclusion

In this paper, I provide evidence on the role of firms' litigation contingency disclosures via 10K/Q filings in debt contracting. Consistent with the proprietary cost theory (e.g., Bhattacharya and Chiesa 1995, Yosha 1995), I find that firms disclosing information about litigation contingencies are more likely to access the public debt market rather than use private debt. Conditional on accessing the public debt market, I show that the disclosure of litigation contingencies is associated with higher risk premiums and the inclusion of default clauses that pertain to court judgments in their bond indentures. However, conditional on the disclosure of litigation contingencies, public debt holders reduce the risk premium for firms with a higher level of disclosure. This evidence suggests that public debt holders can distinguish firms' mandatory and voluntary disclosure incentives and adjust bond terms accordingly.

Furthermore, I document preliminary evidence on the determinants of litigation contingency disclosure. Firms are less likely to disclose information about litigation contingencies if they face higher proprietary costs of disclosure from the legal process and product market competition. Further research could explore the managerial incentives that affect the disclosure of litigation contingencies. For instance, firms are more likely to disclose litigation contingencies if their managers have been named as co-defendants in the lawsuits. Whether this effect varies with the quality of corporate governance is an open question.

Overall, I demonstrate that the disclosure of litigation contingencies in 10K/Q filings is of great importance to public debt holders, echoing the FASB's proposals to enhance litigation contingency disclosure in order to assist investors in accessing the likelihood, timing, and magnitude of future cash outflows associated with litigation contingencies.

Appendix 2.1: Examples of litigation contingency disclosure

W.R. Grace & Co

In addition, on February 22, 2000, a class action case was filed in U.S. District Court in Missoula, Montana (Tennison, et al. v. W.R. Grace & Co., et al) against Grace on behalf of all owners of real property situated within 12 miles from Libby, Montana that are improved private properties. The action alleges that the class members have suffered harm in the form of environmental contamination and loss of property rights resulting from Grace's former vermiculite mining and processing operations. The complaint seeks remediation, property damages and punitive damages. While Grace has not completed its investigation of the claims, it has no reason to believe that its former activities caused damage to the environment or property. At this time, the Company is not able to assess the extent of any possible liability related to this case.

Deltagen Inc

In 1998, Lexicon Genetics Incorporated, one of our competitors, informed us that it was a coexclusive licensee under a patent covering certain isogenic DNA technology that may be used to modify the genome of a target cell. On May 24, 2000, Lexicon filed a case against us in the United States District Court for the District of Delaware. The complaint in the case alleges that our methods of making knockout mice infringe United States Patent No. 5,789,215, under which Lexicon claims to be an exclusive licensee. The complaint seeks a judgment that we have infringed this patent, a permanent injunction against further infringement of the patent and an award of damages in an unspecified amount that, under certain circumstances, may be tripled. On June 13, 2000, we responded to Lexicon's complaint by filing an answer and seeking a declaratory judgment in our favour. Our response seeks a judgment declaring the patent invalid and that we have not infringed and are not infringing the patent. We intend to defend the action vigorously.

The litigation against us is in the early stages and its outcome cannot be predicted. If Lexicon prevails and obtains an injunction, we would be required to obtain a license in order to continue to use the methods covered by the patent. We may not be able to obtain this license on favourable terms or at all. If we are unable to obtain a license, we would be required to redesign our processes to use alternative methods of making knockout mice and expect we would experience a significant disruption in our ability to generate revenue during this redesign period and as we develop a gene function database using these new methods. This redesign and development would involve significant time and costs, and the alternative methods available to us may not be as effective as our current methods. We estimate the average time from the date we begin to create a knockout mouse until the date the data from that knockout mouse is added to the gene function database to be 12 months. The addition of new data points to our gene function database could be significantly delayed. We may fail to attract customers for a gene function database that uses the alternative methods and the marketing of our existing database and DeltaSelect program may be significantly affected. If Lexicon prevails, we could also incur significant financial liabilities which could materially affect our business and operating results.

Appendix 2.2: The elements and construction guidelines of the disclosure score

Elements of the score

Each item within a category receives a score of one or zero based on whether the firm provides the information in its 10K/Qs about a particular lawsuit. The overall score is the sum of all the items.

I. *Facts* about the lawsuit:
   a. Case filing date
   b. Name of the court
   c. Docket number
   d. Name(s) of the plaintiff(s)

II. The *contentions* of the parties:
   a. Legal or contractual basis of the plaintiff's claim
   b. Claim amount
   c. Types of compensation that the plaintiff is seeking
   d. Defendant's response to the claim
   e. Contention of the defense

III. The *evolution* of the lawsuit:
   a. Current status
   b. Next steps
   c. Anticipated timing of resolution

IV. *Potential loss and impact* of the lawsuit:
   a. Qualitative assessment of the most likely outcome
   b. Estimated loss
   c. Potential nonfinancial impact
   d. Insurance coverage
   e. Accrued amount

Construction guidelines

I. Case filing date (the date on which a lawsuit is filed with a court)
   a. Only counts if the specific month and year of the lawsuit filed is known.
   b. Scenario A: "In 2000, Company A sued us…" does not count.
   c. Scenario B: "On October 2000, Company A sued us..." counts.
   d. Scenario C: "On December 20, 2001, Company A sued us..." counts.

II. Name of the court (i.e., the federal court in the Southern District of New York)

III. Docket number (a unique number that identifies a specific case on the court's calendar)

IV. Name(s) of the plaintiff(s)
   a. If it is a class action suit (involving a group of plaintiffs), it counts if the representative of the plaintiffs is known or there is a description of the plaintiffs, i.e., "an alleged class of all persons who reside within a one-mile radius of an industry facility owned by us..."
   b. If it is not a class action suit, it only counts if the specific name of the plaintiff is mentioned. For example, "A financial broker filed against us…" does not count.
   c. You can also find the name of the plaintiff in the case title, i.e., CSI Investment et. al. v. Cendant et al.

V. The legal or contractual basis of a plaintiff's claim (why the plaintiff initiated the lawsuit)
   a. Usually, the description of this item contains the word "allege".
   b. Example: "The suit alleges infringement of United States Patent No. 4.706, 121, which relates to certain electronic program guide functions".

VI. The claim amount
   a. Example 1: "The plaintiffs seek a claim of $10 million".

VII. Types of compensation that the plaintiff is seeking
   a. Example 2: "EchoStar seeks, among other relief, damages and an injunction".
   b. Usually, the description of this item contains the word "seek".

VIII. The defendant's response to the claim (whether they believe the claim has merit, and whether they will defend against it)
   a. Example 1: "Northwest believes the case to be without merit and intends to defend against the claim".

IX. The contention of the defense (the defendant's argument as to why they believe the claim is without merit)

X. Current status (the current stage of the lawsuit)
   a. This item usually describes the current stage of the suit, for example, whether it is in the pleading, discovery, summary judgment, or trial stages.
   b. This item could contain words such as "not yet". For example, "The ruling has not yet been decided".

XI. Next steps (what the defendant expects to happen in the near future about the lawsuit)

XII. The anticipated timing (the anticipated time when the final decision could be made)

XIII. Qualitative assessment of the most likely outcome (whether the defendant believes the final ruling will be in his or her favor, or whether the lawsuit is likely to have a material effect on the defendant's financial position)

XIV. Estimated loss (how much loss the lawsuit could potentially incur)
   a. A specific, estimated amount or an estimated range of amount
   b. Summary judgment amount or verdict amount

XV. Potential nonfinancial impact of the lawsuit (i.e., the impact on the defendant's production, customer relationship, management's diversion of time and attention – each nonfinancial aspect scores one; this item can be more than one).
   a. Potential nonfinancial impact does not mean that this impact will not cause any indirect financial loss. It means the direct impact is nonfinancial.
   b. "A material adverse effect on our financial position or results of operations" does not count.

XVI. Information about possible recovery from any insurance and indemnification arrangements (whether the potential loss of the lawsuit is insured)

XVII. Accrued amount for potential losses (whether the defendant has recognized the potential loss as an accrued amount in 10K/Qs)

Appendix 2.3: Variable definitions

Variable	Definition
Accrual Quality	Discretionary accruals calculated as in Dechow et al. (1995)
Big Auditor	Indicator variable equal to one if a firm is audited by a Big 4 accounting firm and zero otherwise
Bond/Loan Size	Natural logarithm of a bond/loan's offering amount
Callable	Indicator variable equal to one if an issue has a call option and zero if otherwise
Capital Market Access	Indicator variable equal to one if a firm has had a prior public debt issue and zero if otherwise
Cash Flow Volatility	Standard deviation of quarterly cash flows from operations over the four fiscal years prior to the bond being issued, scaled by the absolute value of the mean over the same period
Court Judgment	Indicator variable equal to one if a bond indenture contains the default clause on court judgments and zero if otherwise
Disclosure Indicator	Indicator variable equal to one if a firm discloses a litigation and zero if otherwise
Dscore	Sum of a firm's disclosure items
Executive Co-defendants	Indicator variable equal to one if an executive is involved in a litigation and zero if otherwise
Expected Loss	Abnormal stock return around a lawsuit filing date (0, 1) multiplied by -1. Equally-weighted market model is used to calculated the abnormal return
External Financing	Indicator variable equal to one if a firm accesses external capital markets in the next quarter and zero if otherwise
Firm Size	Natural logarithm of the total assets
Hindex	Sum of the squares of the market shares (based on sales) of firms within a 2-digit SIC industry
Lawsuit Types	Indicator variable for lawsuit types, including litigation related to shareholders, patent infringement, violation of contracts, antitrust, labor, environment issues
Leverage	Long-term debt divided by total assets
Litigation Stage	The difference between the disclosure date and the lawsuit filing date
Loan Purposes	Indicator variable for loan purposes, including corporate purposes, debt repayment, working capital, and takeover
Loan Spread	Loan spread is measured as all-in spread drawn from the DealScan database. All-in spread drawn is defined as the amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down
Loan Types	Indicator variable for loan types, including term-loan revolver greater than one-year revolver less than one year, and 364-day facility
Market-to-Book	Market value of equity plus the book value of debt divided by total assets
Maturity	A bond/loan's maturity date minus its offering date in years
Net Tangible Assets	Logarithm of net plant property and equipment
Number of Lawsuits	Number of lawsuits in which firms participate
Pending Litigation	Indicator variable equal to one if a debt agreement contains the clause on pending litigation and zero if otherwise
Performance Pricing	Indicator variable equal to one if the loan facility uses performance pricing
Post-SOX	Indicator variable equal to one if a litigation is disclosed after 2002 and zero if otherwise

Putable	Indicator variable equal to one if an issue has a put option and zero if otherwise
Rating	Numeric values assigned to bond ratings offered by S&P's or Moody's, ranging from 1 to 20 with the AAA rating equal to one
Rating Residual	The residual obtained from regressing rating on the same set of firm and bond characteristics as in Equation (3)
ROA	Operating income before depreciation scaled by total assets
Stock Return Volatility	Standard deviation of daily stock returns in the prior year
Subordinated	Indicator variable equal to one if an issue is subordinated and zero if otherwise
Tangibility	Value of net property plant and equipment divided by total assets
Term Spread	The difference between the 10-year treasury yield and the 2-year treasury yield. (Data source: Federal Reserve Board of Governors)
Yield Spread	The difference between a bond issue's offering yield and the yield of a benchmark treasury issue
Z-score	Modified Altman's (1968) Z-score=(1.2 working capital +1.4 retained earnings+3.3 EBIT + 0.999 Sales)/Total Assets[22]

[22] Following the approach in Graham, Li and Qiu (2008), I use a modified Z-score, which excludes the ratio of market value of equity to book value of total debt, because market-to-book is a separate control variable in the choice of debt analysis.

Figure 2.1: Timeline for the disclosure of litigation contingencies

This figure presents the timeline for the disclosure of litigation contingencies. *Lawsuit Filed* denotes the date that a lawsuit is filed against a defendant firm, while *Lawsuit Ended* corresponds to the date that the lawsuit is resolved. The firm can decide to access the debt markets while the lawsuit is still pending. The disclosure variables capture the decision to disclose this lawsuit and what information to disclose after the firm is sued but before it accesses the debt markets.

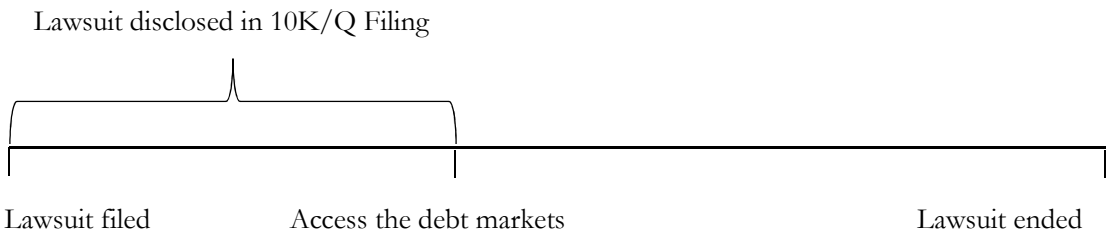

Table 2.1: Descriptive statistics of disclosure variables

This table provides descriptive statistics for disclosure variables. Panel A presents the frequency of each disclosure item in the overall sample. Panel B reports the average of *Disclose* and *Dscore* for each industry that has more than five firms in the sample. The average *Dscore* is calculated for firms that disclose litigation contingencies.

Panel A: Frequency of disclosure items

Disclosure item	Item name	% Provided
Facts	Case filing date	28%
	Name of the court	32%
	Docket number	8%
	Name(s) of the plaintiff (s)	29%
Contentions	Legal or contractual basis of the plaintiff's claim	32%
	Claim amount	3%
	Types of compensation that the plaintiff is seeking	25%
	Defendant's response to the claim	27%
	Contention of the defense	2%
Evolution	Current status	28%
	Next steps	12%
	Anticipated timing of resolution	7%
Potential Loss and Impact	Qualitative assessment of the most likely outcome	14%
	Estimated loss	9%
	Potential nonfinancial impact	4%
	Insurance coverage	7%
	Accrued amount	4%

Panel B: Disclosure variables by industry

Industry name	Disclosure indicator	Dscore	# of firms
Building Materials & Gardening Supplies	0.00	0.00	6
Printing & Publishing	0.08	7.00	13
Apparel & Accessory Stores	0.10	8.00	29
Fabricated Metal Products	0.14	10.33	21
Wholesale Trade - Durable Goods	0.19	8.86	36
Oil and Gas Extraction	0.22	8.50	27
Furniture & Home Furnishings Stores	0.25	8.33	12
General Building Contractors	0.29	7.00	7
Primary Metal Industries	0.29	9.40	17
Food Stores	0.33	7.33	9
Transportation Equipment	0.34	7.33	35
General Merchandise Stores	0.35	8.00	17
Food and Kindred Products	0.36	7.80	28
Petroleum & Coal Products	0.36	6.60	14
Apparel & Other Textile Products	0.38	7.80	13
Rubber & Miscellaneous Plastics Products	0.38	6.80	13
Amusement & Recreation Services	0.38	7.00	8
Eating & Drinking Places	0.42	8.00	12
Misc. Manufacturing Industries	0.44	8.25	9
Chemical & Allied Products	0.45	7.69	139
Electronic & Other Electric Equipment	0.45	8.59	176
Health Services	0.46	8.83	26
Paper & Allied Products	0.47	8.43	15
Wholesale Trade- Nondurable Goods	0.48	7.50	21
Industrial Machinery & Equipment	0.50	8.44	103
Engineering & Management Services	0.50	9.57	28
Instruments & Related Products	0.52	8.90	81
Electric, Gas, & Sanitary Services	0.52	7.33	69
Business Services	0.53	8.78	276
Miscellaneous Retail	0.55	7.39	42
Communications	0.56	8.11	62
Stone, Clay, & Glass Products	0.57	8.50	7
Industries with Fewer than Five Firms			101
Total Number of Firms			1,472

Table 2.2: Univariate comparison across the bond and loan samples

This table compares firm characteristics across the bond and loan sample. The observations are at the bond issue-level or loan level. The last column presents the results of the t-tests that compare the differences in the variables related to bonds and loans. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

	Bonds				**Loans**				**Bond-Loan**
Variable	N	Mean	Median	Std. Dev.	N	Mean	Median	Std. Dev.	Difference
Firm Characteristics									
Disclosure Indicator	949	0.24	0.00	0.43	1,676	0.21	0.00	0.43	0.03***
Market-to-Book	949	1.83	1.78	0.97	1,676	2.05	1.47	0.96	-0.21***
Accrual Quality	949	0.43	0.06	1.08	1,676	0.37	0.09	1.07	0.06
Firm Size	949	9.79	9.98	1.14	1,676	8.06	8.15	1.89	1.73***
Z-score	949	0.76	0.86	0.60	1,676	0.53	0.73	1.16	0.22***
Leverage	949	0.26	0.20	0.14	1,676	0.24	0.22	0.24	0.02***
ROA	949	0.16	0.16	0.07	1,676	0.13	0.12	0.12	0.03
Tangibility	949	0.39	0.41	0.20	1,676	0.30	0.25	0.21	0.09***
Capital Market Access	949	0.93	1.00	0.25	1,676	0.60	1.00	0.49	0.33***

Table 2.3: Litigation contingency disclosure and the choice of debt

This table presents the probit estimation results from the relation between a defendant firm's decision to disclose litigation contingencies and the choice of public versus private debt (Equation 1). The dependent variable in the first two columns is an indicator variable that takes the value of one if a firm issues public bonds and zero if it borrows from banks. The dependent variable in column (3) is an indicator variable that takes the value of one if a firm issues public bonds and zero if it has bank loans or privately placed bonds. The dependent variable in column (4) is an indicator variable that equals one if a firm either accesses the public bond or equity market and zero if it has bank loans or privately placed bonds. The standard errors are clustered at the firm level. The z-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Bonds vs. Loans**	**Bonds vs. Private Debt**		**Bonds & Equity vs. Private Debt**
	(1)	(2)	(3)	(4)
Disclosure Indicator	0.167**	0.286***	0.176*	0.393***
	(2.153)	(2.897)	(1.889)	(4.805)
Expected Loss		-2.202**	-1.975***	-0.434
		(-2.550)	(-2.771)	(-0.764)
Number of Lawsuits		0.086**	0.092**	0.095**
		(2.165)	(2.439)	(2.486)
Market-to-Book		-0.000	-0.000	0.015**
		(-1.295)	(-1.048)	(2.290)
Accrual Quality		-0.015	-0.022	-0.019
		(-0.705)	(-0.971)	(-0.621)
Firm Size		0.313***	0.297***	0.021
		(7.397)	(7.214)	(0.718)
Z-score		0.286***	0.257***	-0.045*
		(2.638)	(2.622)	(-1.903)
Leverage		1.737***	1.155***	0.368
		(4.874)	(3.635)	(1.576)
ROA		1.018	2.216	-4.877***
		(0.380)	(0.856)	(-3.555)
Tangibility		0.857***	0.821***	0.602**
		(2.953)	(2.922)	(2.325)
Capital Market Access		0.442***	0.444***	0.018
		(2.828)	(2.968)	(0.170)
Term Spread		0.157***	0.129***	0.150***
		(3.802)	(3.201)	(4.489)
Industry Fixed Effects	Excluded	Included	Included	Included
N	2,725	2,341	2536	3,041
Pseudo R^2	0.01	0.294	0.273	0.137

Table 2.4: A validity test

This table reports the probit estimation results for the determinants of the decision to disclose litigation contingencies (Equation 2). The dependent variable is *Disclosure Indicator,* which takes the value of one if a defendant firm discloses information about litigation contingencies and zero if it withholds this information. The z-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Disclosure Indicator**
Hindex	-1.683***
	(-2.757)
Net Tangible Assets	-0.821***
	(-4.100)
Expected Loss	1.169**
	(2.073)
Firm Size	-0.079***
	(-3.903)
External Financing	-0.136***
	(-3.132)
ROA	-0.353**
	(-2.123)
Stock Return Volatility	0.306
	(1.133)
Executive Co-defendants	0.317**
	(2.538)
Post-SOX	0.991***
	(13.115)
Lawsuit Types	Included
N	18,981
Pseudo R^2	0.144

Table 2.5: Summary statistics for the bond sample

This table provides the summary statistics for the sample in which sued firms also access the bond market. The observations are at the bond-issue level. Please see Appendix 2.3 for variable definitions.

Variable	N	Mean	Std. Dev.	Min	Median	Max
Firm Characteristics						
Disclosure Indicator	949	0.24	0.43	0.00	0.00	1.00
Dscore	227	6.84	1.87	2.00	7.00	12.00
Expected Loss	949	-0.00	0.04	-0.13	0.00	0.17
Number of Lawsuits	949	2.11	1.57	1.00	1.00	8.00
Firm Size	949	9.79	1.14	6.56	9.98	12.15
Tangibility	949	0.39	0.20	0.03	0.41	0.91
Leverage	949	0.26	0.14	0.03	0.20	0.82
Cash Flow Volatility	949	1.13	2.43	0.31	0.63	22.84
ROA	949	0.16	0.07	-0.30	0.16	0.50
Big Auditor	949	0.96	0.06	0.00	0.00	1.00
Bond Characteristics						
Yield Spread	949	1.77	1.69	-0.12	1.25	9.05
Size	949	11.98	2.05	6.89	12.64	14.91
Maturity	949	11.02	7.64	2.00	10.00	30.00
Rating	949	6.78	4.07	1.00	6.00	18.00
Court Judgment	613	0.06	0.24	0.00	0.00	1.00

Table 2.6: The effect of the decision to disclose litigation contingencies on the bond terms

Panel A: This panel reports the effect of the decision to disclose litigation contingencies on the yield spread (Equation 3). The dependent variable *Yield Spread* is the difference between the yield at issuance and the yield of a treasury bill with a similar maturity. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Yield Spread**		
	(1)	(2)	(3)
Firm Characteristics			
Disclosure Indicator	0.086**	0.127***	0.066*
	(2.374)	(3.728)	(1.860)
Expected Loss	3.162	2.466*	1.779
	(1.247)	(1.780)	(1.095)
Number of Lawsuits	0.086	0.085**	0.077*
	(1.646)	(2.024)	(1.781)
Leverage	4.255***	4.520***	4.530***
	(4.953)	(5.581)	(5.688)
Firm Size	-0.356***	-0.365***	-0.367***
	(-3.343)	(-5.269)	(-5.264)
Tangibility	-0.662	-0.472	-0.429
	(-0.737)	(-0.849)	(-0.751)
Cash Flow Volatility	0.023	0.022***	0.022***
	(1.475)	(3.196)	(3.094)
ROA	-5.299***	-5.355***	-5.338***
	(-3.026))	(-4.125)	(-4.147)
Big Auditor	-2.398***	-1.742***	-1.655***
	(-4.071)	(-3.204)	(-2.857)
Bond Characteristics			
Size		0.191***	0.190***
		(3.827)	(3.851)
Maturity		0.028***	0.028***
		(4.771)	(4.734)
Rating Residual		0.347***	0.342***
		(13.914)	(12.646)
Callable		0.084	-1.991***
		(0.617)	(-2.824)
Putable		-2.083***	0.081
		(-2.979)	(0.599)
Subordinated		0.292	0.317
		(0.548)	(0.588)
Inverse Mills Ratio			0.209**
			(1.979)
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	949	949	949
Adjusted R^2	0.512	0.676	0.677

Panel B: This panel reports the effect on the inclusion of default clauses that pertain to court judgments using probit regressions. The dependent variable *Court Judgment* equals one if bond indentures include these clauses and zero otherwise. The z-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Court Judgment**		
	(1)	**(2)**	**(3)**
Firm Characteristics			
Disclosure Indicator	0.347**	0.932***	0.890**
	(2.163)	(3.282)	(2.117)
Expected Loss	2.520	1.774	0.550
	(0.787)	(0.694)	(0.200)
Number of Lawsuits	0.076	-0.054	-0.072
	(0.867)	(-0.406)	(-0.540)
Leverage	2.956**	5.032***	5.019***
	(2.174)	(2.801)	(2.756)
Firm Size	-0.639***	-0.878***	-0.893***
	(-3.237)	(-3.802)	(-3.771)
Tangibility	-0.589	0.103	0.205
	(-0.855)	(0.147)	(0.280)
Cash Flow Volatility	0.013	0.028	0.031
	(0.680)	(1.420)	(1.517)
ROA	-3.032	-5.923**	-5.664***
	(-1.219)	(-2.309)	(-2.810)
Bond Characteristics			
Size		0.648***	0.675***
		(2.655)	(2.712)
Maturity		0.015	0.015
		(1.437)	(1.354)
Rating Residual		0.368***	0.357***
		(3.163)	(3.058)
Callable		-0.322	-0.324
		(-0.623)	(-0.628)
Inverse Mills Ratio			0.220*
			(1.855)
Year Fixed Effects	Included	Included	Included
Industry Fixed Effects	Included	Included	Included
N	613	613	613
Pseudo R^2	0.340	0.485	0.488

Table 2.7: The effect of the disclosure level on the bond terms

Panel A: This panel reports the effect of the disclosure level of litigation contingencies on the yield spread. The dependent variable *Yield Spread* is the difference between the yield at issuance and the yield of a treasury bill with a similar maturity. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Yield Spread**			
	OLS		**2SLS**	
	(1)	**(2)**	**(3)**	**(4)**
Firm Characteristics			First Stage	Second Stage
Dscore	-0.026***	-0.160***		-0.109**
	(-3.248)	(-2.691)		(-2.260)
Expected Loss	7.732*	5.115*	3.945***	2.928
	(1.683)	(1.833)	(2.663)	(1.084)
Number of Lawsuits	-0.034	-0.001	-0.124**	-0.019
	(-0.403)	(-0.015)	(-2.072)	(-0.262)
Leverage	4.313***	4.726***	0.110	5.109***
	(2.936)	(3.970)	(0.897)	(4.040)
Firm Size	-0.213	-0.403**	0.235	-0.355*
	(-0.901)	(-2.453)	(0.346)	(-1.889)
Tangibility	1.976	1.398	2.809***	0.787
	(1.089)	(1.291)	(2.754)	(0.690)
Cash Flow Volatility	0.054***	0.021***	-0.002	0.035***
	(3.332)	(3.031)	(-0.193)	(3.410)
ROA	-3.320	-3.325	-1.934	-2.674
	(-0.972)	(-1.317)	(-0.732)	(-0.863)
Big Auditor	-2.136	-0.470	0.019	-1.170
	(-1.556)	(-0.433)	(0.021)	(-1.081)
Bond Characteristics				
Size		0.345***	0.386***	0.227
		(3.011)	(3.881)	(1.243)
Maturity		0.018	0.003	0.018
		(1.390)	(0.242)	(1.373)
Rating Residual		0.365***	0.088**	0.320***
		(8.384)	(2.291)	(6.378)
Callable		-0.316	0.496	-2.249***
		(-0.898)	(1.293)	(-2.710)
Putable		-1.788**	0.436	-0.416
		(-2.213)	(0.465)	(-1.027)
Subordinated		1.482***	0.623	0.888
		(2.807)	(0.557)	(1.582)
Litigation Stage			4.756***	
			(4.582)	
Partial R^2			0.112	
Partial F-statistic			10.973	
Year Fixed Effects	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included
N	227	227	227	227
Adjusted R^2	0.615	0.754	0.462	0.741

Panel B: The effect of the disclosure level on the default clause

Panel B of Table 2.7 reports the effect of the disclosure level of litigation contingencies on the inclusion of default clauses that pertain to court judgments. The dependent variable *Court Judgment* equals one if bond indentures include these clauses and zero otherwise. The z-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Court Judgment**			
	Probit		**2SLS**	
	(1)	**(2)**	**(3)**	**(4)**
Firm Characteristics			First Stage	Second Stage
Dscore	-0.001	-0.006		0.040
	(-0.065)	(-0.362)		(0.921)
Expected Loss	1.198	1.333	7.135**	0.468
	(1.263)	(1.611)	(2.611)	(0.538)
Number of Lawsuits	-0.001	0.000	-0.054	0.003
	(-0.105)	(0.001)	(-1.035)	(0.195)
Leverage	1.151**	1.544***	-0.219*	2.167***
	(2.462)	(4.095)	(-1.882)	(3.902)
Firm Size	-0.015	-0.025	-4.949***	-0.040
	(-0.438)	(-0.784)	(-2.873)	(-1.086)
Tangibility	0.230	0.222	2.683***	0.491*
	(0.965)	(1.198)	(3.974)	(1.903)
Cash Flow Volatility	0.021*	0.001	0.027	0.016
	(1.712)	(0.297)	(0.686)	(1.285)
ROA	-1.396**	-1.460***	3.924	-1.117*
	(-2.329)	(-2.845)	(1.323)	(-1.817)
Bond Characteristics				
Size		0.011	0.260*	0.059
		(0.502)	(1.954)	(1.623)
Maturity		0.001	-0.021	0.002
		(0.515)	(-1.635)	(0.609)
Rating Residual		0.042***	-0.078	0.061**
		(3.238)	(-1.227)	(2.412)
Callable		-0.062	0.676	-0.001
		(-0.408)	(1.388)	(-0.003)
Litigation Stage			9.801***	
			(7.602)	
Partial R^2			0.135	
Partial F-statistic			10.602	
Year Fixed-Effect	Included	Included	Included	Included
Industry Fixed-Effect	Included	Included	Included	Included
N	117	117	117	117
Pseudo/Adjusted R^2	0.353	0.527	0.536	0.562

Table 2.8: Robustness checks of the disclosure score

This table presents the results for the regressions that estimate the impact of the disclosure level on the yield spread using alternative measures of the disclosure score. In column (1), I redefine the disclosure score by removing the descriptive items that belong to the *Facts* category. In column (2), I construct an alternative disclosure score only based on the items in the *Potential Loss and Impact* category. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Yield Spread**	
	(1)	**(2)**
Firm Characteristics		
Dscore	-0.136**	-0.177***
	(-2.512)	(-3.116)
Expected Loss	5.489*	5.317*
	(1.956)	(1.991)
Number of Lawsuits	0.072	0.073
	(0.995)	(1.032)
Leverage	4.441***	4.436***
	(4.099)	(4.126)
Firm Size	-0.443***	-0.437***
	(-2.703)	(-2.699)
Tangibility	1.035	1.329
	(0.636)	(0.881)
Cash Flow Volatility	-0.008***	-0.007**
	(-2.833)	(-2.496)
ROA	-3.592	-3.654
	(-1.552)	(-1.628)
Big Auditor	-0.078	0.271
	(-0.064)	(0.243)
Bond Characteristics		
Size	0.317***	0.302***
	(2.717)	(2.795)
Maturity	0.018	0.018
	(1.316)	(1.349)
Rating Residual	0.334***	0.331***
	(7.697)	(7.753)
Callable	-0.018	-0.019
	(-0.047)	(-0.051)
Putable	-1.555**	-1.535**
	(-2.347)	(-2.253)
Subordinated	-0.205	-0.178
	(-0.143)	(-0.124)
Year Fixed Effects	Included	Included
Industry Fixed Effects	Included	Included
N	227	227
Adjusted R^2	0.740	0.745

Table 2.9: Management forecasts and the disclosure level

This table presents the results for the regressions that estimate the impact of the disclosure level on the yield spread for firms that issue management forecasts versus those that do not. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Yield Spread**	
	Management Forecasts=Yes	**Management Forecasts=No**
Firm Characteristics		
Dscore	0.008	-0.227**
	(0.095)	(-2.147)
Expected Loss	6.003*	3.883***
	(1.705)	(3.701)
Number of Lawsuits	-0.009	-0.183**
	(-0.105)	(-2.619)
Leverage	7.447***	4.207***
	(5.683)	(7.082)
Firm Size	-0.472**	-0.130
	(-2.558)	(-0.805)
Tangibility	-0.331	0.640
	(-0.395)	(0.573)
Cash Flow Volatility	0.112	0.037***
	(1.585)	(4.164)
ROA	-1.333	-7.960***
	(-0.390)	(-4.501)
Big Auditor	-1.707***	
	(-3.760)	
Bond Characteristics		
Size	0.144	0.220
	(1.644)	(0.697)
Maturity	0.020	0.013
	(1.102)	(1.032)
Rating Residual	0.276***	0.433***
	(4.403)	(5.455)
Callable	-0.356	-0.611
	(-0.715)	(-1.065)
Putable	-1.908***	-2.528***
	(-3.261)	(-8.302)
Subordinated		-0.368
		(-0.811)
Year Fixed Effects	Included	Included
Industry Fixed Effects	Included	Included
N	158	69
Adjusted R^2	0.726	0.845

Table 2.10: A falsification test

This table presents the results for the regressions that estimate the effect of litigation contingency disclosure on the loan spread and the default clauses related to court judgments and pending litigation. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels. Please see Appendix 2.3 for variable definitions.

Dependent Variable	**Loan Spread**		**Court Judgment**		**Pending Litigation**	
Disclosure Indicator	-0.052		-0.157		-0.596	
	(-0.655)		(-0.546)		(-1.480)	
Dscore		0.021		0.022		0.002
		(0.646)		(1.220)		(0.283)
Expected Loss	0.862	0.718	3.922*	0.129	0.889	0.373
	(1.620)	(1.025)	(1.736)	(0.288)	(0.366)	(1.017)
Lawsuit Number	-0.005	0.014	-0.405***	-0.067*	0.415***	-0.023
	(-0.099)	(0.241)	(-3.087)	(-1.959)	(3.965)	(-1.031)
Leverage	0.402**	0.333***	2.790**	0.269	-0.124	-0.039
	(2.293)	(3.301)	(2.511)	(1.340)	(-0.128)	(-0.455)
Firmsize	-0.184***	-0.224***	-0.393**	-0.063	0.014	0.025
	(-4.282)	(-3.119)	(-1.980)	(-1.613)	(0.106)	(1.020)
Tangibility	-0.948**	-0.417	-0.485	-0.000	1.439	0.301
	(-2.482)	(-0.548)	(-0.568)	(-0.002)	(1.424)	(1.350)
Cash Flow Volatility	0.004***	-0.001	-0.025***	-0.013*	-0.010	0.002
	(2.815)	(-0.160)	(-3.769)	(-1.862)	(-0.865)	(0.887)
Z-score	0.007	0.031**	-0.246*	-0.047**	0.139	0.011
	(0.512)	(2.093)	(-1.687)	(-2.197)	(1.404)	(0.943)
ROA	-0.059	0.108	6.486**	0.887*	3.051	0.276
	(-0.127)	(0.197)	(2.181)	(1.829)	(1.239)	(0.833)
Market-to -Book	-0.004	-0.041	0.623*	0.077**	-0.375*	0.009
	(-0.155)	(-1.095)	(1.943)	(2.049)	(-1.952)	(0.536)
Loan Size	-0.041	-0.091	0.053	0.044	-0.380*	-0.016
	(-1.097)	(-1.391)	(0.304)	(1.143)	(-1.955)	(-0.805)
Loan Maturity	0.084	-0.011	1.405***	-0.002	-0.509	0.034
	(1.283)	(-0.084)	(2.757)	(-0.037)	(-1.512)	(0.566)
Performance Pricing	-0.217***	-0.111	-0.493	0.003	0.102	-0.008
	(-3.300)	(-0.934)	(-1.342)	(0.061)	(0.362)	(-0.310)
Term Spread	0.029	-0.010	0.630***	-0.013	0.300	0.042
	(0.763)	(-0.126)	(3.618)	(-0.299)	(1.426)	(1.194)
Loan Types	Included	Included	Included	Included	Included	Included
Loan Purposes	Included	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
N	1,676	351	395	83	395	83
Adjusted/ Pseudo R^2	0.405	0.582	0.473	0.350	0.244	0.406

3 The Role of Reputable Auditors and Underwriters in the Design of Bond Contracts[23]

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3.1 Introduction

Several theoretical papers suggest that third party information intermediaries can certify the quality of security issuing firms which face significant information asymmetries in capital markets (i.e., the Certification Hypothesis). For instance, the models of DeAngelo (1981), Beatty and Ritter (1986), Booth and Smith (1986) and Titman and Trueman (1986) examine how bank underwriters and auditors help resolve information asymmetries of issuing firms. These theories argue that underwriters and auditors use their reputation capital as a bonding mechanism to credibly certify the information about the future prospects of the issuing firms, thereby helping improve firms' financing terms when raising external financing. In this paper, we empirically investigate the certification hypothesis in the primary bond market by combining the role of auditors and underwriters. Specifically, we study the roles of reputable auditors and bank underwriters in the design of bond contracts.

Auditors and underwriters are important information intermediaries in the bond market, a market which has received little attention so far despite the fact that it provides the most significant source of external financing to U.S. firms.[24] Auditors play a role in certifying that the accounting information provided in the bond prospectuses by issuing firms is accurate and prepared in accordance with Generally Accepted Accounting Principles. In addition to the certification function, auditors have a monitoring role, which they fulfil by reporting potential errors in financial statements and violations of covenants set in bond contracts. Auditors also bear legal liability for accounting irregularities that occur in the reports of the firms they audit and, under certain conditions, provide bond investors with a means to indemnify their losses (e.g., Dye 1993; Mansi, Maxwell and Miller, 2004).[25] These monitoring and insurance roles complement auditors' certification role and potentially make auditors more relevant information intermediaries to bondholders than underwriters. Although underwriters certify information about the future prospects of issuing firms and use their extensive distribution networks and selling expertise to help issuing firms place bond securities, their liability is limited to situations where negligence is proven. Hence, underwriters

[24] Bessembinder and Maxwell (2007) provide statistics that U.S. firms issued $4.6 trillion in corporate bonds during the period 1997-2006, which is approximately three times more than the amount of equity issued over the same period.

[25] In the wake of the Arthur Andersen scandal, the Sarbanes-Oxley Act passed in 2002 effectively made auditors more accountable for errors under a structure of expanded duties and heightened scrutiny.

typically do not provide insurance against investment losses. Furthermore, they have a limited monitoring role after a bond is issued.[26]

High quality bond issuers are likely to signal their type by seeking certification from reputable auditors and underwriters. Auditors and underwriters develop reputation capital by repeatedly entering into the market and providing credible information about the issuing firms. As a result, the value of their reputation capital likely exceeds even the largest possible one-time gain that could be obtained from certifying falsely. Rational investors should understand these incentives and thus provide capital under more favourable terms to the firms certified by intermediaries with reputation capital at stake.

To test these arguments in the bond market, we first construct reputation proxies for auditors and underwriters. We designate an auditor as a reputable auditor if its market share based on the clients' sales is the largest in the industry and outpaces the rest of auditors by at least 10% (Palmrose, 1986; Dunn and Mayhew, 2004). We define reputable auditors at the industry level because the prior literature shows that industry expertise possessed by auditors can affect managers' earnings management behavior and reduce information asymmetry between firms and investors (e.g., Balsam et al, 2003; Almutairi, Dunn, and Skantz 2009). As most issuers in the bond market hire large auditors, our focus is only on companies audited by the big four/five auditors. We define an underwriter as reputable if its market share, as captured by the bond volume advised in the whole bond market, persistently ranks among the top five underwriters in the past three years.

Consistent with the certification hypothesis, we find that hiring reputable auditors reduces bond issuance yields by thirty-five basis points which is both statistically and economically significant. This decrease in bond yields translates into annual interest savings of $65,450 for the average bond issue in our sample. Reputable underwriters also help issuers lower the yields by nineteen basis points, a significantly weaker effect than that of reputable auditors. The greater impact of hiring reputable auditors is consistent with auditors' multiple roles as information intermediaries, monitors, and insurance providers.

We further examine whether reputable auditors and underwriters provide value with respect to nonpricing terms of bond contracts, such as bond maturity and size.[27]

[26] Research by De Franco, Vasvari and Wittenberg-Moerman (2009) documents that research coverage by sell-side bond analysts working for underwriters is very limited.

Debt maturity plays an important role in reducing agency costs associated with asset substitution and improving the efficiency of monitoring by lenders (Leland and Toft, 1996; Stulz, 2000). Short bond maturities may reduce agency costs by subjecting managers to more frequent monitoring by investors and rating agencies (e.g., Datta et al., 2005). However, hiring a reputable auditor may provide an alternative monitoring mechanism to reduce these costs because reputable auditors are incentivized to monitor issuing firms' financial reporting continuously to maintain their reputation in the industry. As a result, issuing firms with reputable auditors may potentially borrow from bondholders for a longer period compared with those with ordinary auditors. Consistent with our conjecture, we find evidence that hiring reputable auditors, on average, lengthens bond maturities by 2.54 years, a statistically significant effect. We do not find a strong substitution effect between the presence of reputable underwriters and bond maturity. This could be explained by the nature of the underwriters' job. Underwriters are responsible for marketing and selling bonds; however, once the bonds are issued, they do not have any monitoring role.

Finally, we examine the impact of reputable auditors and underwriters on bond size, which is an indicator of the issuing firm's repayment ability. If an issuing firm has a higher level of tangible assets and/or is able to generate larger future cash flows, it can borrow more debt. To the extent that reputable auditors and underwriters can certify the accuracy of tangible assets and the ability to generate cash flows to pay the debt back, issuing firms with reputable auditors and underwriters may be able to borrow a larger amount than those with ordinary auditors and underwriters. In addition to the certification effect, the size of a bond issue also depends on underwriters' marketing and selling abilities. Reputable underwriters have extensive distributional networks and superior selling power which allow them to place larger bond issues. Consistent with these arguments, we find evidence that reputable underwriters have a strong positive effect on the size of the bond. Specifically, hiring reputable underwriters increases the actual offering amount by 13.73% relative to the average offering amount in our sample. We do not find a similar result for reputable auditors suggesting that these information intermediaries play a different role in the bond issuing process.

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[27] Covenants are also important contractual features that deal with agency costs. While the Mergent Fixed Income Securities Database (FISD) provides data on the presence of covenants, it does not document the details of covenants. To the extent that only the details of covenants can capture their true restrictiveness, we do not examine the impact of reputable auditors and underwriters on covenant strictness in this paper. We do, however, use the number of covenants as a control variable in our tests.

Our paper makes two significant contributions to existing knowledge on the value of auditors and underwriters in the bond market. First, we bridge two disconnected strands of literature by testing the certification hypothesis simultaneously for reputable auditors and underwriters in the bond market. Although Mansi, Maxwell and Miller (2004) and Ahmed, Rasmussen and Tse (2008) have explored the role of auditors in reducing bondholder-shareholder conflicts, reputable underwriters were not considered as additional intermediaries in the analysis. By combining the certification role of reputable auditors with that of reputable underwriters, we highlight different roles played by these important capital market intermediaries with respect to the structuring of public debt financing.

Second, our paper contributes to the growing body of literature that examines more detailed aspects of debt contracts (e.g., Qian and Strahan, 2007; Brockman, Martin and Unlu, 2010). Previous studies in the bond or syndicated loan market attempt to understand the drivers of a single, contractual dimension (typically the bond yield or the loan spread).[28] We provide unique evidence on the effects of reputable auditors and underwriters on the bond maturity and size. As a result, this study sheds light on the role of information intermediaries with reputation capital on the nonpricing terms of bond contracts and examines the joint role of auditors and underwriters in a richer setting than other papers which focused on the equity market.

The remainder of the paper proceeds as follows: Section 3.2 provides a discussion of related literature and formalizes our hypotheses; Section 3.3 describes empirical strategies and data; Section 3.4 presents the main results; Section 3.5 offers some robustness checks; and Section 3.6 concludes the paper.

3.2 Related literature and hypotheses

The certification hypothesis is derived from the literature on the use of reputation capital to guarantee product quality (Klein and Leffler, 1981). As an extension to this theoretical literature, DeAngelo (1981) shows that when incumbent auditors earn client-specific quasi-rents, auditors with a greater number of clients have more to lose by failing to report a discovered breach in a client's accounting system. The higher the value placed by large auditors on their reputation the better is the quality

[28] For example, Pittman and Fortin (2004) look at the role of big auditors in reducing the interest rate for firms that have become public. Mansi, Maxwell and Miller (2004) examine the influence of big auditors and auditors' tenure on credit spreads and find that auditor quality and tenure are negatively and significantly related to credit spreads. In addition, Ahmed, Rasmussen and Tse (2008) study the impact of industry audit specialists on credit ratings.

of their audits. Consistent with this argument, the model of Titman and Trueman (1986) finds that firms which hire high quality auditors receive greater valuations when securities are issued. Similarly, Booth and Smith (1986) model underwriter reputation as a bonding mechanism to solve the information problems between issuing firms and investors, and find that underwriter reputation is formed either through a premium price charged for quality assurance, or the objective of maintaining long-term profits through repeated entries into the market. The models of Chemmanur and Fulghieri (1994) or Beatty and Ritter (1986) provide similar arguments by showing that investment banks' reputations are achieved by adopting stringent evaluation standards. Taken together, these theories imply that reputation capital can provide capital market intermediaries such as auditors and underwriters with incentives to commit to honest information production on the firms they serve.

By providing more accurate information, these information intermediaries allow outside investors to make more precise estimates of firm values and better investment decisions. Since intermediaries with reputation capital at stake can be adversely and materially affected if their information certification proves false, investors may accept less protection on the securities issued by firms hiring these intermediaries. Therefore, we hypothesize that both auditors and underwriters with reputation concerns play certification roles that help reduce issuers' cost of debt or relax the nonpricing terms of their debt contracts.

Empirical studies have examined the certification roles of auditors and underwriters separately. Pittman and Fortin (2004) and Mansi, Maxwell and Miller (2004) find that the cost of debt is lower for firms with larger auditors. Ahmed, Rasmussen and Tse (2008) show that industry audit specialists help firms reduce the cost of capital, both equity and debt. Empirical evidence in finance, on the other hand, finds that reputable underwriters obtain lower yields and charge higher fees (e.g., Fang, 2005). However, auditors and underwriters have integral, but different, roles in the bond issuing process, and ignoring either in empirical analyses can lead to imprecise inferences of their respective contributions.

The theoretical model developed by Balvers, McDonald and Miller (1988) provides guidance for our empirical analysis of auditors and underwriters in the bond market. The model shows that investment banks with reputation concerns are more likely to select high-reputation auditors as a signal of their own quality, and together, they reduce the underpricing of initial public offerings of equity issues. The model also

predicts that highly reputable auditors and underwriters have divergent effects on underpricing – as the reputation effect of one intermediary increases, the effect of the other diminishes. We expect these findings to apply to the bond market, as well, for several reasons. First, auditors provide assurance that firms' financial statements are prepared in accordance with Generally Accepted Accounting Principles, while underwriters assist firms in documenting, marketing and selling securities. Hence, the information content of both certification roles can differ, with auditors verifying accounting information before and after a bond is issued, and underwriters affirming to general future prospects about bond issuers.

Second, auditors are at high risk for litigation and play an additional insurance role by indemnifying investors against disclosures of false accounting information. In recent years, the litigation against auditors has grown dramatically, both in frequency and cost.[29] The passage of the Sarbanes-Oxley Act further expanded the legal responsibility of auditors, requiring them to report on the adequacy of client firms' internal control over financial reporting. In addition, auditors—especially those with reputation capital at stake—incur indirect costs from litigation, such as loss of reputation capital. If investors recognize the relatively high litigation costs associated with reputable auditors in the event of failure to detect accounting irregularities, they may place more value on the certification role of reputable auditors than on that of reputable underwriters. Therefore, given the differences in the certified information content and exposed litigation costs that exist between auditors and underwriters, we expect reputable auditors to play a stronger role in reducing the cost of debt than reputable underwriters.

While the theoretical predictions about the certification effect on the credit spreads are clear, inferences about certification's role on the negotiated nonpricing bond terms are less straightforward. Debt maturity is one of the main nonpricing terms of a bond contract and is well regarded as an ex-post monitoring device. For example, Leland and Toft (1996) argue that short-term debt reduces or even eliminates the agency costs associated with asset substitution. Also, Stulz (2000) illustrates that short-term debt provides creditors with an extremely powerful tool to monitor the borrowing firm's management. Managers with higher stock ownership choose a larger proportion of short-maturity debt, thereby committing to more frequent monitoring (Datta et al.

[29] In 2002, Arthur Andersen was convicted of obstruction of justice for providing faulty audits of Enron. As a result, the accounting firm paid $ 72.5 million to Enron investors as compensation and ultimately surrendered its licenses and was no longer able to practice as Certified Public Accountants in the United States.

2005). Auditors, too, play a role in monitoring issuing firms' financial reporting systems. In particular, auditors with a reputation concern have stronger incentives to assure the quality of financial reporting throughout the period when debt is outstanding. Given reputable auditors' incentives to facilitate ex-post monitoring of issuers, one could expect either a substitution or a complementary effect between the presence of reputable auditors and the negotiation of a shorter debt maturity. In contrast, the underwriters' main role is to assist borrowers only at issuance; they have no responsibility to monitor borrowers after issuance. As a result, we do not expect an association between the presence of reputable underwriters and bond maturity.

Another important nonpricing term of a bond contract is the size of the bond issue. The size is associated with default risk—the larger the bond, the greater the pressure on its issuer's repayment ability. To the extent that reputable auditors and underwriters reduce the inherent uncertainty associated with the measurement of default risk at issuance, one would expect an increase in the bond sizes of issuers with these types of intermediaries. The size of a bond issue is also a function of the distributional networks and selling abilities of the underwriter. Reputable underwriters have extensive distributional channels, strong relationships with institutional and individual investors as well as superior marketing and selling abilities, all which facilitate the issuance of larger amounts of debt (Fang, 2005). Taking this into account, we expect that reputable underwriters potentially play a more important role in increasing the size of the bonds issued when compared to reputable auditors.

3.3 Data and research design

3.3.1 Proxies of reputable auditors and underwriters

To capture the reputation concerns of auditors and underwriters, we measure their reputation capital based on the magnitude of their respective market share. This is consistent with the theoretical argument that if an information intermediary, such as an auditor or underwriter, engages in quality cutting, this information disseminates faster if the intermediary has a large market share (e.g., Klein and Leffler, 1981). Further, with a large market share, the expected long-term fee premium from information intermediaries' reputation is also likely to exceed the short-term benefits that could be obtained by misinforming investors. Therefore, the market share reflects the income stream at stake, and larger auditors or underwriters have more to lose from a damaged reputation.

We measure a reputable auditor's market share using the total sales audited by an auditor within an industry (Palmrose, 1986; Dunn and Mayhew, 2004). We focus on the certification role of auditors specializing in a particular industry because they are associated with high-quality audits (Craswell, Francis and Taylor, 1995; Krishnan, 2003). Becoming an industry specialist requires a significant investment in training and time to establish a solid reputation. Also, industry audit specialists have a large market share, as their expertise is recognized and they are sought out within the industry. As a result, consistent with DeAngelo's (1981) argument, they have more to lose if they fail to detect frauds in their clients' audits.

We define an industry as all firms with the same two-digit primary Standard Industry Classification (SIC) code in the Compustat universe.[30] We designate an auditor as a reputable auditor if its market share is the largest in the industry and outpaces the rest of auditors by at least 10%. The 10% cut-off supports our inferences on the qualitative differences in auditors' reputations in a particular industry. In checking for robustness, we also confirm that using a 15% or 5% cut-off does not alter the robustness of our results. Further, we validate this measure by investigating the association between the presence of industry audit specialists and the accounting and governance risks of the firms that hire them.[31]

While auditors provide services for the universe of public firms and are pressed to differentiate themselves through industry specialization, underwriters in the debt market, which is not as competitive as the equity market, tend to focus on multiple segments. For instance, Yasuda (2005) documents that underwriters' bank relationships with borrowers have a positive and significant impact on their bond underwriting business.[32] Therefore, we use the market share based on the underwriter's volume in the whole bond market to identify reputable underwriters. We define an underwriter as reputable if its market share persistently ranks among the top five underwriters in the

[30] Academic researchers use various industry classifications to divide firms into homogenous groups for the purpose of their analyses (e.g., Bhojraj, Lee and Oler, 2003). While not all industry groupings suit our analysis, we also employ a well-accepted alternative industry classification developed by Fama and French (1997) in robustness checks (see Section 5).

[31] We use the Accounting and Governance Risk (AGR) rating provided by Audit Integrity in our validity test. The AGR rating is a comprehensive measure of the risk associated with a public firm's accounting and governance practices. High AGR scores imply low accounting and governance risks. In unreported tables, we show that the presence of industry audit specialists is associated with a low AGR score, consistent with the notion that industry audit specialists are related to high accounting and governance quality.

[32] A potential explanation for this finding is that bank relationships in the loan market provide the underwriters an informational advantage in the bond market.

past three years.[33] The intuition behind this measure is that an underwriter with a large market share will not imperil its reputation for the sake of short-term profits. Underwriters with a large market share extract economic rents on reputation from their clients (Fang, 2005). Moreover, they are repeat players, and the poor performance of a bond not only damages their reputation in the bond market, but could also affect their businesses in other areas, such as bank lending, equity underwritings or M&A advisory services. In robustness checks (see Section 5), we also present results using the top eight underwriters and classifying reputable underwriters based on the number of bonds they place.

3.3.2 Regression specifications

This section presents the regression specifications concerning the effects of reputable auditors and underwriters on the bond terms. To examine the certification roles of reputable auditors and underwriters on bonds' spreads, we estimate the following regression (we present the computation of all variables in Appendix 3.1):

$$\text{Credit Spread} = \alpha + \beta\,\text{Reputable Auditor} + r\,\text{Reputable Underwriter} + \theta\,\text{Interaction Term} + \pi\,\text{Firm Controls} + \upsilon\,\text{Bond Controls} + \sigma\,\text{Industry - and Year - Fixed Effects} + \varepsilon \quad (1)$$

The dependent variable, *Credit Spread*, represents the risk premium that investors require to hold the issuer's bond, taking into consideration the effect of business cycles. Credit spread is a better proxy for the cost of debt than interest expense used by prior studies for several reasons. First, the interest expense field pools together the cost of debt with different types of lenders, different maturities and security features. Banks rely less on auditors than bondholders because they have access to private information that is not reflected in public financial statements. Even within public debt, debt securities are not homogeneous and they cannot be pooled easily unless their distinctive features are controlled for in the empirical tests. Second, the interest expense field from Compustat includes other items that are irrelevant to the cost of debt, such as amortization of expenses associated with debt issuance.[34] Third, the interest expense is not adjusted for treasuries; thus, the measure moves with the interest rate environment or macroeconomic conditions, which may create spurious correlations.

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[33] Market share has been used frequently in the finance literature as an empirical proxy for reputation. See, for example, Simon (1990), De Long (1991), Megginson and Weiss (1991), and Beatty and Welch (1996).

[34] Examples of expenses associated with debt issuance are underwriting fees, advertising costs and brokerage cost. Moreover, besides amortization of expenses associated with debt issuance, there are also other items included in the interest expense filed from Compustat that have nothing to do with the cost of debt, such as interest expense associated with deferred compensation and tax settlements, factoring charges, etc.

Reputable Auditor and *Reputable Underwriter* are indicator variables equal to "1" if an issue is certified by reputable auditors or reputable underwriters, and "0" if otherwise. We also include an interactive term, *Reputable Auditor* and *Reputable Underwriter,* to examine whether the effects of reputable auditors and underwriters on credit spreads vary with each other.

We control for firm-specific variables to account for cross-sectional differences in credit spreads beyond the effect of hiring reputable auditors and underwriters. We include auditor tenure (*Tenure*) as it has been shown to be negatively related to credit spreads because of its role in reducing the information asymmetry between the issuer and the investors (Mansi, Maxwell, and Miller, 2004). Firm size and leverage are proxies for the issuer's financing risk. We measure them as the natural log of total assets of the issuer (*Firm Size*) and the ratio of long-term debt to total assets (*Leverage*), respectively. To control for the issuer's risk of repaying the debt and the coupons, we also include the asset tangibility computed as net property plant and equipment scaled by total assets (*Tangibility*) and the return on assets (*ROA*) in the regression.

Further, we control for bond variables in our analysis. While put options or sinking fund features add safety to bond issues and are expected to be negatively related to credit spreads, call options or subordinated clauses put bondholders at a disadvantage and, therefore, are priced in the risk premium. We include maturity and bond size in the regression of credit spreads, as the potential losses to bond investors increase in the time horizons of repayments and the offering amounts. Furthermore, restrictive covenants mitigate the wealth transfer from bondholders to shareholders. Investors demand more covenants if the risk of wealth expropriation or asset substitution is more severe. Hence, we use the number of covenants to account for the riskiness of bond issues due to a higher agency cost of debt.

Credit ratings agencies, as information intermediaries, also provide independent assessments of the issuer's credit risk. Because they have access to the issuer's private information, their opinions are valued by bondholders. Therefore, we include credit rating information as a control in our analysis of credit spread. We designate an indicator variable *Speculative Grade* equal to "1" to the issues rated below a BBB rating by Moody's or S&P's, and "0" otherwise.

We then examine the relation between reputable auditors and underwriters and bond maturities, controlling for the risk of bonds as well as other factors known to influence bond maturities. The specification of the maturity regression is:

$$\text{Maturity} = \alpha + \beta\ \text{Reputable Auditor} + r\ \text{Reputable Underwriter} + \theta\ \text{Interaction Term} + \pi\ \text{Firm Controls} + \upsilon\ \text{Bond Controls} + \sigma\ \text{Industry - and Year - Fixed Effects} + \varepsilon \quad (2)$$

Maturity is measured as the maturity date of a bond issue minus its offering date in years. In this test, we also include *Credit Spread* as an additional control variable because it reflects the inherent risk associated with bond issues. Further, because credit spreads already incorporate the credit risk assessments provided by credit rating agencies, we do not include the credit rating information in this regression. The remaining control variables are similar to the ones we use in the Credit Spread regression.

Finally, to explore the effects of reputable auditors and underwriters on bond sizes, we use a similar regression specification as the regression of bond maturity:

$$\text{Bond Size} = \alpha + \beta\ \text{Reputable Auditor} + r\ \text{Reputable Underwriter} + \theta\ \text{Interaction Term} + \pi\ \text{Firm Controls} + \upsilon\ \text{Bond Controls} + \sigma\ \text{Industry - and Year - Fixed Effects} + \varepsilon \quad (3)$$

In order to account for the possibility that there are shifts in debt financing over time caused by changes in general capital market conditions, we include year-fixed effects in all bond terms regressions. Further, we also add fixed effects at the industry level, given that the cost of debt and other bond terms vary with the industry membership (e.g., Jorion, Shi, and Zhang, 2009). We account for the correlation of error terms across observations that belong to the same issuing firm by calculating robust standard errors that allow for clustering at the firm level.

3.3.3 Data and descriptive statistics

We use two data sources for our main analysis: the Compustat database and the Mergent Fixed Income Securities Database (FISD). While the former provides us information to measure the reputation of auditors and other firm-level variables, the latter enables us to identify our dependent variables, the reputation of underwriters, as well as other bond-specific characteristics that we use as controls in our empirical tests. Information on corporate bond issues received reasonable coverage in 1995 therefore we focus our analysis from 1995 to 2006.

To calculate the market shares of auditors in each industry, we begin with a sample of firm-year observations that have sales information in the Compustat database. Based on these market shares, we construct the reputable auditor measure for each of the years in our sample.[35] We then manually match this Compustat sample with the Mergent FISD bond data (based on company names, industry and location), excluding

[35] Appendix 3.2 lists the names of reputable auditors by industry.

observations without information on firm-level control variables (size, leverage, etc). We do not consider corporate bonds that are convertible, privately placed, issued in foreign currencies or do not have fixed coupon payments. These filters allow us to select a more homogenous group of bond securities that facilitates better cross-sectional comparisons. Because the majority of auditors hired by firms issuing bonds are Big Auditors (98% in our matched sample), we further eliminate firms not audited by Big Auditors and focus on the variation of reputation concerns that pertains to industry expertise.

Finally, we exclude issues without underwriting information. As a result, our final sample consists of 9,517 bond issue-level observations. We include financial institutions in our analysis because prior literature (e.g., Craswell, Francis and Taylor, 1995) argues that the demand for auditor industry specialization is increasing in the complexity of auditing tasks. Financial institutions have complicated contracts for financial instruments and derivatives, requiring auditors with sophisticated financial knowledge to prepare the audits.

We present the details of our sample selection process in Panel A of Table 3.1. Because firms often issue multiple bonds over the sample period or during a year, we report both firm-level and issue-level distributions by year in Panel B of Table 3.1. Our final sample comprises 1,771 firm-year observations and 9,517 bond issue-year observations. Panel A of Table 3.2 presents summary statistics for all variables used in our tests grouped depending on whether they capture firm or bond characteristics. On average, 27% of bond issues in our sample are certified by reputable auditors. The standard deviation of the reputable auditor measure *Reputable Auditor* is 0.45. The average auditor-client relationship is about six years (*Tenure*). Also, the average leverage ratio is 43%, suggesting that the firms in our sample rely more on debt financing than the average Compustat firm (25%). Firms in our sample are relatively large, consistent with the fact that large firms frequently access the corporate bond market.

The average value of the indicator variable *Reputable Underwriter* is 0.09, implying that 9% of bond issues are placed by reputable underwriters. *Credit Spread*, measured as the difference between a bond issue's offering yield and the yield of a matching treasury issue, is the pricing-term of a bond and captures the direct cost of borrowing. The match with Treasury bills' yields integrates the influence of business cycles on the corporate bond market. The average credit spread of bonds in our sample is about 130 basis points, with a standard deviation of about 146 basis points. The mean maturity of

bonds is approximately 9.01 years, consistent with the fact that bonds are usually issued with long terms. *Bond size* is calculated as the logarithm of an issue's offering amount, and its mean value is 9.83, with a standard deviation of 2.14. We assign numeric values to the credit ratings of Moody's or S&P's.[36] The variable *Credit Rating* is an increasing function of the riskiness of a bond issue. The average firm in our sample receives a rating level of 6.75, well within the investment grade range. We also report the Spearman correlations among all the variables in Panel B of Table 3.2.

3.4 Results

3.4.1 Univariate evidence

We begin with univariate tests to show preliminary evidence for the effects of reputable auditors and underwriters on bonds' pricing and nonpricing terms. In Panel A of Table 3.3, we present the results of *t*-tests of mean differences in the credit spreads, maturities and bond sizes between issues with reputable auditors and those without. As shown in Panel A, the mean credit spread for the bonds issued with reputable auditors is significantly lower than that for the bonds without reputable auditors at the 1% level, suggesting that reputable auditors play a role in reducing the cost of borrowing. Further, we find that maturities are significantly longer for issues with reputable auditors at the 1% level too, consistent with the argument that reputable auditors substitute for the role of short-term debt as a monitoring device. The size of a bond is statistically larger for issues certified by reputable auditors, seemingly supporting the hypothesis that reputable auditors reduce the information risk in bond issues and, in turn, bondholders are willing to provide more debt capital.

Panel B of Table 3.3 presents univariate results for firms hiring reputable underwriters. While the role of reputable underwriters on nonpricing terms is consistent with its certification role in reducing the agency's cost of debt, its effect on the credit spreads seems to be at odds. Issues with reputable underwriters are associated with larger credit spreads. Because this univariate test does not control for other correlated variables that explain credit spreads, we rely on multivariate regression specifications to make proper inferences about the role of reputable underwriters on the spreads. However, the effect of hiring reputable underwriters on bond maturity and size is consistent with the arguments that they are reducing information asymmetries and have

[36] For example, if a bond issue has a rating of AAA by Moody's or S&P's, the value of the variable *Credit Rating* is 1, whereas if a bond issue is rated BAA, its value is 9. The earliest rating for a bond issue is taken whenever available in the Mergent FISD database; if not, the second-most-recent rating or the average rating of the issue is used instead.

access to extensive distribution channels. Firms that hire reputable underwriters obtain bonds with a significantly longer term at the 1% level and can issue larger bonds also at the 1% level.

3.4.2 Multivariate evidence

Table 3.4 reports the results regarding the effects of reputable auditors and underwriters on credit spreads, maturities and bond sizes. In Models 1, 3 and 5 we estimate the effects of reputable auditors and underwriters on bond terms in a reduced form that only includes firm, industry and year fixed effects (e.g., Qian and Strahan, 2007). This mitigates the concern that bond features such as offering yield or maturity likely are simultaneously determined, and therefore might produce biased estimates when included as explanatory variables. Models 2, 4, and 6 correspond to the full regression specifications.

Models 1 and 2 show the results of the credit spread regression. In Model 1, without controlling for bond characteristics, the effect of reputable auditors is negative and statistically significant at the 10% level. Model 2 displays the results for the full regression of credit spread as specified in the previous section. Consistent with the certification hypothesis, the coefficient estimates on both reputable auditors and reputable underwriters are negative and statistically significant at the 1% and 10% level, respectively. These results can be interpreted as evidence that intermediaries with reputation concerns help issuers obtain lower costs of debt. Further, in terms of economic magnitude, reputable auditors on average reduce credit spreads by thirty-five basis points, while reputable underwriters receive only a nineteen basis points decrease in spreads. This effect suggests that for the average bond issued by a firm hiring reputable auditors and underwriters, the cost of debt is lower by $65,597 and $35,609 respectively.

The null that the coefficient of *Reputable Auditor* equals to that of *Reputable Underwriter* is rejected at the 10% level. The economic significance of the coefficient estimate on reputable auditors is also stronger than that on reputable underwriters. Thus, these results imply that reputable auditors play a relatively more important role in certifying the quality of bond issues, consistent with the additional insurance role of reputable auditors who provide effective legal protection for bondholders against potential losses arising from fraud audits. The coefficient estimate of the interaction term of reputable auditor and underwriter is not significant, implying that the effect of

hiring a reputable auditor on credit spreads does not vary with that of hiring reputable underwriters.

The signs of the coefficient estimates for the control variables are as expected: Higher leverage is associated with higher credit spreads, reflecting greater credit risk. Issues with put options or sinking fund features receive lower credit spreads, while callable or subordinated bonds receive higher credit spreads. *Speculative-grade* is strongly positive and significant, indicating that bondholders incorporate the risk assessments of credit rating agencies into their decision of risk premiums on bonds.

Models 3 and 4 show the results of the effects of reputable auditors and underwriters on the maturities of bonds. In both models, the coefficient estimates on reputable auditors are positive and significant, while those on reputable underwriters are positive, but not significant. Specifically, in Model 4, the coefficient on *Reputable Auditor* indicates that hiring reputable auditors on average lengthens bond maturities by 2.54 years. These results imply that the monitoring role of reputable auditors substitutes for the ex-post monitoring role of the short-term debt. Thus, issuers can issue bonds with longer maturities when they hire reputable auditors.

Turning to bond size, in Models 5 and 6, we find that, in contrast to the maturity regression, the coefficient estimate on reputable underwriters is significantly positive, while the estimate on reputable auditors is negative but not significant. The *F*-test rejects the null that the coefficient estimate on reputable underwriters equals to that on reputable auditors at the 1% significance level. These results indicate that the role of reputable underwriters is more valued in determining the issuing amounts of bonds, consistent with the extensive distribution networks and superior marketing and selling skills that reputable underwriters have. The point estimate of 1.35 for the coefficient on the variable *Reputable Underwriter* implies that hiring reputable underwriters on average increases the actual offering amount by about 13.73%.

Taken together, the multivariate results from Table 3.4 demonstrate that reputable auditors and underwriters have a significant impact on bonds' pricing as well as nonpricing terms. In the presence of reputable auditors, credit spreads are much lower, and bond maturities are significantly longer; while with reputable underwriters, credit spreads are marginally lower and bond sizes are significantly larger. These results are consistent with the certification hypothesis and the multiple roles that reputable auditors and underwriters play in the bond market.

3.5 Sensitivity analyses and additional tests

3.5.1 Self-selection bias

The previous literature suggests that the choices of auditors and underwriters may be subjected to a selection bias (e.g., Chaney, Jeter and Shivakumar, 2004; Fang, 2005). To the extent that unobservable determinants of the auditor and underwriter choices correlate with bond terms, our coefficient estimates are biased, and our inferences are confounded. Hence, in this section, we address the selection bias issue of reputable auditors and underwriters and demonstrate that the inferences drawn from OLS regressions remain robust.

3.5.1.1 Endogenous switching model

We first employ an endogenous switching model to address the selection bias issue of reputable auditors and underwriters (Maddala, 1983). Conceptually, we want to hold the bond issue constant and keep separate the treatment effects on bond terms due to reputable auditors and underwriters. More specifically, we are interested in the following counterfactual outcomes: For an issue certified by a reputable auditor or underwriter, what would the alternative credit spread, maturity and bond size be had it been certified by an ordinary auditor or underwriter? Empirically, the endogenous switching model gives us a way to determine these hypothetical outcomes. The model consists of a regression of the choice of reputable auditors or underwriters and two outcome equations on the dependent variables of interest—one for issues with reputable auditors / underwriters, and one for issues with ordinary auditors / underwriters:

$$\text{Reputable Auditor / Underwriter}_i = Z_i'\gamma + \varepsilon_i \quad (4)$$

$$y_{1i} = x_i'\beta_1 + u_{1i} \text{ , and} \quad (5)$$

$$y_{2i} = x_i'\beta_2 + u_{2i} \quad (6)$$

The vector Z_i contains the factors that affect the issuer's choice of reputable auditors or underwriters. We include firm-level variables such as leverage, size, tangibility and return on assets in this vector. We also add two non-linear terms in Z_i, the squares of leverage and firm size, since we expect that the choice of a reputable underwriter or auditor is non-monotonic. Larger and more indebted firms are more likely to choose

reputable information intermediaries because of their increased complexity.[37] The endogeneity is then modelled by allowing the error term in the regression of the auditor / underwriter choice to correlate with the error terms in the outcome equations (i.e., regressions 5 and 6 where the dependent variables are the bond yields, maturities or sizes). In this way, the unobserved factors that affect the choice of reputable auditors or underwriters are also allowed to influence bond terms.

In addition to addressing the endogeneity concern, the switching regression also relaxes the restriction that the estimates of the β parameters are identical for issues with reputable auditors / underwriters and those with ordinary auditors / underwriters. By estimating the coefficients of variables in the vector *X* separately, the model provides the estimates needed to calculate the hypothetical outcomes of bond terms.

Table 3.5 presents the results of the endogenous switching regressions. Panel A shows that reputable auditors are more likely to certify smaller issuers with lower leverage and larger tangible assets. We also include *Reputable Underwriter* as a control variable because Balvers et al. (1988) suggests that the underwriter influences the auditor choice. Reputable underwriters may more frequently select reputable auditors as a reflection of their high reputation. Consistent with this argument, Panel A of Table 3.5 shows that the presence of reputable auditors is positively and significantly associated with the presence of reputable underwriters.

Table 3.5, Panel B displays the results of the outcome equations. While most variables have the same sign in both equations corresponding to credit spreads, maturities and bond sizes, their magnitudes are notably different for bonds issued by firms hiring reputable and ordinary auditors. This supports the relaxation of the assumption that the coefficient estimates of explanatory variables are identical across the two alternative regimes (*Reputable Auditor*=1 versus *Reputable Auditor*=0). Further, in the outcome regressions of credit spreads, reputable underwriters appear to exert a negative effect only in the equation of issues with ordinary auditors (*Reputable Auditor*=0). This result suggests that, after controlling for the selection of reputable auditors, there is an interaction effect between reputable auditors and reputable underwriters; namely, reputable underwriters play the certification role in the absence of reputable auditors.

[37] According to Li and Prabhala (2007), this type of selection model does not strictly require exogenous instruments. Nevertheless, we re-estimate the first stage models by using two instruments, the percentage of firms in an industry that hire a reputable auditor or underwriter and the results remain very robust. Minnis (2011) provides a discussion about the appropriateness of such instruments computed at the industry level.

The separate estimations of bond terms across issues with reputable auditors and those without show that the effects of the control variables on bond terms vary with the presence/absence of reputable auditors. More importantly, such estimation techniques also enable us to calculate the hypothetical outcomes of bond terms in alternative regimes. We do so by applying the coefficient estimates of the regime of reputable auditors to issues with ordinary auditors, and vice versa. Panel B of Table 3.5 compares the means of the actual values of bond terms with their hypothetical counterparts, derived from the switching models. For issues certified by reputable auditors (Group 1), the actual credit spread and maturity are 118 bps and 11.94 years, respectively. If certified by ordinary auditors, the hypothetical spread and maturity would be 192 bps and 8.42 years, 74 bps more and 3.52 years shorter than the actual case, these differences being statistically significant.

In contrast, the average issue with ordinary auditors (Group 2) has a credit spread of 134 bps and a maturity of 7.91 years. If certified by reputable auditors, the credit spread would decrease by 23 bps, and the maturity would lengthen by 1.90 years. Again, the differences between these actual and hypothetical values are statistically significant. In the case of issues with ordinary auditors, their average bond size would have been larger, as well.

We apply the endogenous switching model again to account for the self-selection bias of reputable underwriters. We also calculate the differences in bond terms across the regimes of reputable and ordinary underwriters. Panel C of Table 3.5 presents these results. For issues certified by reputable underwriters, the actual credit spread and maturity are 178 bps and 12.06 years, respectively. If certified by ordinary underwriters, the hypothetical spread would increase by 10 bps and the bond maturity would decrease by 1.78 years. For issues placed by ordinary underwriters, the actual credit spread and bond maturity are 125 bps and 8.72 years, respectively. Consistent with the main results, we also find that the bond size decreases by approximately 17.39% relative to the average offering amount in our sample (computed as 1.71 divided by 9.83). If placed by reputable underwriters, their spread would be 13 bps less, their maturities would be 3.79 years longer and their size would increase by 24.72% relative to the average offering amount. This evidence shows that, after controlling for the self-selection bias of reputable underwriters, the presence of reputable underwriters can help issuers obtain favourable credit spreads, bond maturities and offering amounts. In

particular, the substitution effect between hiring reputable underwriters and the monitoring role of short-term debt turns out to be significant.

Overall, these sensitivity tests document that the positive impacts of reputable auditors and underwriters on bond terms shown in our main OLS regressions are robust after controlling for selection-bias problems.

3.5.1.2 Changes analysis

We use a change specification of our regressions to further address the selection bias issues regarding both reputable auditors and underwriters. This change approach can eliminate firm-level unobserved factors that could potentially confound our results, and allows us to establish a stronger causal link between the types of the two intermediaries and the bond terms of interest.

Panel A of Table 3.6 presents descriptive statistics of the changes in bond terms caused by changes of reputable auditors and underwriters, respectively. Columns (1) and (2) report the statistics concerning the changes in credit spreads, maturities and bond sizes after issuing firms switch from ordinary auditors to reputable auditors, and vice versa. Among the issuing firms that change to reputable auditors from ordinary ones, 52.5% enjoy a decrease in credit spreads, 40% have longer bond maturities and 50% issue larger bonds. This is indicative that the new hires of reputable auditors have positive impacts on bond terms. In contrast, when issuing firms dismiss reputable auditors, 60% of them have an increase in their credit spreads, and 45% of them experience a shortening in bond maturities. These statistics suggest that bondholders seem to punish issuers for switching from reputable auditors to ordinary ones.

Column (3) and (4) present descriptive statistics for the changes in bond terms due to the changes from ordinary underwriters to reputable ones, and vice versa. For the issuing firms that experience the changes from ordinary to reputable underwriters, 41% of them have longer bond maturities, and 52% of them increase bond sizes. The changes in the bond terms concerning issuers' switches from reputable to ordinary underwriters are not very informative of any punishment by bond investors.

We then turn to the multivariate changes analysis to examine the effects of reputable auditors and underwriters on the bond terms. In our OLS regressions, we do not exclude the issuers that have multiple bonds in a given year. In the change regressions, however, to make the changes comparable, we only include the largest bond of an issuer in a given year. Further, we also eliminate bonds in the year of changes of reputable auditors/underwriters, because it is unclear whether they were

issued before or after the auditor/underwriter changes. Finally, we halve the full-change sample: the first sample consists of issuing firms that switch from ordinary auditors to reputable auditors, and those that do not change auditors (⊿ *Reputable Auditor=1 or 0*); and the second sample consists of issuing firms that change from reputable auditors to ordinary auditors and those that do not change auditors (⊿ *Reputable Auditor=-1 or 0*). Both samples use issuing firms that do not change auditors as the comparison group.[38] Such separation allows us to determine whether the univariate evidence in Panel A holds in the multivariate framework. We include in both regressions the change in reputable underwriters.

Panel B of Table 3.6 presents the multivariate regression results for the first sample. Interestingly, the coefficient estimate of ⊿ *Reputable Auditor* in the regression of credit spread is negative, but not statistically significant, implying that bondholders do not react to switches from ordinary to reputable auditors strongly, although this might also be due to the limited power since we do not have many reputable auditor switches in the sample. Panel C of Table 3.6 displays the multivariate regression results for the second sample. The coefficient estimate of ⊿ *Reputable Auditor* with respect to credit spread is negative and statistically significant at 10%, indicating that the change from reputable auditors to ordinary auditors leads to an increase in credit spread. This is consistent with the univariate evidence presented in Panel A, suggesting that bondholders penalize issuing firms that switch from reputable to ordinary auditors. The coefficient estimate of ⊿ *Reputable Auditor* on bond maturities is positive but not significant, weakly supporting the hypothesis that the presence of reputable auditors and the effect of short-term bonds substitute for each other. In both samples, we do not find any effect for the change in reputable underwriters, mainly because they hardly change when auditors change.

The results in Panel B and C of Table 3.6 can be explained by bonds' non-linear payoff structure (Easton, Monahan and Vasvari, 2009). Because holding bonds provides a limited upside, bondholders are less sensitive to good news compared to bad news. This is consistent with our multivariate results that bondholders do not react strongly to switches from ordinary to reputable auditors. However, when there is bad news (i.e., issuing firms change from reputable to ordinary auditors), bondholders react negatively and significantly. Overall, these results largely support our conclusions from the OLS regressions.

[38] We thank the referee for suggesting this research design.

We also conduct a multivariate change analysis using samples partitioned based on whether issuing firms change from ordinary underwriters to reputable underwriters, or vice versa. Consistent with the univariate evidence, we do not find informative results for the impact of changes in reputable underwriters on different bond terms. This may be due to the low power of the test given that only a very small number of firms switch underwriters. However, this result is also consistent with our argument that investors place more value on reputable auditors than underwriters since the former play multiple roles as information intermediaries, monitors and insurance providers. Consequently, investors respond more strongly to the changes in reputable auditors than underwriters.

3.5.2 Rating groups analysis

The theory suggests that the certification roles of reputable auditors and underwriters help issuers reduce the information asymmetry that exists between insiders and bondholders. Such an information gap could negatively affect bondholders if insiders use it to their own advantage by diverting wealth to themselves. As a result, one would expect the impact of intermediaries' certification roles to increase in the magnitude of bond risk associated with this information gap. Empirically, we use credit ratings to proxy for bond risk and explore whether the effects of reputable auditors and underwriters are stronger for issues with lower credit ratings. To do so, we partition the full sample into high-investment grade (S&P's rating "AAA", "AA+", and "AA"), moderate-investment grade ("AA-", "A+", "A"), low-investment grade ("A-", "BBB+", "BBB"), and speculative-grade (below "BBB").

Table 3.7 presents the results concerning the effects of reputable auditors and reputable underwriters on the bond terms for different rating groups. Consistent with our expectation, the coefficient estimates of reputable auditors on credit spreads become more negative as ratings become lower. The estimates are especially significant and strong for issues with low investment and speculative grades, implying that the certification role of reputable auditors is more important to the issues with a high bond risk. However, the coefficient estimates of reputable auditors on bond maturities are only statistically significant for issues with high investment grades, suggesting that reputable auditors can only substitute the ex-post monitoring role of short-term debt in a low-bond-risk environment. The impact of reputable underwriters on bond sizes persists across rating groups, as the coefficient estimates on reputable underwriters are positive and significant in all regressions of rating groups.

3.5.3 Additional robustness checks

In untabulated robustness checks, we investigate whether our baseline results remain robust when we use alternative measures of reputable auditors and underwriters. The first set of robustness checks relates to alternative measures of reputable auditors. We designate an auditor as a reputable auditor if its market share is the largest in the industry and exceeds the rest of auditors by at least 15% instead of 10%. As an alternative, we follow prior literature (e.g., Mayhew and Wilkins, 2003) and construct a measure of auditor reputation based on the square root of the assets of the auditor's clients. Finally, we use an alternative industry classification developed by Fama and French (1997) to identify reputable auditors. Our main results are robust to all these measures.

In the second set of sensitivity checks, we find that our results are robust to alternative specifications for the construct that captures the reputation of underwriters. We define reputable underwriters as the top eight underwriters based on market share. We also identify the top five underwriters based on the logarithm of the face value of bond issues they have advised on, as opposed to their market share. Our baseline findings regarding the size of the bond issue continue to remain robust.

3.6 Conclusion

In this paper, we test the certification hypothesis which states that capital market intermediaries with reputation capital at stake can provide a certification role which reduces the information asymmetry between firms and investors, and thereby helps firms obtain favourable bond terms. For this certification role to hold, capital market intermediaries must have strong incentives to maintain their reputation through repeated entries into the capital markets.

We empirically show that reputable auditors and underwriters indeed satisfy this requirement and play an important role in bridging firms that need to raise bonds and investors that seek bond risk premiums. Reputable auditors and underwriters not only assist bond issuers in obtaining lower bond yields, but also help issuers borrow more and for longer periods. Taken together, our results provide a more complete picture of how different capital market intermediaries affect the pricing and nonpricing terms of bonds. Further, the nature of reputable auditors' and underwriters' job responsibilities determines the different magnitudes and ways in which they provide benefits for the issuing firms.

Appendix 3.1: Variable definitions

Variable	Definition	Source
Reputable Auditor	Indicator variable equal to 1 if a firm hires reputable auditor, and 0 otherwise	Compustat
Tenure	The length of the auditor-client relationship	Compustat
Leverage	Long-term debt divided by total asset	Compustat
Tangibility	Net property, plant and equipment scaled by total assets	Compustat
ROA	Operating income divided by total assets	Compustat
Firm Size	The natural logarithm of total assets	Compustat
Reputable Underwriter	Indicator variable equal to 1 if an issue is underwritten by a reputable underwriter, and 0 otherwise	FISD
Credit Spread	The difference between a bond issue's offering yield and the yield of a benchmark treasury issue	FISD
Credit Rating	Numeric values assigned to bond ratings offered by S&P's or Moody's, ranging from 1 to 20	FISD
Speculative-grade	Indicator variable equal to 1 if an issue is rated below BBB by S&P's or Moody's, and 0 otherwise	FISD
Maturity	An issue's maturity date minus its offering date in years	FISD
Bond Size	The natural logarithm of an issue's offering amount	FISD
Callable	Indicator variable equal to 1 if an issue has a call option, and 0 otherwise	FISD
Putable	Indicator variable equal to 1 if an issue has a put option, and 0 otherwise	FISD
Sinking fund	Indicator variable equal to 1 if an issue has the sinking fund feature, and 0 otherwise	FISD
Subordinated	Indicator variable equal to 1 if an issue is subordinated, and 0 otherwise	FISD
No. of Covenants	The number of covenants included in an issue	FISD

Appendix 3.2: Reputable auditors by industry

Two-digit SIC	Reputable Auditors
13	PWC (1995-2006)
15	Arthur Anderson (1995-1998); Ernst & Young (1999-2006)
17	Arthur Anderson (1995-2006)
20	Ernst & Young (1995-2006)
22	Ernst & Young (1995-2006)
23	Ernst & Young (1995-2005); Deloitte & Touche (2006)
24	Arthur Anderson (1995-2004); KPMG (2005-2006)
25	PWC (1995-2006)
26	Arthur Anderson (1995-2001); PWC (2002-2006)
28	PWC (1995-2006)
29	PWC (1995-2006)
30	PWC (1995-2006)
31	Ernst & Young (1995-2006)
33	PWC (1995-2006)
34	PWC (1995-2006)
35	PWC (1995-2006)
36	KPMG (1995-2006)
37	Deloitte & Touche (1995-2000); PWC (2002-2006)
38	PWC (1995-2006)
39	PWC (1995-2006)
40	PWC (1995-2006)
42	Ernst & Young (1995-2005); Deloitte & Touche (2006)
44	PWC (1995-2006)
45	Ernst & Young (1995-2006)
48	PWC (1995-2000); Ernst & Young (2001-2006)
49	Arthur Anderson (1995-2000); Deloitte & Touche (2001-2006)
50	Deloitte & Touche (1995-2006)
51	Arthur Anderson (1995-2001); Ernst & Young (2002-2006)
53	Ernst & Young (1995-2006)
54	Deloitte & Touche (1995-2006)
55	Arthur Anderson (1995-2001); Deloitte & Touche (2002-2006)
56	Deloitte & Touche (1995-2006)
61	KPMG (1995-2006)
62	Deloitte & Touche (1995-2006)
63	PWC (1995-2006)
67	Ernst & Young (1995-2006)
70	Arthur Anderson (1995-2001); Ernst & Young (2002-2006)
72	PWC (1995-2006)
73	PWC (1995-2006)
75	KPMG (1995-2006)
78	Ernst & Young (1995-2006)
79	Arthur Anderson (1995-2001); Deloitte & Touche (2002-2006)
80	Ernst & Young (1995-2006)
87	PWC (1995-2006)

Appendix 3.3: Reputable underwriters by year

Year	Reputable Underwriters
1996	JP Morgan, Bank of America Merrill Lynch, Credit Suisse, Citi, Barclays Capital
1997	JP Morgan, Bank of America Merrill Lynch, Citi, Credit Suisse, Morgan Stanley
1998	Bank of America Merrill Lynch, JP Morgan, Credit Suisse, Citi, Morgan Stanley
1999	JP Morgan, Bank of America Merrill Lynch, Credit Suisse, Citi, Barclays Capital
2000	JP Morgan, Bank of America Merrill Lynch, Citi, Credit Suisse, Morgan Stanley
2001	JP Morgan, Citi, Bank of America Merrill Lynch, Credit Suisse, Barclays Capital
2002	JP Morgan, Bank of America Merrill Lynch, Citi, Barclays Capital, Credit Suisse
2003	JP Morgan, Bank of America Merrill Lynch, Citi, Barclays Capital, Morgan Stanley
2004	JP Morgan, Bank of America Merrill Lynch, Citi, Barclays Capital, Morgan Stanley
2005	JP Morgan, Bank of America Merrill Lynch, Barclays Capital, Citi, Credit Suisse
2006	JP Morgan, Bank of America Merrill Lynch, Barclays Capital, Citi, Goldman Sachs & Co

Table 3.1: Sample selection and distribution

Panel A of Table 3.1 presents the observation selection process. We first construct a sample based on the identification of reputable auditors. We then delete observations without information on firm-level control variables. We merge the resulting sample with the Mergent Fixed Income Securities Database (FISD) to get bond issue-level variables. Since we only focus on firms audited by Big Auditors, we eliminate firms audited by non Big Auditors. Finally, we delete observations that do not have underwriter information. Panel B looks at the distribution of the firm-level and bond issue-level observations by year. Our sample is over the period from 1995 to 2006.

Panel A: Sample selection

Description	Obs.
Reputable auditor Sample	60,337
Eliminate observations without information on firm-level control variables	(790)
Eliminate observations without bond information	(49,143)
Eliminate firms audited by non Big Auditors	(128)
Eliminate observations without underwriter information	(759)
Final Sample	9,517

Panel B: Sample distribution by year

Year	Firm-level obs.	Bond issue-level obs.
1995	54	239
1996	82	361
1997	106	482
1998	202	554
1999	126	617
2000	64	439
2001	181	759
2002	62	153
2003	330	2,239
2004	196	1,551
2005	199	1,330
2006	169	793
Total	1,771	9,517

Table 3.2: Summary statistics

Panel A: Descriptive statistics

This panel reports summary statistics for the full sample of 9,517 observations from 1995 through 2006. We group the variables according to their characteristics. *Reputable auditor* is an indicator variable equal to1 if a firm hires a reputable auditor, as defined in the paper, and 0 otherwise. *Tenure* equals to the length of the auditor-client relationship (in years). *Leverage* is calculated as long-term debt divided by total asset. *Tangibility* is net property, plant and equipment scaled by total assets. *ROA* is measured as operating income divided by total assets. *Firm size* is the logarithm of total assets. *Reputable Underwriter* assigns the value of 1 to bond issues underwritten by a reputable underwriter, as defined in the paper and 0 otherwise. *Credit Spread* is the difference between a bond issue's offering yield and the yield of a benchmark treasury issue. *Credit Rating* is the corresponding values of bond ratings offered by S&P's or Moody's, ranging from 1 to 20. *Maturity* is measured as the maturity date of a bond issue minus its offering date in years. *Offering amount* is an issue's actual offering amount. *Bond Size* is the logarithm of an issue's offering amount. *Callable* is an indicator variable equal to1 if a bond issue has a call option and 0 otherwise. *Putable* is an indicator variable equal to1if a bond issue has a put option, and 0 otherwise. *Sinking fund* is an indicator variable equal to1 if a bond issue has the sinking fund feature and 0 otherwise. *Subordinated* is an indicator variable that assigns 1 to a subordinated bond issue and 0 otherwise. *No. of Covenants* is the number of covenants included in an issue.

				Distribution		
	No. of obs.	**Mean**	**Std**	**25th**	**50th**	**75th**
Firm Characteristics						
Reputable Auditor	9,517	0.27	0.45	0.00	0.00	1.00
Tenure	9,517	6.12	3.28	3.00	6.00	9.00
Leverage	9,517	0.43	0.17	0.32	0.45	0.53
Tangibility (%)	9,517	22.75	23.76	8.18	13.17	31.06
ROA (%)	9,517	9.05	4.85	6.53	8.18	9.90
Firm Size	9,517	10.48	1.79	9.37	10.27	12.03
Bond Characteristics						
Reputable Underwriter	9,517	0.09	0.28	0.00	0.00	0.00
Credit Spread	9,517	1.30	1.46	0.47	0.86	1.71
Credit Rating	9,517	6.71	4.76	5.00	6.00	7.00
Maturity (years)	9,517	9.01	8.04	4.00	7.00	10.00
Offering Amount ($)	9,517	187,421	2061,696	3,467	13,229	150,000
Bond size	9,517	9.83	2.14	8.15	9.49	11.92
Callable	9,517	0.45	0.50	0.00	0.00	1.00
Putable	9,517	0.01	0.08	0.00	0.00	0.00
Sinking Fund	9,517	0.00	0.06	0.00	0.00	0.00
Subordinated	9,517	0.01	0.10	0.00	0.00	0.00
No. of Covenants	9,517	1.64	3.54	0.00	0.00	0.00

Table 3.2 (continued)
Panel B: Correlations

This panel reports the pair-wise Spearman correlations of variables used in the analyses.

	Credit Spread	Maturity	Bond Size	Credit Rating	Reputable Auditor	Reputable Underwriter	Tenure	Leverage	Tangibility	ROA	Firm Size	Callable	Putable	Sinking Fund	Subordinated
Maturity	0.20***														
Bond Size	0.38***	0.17***													
Credit Rating	0.58***	-0.06***	0.32***												
Reputable Auditor	-0.06***	0.25***	0.15***	-0.23***											
Reputable Underwriter	0.10***	0.11***	0.32***	0.11***	0.11***										
Tenure	0.06***	0.01	-0.07***	-0.11***	0.03***	-0.01									
Leverage	0.13***	-0.16***	-0.30***	0.09***	-0.33***	-0.13***	0.01								
Tangibility	0.22***	0.16***	0.34***	0.22***	0.03***	0.14***	-0.04***	-0.32***							
ROA	0.10***	0.07***	0.33***	0.20***	-0.06***	0.13***	-0.18***	-0.33***	0.62***						
Firm Size	-0.15***	-0.12***	-0.29***	-0.42***	0.07***	-0.18***	0.42***	0.17***	-0.36***	-0.42***					
Callable	0.37***	0.62***	0.27***	0.16***	0.14***	0.15***	0.15***	-0.06***	0.19***	0.10***	-0.15***				
Putable	-0.05***	0.09***	0.02***	0.00	-0.01	0.01	-0.07***	-0.02**	0.05***	0.07***	-0.05***	-0.04***			
Sinking Fund	-0.01	0.05***	0.05***	-0.01	0.03***	-0.01	-0.02**	-0.02**	0.07***	-0.00	-0.04***	0.06***	-0.00		
Subordinated	-0.06***	0.03***	-0.01	-0.07***	0.07***	-0.01*	-0.09***	-0.11***	0.14***	0.02**	-0.04***	-0.01*	-0.01	0.39***	
No. of Covenants	0.38***	0.24***	0.66***	0.46***	0.15***	0.31***	-0.14***	-0.23***	0.37***	0.37***	-0.53***	0.37***	0.01	0.02**	-0.02**

Table 3.3: Univariate tests

This table presents the results for univariate tests of reputable auditors and reputable underwriters. In Panel A, we compare the differences in bond terms between firms hiring reputable auditors and those hiring ordinary auditors. In Panel B, we compare the differences in bond terms between firms hiring reputable underwriters and those hiring ordinary underwriters. $Mean_1$ is the average credit spread/maturity/bond size for firms hiring reputable auditors or underwriters, while $Mean_0$ is the average credit spread/maturity/bond size for firms hiring ordinary auditors or underwriters. Diff. in Mean calculates the differences in bond terms between firms hiring reputable auditors/underwriters and those hiring ordinary auditors/underwriters. The t-statistics are from one-tailed t-tests. *, **, *** are 10%, 5% and 1% significance levels.

Panel A: Reputable versus ordinary auditor

	$Mean_1$	**$Mean_0$**	**Diff. in Mean**	**t-statistic**
Credit Spread	1.18	1.34	-0.16***	-4.72
Maturity	11.94	7.91	4.03***	22.32
Bond Size	10.38	9.62	0.76***	15.70

Panel B: Reputable versus ordinary underwriters

	$Mean_1$	**$Mean_0$**	**Diff. in Mean**	**t-statistic**
Credit Spread	1.77	1.25	0.52***	10.02
Maturity	12.06	8.71	3.35***	11.60
Bond Size	12.16	9.60	2.56***	35.33

Table 3.4: Bond terms analysis

This table presents the main results for bond terms regressions. Models 1 and 2 report the results when credit spread is the dependent variable. Models3and 4 present the results for the maturity regressions. Models 5and6 report the results when bond size is the dependent variable. *Interaction* is an interaction term of *Reputable Auditor* and *Reputable Underwriter*. Standard errors are clustered at the firm level. *, **, *** are 10%, 5% and 1% significance levels. See Appendix 3.1 for variable definitions.

	Credit Spread				**Maturity**				**Bond Size**			
Variables	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic
Reputable Auditor	-0.31*	-1.78	-0.35***	-2.68	3.18***	3.09	2.54***	2.75	-0.01	-0.03	-0.11	-0.66
Reputable Underwriter	0.16	1.05	-0.19*	-1.73	0.75	0.78	0.92	1.14	1.74***	5.26	1.35***	4.82
Interaction	0.02	0.13	0.15	1.13	-0.48	-0.33	-0.84	-0.65	-0.03	-0.08	0.11	0.26
Firm Characteristics												
Tenure	0.05	1.40	0.02	0.96	0.03	0.15	-0.10	-0.63	0.03	0.52	0.01	0.18
Leverage	2.00***	3.62	0.96***	2.75	3.41	0.79	1.89	0.60	-0.86	-1.32	-1.82***	-3.35
Firm Size	-0.12	-1.29	0.01	0.20	0.52	1.52	0.42	1.47	0.09	0.82	0.25***	2.57
Tangibility	-0.01	-0.76	0.01**	2.50	0.01	0.25	0.01	0.43	-0.01	-0.64	0.01	0.55
ROA	-0.02	-1.57	-0.01	-0.05	0.07*	1.69	0.023	0.50	0.03*	1.84	0.04***	3.26
Bond Characteristics												
Putable			-0.58***	-2.70			15.70***	4.77			-0.02	-0.05
Callable			0.24***	2.87			7.86***	7.65			0.21**	2.33
Sinking Fund			-0.80***	-3.64			2.71	1.56			1.68***	4.01
Subordinated			0.28*	1.69			-1.82	-0.63			-0.74	-1.31
Maturity			0.01	1.63							0.01	0.54
Bond Size			0.04*	1.79			0.08	0.56				
No. of Covenants			0.14***	11.66			-0.35***	-4.78			0.26***	7.02
Speculative-grade			1.34***	12.40								
Credit Spread							-0.07	-0.35			0.01	0.22
Industry&year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
N	9,517		9,517		9,517		9,517		9,517		9,517	
Adjusted R^2	0.10		0.47		0.03		0.29		0.17		0.48	
F-statistic			2.96*				3.29*				28.08***	

Table 3.5: Switching regressions

This table presents the main results for bond terms regressions using endogenous switching regressions. Panel A reports probit estimates for the choice of reputable auditors and underwriters, using the squares of firm size and leverage as instrument variables. Panel B presents the results of switching regressions for reputable auditors. It also reports the actual values of bond terms versus their counterfactual hypothetical values for firms hiring reputable auditors (Group 1) and firms not hiring reputable auditors (Group 2). Panel C presents the results of switching regressions for reputable underwriters. It also reports the actual values of bond terms versus their counterfactual hypothetical values for firms hiring reputable underwriters (Group 1) and firms not hiring reputable underwriters (Group 2). Difference is the mean difference between actual and hypothetical values of bond terms. Standard errors are clustered at the firm level. *, **, *** are 10%, 5% and 1% significance levels. See Appendix 3.1 for variable definitions.

Panel A: Choices of reputable auditors and underwriters

	Reputable Auditor		**Reputable Underwriter**	
	Coef.	z-statistic	Coef.	z-statistic
Leverage	-5.65***	-4.11	-1.85***	-3.08
Firm Size	-1.84**	-2.27	0.73**	2.22
Tangibility	0.01***	2.81	0.01**	2.03
ROA	-0.01	-0.80	0.01	1.35
Firm Size^2	0.09**	2.20	-0.04**	-2.39
Leverage^2	2.75***	3.20	1.44**	2.54
Reputable Auditor			0.35***	3.08
Reputable Underwriter	0.36***	2.80		
Year fixed effects	Yes		Yes	
Industry fixed effects	Yes		Yes	
N	9,517		9,517	
Pseudo R^2	0.24		0.11	

Panel B: Switching regressions for reputable auditors

	Credit Spread				Maturity				Bond Size			
	Group 1		Group 2		Group 1		Group 2		Group 1		Group 2	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
Reputable Underwriter	0.04	0.58	-0.18*	-1.75	-0.17	-0.24	0.80	1.02	1.49***	4.00	1.31***	5.09
Tenure	-0.01	-0.19	0.06*	1.88	0.09	0.72	-0.25	-1.23	0.01	0.35	0.03	0.49
Leverage	1.20***	4.22	2.03***	3.33	-0.43	-0.16	-0.22	-0.07	-4.25***	-2.72	-1.32	-1.28
Firm Size	-0.16***	-5.23	0.02	0.29	0.47	1.36	0.05	0.18	0.19	1.24	0.20**	2.15
Tangibility	-0.01	-0.19	-0.01	-0.97	0.04**	2.24	0.04**	2.39	0.01***	2.80	0.01	0.07
ROA	-0.03***	-5.08	-0.01	-0.60	0.14**	2.20	-0.01	-0.31	0.01	0.27	0.02*	1.77
Putable	-1.58**	-2.25	-0.09	-0.50	18.90***	6.60	15.82***	3.81	-0.22	-0.42	0.51	0.71
Callable	0.03	0.61	0.28**	2.13	9.75***	14.40	7.40***	5.45	1.06***	4.00	0.01	0.09
Sinking Fund	-0.32	-1.14	-0.83***	-2.74	-0.51	-0.19	2.67	1.12	1.66***	3.65	2.12***	3.90
Subordinated	0.27	1.07	0.05	0.13	-4.45**	-2.09	-1.63	-0.62	-0.62	-0.84	-1.20**	-2.00
Maturity	0.01***	4.43	-0.01	-0.86					0.01	0.87	0.01	0.22
Bond Size	-0.01	-0.57	0.02	1.52	-0.11	-0.60	0.24*	1.73				
No.of Covenants	0.10***	6.40	0.11***	4.79	-0.66***	-4.66	-0.20**	-2.47	0.26***	5.71	0.27***	6.56
Speculative-grade	1.28***	7.55	1.31***	10.84								
Credit Spread					1.01***	3.25	-0.25	-1.14	-0.17	-1.47	0.08	1.17

Group 1: Reputable Auditor=1	**Actual**	**Hypothetical**	**Difference**	**t-stat.**
Credit Spread	1.18	1.92	-0.74***	-34.51
Maturity	11.94	8.42	3.52***	21.40
Bond Size	10.38	10.75	0.37***	-10.24
Group 2: Reputable Auditor=0	**Actual**	**Hypothetical**	**Difference**	**t-stat.**
Credit Spread	1.34	1.11	0.23***	15.85
Maturity	7.91	9.81	1.90***	-22.81
Bond Size	9.61	10.31	-0.70***	-31.51

Table 3.5 (continued)
Panel C: Switching regressions for reputable underwriters

	Credit Spread				Maturity				Bond Size			
	Group 3		Group 4		Group 3		Group 4		Group 3		Group 4	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
Reputable Auditor	0.11	0.10	-0.33**	-2.53	0.92	1.05	2.57***	2.81	-0.54	-1.62	0.47*	1.78
Tenure	-0.09	-0.29	0.02	0.86	0.01	0.12	-0.20	-1.09	-0.08*	-1.70	-0.01	-0.01
Leverage	0.24	0.09	0.87***	3.01	-8.37***	-4.37	-0.02	-0.01	-3.57***	-7.69	-2.70***	-3.40
Firm Size	-0.21	-1.60	0.02	0.53	0.55	1.53	0.15	0.58	0.24*	1.85	0.19**	1.97
Tangibility	0.01	0.37	0.01	1.39	0.09***	4.66	0.03**	2.45	0.01***	4.88	0.01	1.26
ROA	-0.01	-0.02	-0.01	-0.62	0.11	1.28	0.01	0.41	0.04**	1.96	0.03	1.58
Putable	-0.87	-1.53	-0.48*	-1.81	20.52***	7.62	15.72***	3.73	0.72**	2.40	-0.08	-0.15
Callable	-0.22	-0.25	0.27***	2.88	4.71***	4.04	8.28***	8.05	0.48***	2.96	0.09	0.48
Sinking Fund	1.47	0.84	-0.79***	-4.31	3.66	1.16	1.01	0.66	1.78***	3.42	2.52***	3.71
Subordinated	-0.01	0.00	0.57***	2.72	-3.55	-1.13	-2.37	-1.43	-1.89*	-1.93	-1.28*	-1.69
Maturity	0.02*	1.74	0.01	0.60					-0.01	-1.25	0.02**	2.21
Bond Size	0.51	0.36	0.04*	1.75	-0.24	-0.38	0.17	1.37				
No.of Covenants	0.11	0.88	0.13***	9.85	-0.43***	-3.93	-0.27***	-3.49	0.27***	8.65	0.33***	10.57
Speculative-grade	0.98	0.61	1.25***	9.95								
Credit Spread					0.99***	3.81	-0.19	-0.89	0.21***	2.82	-0.01	-0.06

Group 3: Reputable Underwriter=1	**Actual**	**Hypothetical**	**Difference**	**t-stat.**
Credit Spread	1.78	1.88	-0.10**	-2.58
Maturity	12.06	10.28	1.78***	5.18
Bond Size	12.16	10.45	1.71***	30.34
Group 4: Reputable Underwriter=0	**Actual**	**Hypothetical**	**Difference**	**t-stat.**
Credit Spread	1.25	1.12	0.13***	7.18
Maturity	8.72	12.51	-3.79***	-43.69
Bond Size	9.60	12.03	-2.43	-0.01

Table 3.6: Changes analysis

This table presents the results for changes regressions. Columns (1) - (2) of Panel A presents descriptive statistics of the changes in bond terms after issuing firms switch from ordinary auditors to reputable auditors, or vice versa. Columns (3)--(4) of Panel A present the changes in bond terms that occur after the switches from ordinary underwriters to reputable ones, or vice versa Panel B presents estimates for the multivariate changes regressions of issuing firms that change from ordinary auditors to reputable auditors and those do not change auditors. . Panel C reports estimates for the multivariate changes regressions of issuing firms that change from reputable auditors to ordinary auditors and those do not change auditors. *, **, *** are 10%, 5% and 1% significance levels.

Panel A: Description of changes in reputable auditor and underwriters

		Switch to reputable auditors (1)	**Switch to ordinary auditors (2)**	**Switch to reputable underwriters (3)**	**Switch to ordinary underwriters (4)**
Credit Spread	↑	19 (47.5%)	12 (60%)	58 (45%)	19 (48.7%)
	=	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	↓	21 (52.5%)	8 (40%)	71 (55%)	20 (51.3%)
Maturity	↑	16 (40.0%)	8 (40%)	53 (41%)	16 (41%)
	=	13 (32.5%)	3 (15%)	38 (29.5%)	15 (38%)
	↓	11 (27.5%)	9 (45%)	38 (29.5%)	8 (21%)
Bond Size	↑	20 (50.0%)	15 (75%)	67 (52%)	20 (51%)
	=	6 (15.0%)	1 (5%)	20 (15.5%)	3 (8%)
	↓	14 (35.0%)	4 (20%)	42 (32.5%)	16 (41%)
N		40	20	129	39

Panel B: Δ Reputable Auditor=1 or 0

	Credit Spread		Maturity		Bond Size	
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Δ Reputable Auditor	-0.02	-0.09	1.99	0.85	-0.337**	-2.36
Δ Reputable Underwriter	0.04	0.30	-0.62	-0.55	-0.005	-0.08
Δ Leverage	1.92**	2.16	-14.26**	-2.13	0.069	0.17
Δ Firm Size	0.20	0.94	-3.12*	-1.90	0.525***	5.35
Δ Tangibility	-0.02**	-2.28	0.01	0.04	-0.008	-1.42
Δ ROA	0.004	0.22	0.09	0.68	-0.008	-0.98
Δ Maturity	0.02***	2.90			-0.001	-0.45
Δ Bond Size	-0.09	-0.89	-0.35	-0.45		
Δ No. of Covenants	0.12***	3.64	-0.20	-0.81	0.098***	6.51
Δ Credit Rating	0.22***	4.69				
Δ Credit Spread			0.82**	2.28	-0.025	-1.14
N	420		420		420	
Adjusted R^2	0.13		0.01		0.16	

Panel C: Δ Reputable Auditor= -1 or 0

	Credit Spread		Maturity		Bond Size	
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Δ Reputable Auditor	-0.78*	-1.88	2.33	0.74	-0.263	-1.40
Δ Reputable Underwriter	0.04	0.27	-0.35	-0.31	-0.092	-1.32
Δ Leverage	2.17**	2.43	-13.91**	-2.08	-0.032	-0.08
Δ Firm Size	0.47**	2.31	-2.34	-1.52	0.480***	5.37
Δ Tangibility	-0.01*	-1.70	-0.004	-0.05	-0.009*	-1.78
Δ ROA	0.01	0.36	0.18	1.24	-0.001	-0.19
Δ Maturity	0.01**	2.50			-0.001	-0.31
Δ Bond Size	-0.06	-0.59	-0.26	-0.31		
Δ No. of Covenants	0.11***	3.32	-0.18	-0.71	0.088***	6.00
Δ Credit Rating	0.26***	5.39				
Δ Credit Spread			0.72**	1.99	-0.022	-1.01
N	400		400		400	
Adjusted R^2	0.17		0.01		0.15	

Table 3.7: Rating group analysis

In this table, we partition the full sample into high investment grade (S&P's rating "AAA", "AA+", "AA"), moderate investment grade ("AA-", "A+", "A"), low investment grade ("A-", "BBB+", "BBB") and speculative-grade (below "BBB").. *, **, *** are 10%, 5% and 1% significance levels. See Appendix 3.1 for variable definitions.

	Credit Spread				Maturity				Bond Size			
	High	Moderate	Low	Speculative	High	Moderate	Low	Speculati-ve	High	Moderate	Low	Speculati-ve
Reputable Auditor	0.01	-0.18	-0.14*	-0.32**	5.66***	-0.22	0.74	-0.27	-1.07***	0.16	0.39**	0.64***
	(0.08)	(-1.63)	(-1.66)	(-2.33)	(3.73)	(-0.19)	(0.69)	(-0.88)	(-3.02)	(0.63)	(2.51)	(4.73)
Reputable Underwriter	0.18	-0.03	-0.15	-0.01	-0.59	-0.96	2.72**	0.13	2.10***	1.68**	0.94***	0.60***
	(1.42)	(-0.35)	(-1.30)	(-0.02)	(-0.54)	(-0.75)	(2.55)	(0.31)	(7.37)	(2.57)	(4.47)	(3.24)
Interaction	0.12	0.04	0.18	-0.05	0.21	1.07	-2.71	1.12	1.06***	-0.24	-0.48*	-0.74***
	(0.62)	(0.34)	(1.23)	(-0.24)	(0.16)	(0.59)	(-1.64)	(1.61)	(2.72)	(-0.36)	(-1.86)	(-3.47)
Tenure	-0.07**	0.01	-0.01	0.01	0.61	-0.07	0.10	0.02	-0.06	0.01	0.04	-0.02
	(-2.28)	(0.80)	(-0.40)	(0.47)	(1.03)	(-0.48)	(0.65)	(0.49)	(-0.50)	(0.22)	(1.40)	(-1.12)
Leverage	0.31	0.18	0.85**	2.04***	21.76***	5.56**	-0.27	-1.41**	0.84	-1.02	-0.93	-1.19***
	(0.54)	(0.75)	(2.00)	(6.54)	(7.45)	(2.01)	(-0.07)	(-2.42)	(0.57)	(-1.64)	(-1.15)	(-3.64)
Firm Size	-0.07	0.09	0.04	-0.23***	0.43	0.70**	0.01	0.06	0.21**	0.13	0.11	0.09
	(-1.43)	(1.63)	(0.93)	(-4.24)	(0.60)	(2.31)	(0.04)	(0.46)	(2.21)	(1.24)	(1.28)	(1.58)
Tangibility	-0.01*	0.01*	0.01**	0.01	-0.22***	-0.01	0.07***	0.01	-0.05*	-0.01	-0.01*	0.01
	(-1.69)	(1.80)	(2.39)	(1.54)	(-2.90)	(-0.77)	(2.96)	(0.87)	(-1.88)	(-0.26)	(-1.95)	(1.29)
ROA	-0.01	-0.02**	0.01	-0.04***	0.01	-0.04	-0.09	0.03*	-0.01	-0.01	-0.01	0.03***
	(-0.38)	(-2.08)	(1.31)	(-4.11)	(0.01)	(-0.55)	(-1.14)	(1.81)	(-0.19)	(-0.68)	(-0.60)	(3.99)
Putable	-0.37	-0.52***	-0.38**	-0.81***	6.59**	19.08***	21.30***	12.72***	-0.84**	0.84	0.11	-0.28
	(-0.49)	(-2.81)	(-2.40)	(-2.90)	(2.47)	(4.22)	(5.58)	(4.16)	(-2.13)	(1.55)	(0.43)	(-0.44)
Callable	0.09	0.24**	0.31***	0.39**	9.63***	9.21***	4.97***	2.32***	0.34***	0.35***	0.35***	-0.26
	(0.80)	(2.37)	(2.92)	(2.45)	10.06	(9.39)	(2.71)	(4.98)	(2.71)	(3.83)	(2.65)	(-1.00)
Sinking Fund	-0.36*	-0.54***	-1.16***	-0.32	-2.71	-1.51	4.79	9.50***	1.54*	1.67***	-0.41	-0.12
	(-1.74)	(-2.97)	(-4.05)	(-0.68)	(-0.52)	(-0.52)	(1.05)	(4.37)	(1.81)	(2.76)	(-0.57)	(-0.18)
Subordinated		-0.03	0.56**	-0.16		5.60	1.13	2.80***		0.02	0.32	1.56***
		(-0.16)	(2.01)	(-0.21)		(0.83)	(0.25)	(2.61)		(0.05)	(0.45)	(2.71)

Table 7 (continued)												
Maturity	0.02***	0.01*	0.02***	0.01					-0.01	-0.01	0.01	0.06***
	(3.83)	(1.81)	(7.92)	(0.11)					(-1.19)	(-1.14)	(0.89)	(4.18)
Bond Size	-0.02	0.08***	0.02	-0.06*	-0.13	-0.12	0.22	0.57***				
	(-0.59)	(3.11)	(0.72)	(-1.72)	(-1.52)	(-1.12)	(0.99)	(6.42)				
No. of Covenants	-0.13*	-0.05***	0.01	0.16***	0.14	0.08	0.02	-0.12***	0.32**	0.57***	0.34***	0.16***
	(-1.81)	(-3.06)	(0.05)	(10.67)	(0.42)	(0.44)	(0.09)	(-2.91)	(2.34)	(7.27)	(7.38)	(6.69)
Credit Spread					1.56***	0.26	2.46***	0.01	-0.11	0.16	0.05	-0.06*
					(3.76)	(1.17)	(2.93)	(0.11)	(-0.62)	(1.32)	(0.77)	(-1.80)
Year Fixed Effects		Yes				Yes				Yes		
Industry Fixed Effects		Yes				Yes				Yes		
N	1,307	4,504	2,280	1,426	1,307	4,504	2,280	1,426	1,307	4,504	2,280	1,426
Adjusted R^2	0.09	0.16	0.30	0.5	0.14	0.34	0.34	0.28	0.16	0.50	0.52	0.63

4 Default Clauses in Debt Contracts[39]

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4.1 Introduction

The literature has long suggested that expected bankruptcy costs (or default costs) play an important role in a firm's debt financing decisions (e.g., Baxter, 1976; Altman, 1985). However, the literature has largely ignored the effect of expected default costs on debt contracting. Specifically, debtholders are expected to take the cost of default into account when negotiating debt contracts. If the expected cost of default is high, debtholders can *ex-ante* raise the cost of borrowing and adjust other contractual terms accordingly to protect their interests. In this paper, we fill this gap by examining the importance and determinants of provisions in debt contracts that identify the events that trigger firm default — default clauses.

Theoretical literature on financial contracting shows that in the presence of unforeseeable contingencies and agency conflicts between borrowers and debtholders, optimal debt contracts allocate control rights to debtholders via contractual provisions when borrowers underperform (e.g., Aghion and Bolton, 1992; Dewatripont and Tirole, 1994). Default clauses are such a mechanism. They are an essential part of a debt contract because they facilitate control rights for debtholders and thus provide protection in the event that a borrower may be unable to fulfil its debt obligations.

Default clauses describe in detail the events that allow debtholders to demand the repayment of debt principal and receive control rights over the firm. The standard events of default are the declaration of insolvency, bankruptcy or reorganization, the failure to pay outstanding principal or interest beyond a specified grace period, or the failure to comply with covenants after a certain grace period. Other events triggering default that are not standard yet common are situations where i) the firm fails to pay the interest and principal on other debt commitments, other liabilities, or court judgments that involve payments above certain thresholds, ii) the guarantees provided by the firm become invalid, or iii) the firm fails to notify debtholders of fundamental changes in its business.

Default clauses are distinctly different from debt covenants. Covenants monitor the borrower's performance and mitigate agency conflicts between borrowers and debtholders (Smith and Warner, 1979), but provide only a partial indication of the borrower's ability to pay its debt obligations.[40] However, default clauses capture a more

[40] Covenant violations occur frequently in syndicated loan contracts (Dichev and Skinner, 2002). Bank lenders often renegotiate the terms of the syndicated loans; thus, covenant violations rarely lead to actual defaults (Gopalakrishnan and Parkash, 1995).

comprehensive set of events that signal borrowers' potential inability to repay the debt and, most importantly, identify the instances when the actual transition of control rights to debtholders takes place.[41] In the event of default, debtholders take control and work out a solution for the borrower which could take the form of an informal renegotiation among various claimants against the borrower. Alternatively, the borrower could file for bankruptcy under Chapters 7 or 11.[42] In either scenario, the occurrence of a default imposes significant costs on both the borrower and the debtholders (Ang, Chua and McConnell, 1982; Altman, 1984; Glover, 2011). Default costs can include administrative expenses paid to attorneys, accountants, consultants, expert witnesses and trustees, as well as indirect costs arising from the loss of intangibles and growth opportunities (Acharya, Bharath and Srinivasan, 2007), asset fire sales (Shleifer and Vishny, 1992), and the deterioration of supplier and customer relationships (Titman, 1984).

The restrictiveness of default clauses in debt contracts is likely affected by a borrowing firm's expected cost of default. Default costs directly influence the loss suffered by debtholders in the event of default. The higher the aggregate sum of these costs, the lower the recovery rate of the debt. On the one hand, one would expect debtholders to write debt contracts that would compensate them for these expected default costs *ex ante* or offer more protection. They could demand higher credit spreads, shorter debt maturity and/or set more restrictive default clauses. In terms of default clauses' restrictiveness, debtholders can add more default clauses and set shorter grace periods or smaller threshold amounts for the events that trigger defaults. These protections minimize their credit losses by facilitating control rights in a timelier manner. Hence, higher expected costs of default can be associated with more restrictive default clauses.

On the other hand, the relation between expected default costs and the restrictiveness of default clauses hinges on the priority of claims held by different debtholders. In bankruptcy, as a general rule, secured debtholders — those who have a security interest or collateral in the debtor's property — will be paid before unsecured debtholders.[43] If a borrowing firm incurs large default costs, the amount of proceeds available to unsecured debtholders will be significantly lower after paying out the secured

[41] Using a sample of 159 incidents of default, Beneish and Press (1995) show that 30% of the defaults occur without experiencing covenant violations.
[42] Chapters 7 and 11 are two types of bankruptcy filings available to firms in the United States. Under Chapter 7, the assets of a bankrupt firm are liquidated, and the proceeds obtained from selling the assets are distributed to the creditors in the order of priority. In Chapter 11 bankruptcy, however, the bankrupt firm is allowed to continue to operate, and the creditors agree on a reorganization plan for the firm.
[43] Source: § 507 U.S. Bankruptcy Code.

debtholders. In the extreme scenario, unsecured debtholders can become like equity holders, losing the full value of their claims in default. As a result, unsecured or junior debtholders may prefer to set loose default clauses to give the borrowing firm sufficient time to remedy the default and thereby minimize the probability of default. Bondholders typically fall into the category of junior debtholders whose claims are subordinated to bank debt. Furthermore, bondholders are widely dispersed investors whose renegotiation costs are likely to be higher relative to banks' costs. These arguments suggest that, in the case of bond contracts, higher expected costs of default are potentially associated with less restrictive default clauses. In the case of senior and secured debtholders, such as banks, the impact of the default costs on their credit losses is likely to be limited due to the priority of their claims and the collateral they require. Hence, one would expect a weaker impact of default costs on default clauses set by banks or none at all.

Using a hand-collected sample of 4,627 bond prospectuses and 9,361 syndicated loan agreements for U.S. public firms in the period 1996-2009, we construct an index of the restrictiveness of default clauses in these contracts. The index captures three dimensions: (1) the number of default clauses, each clause indicating a particular event that triggers default; (2) the grace period allowed for each default-triggering event; and (3) the threshold amount that triggers a default in each event. Our descriptive empirical evidence indicates significant cross-sectional variation in the restrictiveness of default clauses.

Our first set of analyses examines the predictive ability of the default clauses' restrictiveness index for bankruptcies, as measured by both Chapter 7 and 11 fillings. We construct a firm level index for default clauses by combining default clauses in both bond and loan agreements. Using a hazard model, we document that a higher firm level default index, which proxies for more restrictive default clauses, is related to a higher probability of bankruptcy one or two years ahead. This finding suggests that default clauses do indeed facilitate the transfer of control rights to creditors.

Our second set of analyses investigates the determinants of the restrictiveness of default clauses in bond and loan contracts, in particular the expected cost of default at the time of debt contract issuance. We capture the higher expected cost of default by the extent of intangible assets relative to tangible assets employed by the firm. We use research and development costs relative to total assets, an indicator that flags industries with high asset specificity and the tangibility measure proposed by Hahn and Lee

(2009).[44] First, we document that higher expected costs of default are associated with less restrictive default clauses in bond contracts, consistent with the argument that bondholders are keen to avoid costly defaults given their high renegotiation costs and lower claim priority against borrowing firms. We perform additional sensitivity analyses and find that our results are robust to various proxies for expected default costs and alternative measures of the restrictiveness of default clauses. Second, we find no evidence that higher default costs are associated with less restrictive default clauses in loan contracts consistent with the expectation that because loans are senior claims protected by collateral, the expected default costs have little or no impact on the restrictiveness of default clauses. These findings validate the argument that bondholders take default costs into account when structuring bond contracts because their lower priority in bankruptcies leads to a lower likelihood of recovering an investment. As a result, they prefer to set up less restrictive default clauses to reduce the probability of default, while senior claimants such as banks less concerned about this.

Our last set of analyses examines the interrelation of default clauses in bond contracts and loan agreements by using a subset of firms that issue corporate bonds while syndicated loans are outstanding. We find that default clauses in bond contracts become more restrictive when banks place uncommon default clauses in loan agreements, such as default clauses conditional on pending litigation and pension obligations. One explanation is that bondholders have incentives to avoid a situation in which the firm defaults on bank loans without defaulting on bonds and thus the risk that the bank expropriates bondholders' wealth increases. Anticipating the banks' behaviour in the event of default, bondholders place restrictive default clauses to obtain timelier control rights of the borrower in financial distress.

Our paper is closely related to the literature that studies the role of expected default costs in determining the firm's capital structure. Introducing default costs and tax benefits in their formal models, a number of authors (e.g., Kraus and Litzenberger, 1973; Scott, 1976; Kim, 1978) have noted that an optimal capital structure depends on the trade-off between the expected value of default costs and the tax savings associated with the deductibility of interest expense. A larger number of empirical studies also have attempted to estimate default costs (e.g., Warner, 1977; Altman, 1984; Weiss, 1990; Bris, Welch and Zhu, 2007; Glover, 2011). However, this literature only focuses on the influence of expected default costs on a firm's financing policy and capital structure. We

[44] Hahn and Lee (2009) refer to this measure as excess debt capacity. We provide more details on the computation in Section 2.3.

contribute to this literature by demonstrating that the expected cost of default also plays an important role in the specification of default provisions present in debt contracts.

Our findings also contribute to a growing body of literature investigating the design of multidimensional debt contract terms (e.g., Qian and Strahan, 2007). Debt contracts contain both pricing and non-pricing terms, such as maturity, size and covenants. We add to this literature by investigating the variation and role of another important feature of debt contracts — default clauses. Financial contracting theories argue that under optimal debt contracting, debtholders can use contractual tools to obtain control rights of a borrower when its credit quality deteriorates. Default clauses are one such mechanism which facilitates the actual transfer of control rights when certain events happen.

The remainder of the paper proceeds as follows. Section 4.2 describes our data and measures. Sections 4.3 and 4.4 present the results. Section 4.5 concludes the paper.

4.2 Data and measures

4.2.1 Sample construction

Because bond default clauses are typically included in bond prospectuses, to construct the bond sample, we begin with SEC filings that may contain bond prospectuses over the period of 1996-2009.[45] Under the Securities Act of 1933, firms must disclose significant information about securities being offered for public sale through the registration of securities with the SEC. In the case of bonds, the majority of bond prospectuses are filed in Forms S-3 and 424.

To obtain a comprehensive sample of bond prospectuses, we also search for bond prospectuses in other SEC filings identified by the Mergent Fixed Income Securities Database (FISD).[46] FISD is the largest database of publicly offered U.S. bonds, and it provides detailed information on bond issues and issuers except for default clauses. We use a text-search program to scan these SEC filings for the keywords "event(s) of default". In principle, every bond prospectus should define events that would trigger default. To further restrict the filings to those that contain bond agreements rather than equity prospectuses, we also require these filings to include the term "indenture". This process allows us to extract EDGAR filings that may include bond agreements.

[45] We start with the year 1996 because, prior to 1995, electronic filings are not available on a large scale in the SEC's electronic filing system—EDGAR.
[46] Based on FISD, we identify 82 types of SEC forms that could include bond registration information.

We match the identified SEC filings from the previous step with FISD and Compustat based on CIKs and filing dates. Specifically, we first match FISD and Compustat by CUSIPs, issuer names and industries. Then, we match the merged FISD-Compustat sample with the SEC filings that may contain bond prospectuses by CIKs and filing dates. Firms usually file their final bond prospectuses with the SEC within a few days of issuance. To be cautious, we impose the matching criteria that the SEC filing dates are within one month of the issuance dates in FISD. We exclude bonds issued by non-U.S. or financial firms, and we also eliminate privately placed bonds or medium-term notes.[47] After this step, we are left with 5,697 bond prospectuses. Finally, we manually check whether these bond prospectuses are actually covering new bonds issued and code the default clauses in each of them. Firms can file multiple prospectuses with the SEC for the same bond issue; typically the latest prospectus contains information about the finalized bond terms. Our final sample of bond contracts with complete information on default clauses covers 4,627 bond issues from 865 firms.

To obtain a comprehensive sample of default clauses for loan contracts, we start with 10-K, 10-Q and 8-K filings that were filed with the SEC between 1996 and 2009, as material loan agreements are usually attached to these filings. Similar to the construction of the sample of bond prospectuses, we extract the filings that may contain loan agreements using the keywords "event(s) of default" as well as terms that help identify loan contracts, such as "credit agreement", "loan agreement" or "credit facility". We then map the extracted filings to DealScan and Compustat using loan origination dates and borrower names.[48] We are able to locate 15,519 loan contracts in DealScan. To ensure that the filings contain the correct loan contracts, we manually check these filings based on loan origination dates and loan amounts. We successfully retrieve 10,053 loan contracts. Finally, we manually code events of default clauses in these contracts and remove those without detailed information on event-of-default clauses, which yields a sample of 9,999 loan contracts for 4,033 non-financial U.S. firms.

[47] We exclude medium-term notes (MTNs) because their final bond prospectuses typically do not contain information on default clauses. The details of default clauses are available in the initial bond prospectuses of MTNs, which date back a few years before issuances and make the mapping between FISD and SEC filings extremely difficult.

[48] Because we are unsure about the time lag between deal-active dates and their actual filing dates with the SEC, to be as conservative as possible, we impose the matching criteria that loan agreements are filed with SEC within the range of three months before and 12 months after loan origination dates.

4.2.2 Restrictiveness of default clauses

Default clauses stipulate the events which allow debtholders to demand repayment of the debt in advance of its normal due date. Nine common default clauses exist in both bond and loan agreements: declaration of insolvency, bankruptcy or reorganization (*events of bankruptcy clause*), failure to pay principals (*principal payment clause*), failure to deliver interest payments (*interest payment clause*), breach of covenants (*covenant breach clause*), default under other debt (*cross-default clause*), failure to pay court judgments (*court judgment clause*), invalid guarantees (*invalid guarantees clause*), failure to pay non-debt liabilities such as taxes or insurance fees (*non-debt liabilities clause*), and failure to report the occurrence of a fundamental change (*report of change clause*). While the definitions of these clauses are self-explanatory, we provide examples for each type of clause in Appendix A.

Some default clauses are unique in bond or loan agreements. For instance, bond agreements can include default clauses related to an issuer's failure to install sinking funds (*sinking fund clause*), failure to meet redemption requirements (*redemption clause*), or failure to deliver the settlement amount on the conversion of bonds (*conversion clause*). These clauses originate from bond-specific sinking funds, or from features that allow redemption and convertibility. Unique default clauses in loan agreements include the borrower's failure to pay deficits in pension plans (*pension clause*), the occurrence of a change in control (*change in control clause*), or the presence of pending litigation (*pending litigation clause*). A pending litigation clause is notably different from a court judgment clause. Although both clauses are related to litigation, the former can trigger a default as long as a lawsuit is brought against a borrower, while the latter gives debtholders the right to accelerate the debt only if the borrower is unable to pay a certain amount set by the court judgment. Therefore, the pending litigation clause is more restrictive than the court judgment clause.

Panel A of Table 4.1 provides the frequency of each default clause in both the bond and loan samples. All debt agreements include the essential default clauses on events of bankruptcy, principal payment, interest payment and covenant breaches. For other default clauses that are commonly present in bond and loan agreements, the frequencies of these default clauses are generally higher in the loan sample than in the bond sample, except for the report of change clause.[49] For instance, 94.66% of the loan agreements have cross-default clauses, while 51.52% of the bond agreements have these

[49] The lower frequency of the report of change clause in the loan sample may be due to the fact that an alternative clause (the change of control clause) exists extensively in the loan agreements.

clauses. Further, 91.51% of the loan agreements contain court judgment clauses; however, only 10.15% of the bond agreements include these clauses. This evidence suggests that, on average, loan agreements have more restrictive common default clauses than bond agreements.

Default clauses related to pension and change in control are also pervasive in the loan sample. A total of 94.80% of the loan agreements contain the pension clause, and 70.88% contain the change in control clause. The pending litigation clause is only included in 1.92% of the loan sample, which is not surprising, as this clause gives debtholders the acceleration right of debt as long as the borrowing firm is a defendant in a pending lawsuit, which is therefore extremely costly for the borrowing firm.

Certain default clauses state the grace period of a default. A grace period is a time period during which a certain event of default is waived. The longer the grace period, the more time a borrower has to remedy the default. Grace periods of default clauses range from 0 to 120 days, depending on the nature of the default clause and debt claim. Panel B of Table 4.1 presents the statistics for grace periods of various default clauses. The principal payment clause typically has a short grace period. For example, the average grace period of the principal payment clause is one day for the bonds and about half a day for the loans. The court judgment clause, on the other hand, has a relatively long grace period: on average, 55 days for the bonds and 34 days for the loans. Furthermore, the grace periods of the common default clauses are generally much longer for the bonds than loans. For instance, the average grace period of the interest payment clause is 33 days for the bonds, compared to four days for the loans. Similar observations apply to the covenant breach and cross-default clauses. Panel B of Table 4.1 provides further evidence that loan default clauses are usually more restrictive than bond default clauses.

A few of the default clauses also specify a threshold amount above which a certain event of default would occur. For example, a cross-default clause usually states that a specified amount of default under another debt agreement would trigger the default of the current debt agreement. The lower the threshold amount, the more restrictive the default clause. The court judgment and pension clauses also have similar requirements of threshold amounts. To the extent that court judgments and pension funds are also liabilities, court judgment and pension clauses are similar to cross-default clauses. Panel C of Table 4.1 provides the summary statistics for the threshold amounts of these clauses as percentages of firms' total assets. In general, a default on a small amount of other debt liability can accelerate the repayment of the current debt liability.

For instance, on average, a debt liability that amounts to 0.60% of a firm's total assets can trigger the default of the current bond.

Table 4.1 shows that default clauses exhibit significant variations in their presence in debt agreements, grace periods and threshold amounts. To capture the overall restrictiveness of default clauses, we create a default clause index, taking various clauses into account. We first construct an individual score for each default clause. For a default clause that does not specify a grace period or a threshold amount, we assign the value of 1 to the existence of the default clause, and 0 otherwise. Examples of such default clauses include the invalid guarantees clause, non-debt liabilities clause, report of change clause and change of control clause.

Another group of default clauses states either a grace period or a threshold amount in the event of default. For instance, the interest payment clause typically specifies the time period that a firm's failure to pay interests is pardoned. To account for the variation in the grace periods of interest payments (IP), we measure the restrictiveness of the interest payment clause as:

$$\text{Score}_{IP} = \text{Indicator}_{IP} + \left(1 - \frac{\text{Grace period}_{IP} - \text{Minimum grace period}_{IP}}{\text{Maximum grace period}_{IP} - \text{Minimum grace period}_{IP}}\right) \quad (1)$$

Indicator_{IP} is an indicator variable that takes the value of 1 if an interest payment clause exists in a debt agreement and 0 otherwise. Here, we take the difference between the grace period of an interest payment clause and the minimum grace period of interest payment clauses across the bond and loan samples, scaled by the difference between the maximum and minimum grace periods of interest payment clauses. This approach gives us a relative ranking of the restrictiveness of a grace period and also enables the comparison of the grace periods for the same default clause across the bond and loan samples. The individual score associated with the interest payment clause captures the existence of this clause as well as its grace period. The higher the score, the more restrictive the clause. We apply the same method to the construction of scores for the principal payment, covenant breach, sinking fund, redemption, conversion, pending litigation and pension default clauses.

The last group of default clauses, such as cross-default and court judgment clauses, specify grace periods as well as threshold amounts. In creating scores for this group of default clauses, we assign equal weights to the grace periods and threshold amounts. For example, we construct the score of the cross-default clause as follows:

$$\text{Score}_{CD} = \text{Indicator}_{CD} + 0.5 * (1 - \frac{\text{Grace period}_{CD} - \text{Minimum grace period}_{CD}}{\text{Maximum grace period}_{CD} - \text{Minimum grace period}_{CD}})$$
$$+ 0.5 * (1 - \frac{\text{Threshold amount}_{CD} - \text{Minimum threshold amount}_{CD}}{\text{Maximum threshold amount}_{CD} - \text{Minimum threshold amount}_{CD}}) \quad (2)$$

The score of the cross-default clause above incorporates the presence of the cross-default clause and its grace period and threshold amount, representing the overall restrictiveness of this clause.

After obtaining an individual score for each default clause, we sum over the individual scores to obtain an index for the default clauses of a debt agreement. The higher the default clause index, the more restrictive the default clauses. Panel A of Table 4.1 provides summary statistics for the individual score for each default clause. Consistent with the evidence on grace periods and threshold amounts in Panels B and C of Table 4.1, a default clause is typically more restrictive in the loan agreement than in the bond agreement. For instance, the mean score of the covenant breach clause is 1.95 for the loans, compared to 1.41 for the bonds. The default clause index is also higher for the loans (14.01) than the bonds (10.28). Taken together, the descriptive evidence in Table 4.1 shows that default clauses in loan agreements are more restrictive than in bond agreements. This could be explained by the different renegotiation costs for loans and bonds. The number of lenders of a bond is much higher than that of a loan, which entails higher renegotiation costs for bonds than loans (Smith and Warner, 1979). As such, bondholders are likely to set less restrictive default clauses to avoid costly renegotiation with borrowing firms.

Figure 4.1 plots the default clause indexes for the loan and bond samples over time. The restrictiveness of default clauses in the loan agreements is relatively stable over time; in contrast, the default clauses in the bond agreements vary more significantly over time. This could be because bonds are more sensitive to macroeconomic shocks than loans (Greenwood, Hanson and Stein, 2010).

4.2.3 Expected default costs

As mentioned above, the finance literature categorizes default costs into direct expenses in bankruptcies and indirect costs arising from asset liquidation, lost growth opportunities, asset fire sales, etc. Existing evidence suggests that the direct administrative and legal costs of bankruptcies are rather small (e.g., Altman, 1984; Weiss,

1990). Hence, the literature has focused on the indirect costs when measuring default costs (e.g., Shleifer and Vishny, 1992; Acharya, Bharath and Srinivasan, 2007).

One challenge in measuring indirect default costs is that they are *ex-ante* unobservable. For instance, indirect costs associated with the deterioration of supplier and customer relationships in defaults are opportunity costs that are difficult to quantify. Nevertheless, Haugen and Senbet (1978) argue that indirect default costs are *ex-ante* liquidation costs, which can be reasonably proxied using accounting variables such as the ratio of fixed assets to total assets and research and development (R&D) expenses (Alderson and Betker, 1996). The rationale behind these accounting variables is that the most important cost of liquidation is the destruction of going-concern value when assets are sold to pay back debt. The going-concern value is more likely to be preserved if there is a large portion of tangible assets as opposed to intangible assets. Intangible assets represent firm-specific rents such as growth opportunities and human capital, and they are usually more valuable to the firm itself than to other firms (John, 1993). Following this argument, we use two accounting measures for tangible and intangible assets to proxy for expected default/liquidation costs. The first measure, *Excess debt capacity,* is a firm-level tangibility measure based on Berger, Ofek and Swary (1996), which captures the expected asset liquidation value of a firm. Following Almeida and Campello (2007), we add the value of cash holdings in the original Berger, Ofek, and Sway measure, as their value is likely to be preserved in default states, similar to that of fixed assets. Furthermore, to account for the cross-sectional variation in the level of existing debt, we subtract the book value of total debt from the expected liquidation value of the firm (Hahn and Lee, 2009). As such, the higher the excess debt capacity, the more tangible the assets, and the lower the liquidation/default costs.[50] The second measure is the research and development expense scaled by total assets, which is a proxy for a firm's intangible assets.

Furthermore, Shleifer and Vishny (1992) also argue that firm-specific assets have low liquidation values, and this is particularly true if the firm's industry is in distress. Therefore, we also construct an industry-level measure for liquidation costs, *Industry asset specificity*, which equals 1 for firms with SIC codes between 3,400 and 4,000, and 0 otherwise. Presumably, firms that produce machines and equipment require specialized servicing and spare parts (John, 1993).

[50] Our results are similar if we include the level of total debt to proxy for firm-level tangibility.

4.3 Default clause restrictiveness and bankruptcy prediction

One may argue that default clauses are boilerplates in debt agreements and do not provide relevant information to market participants. The variations in default clauses shown in Table 4.1 challenge this claim and suggest that debtholders may rationally structure the default clauses to best protect their own interests. To further validate the importance of default clauses, we explore whether the restrictiveness of default clauses have predict power for bankruptcy. To the extent that more restrictive default clauses increase the likelihood that firms "default", one would expect a positive association between the restrictiveness of default clauses and the likelihood of bankruptcy.

To examine the relation between default clause restrictiveness and bankruptcy risk, we create a firm-level default clause index, capturing the overall restrictiveness of default clauses set in a firm's bond and loan agreements. Specifically, we value- weight the default clause index associated with each of the firm's outstanding bonds and loans. The weight is calculated as the bond/loan amount as percentage of the total debt. Then we match the sample with the Chapters 11 and 7 bankruptcy data to estimate the relation between the restrictiveness of default clauses and the probability of bankruptcy. Following Shumway (2001) and Beaver, Correia and McNichols (2012), we use a hazard model to estimate the bankruptcy risk. This model allows time-varying covariates, and it can increase the efficiency and reduce the bias of the estimated coefficients. The other explanatory variables for bankruptcy risk include accounting and market variables taken from Beaver, Correia and McNichols (2012).

Table 4.2 reports the estimation results for the hazard model of bankruptcy risk. Consistent with expectation, the default clause index is positive related to the likelihood of bankruptcy one year and two years ahead, which means firms with more restrictive default clauses are more likely to fail. The signs of the majority of control variables are also consistent with prior literature. For instance, larger firms are relatively safe, and firms with more liabilities are related to a higher likelihood of bankruptcy. The predictive power of the default clause index reduces as the time-horizon of bankruptcy increases. For instance, the coefficient on the default clause index is positive but insignificant when predicting bankruptcy three years ahead. However, at the same time, the predictive power of other important variables, such as firm size, also deteriorates over time.

4.4 Default clause restrictiveness and expected default costs

Our second set of analysis explores the determinants of the restrictiveness of default clauses, focusing on the effects of expected default costs. Our main empirical model is as follows:

$$\text{Default clause index} = f(\text{Proxies for expected default costs, Firm characteristics, Debt characteristics, Year indicators}) \quad (3)$$

Here, the dependent variable is the index created for bond or loan default clauses in Section 2.2. We use *Excess debt capacity* or *R&D* to measure firm-level default costs and *Industry asset specificity* to account for the default costs at the industry level. We control for firm characteristics, bond- or loan-specific characteristics, and year-fixed effects. We include year-fixed effects to account for the effects of macroeconomic conditions given the findings in the literature that investors require more compensation when aggregate default risk increases in bad economic times (Collin-Dufresne, Goldstein and Martin, 2001). Data definitions and measurement details for all variables are reported in Appendix B.

4.4.1 Effect of expected default costs on the restrictiveness of bond default clauses

Here, we first investigate the relation between expected default costs and default clause restrictiveness in the bond sample. Table 4.3 presents the average default clause index by industry in the bond sample. Industries with assets that are less redeployable, such as fabricated metal products and industry machinery/equipment are associated with a relatively low default clause index. On the other hand, the business services industry (two-digit SIC 73) which provides services in advertising, data processing and personnel supply relies mainly on human capital that is easily transferable to other industries. As a result, this industry has the highest default clause index. The cross-industry variation is generally consistent with the argument that a high level of industry asset specificity is negatively related to the restrictiveness of default clauses.

Panel A of Table 4.4 presents summary statistics for the final bond sample with information on firm and bond characteristics. The sample size falls from 4,627 to 2,932 bond issues because of the unavailability of firm-level or bond-level information. Nevertheless, the mean of the default clause index is 9.97, similar to that of the full sample of bonds in Table 4.1, suggesting that the bond sample for the regression analysis is representative of the full sample in terms of default clause restrictiveness. The average

bond size of the final sample is approximately $384 million, and the average bond maturity is about 12 years. The mean of the rating value is 7.50, corresponding to an investment-grade rating. Table 4.5 reports the regression results for the final bond sample. The regression in Column (1) includes firm characteristics that could influence the restrictiveness of default clauses. These variables include firm size, leverage, interest coverage, stock return volatility, market-to-book ratio, etc. The inclusion of these variables is driven by the agency theory (Jensen and Meckling, 1976; Myers, 1977; Smith and Warner, 1979), which argues that the conflict of interest between shareholders and debtholders will result in actions undertaken by managers that negatively affect the interest of debtholders. Examples of this are asset substitution, overinvestment and underinvestment. Debtholders rationally anticipate the potential for managers' opportunistic behaviour and will set restrictive covenants to reduce these agency costs. To the extent that covenant breach constitutes an important default clause, one would expect the agency costs to have effects on the structure of default clauses as well. Therefore, we include the variables used in prior literature (e.g., Bradley and Roberts, 2004) to capture the effect of different agency costs of debt on the restrictiveness of default clauses.

The results in Column (1) show that after controlling for firm characteristics, *Excess debt capacity* is positively and significantly related to the default clause index, suggesting that firms with lower expected costs of default are associated with more restrictive bond default clauses. Further, the coefficient on *Industry asset specificity* is negative and significant at the 1% level, indicating that higher industry-level default costs lead to less restrictive bond default clauses. The results also show that small, highly leveraged, volatile firms are related to more restrictive bond default clauses. These results are consistent with the argument that the agency costs of debt are inversely related to a firm's financial health (Bradley and Roberts, 2004).

We further control for bond characteristics that might affect the restrictiveness of bond default clauses and report the results in Column (2) of Table 4.5. We include an indicator variable *Prior Loan*, which takes the value of 1 if a firm has at least one outstanding loan when it issues a bond. Prior literature shows that bank loans have cross-monitoring effects on other debts (Datta, Datta and Patel, 1999). To the extent that banks monitor a firm's closeness to default for bondholders, bondholders can avoid the duplicate monitoring costs and loosen the default clauses in bond agreements. We also control for other bond-specific characteristics, such as bond rating, size, maturity and

covenants. For instance, rating agencies provide professional assessments of each firm's credit risk to the bondholders. Nevertheless, the factors that determine credit ratings are likely to be confounded with the variables that explain the restrictiveness of default clauses. To mitigate this concern, we regress credit ratings on the same set of firm and bond variables as Equation (3) and include the residuals obtained from these regressions as an additional control variable.

The regression results show that, after including the additional bond controls, the effects of *Excess debt capacity* and *Industry asset specificity* on the bond default clause restrictiveness remain significant. The coefficient of *Excess debt capacity* becomes significant at the 1% level. Further, consistent with the cross-monitoring hypothesis, the presence of prior loans leads to less restrictiveness bond default clauses. The regression results also show that the number of covenants is positively related to the restrictiveness of default clauses, consistent with that both covenants and default clauses can be used to reduce the agency conflicts between stockholders and bondholders.

In Columns (3) and (4) of Table 4.5, we explore whether the relation between expected default costs and default clause restrictiveness is robust to using an alternative firm level measure for expected costs of default — R&D expense. In the two regressions excluding and including bond characteristics, the coefficient on *R&D* is negative and significant at the 1% level, indicating that firms with more intangible assets, and therefore higher default costs, are associated with less restrictive default clauses.

To further understand the effect of different default costs on the specific structure of an individual default clause, we run the same regressions as above, with the condition on having a specific default clause. More precisely, we use the threshold amounts or grace periods of certain default clauses as dependent variables and run the analyses within the sample that include these default clauses in the bond agreements. While the power of these analyses lessens because of the significant drop in the sample sizes, we find interesting results regarding the threshold amounts of the cross-default clause and the grace period of the court judgment clause.

Column (1) of Table 4.6 reports the results for the regression that examines the relation between the threshold amount of the cross-default clause and the expected default costs. The coefficient on *Excess debt capacity* is negative and significant at the 10% level, suggesting that firms with lower firm-level default costs are associated with lower threshold amounts that would trigger a cross-default. We find no evidence that the industry-level default costs affect the threshold amounts. In Column (2) of Table 4.6, on

the other hand, we find a positive and significant association between *Industry asset specificity* and the grace period of the court judgment clause, indicating that the industry-level default costs are positively associated with the grace period. This could be because industries with higher specific assets are likely to experience defaults when the entire industry is in distress and therefore lengthen the time to find a reasonable buyer of the assets.

Taken together, the results presented in this section show that default costs are negatively related to the restrictiveness of default clauses set in bond agreements. These results imply that bondholders have incentives to delay or avoid actual defaults of firms with higher default costs. In the next section, we turn to our analysis of the relation between default costs and default clause restrictiveness of loans and explore whether banks have similar incentives as bondholders in structuring default clauses.

4.4.2 Effect of expected default costs on the restrictiveness of loan default clauses

Here, we examine the impact of default costs on the restrictiveness of loan default clauses using the same empirical model in Equation (3). For the loan-level controls, we include loan characteristics that proxy for credit risk, such as *Loan spread* or *Performance pricing,* to account for the influence of credit risk on the structure of default clauses. Further, we also control for the number of lenders in a debt agreement because the number of lenders is positively related to debt renegotiation costs (Smith and Warner, 1976). To the extent that the renegotiation cost constitutes part of the default costs, the number of lenders may also have an effect on the restrictiveness of default clauses.

Table 4.7 reports the results for the analyses on loan default clauses. In contrast to the results on the restrictiveness of default clauses in bond agreements, the coefficients of the proxies for expected bankruptcy costs are generally insignificant, consistent with the argument that banks have less incentive to avoid defaults because they are typically senior in the priority of claims, and the renegotiation costs are also lower among banks.

The coefficient on *Excess debt capacity* is negative and significant at the 5% level in Regression 1, indicating that firms with more tangible assets are related to less restrictive default clauses in loan agreements. This may be because banks rationally write default clauses to compensate for their credit losses in the events of default. If firms have more tangible assets, the recovery rate of their debt investment is higher. As a result, banks reduce the level of protection by setting less restrictive default clauses in loan agreements.

Furthermore, the coefficient of loan characteristics, such as loan size, maturity, performance pricing and covenants are positive and significant at the 1% level, suggesting that credit risk is positively related to the restrictiveness of default clauses.

4.4.3 Relation between the restrictiveness of bond and loan default clauses

To explore whether there is an interrelation between the default clauses set in a loan and bond agreement for the same firm, we construct a subsample of firms that issue a bond while having loans outstanding. To highlight the effect of loan default clauses on bond default clauses, we separate the loan default clause index into the part related to the nine common default clauses existing in both loan and bond agreements, *Loan_index_overlap*, and the part associated with the default clauses unique to loan agreements, *Loan_index_unique*.

Table 4.8 reports the results for the regressions that examine the effect of the loan default clauses on the restrictiveness of bond default clauses. The coefficient on *Loan_index_overlap* is insignificant. However, the coefficient on *Loan_index_unique* is positive and significant at the 1% level. When banks set additional default clauses in loan agreements, it appears that bondholders are likely to increase the restrictiveness of the default clauses in their bond agreements as well. This could be explained in so far as bondholders appear concerned that banks may take control of firms and sell off the firms' assets using additional default clauses without defaulting on existing bonds.

4.4.4 Robustness analyses

To show that our results are not sensitive to the way we measure the restrictiveness of default clauses, we construct two alternative default clause indexes for the bond sample. In the first alternative index, we count the number of default clauses that are included in a debt agreement. The rationale behind this index is that more default clauses increase the likelihood of violating one of them. The results regarding this first index are reported in Columns (1) and (2) of Table 4.9. The signs on the coefficients of *Excess debt capacity*, *R&D* and *Industry asset specificity* are consistent with the hypothesis that default costs are negatively related to the restrictiveness of bond default clauses. For the second alternative index, we aggregate the individual scores for the default clauses that exist in both loan and bond agreements. Columns (3) and (4) present the corresponding results. The negative effect of default costs on the bond default clause restrictiveness remains robust to this alternative measure.

4.5 Conclusion

In this paper, we provide novel evidence on default clauses in debt contracts. Default clauses exhibit significant cross-sectional variations in both bond and loan agreements and are generally more restrictive in loan agreements. Cross-sectionally, we document two sets of results. First, the overall restrictiveness of default clauses at the firm level is positively associated with the borrowing firm's bankruptcy risk. Second, the expected costs of default are an important determinant of the restrictiveness of default clauses in the bond contracts, but not in the loan sample. The different effects could be due to the lower claim priority of bonds and the higher renegotiation costs of bonds.

Appendix A: Examples of default clauses

Common default clauses:

1. Events of bankruptcy clause
   Example: "Certain events of bankruptcy, insolvency or reorganization of Kohl's Corporation";

2. Principal payment clause
   Example: "Default in the payment of principal or premium, if any, when due";

3. Interest payment clause
   Example: "Our failure for 30 days to pay interest when due on the debentures";
4. Covenant breach clause

   Example: "Default in the performance of, or breach of, any other covenant or warranty contained in the indenture for the benefit of debt securities of that series, which default continues for 90 days after written notice by the trustee or by the holders of at least 25% in aggregate principal amount of outstanding debt securities of that series";
5. Cross-default clause
   Example: "default for 10 days after notice as provided in the Indenture, in respect of any other indebtedness for borrowed money of the Company or any Restricted Subsidiary in excess of $10,000,000 that has been declared due and payable prior to maturity";

6. Court judgment clause
   Example: "A final judgement or judgments that exceed $5,000,000 or more in the aggregate, for the payment of money, having been entered by a court or courts of competent jurisdiction against the Company or any of its subsidiaries and such judgment or judgments are not satisfied, stayed, annulled or rescinded within 60 days of being entered";

7. Invalid guarantees clause
   Example: "any of the Guarantees cease to be in full force and effect or any of the Guarantees are declared to be null and void or invalid and unenforceable or any of the Subsidiary Guarantors denies or disaffirms its liability under its Guarantees (other than by reason of release of a Subsidiary Guarantor in accordance with the terms of the Indenture";

8. Non-debt liabilities clause
   Example: "Failure or refusal to pay when due any taxes, assessments, insurance, claims, liens or encumbrances upon our facilities securing the bonds of such series, or to maintain such facilities in good repair, or to cure the breach of any other covenant set forth in the trust indenture as to such series of bonds";

9. Report of change clause
   Example: "we fail to provide notice of the occurrence of a fundamental change as required by the indenture";

Unique bond default clauses:

1. Sinking fund clause
   Example: "default in the deposit of any sinking fund payment when due, which default continues for 30 days";

2. Redemption clause
   Example: "default in our obligation to redeem the Notes after we have exercised our option to redeem";

3. Conversion clause
   Example: "a default in our obligation to deliver the settlement amount on conversion of the Notes, together with cash in lieu thereof in respect of any fractional shares, on conversion of any Notes and such default continues for a period of 5 days or more";

Unique loan default clauses:

1. Pension clause
   Example: "(i) Pension Plans. Any of the following events shall occur with respect to any Pension Plan: (i) the institution of any steps by the Company, any member of its Controlled Group or any other Person to terminate a Pension Plan if, as a result of such termination, the Company or any such member could reasonably expect to be required to make a contribution to such Pension Plan, or could reasonably expect to incur a liability or obligation to such Pension Plan or the PBGC, in excess of $75,000,000; or (ii) a contribution failure occurs with respect to any Pension Plan which gives rise to a Lien under Section 302(f) of ERISA with respect to a liability or obligation in excess of $75,000,000";

2. Change in control clause
   Example: "any Change in Control occurs, and the Co-Administrative Agents and the Banks notify the Company within thirty (30) days after first being notified by the Company of the Change in Control that the Co-Administrative Agents and the Banks do not consent to the Change in Control";

3. Pending litigation clause
   Example: "Notice is given to the Borrower by the Agent or any Bank that, in the opinion of the Agent or such Bank, any litigation or governmental proceeding which has been instituted against the Borrower or any Subsidiary will reasonably be likely to have a Material Adverse Effect, and within thirty (30) days after such notice (i) such litigation or proceeding is not dismissed or (ii) an opinion of the Borrower's or the affected Subsidiary's trial counsel shall not have been received by each Bank, in form and substance satisfactory to each Bank, that the Borrower or the affected Subsidiary has a meritorious position and will ultimately prevail in the Proceedings";

Appendix B: Variable definition

Variable	Definition
Default clause index	sum of the individual scores for default clauses included in a debt agreement
Firm size	log(total assets)
Leverage	long-term debt / total assets
Interest coverage	operating income before depreciation / interest expense
Stock return volatility	standard deviation of monthly stock return in the past 12 months of the bond issuance or loan origination
Market-to-book	market value of a firm's equity / the book value of a firm's equity
EDF	Moody's KMV expected default frequency measure
Industry asset specificity	indicator variable equals to 1 for firms with SIC codes between 3400 and 4000
Excess debt capacity	(cash holdings + 0.715*receivable + 0.547*inventory + 0.535*PPE - total debt) / total assets
R&D	R&D expense / total assets
Prior loan	indicator variable equals to 1 if a firm has outstanding loan when it issues a bond
Rating	numeric values assigned to bond ratings offered by S&P's or Moody's, ranging from 1 to 20 with the AAA rating equal to one
Offering size	face value of a bond
Maturity	difference between the issue date and the maturity date
Number of covenants	number of covenants included in a bond/loan
NROAI	indicator variable equal to 1 if the return on assets (ROA) is negative
ROA	return on assets, defined as earnings before interest scaled by lagged assets
LTA	ratio between total liabilities and total assets
ETL	net income before interest, taxes depreciation, depletion and amortization divided by total liabilities
LERET	prior year's security returns, where security returns are calculated over a 12-month period ending with the third month after the end of the fiscal year
LSIGMA	standard deviation of the residual return from a regression of the security's monthly return on the return of the market portfolio (the return for a 12-month period ending with the third month of the fiscal year is used in this regression)
LRSIZE	logarithm of the market capitalization as of the end of the third month after the end of the fiscal year, divided by the market capitalization of the market index of NYSE, AMEX and NASDAQ firm
Loan_index_overlap	sum of the nine common default clauses included in loans and bonds
Loan_index_unique	sum of the scores for pending litigation, change of control, and pension-related default clauses in loan agreements
Bond/Loan size	natural logarithm of a bond/loan's offering amount
Loan spread	amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down
Performance pricing	indicator variable equal to 1 if a loan has performance pricing provision
Number of lenders	number of lenders originates a loan

Figure 4.1: Time plot of default clause index

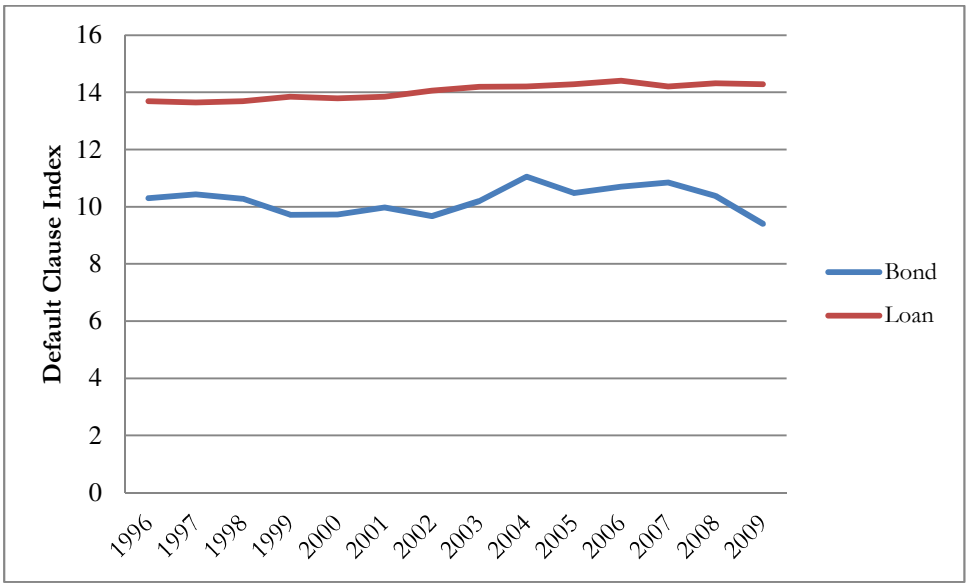

Table 4.1: Descriptive evidence of default clauses

Panel A: Individual score for each clause

	Bond						Loan					
Default clause	**N**	**Freq. (%)**	**Mean**	**Minimum**	**Median**	**Maximum**	**N**	**Freq. (%)**	**Mean**	**Minimum**	**Median**	**Maximum**
Common clause												
Events of bankruptcy	4,627	100	2.00	2.00	2.00	2.00	9,361	100	1.76	1.00	1.75	2.00
Principal payment	4,627	100	1.98	1.00	2.00	2.00	9,361	100	1.98	1.00	2.00	2.00
Interest payment	4,627	100	1.63	1.00	1.67	2.00	9,361	100	1.96	1.33	1.97	2.00
Covenant breach	4,627	100	1.41	1.00	1.50	2.00	9,361	100	1.95	1.25	2.00	2.00
Cross-default	4,627	51.52	0.96	0.00	1.64	2.00	9,361	94.66	1.84	0.00	1.97	2.00
Court judgment	4,627	10.15	0.17	0.00	0.00	2.00	9,361	91.51	1.65	0.00	1.82	2.00
Invalid guarantees	4,627	8.23	0.08	0.00	0.00	1.00	9,361	28.31	0.28	0.00	0.00	1.00
Non-debt liabilities	4,627	0.60	0.01	0.00	0.00	1.00	9,361	0.10	0.00	0.00	0.00	1.00
Report of change	4,627	0.23	0.00	0.00	0.00	1.00	9,361	0.10	0.00	0.00	0.00	1.00
Bond-specific clause												
Sinking fund	4,627	62.45	1.20	0.00	2.00	2.00						
Redemption	4,627	41.19	0.81	0.00	0.00	2.00						
Conversion	4,627	0.84	0.01	0.00	0.00	2.00						
Loan-specific clause												
Pension							9,361	94.80	1.84	0.00	2.00	2.00
Change in control							9,361	70.88	0.71	0.00	1.00	1.00
Pending litigation							9,361	1.92	0.04	0.00	0.00	2.00
Default clause Index	4,627	100	10.28	6.25	10.55	16.00	9,361	100	14.01	7.19	14.27	17.78

Panel B: Grace period (days)

	Bond						Loan					
Default clause	**N**	**Mean**	**Minimum**	**Median**	**Maximum**	**Std. Dev.**	**N**	**Mean**	**Minimum**	**Median**	**Maximum**	**Std. Dev.**
Common clause												
Events of bankruptcy	4,627	0	0	0	0	0	9,361	29	0	30	120	29
Principal payment	4,627	1	0	0	30	2	9,361	0.58	0	0	30	2
Interest payment	4,627	33	0	30	90	13	9,361	4	0	3	60	5
Covenant breach	4,627	71	0	60	120	19	9,361	6	0	0	90	12
Cross-default	2,384	17	0	10	90	16	8,861	1	0	0	90	6
Court judgment	470	55	0	60	120	17	8,566	34	0	30	120	18
Bond-specific clause												
Sinking fund	2,890	6	0	0	90	16						
Redemption	1,906	2	0	0	90	8						
Conversion	39	52	0	60	90	40						
Loan-specific clause												
Pending litigation							180	14	0	0	120	23

Panel C: Threshold amount (percentage of total assets)

	Bond						Loan					
Default clause	**N**	**Mean**	**Minimum**	**Median**	**Maximum**	**Std. Dev.**	**N**	**Mean**	**Minimum**	**Median**	**Maximum**	**Std. Dev.**
Common clause												
Cross-default	2,384	0.60	0.00	0.20	5.70	1.00	8,861	0.78	0.00	0.41	8.40	1.18
Court judgment	470	1.20	0.00	0.70	8.40	1.40	8,566	0.94	0.00	0.57	7.72	1.19
Loan-specific clause												
Pension							8,874	0.40	0.00	0.00	6.56	0.86

Table 4.2: The predictive ability of firm level default clause index for bankruptcy

This table presents the results for a hazard model for the sample of observations with firm level default clause index. We construct the firm level default clause index as a valued-weighted average of the default clause indexes associated with a firm's outstanding loans and bonds. The dependent variable is either one if the firm is bankrupt in a given year. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Panel A: Predict bankruptcy one-year ahead

	Coefficients	Chi-square	p-value
Default clause index	0.08***	23.76	<.0001
ROA	0.04	0.01	0.955
LTA	3.30***	114.10	<.0001
ETL	0.37	1.53	0.216
NROAI	0.69**	5.19	0.022
LRSIZE	-0.18***	11.24	0.001
LERET	-0.37***	8.54	0.003
LSIGMA	5.42***	46.46	<.0001
N	33,481		
Adjusted R^2	0.21		

Panel B: Predict bankruptcy two-year ahead

	Coefficients	Chi-square	p-value
Default clause index	0.03**	4.65	0.031
ROA	-2.36**	4.68	0.030
LTA	3.13***	84.78	<.0001
ETL	0.24	0.47	0.492
NROAI	-0.89*	3.78	0.051
LRSIZE	-0.09*	3.62	0.057
LERET	-0.92***	20.42	<.0001
LSIGMA	1.72	2.56	0.109
N	27,817		
Adjusted R^2	0.10		

Panel C: Predict bankruptcy three-year ahead

	Coefficients	Chi-square	p-value
Default clause index	0.01	1.50	0.219
ROA	-2.00*	3.02	0.082
LTA	2.59***	52.51	<.0001
ETL	0.27	0.57	0.450
NROAI	-0.31	0.48	0.486
LRSIZE	0.01	0.01	0.991
LERET	-0.04	0.14	0.704
LSIGMA	2.76**	6.21	0.012
N	24,573		
Adjusted R^2	0.05		

Table 4.3: Default clause index by industry

This table presents the default clause index of bonds by the first two-digits of standard industry classification (SIC) code.

SIC	Industry name	Freq.	Default clause index
10	Metal mining	25	10.80
13	Oil and gas extraction	190	11.13
15	General building contractors	89	10.96
20	Food and kindred products	211	9.68
26	Paper products	54	9.98
27	Printing and publishing	52	10.04
28	Chemicals products	381	9.24
29	Petroleum and coal products	123	9.80
33	Primary metal industry	42	10.48
34	Fabricated metal products	45	9.10
35	Industry machinery & equipment	113	9.63
36	Electronic equipment	97	9.82
37	Transportation equipment	203	9.68
38	Instrument products	55	10.26
40	Railroad transportation	93	9.89
42	Trucking and warehousing	216	11.20
45	Transportation by air	86	8.12
48	Communications	279	9.93
49	Electric, gas and sanitary services	922	9.23
50	Wholesale durable goods	36	10.36
51	Wholesale non-durable goods	49	9.62
53	General merchandise stores	103	9.69
54	Food stores	58	11.55
58	Eating and drinking places	26	10.41
59	Miscellaneous retailing	31	11.76
73	Business services	745	12.42
79	Recreation services	26	12.07
80	Health services	37	10.62

Table 4.4: Descriptive statistics

Panel A: Summary statistics

This panel provides summary statistics for the final bond sample with information on firm and bond characteristics. Please see Appendix B for variable definitions.

Variable	N	Minimum	Mean	Maximum	Std. Dev.
Default clause index	2,932	6.25	9.97	16.00	1.83
Firm size	2,932	3.54	9.30	13.45	1.33
Leverage	2,932	0.00	0.25	0.63	0.13
Interest coverage	2,932	0.82	12.55	68.32	12.98
Stock return volatility	2,932	0.02	0.08	0.57	0.04
Market-to-book	2,932	0.92	1.89	4.78	0.83
EDF	2,932	0.01	0.32	33.71	1.26
Industry asset specificity	2,932	0.00	0.14	1.00	0.34
Excess debt capacity	2,932	-0.39	0.11	0.53	0.19
R&D	2,932	0.00	0.01	0.13	0.03
Prior loan	2,932	0.00	0.83	1.00	0.38
Rating	2,932	1.00	7.50	16.00	3.23
Offering size ($thousands)	2,932	65.00	384,423	2,000,000	386,153
Maturity	2,932	2.00	12.26	40.00	8.97
Number of covenants	2,932	0.00	4.79	18.00	3.28

Panel B: Pearson correlations

	Default clause index	Firm size	Leverage	Interest coverage	Stock return volatility	Market-to-book	EDF	Industry asset specificity	Excess debt capacity	R&D expense	Prior loan	Rating	Offering size	Maturity
Firm size	-0.36***													
Leverage	0.16***	-0.25***												
Interest coverage	-0.05***	0.18***	-0.56***											
Stock return volatility	0.09***	-0.19***	0.19***	-0.04***										
Market-to-book	-0.01	0.09***	-0.34***	0.56***	-0.17***									
EDF	0.10***	-0.13***	0.24***	-0.14***	0.45***	-0.16***								
Industry asset specificity	-0.09***	-0.08***	-0.19***	0.05***	0.07***	-0.01	0.01							
Excess debt capacity	0.01	0.04***	-0.72***	0.51***	-0.09***	0.29***	-0.16***	0.05***						
R&D	-0.22***	0.12***	-0.34***	0.32***	0.08***	0.26***	-0.04**	0.42***	0.19***					
Prior loan	-0.15***	-0.03**	0.16***	-0.17***	0.18***	-0.21***	0.06***	0.03***	-0.22***	0.10***				
Rating	0.29***	-0.47***	0.50***	-0.45***	0.38***	-0.52***	0.28***	0.02	-0.37***	-0.15***	0.33***			
Offering size	-0.16***	0.37***	-0.09***	0.05***	-0.01	-0.01	-0.02	0.01	-0.03**	0.08***	0.15***	0.01		
Maturity	-0.04**	-0.03*	-0.0146	-0.03*	-0.10***	-0.01	-0.06***	0.01	0.08***	-0.01	-0.05***	-0.08***	0.05***	
Number of covenants	0.39***	-0.51***	0.26***	-0.21***	0.30***	-0.20***	0.21***	0.12***	-0.17***	-0.03*	0.23***	0.62***	0.14***	0.02

Table 4.5: The role of expected default costs in the design of bond default clauses

This table presents the regression results for the relation between expected default cost and the restrictiveness of bond default clauses. The dependent variable is default clause index of a bond, calculated as the sum of the score for individual default clause in a bond prospectus. Please see Appendix B for variable definition. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Dependent variable	**Bond default clause index**			
	(1)	**(2)**	**(3)**	**(4)**
Firm characteristics				
Excess debt capacity	1.03*	1.17***		
	(1.75)	(2.66)		
R&D			-9.09***	-8.17***
			(-3.29)	(-4.17)
Industry asset specificity	-0.40***	-0.53***	-0.20	-0.35**
	(-2.70)	(-4.03)	(-1.20)	(-2.40)
Firm size	-0.46***	-0.18***	-0.46***	-0.20***
	(-9.29)	(-4.14)	(-9.46)	(-4.43)
Leverage	2.46***	1.86***	1.25**	0.60
	(3.00)	(2.82)	(2.40)	(1.28)
Interest coverage	0.00	-0.00	0.01	0.00
	(0.13)	(-0.35)	(1.13)	(0.99)
Stock return volatility	5.14***	1.39	6.52***	2.99**
	(2.65)	(1.17)	(3.96)	(2.49)
Market_to_book	-0.03	-0.06	0.01	-0.02
	(-0.31)	(-0.85)	(0.14)	(-0.28)
EDF	0.02	-0.01	0.01	-0.02
	(0.46)	(-0.35)	(0.20)	(-0.72)
Bond characteristics				
Prior loan		-0.60***		-0.56***
		(-3.54)		(-3.62)
Rating residual		0.10***		0.10***
		(3.80)		(4.10)
Bond size		-0.17***		-0.16***
		(-4.45)		(-4.51)
Maturity		-0.01***		-0.01*
		(-2.80)		(-1.74)
Number of covenants		0.27***		0.25***
		(15.67)		(13.55)
Year indicators	Included	Included	Included	Included
N	2,929	2,929	2,995	2,995
Adjusted R^2	0.27	0.45	0.29	0.45

Table 4.6: The role of expected default costs in setting individual default clauses

This table reports the regression results for the effects of expected default costs on the minimum amount of the cross-default clause and the grace period of the court judgement clause. Please see Appendix B for variable definition. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Dependent variable	Threshold amount of cross-default Clause (1)	Grace period of court judgment clause (2)
Firm Characteristics		
Excess debt capacity	-0.01*	-0.43
	(-1.84)	(-0.08)
Industry asset specificity	0.00	8.60***
	(0.28)	(4.01)
Firm size	-0.01***	-0.81
	(-12.29)	(-0.82)
Leverage	-0.01	2.11
	(-1.13)	(0.28)
Interest coverage	-0.00	0.12
	(-1.41)	(0.97)
Stock return volatility	-0.01	9.60
	(-1.24)	(0.52)
Market-to-book	0.00***	-2.49*
	(4.72)	(-1.93)
EDF	0.00	-0.15
	(0.53)	(-0.42)
Bond characteristics		
Prior loan	-0.00	3.76*
	(-0.14)	(1.76)
Rating residual	0.00	0.52
	(0.52)	(1.43)
Bond size	0.00***	0.75
	(4.44)	(0.73)
Maturity	-0.00	-0.03
	(-0.08)	(-0.27)
Number of covenants	-0.00	0.18
	(-1.04)	(0.83)
Grace period of cross-default clause	0.00	
	(0.07)	
Minimum amount of court-order clause		-5.75
		(-0.08)
Year indicators	Included	Included
N	1,168	335
Adjusted R^2	0.43	0.16

Table 4.7: The relation between expected default costs and loan default clauses

This table presents the regression results for the relation between expected default costs and the restrictiveness of loan default clauses. The dependent variable is loan default index, calculated as the sum of the score for individual default clause in loan agreements. Please see Appendix B for variable definition. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Dependent variable	**Loan default clause index**	
	(1)	**(2)**
Firm characteristics		
Excess debt capacity	-0.29**	
	(-2.41)	
R&D		-0.75
		(-1.57)
	(-0.22)	(0.04)
Industry asset specificity	0.05	0.07
	(1.02)	(1.47)
	(-1.34)	(0.39)
Interest coverage	0.00	0.00
	(1.06)	(0.58)
Stock return volatility	0.08	0.03
	(0.34)	(0.12)
Market-to-book	-0.01	-0.00
	(-0.39)	(-0.04)
EDF	-0.00	0.00
	(-0.01)	(0.56)
Loan characteristics		
Loan spread	-0.00	-0.00
	(-0.42)	(-0.22)
Loan size	0.08***	0.08***
	(2.96)	(2.87)
Maturity	0.00***	0.00***
	(3.35)	(3.42)
Performance pricing	0.13***	0.12***
	(2.94)	(2.80)
Number of lenders	-0.00	-0.00
	(-0.88)	(-0.55)
Number of covenants	0.07***	0.07***
	(12.57)	(12.64)
Year indicators	Included	Included
N	6,673	6,785
Adjusted R^2	0.11	0.11

Table 4.8: The impact of loan default clauses on bond default clauses

This table presents the results for the regressions that control for the restrictiveness of loan default clauses in the bond sample. The sample size decreases as we restrict the analysis to firms that have both bond and loan default clauses. The dependent variable is the default clause index of a bond, calculated as the sum of the score for individual default clause in a bond prospectus. Please see Appendix B for variable definition. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Dependent variable	**Bond default clause index**	
	(1)	**(2)**
Firm characteristics		
Loan_index_overlap	0.13	0.12
	(1.59)	(1.49)
Loan_index_unique	0.28***	0.27**
	(2.60)	(2.47)
Excess debt capacity	0.15	
	(0.30)	
R&D		-8.31***
		(-2.90)
Industry asset specificity	-0.51***	-0.27
	(-2.83)	(-1.23)
Firm size	-0.17***	-0.17***
	(-2.70)	(-2.66)
Leverage	0.10	-0.14
	(0.11)	(-0.23)
Interest coverage	-0.01	-0.00
	(-1.18)	(-0.62)
Stock return volatility	3.18**	3.44**
	(2.06)	(2.22)
Market-to-book	-0.11	-0.07
	(-1.31)	(-0.90)
EDF	-0.01	-0.01
	(-0.40)	(-0.47)
Bond characteristics		
Rating residual	0.13***	0.13***
	(4.15)	(4.26)
Bond size	-0.03	-0.02
	(-0.51)	(-0.26)
Maturity	-0.01	-0.01
	(-1.61)	(-1.16)
Number of covenants	0.26***	0.25***
	(12.15)	(11.37)
Year indicators	Included	Included
N	1,260	1,288
Adjusted R^2	0.46	0.46

Table 4.9: Alternative default clause index

This table reports the regression results for the role of expected default costs in the design of default clauses using alternative default clause indexes. In Column (1) and (2), the default clause index is the count of default clauses in bond prospectuses. In Column (3) and (4), the default clause index is constructed as the sum of the scores for the clauses that exist both in bond prospectuses and loan agreements. Please see Appendix B for variable definition. The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

Dependent variable	**Number of clauses**		**Default clause index of common clauses**	
	(1)	**(2)**	**(3)**	**(4)**
Firm characteristics				
Excess debt capacity	0.13**		0.87**	
	(2.39)		(2.30)	
R&D		-1.08***		-4.85***
		(-3.70)		(-3.00)
Industry asset specificity	-0.06***	-0.04*	-0.45***	-0.37***
	(-3.55)	(-1.83)	(-4.28)	(-3.26)
Firm size	-0.01**	-0.01**	-0.23***	-0.25***
	(-2.39)	(-2.56)	(-5.48)	(-5.97)
Leverage	0.19**	0.04	1.64***	0.73*
	(2.28)	(0.75)	(2.74)	(1.68)
Interest coverage	-0.00	0.00	-0.00	0.00
	(-0.20)	(1.06)	(-0.45)	(0.55)
Stock return volatility	-0.03	0.13	3.69***	5.21***
	(-0.20)	(0.90)	(3.69)	(4.65)
Market-to-book	0.00	0.01	-0.17**	-0.15*
	(0.16)	(0.69)	(-2.27)	(-1.94)
EDF	-0.00	-0.00	-0.02	-0.03
	(-0.26)	(-0.53)	(-0.77)	(-1.30)
Bond characteristics				
Prior loan	-0.08***	-0.07***	-0.34***	-0.36***
	(-3.65)	(-3.70)	(-2.76)	(-2.96)
Rating residual	0.01***	0.01***	0.08***	0.09***
	(3.75)	(3.93)	(3.62)	(3.90)
Bond size	-0.02***	-0.02***	-0.10***	-0.08***
	(-3.66)	(-3.88)	(-3.87)	(-3.36)
Maturity	-0.00**	-0.00	-0.01***	-0.01*
	(-2.11)	(-1.21)	(-2.64)	(-1.73)
Number of covenants	0.03***	0.03***	0.25***	0.23***
	(12.28)	(11.62)	(16.10)	(12.76)
Year indicators	Included	Included	Included	Included
N	2,929	2,995	2,929	2,995
Adjusted R^2			0.54	0.53

5 Conclusion

In this thesis, I have presented research on accounting information and debt markets. The first chapter provided a brief introduction. The second chapter examined the role of litigation contingency disclosure in debt contracting. Empirical evidence was presented showing that firms which disclose litigation contingencies are associated with a higher likelihood of accessing the public debt market. When accessing the public debt market, the decision to disclose litigation contingencies leads to higher bond yields and a higher likelihood of including default clauses pertaining to court judgments. However, conditioning on disclosing litigation contingencies, the high disclosure level reduces the yields. In the third chapter, the certification hypothesis was tested empirically by examining the role of reputable auditors and underwriters in the bond market. The evidence showed that reputable auditors and underwriters not only assist bond issuers in obtaining lower bond yields but also help issuers borrow more and for longer periods. In the fourth chapter, default clauses in debt contracts were examined. Using a comprehensive sample of bond and syndicated loan contracts, it was shown that that the restrictiveness of default clauses in both loan and bond contracts predict firm bankruptcies one and two years ahead. Furthermore, firms with higher expected bankruptcy costs receive fewer restrictive default clauses. This effect is particularly strong for bond agreements.

Bibliography

[1] Acharya, V.V., Bharath, S.T. and Srinivasan, A., 2007. Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries. *Journal of Financial Economics* 85, 787-821.

[2] Aghion, P. and Bolton, P., 1992. An incomplete contracts approach to financial contracting. *Review of Economic studies* 59, 473-494.

[3] Ahmed, A.S., Billings, B.K., Morton, R.M., and Stanford-Harris, M., 2002. The role of accounting conservatism in mitigating bondholder–shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review* 77, 867–890.

[4] Ahmed, A., Rasmussen, S., and Tse, S. 2008. Audit quality, alternative monitoring mechanisms, and cost of capital: An empirical analysis*, Working Paper*. College Station: Texas A&M University.

[5] Alderson M.J. and Betker, B.L., 1996. Liquidation costs and accounting data. *Financial Management* 25, 25-36.

[6] Alexander, J.C., 1991. Do the merits matter? A study of settlements in securities class actions. *Stanford Law Review* 43, 497-588.

[7] Almeida, H. and Campello, M., 2007. Financial constraints, asset tangibility, and corporate investment. Review *of Financial Studies* 20, 1429-1460.

[8] Almutairi, A. R., Dunn, K., and Skantz, T., 2009. Auditor tenure, auditor specialization, and information asymmetry. *Managerial Auditing Journal* 24, 600-623.

[9] Altman, E.I., 1984. A further empirical investigation of the bankruptcy cost question. *Journal of Finance* 39, 1067- 1089.

[10] Ang, J.S., Chua, J.H. and McConnell. J.J., 1982. The administrative costs of corporate bankruptcy: a note. *Journal of Finance* 37, 219-226.

[11] Angrist, J.D. and Pischke, J., 2009. Most Harmless Econometrics: An Empiricist's Companion. *Princeton University Press*.

[12] Armstrong, C.S., Guay, W.R., and Weber, J. P., 2010. The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics* 50, 179-234.

[13] Ball, R., Bushman, R.M., and Vasvari, F.P., 2008. The debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research* 46, 247–287.

[14] Balsam, S., Krishnan, J., and Yang, Y. S., 2003. Auditor industry specialization and earnings quality. *Auditing: A Journal of Practice and Theory* 22, 71-97.

[15] Balvers, R. J., McDonald, B., and Miller, R. E., 1988. Underpricing of new issues and the choice of auditor as a signal of investment banker reputation. *The Accounting Review* 63, 605-622.

[16] Barry, C.B. and Brown, S.J., 1984. Differential information and the small firm effect. *Journal of Financial Economics* 13, 283–294.

[17] Barry, C.B. and Brown, S.J., 1985. Differential information and security market equilibrium. *Journal of Financial and Quantitative Analysis* 20, 407–422.

[18] Barth, M.E., and McNichols, M.F., 1994. Estimation and market valuation of environmental liabilities relating to superfund sites. *Journal of Accounting Research* 32, 177–209.

[19] Barth, M.E., McNichols, M.F., and Wilson, G.P., 1997. Factors influencing firms' disclosures about environmental liabilities. *Review of Accounting Studies* 2, 35-64.

[20] Baxter, N.D., 1967. Leverage, risk of ruin and the cost of capital. *Journal of Finance* 22, 395-403.

[21] Beatty, R. P., and Ritter, J. , 1986. Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics* 15, 213-232.

[22] Beatty, A., Weber, J., and Yu, J.J., 2008. Conservatism and debt. *Journal of Accounting and Economics* 45, 154–174.

[23] Beatty, R. P., and Welch, I., 1996. Issuer expenses and legal liability in initial public offerings. *Journal of Law and Economics* 39, 545-602.

[24] Beaver, W.H., Correia, M. and McNichols. M.F., 2012. Do differences in financial reporting attributes impair the predictive ability of financial ratios for bankruptcy? *Review of Accounting Studies* 2012.

[25] Bebchuk, L. A. and Fried, J. M., 1996. The uneasy case for the priority of secured claims in bankruptcy. *The Yale Law Journal* 105, 857-934.

[26] Beneish, M.D. and Press. E., 1995. Interrelation among events of default. *Contemporary Accounting Research* 12, 57-84.

[27] Bens, D.A., 2002. The determinants of the amount of information disclosure about corporate restructurings. *Journal of Accounting Research* 40, 1-20.

[28] Berger, P., Ofek, E., and Swary. I., 1996. Investor valuation and abandonment option. Journal of Financial Economics 42, 257-287.

[29] Bessembinder, H., and Maxwell, W. , 2008. Transparency and the corporate bond market *Journal of Economic Perspectives* 22, 217-234.

[30] Beyer, A., Cohen, D.A., Lys, T.Z., and Walther, B.R., 2010. The financial reporting environment: review of the recent literature. *Journal of Accounting and Economics* 50, 296-343.

[31] Bharath, S. T., Sunder, J., and Sunder, V.S., 2008. Accounting quality and debt contracting. *The Accounting Review* 83, 1–28.

[32] Bhattacharya, S. and Chisea, G., 1995. Proprietary information, financial intermediation, and research incentives. *Journal of Financial Intermediation* 4, 328–357.

[33] Bhojraj, S., Charles, M., Lee, C., and Oler, D.K., 2003. What's my line? A comparison of industry classification schemes for capital market research. *Journal of Accounting Research* 41, 745-774.

[34] Blacconiere, W.G. and Patten, D.M., 1994. Environmental disclosures, regulatory costs, and changes in firm value. *Journal of Accounting and Economics* 18, 357-377.

[35] Black, F. and Scholes, M., 1973. The Pricing of Options and Corporate Liabilities. *Journal of Political Economy* 81, 637–54.

[36] Booth, J. R., and Smith, R.L., 1986. Capital raising, underwriting and the certification hypothesis. *Journal of Financial Economics* 15, 261-281.

[37] Botosan, C.A., 1997. Disclosure level and the cost of equity capital. *The Accounting Review* 72, 323–349.

[38] Botosan, C.A and Plumlee, M.A, 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40, 21–40.

[39] Bradley, M. and Roberts, M.R., 2004. The structure and pricing of corporate debt covenants. *Working Paper.*

[40] Bris, A., Welch, I., and Zhu. N., 2006. The costs of bankruptcy: Chapter 7 Liquidation versus Chapter 11 Reorganization. *Journal of Finance* 61, 1253-1303.

[41] Brockman, P., Martin, X., and Unlu, E., 2010. Executive compensation and the maturity structure of corporate debt. *Journal of Finance* 3, 1123-1161.

[42] Brown, S., 1979. The effect of estimation risk on capital market equilibrium. *Journal of Financial and Quantitative Analysis* 14, 215–220.

[43] Carroll, S.J., Hensler D., Gross, J., Sloss, E. M., Schonlau, M., Abrahamse, and A., Ashwood, J. S. 2005. Asbestos Litigation Costs and Compensation. *Santa Monica, CA: RAND Corporation*

[44] Campbell, K., Sefcik, S.E., and Soderstrom, N.S., 2003. Disclosure of private information and reduction of uncertainty: environmental liabilities in the chemical industry. *Review of Quantitative Finance and Accounting* 21, 349-378.

[45] Chaney, P. K., Jeter, D. C., and Shivakumar, L., 2004. Self-selection of auditors and audit pricing in private firms. *Accounting Review* 79, 51-72.

[46] Chemmanur, T. J., and Fulghieri, P., 1994. Investment bank reputation, information production, and financial intermediation. *Journal of Finance* 49, 57-79.

[47] Collin-Dufresne, P., Goldstein R.S., and Martin. J.S., 2001. The determinants of credit spread changes. *Journal of Finance* 56, 2177-2207.

[48] Craswell, A. T., Francis, J. R., and Taylor, S.L., 1995. Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics* 20, 297-322.

[49] Datta, S., Datta, M.I. and Patel. A., 1999. Bank monitoring and the pricing of corporate public debt. *Journal of Financial Economics* 51, 435-449.

[50] Datta, S., Iskandar-Datta, M., and Raman, K., 2005. Managerial stock ownership and the maturity structure of corporate debt. *Journal of Finance* 60, 2333-2350.

[51] DeAngelo, L. ,1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3, 183-200.

[52] Dechow, P.M., Sloan, R., and Sweeney, A. 1995. Detecting earnings management. *The Accounting Review* 70 (2), 193-225.

[53] De Franco, G., Vasvari, F. P., and Wittenberg-Moerman, R., 2009. The informational role of bond analysts. *Journal of Accounting Research* 47, 1201-1248.

[54] De Long, J. B., 1991. Did J.P. Morgan's men add value? An economist's perspective on financial capitalist. In P. Temin ,Ed., Inside the business enterprise: Historical perspectives on the use of information. Chicago, IL: *University of Chicago Press*.

[55] Dewatripont, M. and Tirole. J., 1994. A theory of debt and equity: diversity of securities and manager-shareholder congruence. *Quarterly Journal of Economics* 109, 1027-1054.

[56] Dhaliwal, D. D., Khurana, I. K., and Pereira, R. 2010. Firm disclosure policy and the choice between private and public debt. *Contemporary Accounting Research* 28, 293-330.

[57] Diamond, D. W. and Verrecchia, R.E., 1991. Disclosure, liquidity, and the cost of capital. *Journal of Finance* 46, 1325-1359.

[58] Dichev, I.D. and Skinner. D.J., 2002. Large-sample evidence on the debt covenant hypothesis. *Journal of Accounting Research* 40, 1091-1123.

[59] Duffie, D. and Lando, D., 2001. Term structures of credit spreads with incomplete accounting information. *Econometrica* 69, 633-664.

[60] Dunn, K. A., and Mayhew, B. W., 2004. Audit firm industry specialization and client disclosure quality. *Review of Accounting Studies* 9, 35-58.

[61] Dye, R.A., 1985. Disclosure of nonproprietary information. *Journal of Accounting Research* 23, 123–145.

[62] Dye, R., 1993. Auditing standards, legal liability, and auditor wealth. *Journal of Political Economy* 101, 877-914.

[63] Easton, P.D., Monahan, S.J., and Vasvari F.P., 2009. Initial evidence on the role of accounting earnings in the bond market. *Journal of Accounting Research* 47, 721-766.

[64] Elkamhi, R., Langlois, H., Jacobs, K., and Ornthanalai, C. 2011. Accounting information releases and CDS spreads. *Working Paper.*

[65] Fama, E. F., and French, K. R., 1997. Industry costs of equity. *Journal of Financial Economics* 43, 153-193.

[66] Fang, L. H., 2005. Investment bank reputation and the price and quality of underwriting services. Journal of Finance, 6, 2729-2761.

[67] Friedenthal, J.H. , Kane, M. K., and Miller, A. R., 2005. Civil Procedure. *Thomson West.*

[68] Glover, B. 2011. The expected cost of default. *Working Paper.*

[69] Gopalakrishnan V. and Parkash. M., 1995. Borrower and lender perceptions of accounting information in corporate lending agreements. *Accounting Horizons* 9, 13-26.

[70] Graham, J.R., Li, S., and Qiu J., 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89, 44-61.

[71] Greenwood, R., Hanson, S., and Stein, J.C. 2010. A gap-filling theory of corporate debt maturity choice. *Journal of Finance* 65, 993-1028.

[72] Hahn, J. and Lee. H. 2009. Financial constraints, debt capacity, and the cross-section of stock returns. *Journal of Finance* 64, 891-921.

[73] Haugen, R.A. and Senbet. L.W., 1978. The insignificance of bankruptcy costs to the theory of optimal capital structure. *Journal of Finance* 33, 383-393.

[74] Helwege, J., 1999. How long do junk bonds spend in default? *Journal of Finance* 54, 341-357.

[75] Henne, K. M., 2008. The reporting of contingent legal liabilities. *Working Paper*, University of Oklahoma.

[76] James, C.,1987. Some evidence on the uniqueness of bank loans. *Journal of Financial Economics* 19: 217-235.

[77] Jensen, M.C. and Meckling. W.H., 1976. Theory of the firm: managerial behaviour, agency costs, and capital structure. *Journal of Financial Economics* 3, 305-360.

[78] John, T.A. 1993. Accounting measures of corporate liquidity, leverage, and costs of financial distress. *Financial Management* 22, 91-100.

[79] Jorion, P., Shi, C., and Zhang, S., 2009. Tightening credit standards: The role of accounting quality. *Review of Accounting Studies* 14, 123-160.

[80] Jung, W.O. and Kwon, Y.K., 1988. Disclosure when the market is unsure of information endowment of managers. *Journal of Accounting Research* 26, 146–153.

[81] Kim, E.H. 1978. A mean-variance theory of optimal capital structure and corporate debt capacity. *Journal of Finance* 33, 45-63.

[82] Klein, B., and Leffler, K., 1981. The role of market forces in assuring contractual performance. *Journal of Political Economy* 89, 615-641.

[83] Kothari, S.P. and Shu, S., Wysocki, P.D., 2009. Do managers withhold bad news? *Journal of Accounting Research* 47, 241–276.

[84] Kraus, A. and Litzenberger. R.H., 1973. A state-preference model of optimal finance leverage. *Journal of Finance* 28,911-922.

[85] Krishnan, G., 2003. Does Big 6 auditor industry expertise constrain earnings management? *Accounting Horizons* 17, 1-16.

[86] Lambert, R., Leuz, C., and Verrecchia, R.E., 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research* 45, 385–420.

[87] Leland, H. E., and Toft, K. B., 1996. Optimal capital structure, endogenous bankruptcy, and the term structure of credit spreads. *Journal of Finance* 51, 987-1019.

[88] Li, K. and Prabhala, N.R., 2007. Self-selection models in corporate finance: Handbook of corporate finance 1, 38-86. Elsevier.

[89] Li, Y., Richardson, G.D., and Thornton, D.B., 1997. Corporate disclosure of environmental liability information: theory and evidence. *Contemporary Accounting Research* 14, 435-474.

[90] Lummer, S.L. and McConnell, J.J., 1989. Further evidence on the bank lending process and the capital market response to bank loan agreements. *Journal of Financial Economics* 25, 99-122.

[91] Maddala, G. S., 1983. Limited-dependent and qualitative variables in econometrics. Melbourne, Australia: Cambridge University Press.

[92] Mansi, S., Maxwell, W. F., and Miller, D.P., 2004. Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research* 42, 755-793.

[93] Mayhew, B. W., and Wilkins, M. S., 2003. Audit firm industry specialization as a different strategy: Evidence from fees charged to firms going public. *Auditing: A Journal of Practice and Theory* 22, 33-52.

[94] Megginson, W. L., and Weiss, K. A., 1991. Venture capitalist certification in initial public offerings. *Journal of Finance* 46, 879-904.

[95] Merton, R. 1973. The Theory of Rational Option Pricing. *Bell Journal of Economics and Management Science* 4, 141–83.

[96] Minnis, M., 2011. The value of financial statement verification in debt financing: Evidence from private U.S. firms. *Journal of Accounting Research* 49, 457-506.

[97] Minton, B.A. and Schrand, C., 1999. The impact of cash flow volatility on discretionary investment and the costs of debt and equity financing. *Journal of Financial Economics* 54, 423-460.

[98] Myers, S.C. 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5, 147-145.

[99] Palmrose, Z. V., 1986. Audit fees and auditor size: Further evidence. *Journal of Accounting Research* 24, 97-110.

[100] Pittman, J. A., and Fortin, S., 2004. Auditor choice and the cost of debt capital for newly public firms. *Journal of Accounting and Economics* 37, 113-136.

[101] Qian, J., and Strahan, P. E., 2007. How laws and institutions shape financial contracts: The case of bank loans. *Journal of Finance* 6, 2803-2834.

[102] Rajan, R.G., 1992. Insiders and outsiders: The choice between informed and arm's-length debt. *Journal of Finance* 47, 1367–1400.

[103] Roberts, M.R. and Sufi. A., 2009. Control rights and capital structure: an empirical investigation. *Journal of Finance* 64, 1657-1695.

[104] Scott, J.H. Jr. 1976. A theory of optimal capital structure. *Bell Journal of Economics* 7, 33-54.

[105] Sengupta, P., 1998. Corporate disclosure quality and the cost of debt. *The Accounting Review* 73, 459–474.

[106] Shivakumar, L., Urcan, O., Vasvari, F.P., and Zhang, L., 2011. The debt market relevance of management earnings forecasts: evidence from before and after the credit crisis. *Review of Accounting Studies*, Forthcoming.

[107] Shleifer, A. and Vishny. R.W., 1992. Liquidation values and debt capacity: a market equilibrium approach. *Journal of Finance* 47, 1343-1366.

[108] Shumway, T. 2001. Forecasting bankruptcy more accurately: a simple hazard model. *Journal of Busines*s 74, 101-124.

[109] Simon, C. J., 1990. The role of reputation in the market for initial public offerings. *Unpublished manuscript*, University of Chicago, Chicago, IL.

[110] Smith, C.W.Jr. and Warner. J.B., 1979. On financial contracting: an analysis of bond covenants. *Journal of Financial Economics* 7,117-161.

[111] Stock, J.H., Wright, J.H., and Yogo, M., 2002. A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economics Statistics* 20, 518–529.

[112] Stulz, R., 2000. Does financial structure matter for economic growth? A corporate finance perspective, *Working paper*. Columbus: Ohio State University.

[113] Tang, V., 2009. Proprietary cost & privately held firms' financing choice between public offerings and private placements. *Working Paper, Georgetown University*.

[114] Titman, S. 1984. The effect of capital structure on a firm's liquidation decision. *Journal of Financial Economics* 13, 137-151.

[115] Titman, S., and Trueman, B., 1986. Information quality and the valuation of new issues. *Journal of Accounting and Economics* 8, 150-172.

[116] Verrecchia, R.E., 1983. Discretionary disclosure. *Journal of Accounting and Economics* 5, 179–194.

[117] Verrecchia, R.E., 2001. Essays on disclosure. *Journal of Accounting and Economics* 32, 97–180.

[118] Weiss, L.A., 1990. Bankruptcy resolution: direct costs and violation of priority of claims. *Journal of Financial Economics* 27, 285-314.

[119] White, M. J. 2004. Asbestos and the Future of Mass Torts. *Journal of Economic Perspectives* 18, 183–204.

[120] Zechman, S.L.C., 2010. The relation between voluntary disclosure and financial reporting: evidence from synthetic leases. *Journal of Accounting Research* 48, 725-765.

[121] Zhang, J., 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics* 45, 27–54.

[122] Yasuda, A., 2005. Do bank relationships affect the firms' underwriter choice in the corporate-bond underwriting market? *Journal of Finance* 3, 1259-1292.

[123] Yosha, O., 1995. Information disclosure costs and the choice of financing source. *Journal of Financial Intermediation* 4, 3-20