

# **Default Clauses in Debt Contracts \***

**Ningzhong Li**

University of Texas at Dallas  
800 West Campbell Road, Richardson, TX, USA  
ningzhong.li@utdallas.edu

**Yun Lou**

HEC Paris  
1 Rue de La Liberation, Jouy-en-Josas, Cedex, France  
lou@hec.fr

**Florin P. Vasvari**

London Business School  
Regent's Park, London, NW1 4SA, United Kingdom  
fvasvari@london.edu

February 2012

**VERY PRELIMINARY**

## **Abstract**

This paper examines the structure, determinants and implications of the set of default clauses required in lending agreements, a contracting feature that was previously overlooked in the debt literature. Default clauses are critical contractual provisions that facilitate the transfer of control rights to debtholders when certain pre-specified events ensue. We document significant cross-sectional variation in the presence of various default clauses and the restrictiveness of their two main characteristics, the grace period and the threshold value allowed before a clause can trigger default. We find that an index of the restrictiveness of the set of default clauses decreases with the credit quality of the borrowing firm in both bond and syndicated loan contracts. However, only the default clause restrictiveness of bonds decreases with expected bankruptcy costs, consistent with bondholders' interest to avoid bankruptcy events due to their limited ability to renegotiate contracts when defaults occur and lower priority claims. Finally, we show that the restrictiveness of default clauses is positively associated with the probability of a subsequent bankruptcy filing and with events that avoid bankruptcy filings such as bond repurchases in the case of bond contracts and loan amendments in the case of syndicated loans.

*Keywords:* events of default, default clauses, loan agreement, bond contracts, creditor control rights, cross-default, bankruptcy.

*JEL Classifications:* G21, G33, M41

\* We thank Brandon Julio, Laurence van Lent and seminar participants at Erasmus University, HEC Paris, Rice University and University of Texas at Dallas for valuable comments and suggestions. We gratefully acknowledge the financial support of the AXA Research Fund and the London Business School RAMD Fund. We thank Giulia Pizzini, Surabhi Rajagopal, and Sundipika Wahal for excellent research assistance and Maria Correia for kindly sharing the bankruptcy data. All errors remaining are our own.

## 1 Introduction

The incomplete contracting theory emphasizes the efficient allocation of control rights in debt contracting relationships in the presence of unforeseeable contingencies and agency conflicts between shareholders and debtholders.<sup>1</sup> Contractual provisions in debt agreements allocate decision rights to debtholders in a state contingent manner when borrowers fail to make debt payments (Hart and Moore [1998]) or they just underperform (e.g., Aghion and Bolton [1992]; Dewatripont and Tirole [1994]). The empirical debt contracting literature has focused on debt payment default or the violation of covenants in the debt contract as the main mechanisms facilitating the allocation of control rights to debtholders. However, missed payments or covenant violations are complemented by additional control mechanisms about which relatively little is known. Debt contracts include a detailed "events of default" section where creditors specify other clauses that provide them with control rights when the borrower underperforms or the specific conditions under which a missed payment or a covenant violation allows them to intervene. The goal of this paper is to provide first hand empirical evidence on the full set of default clauses and their characteristics in a large sample of bond and syndicated loan contracts. We identify the main factors that affect the cross-sectional variation in the use of default clauses and assess the impact of the default clauses on the probability that a borrower files for bankruptcy or restructures the debt via debt repurchases and renegotiations.

Control rights are effectively transferred to debtholders upon the declaration of default which arises when any of the events of default specified in the debt contract occur and a predetermined "grace period" has passed. When a debt issue is in default, lenders have the right to accelerate the payment of the principal outstanding and cancel the debt portion which may still undrawn. If the borrower cannot repay the debt as requested or

---

<sup>1</sup> See for example Grossman and Hart [1986], Bolton and Scharfstein [1996], Hart and Moore [1988, 1990] or Aghion and Bolton [1992].

renegotiate with the lenders to obtain a waiver or debt contract modification, it has to file for bankruptcy under Chapters 7 or 11. Some events that trigger the declaration of default are completely described in the default clause section of the debt contract (e.g., cross-default provisions, court judgements). Other events and their associated grace periods are mentioned in the default clauses section but have their details discussed in other sections of the contract. For example, the violation of a covenant is an event of default in all debt contracts but the types of covenants required and their characteristics are covered in a separate covenant section. Figure 1 presents a graphical depiction of the main events that can prompt the declaration of default by lenders or their representatives and their details. The figure illustrates that a focus just on covenants, ignoring the presence of other default clauses and their terms, does not capture fully the relevant contractual features that facilitate the allocation of control rights to lenders.

Our study relies on a sample of 4,627 bond prospectuses and 9,361 syndicated loan agreements issued by U.S. public firms in the period 1996-2009. We provide unique detailed descriptive evidence on the use of default clauses and their terms in both bond and loan contracts by manually coding the events of default section in each debt contract. We construct an index that captures the restrictiveness of the set of default clauses in each contract by coding three dimensions: (1) The inclusion of a specific event of default; (2) The grace period, if any, allowed for the event of default; and (3) The threshold amount, if any, that triggers the event of default.<sup>2</sup> We identify four events of default that are standard in all bond and loan contracts: the declaration of insolvency, bankruptcy, or reorganization; the failure to pay debt principal; the failure to pay interest and the violation of a covenant. The grace periods for these events, however, can vary significantly. For instance, the grace periods for missed interest payments are, on average, 33 days (4 days) for bonds (loans)

---

<sup>2</sup> A detailed description of how we construct the default clause restrictiveness index is presented in Section 3.

and range from zero days to 90 days. Similarly, borrowers have, on average, 71 days (6 days) to cure the violation of a covenant in bond (loan) contracts. Other common events of default specified in debt contracts are: the failure to pay the interest and principal of other debt commitments above certain threshold amounts specified as a percentage of total assets (52% of bond contracts and 95% of loan contracts), the failure to pay court judgements above certain thresholds (10% of bond contracts and 92% of loan contracts), or the existence of guarantees that become invalid (8% of bond contracts and 28% of loan contracts).

Some events of defaults are unique to loan contracts, including: i) the failure to pay pension liabilities above certain thresholds or the incurrence of additional pension liabilities above certain thresholds due to terminations of pension plans (95% of loan contracts), ii) changes of control ownership (71% of loan contracts)<sup>3</sup>, and iii) the existence of pending litigation (2% of loan contracts). Bond-specific events of default clauses refer to bond features and include: i) the failure to make due payments to the sinking fund (62% of bond contracts), ii) the failure to redeem the bond principal when the bondholders exercise their redemption rights (41% of bond contracts) and iii) the failure to convert the bonds into common shares when the bondholders exercise their conversion rights (1% of bond contracts).

Our descriptive evidence indicates significant cross-sectional variation in the index that captures the restrictiveness of default clauses across both bond and syndicated loan contracts. Default clauses are significantly more restrictive in loan contracts than in bond contracts consistent with the interpretation that banks are more effective and active monitors that face lower monitoring and renegotiation costs. More restrictive default clauses combined with the presence of very tight covenants in syndicated loan agreements

---

<sup>3</sup> Restrictions on changes in ownership are typically specified in bond indentures as a covenant restricting mergers and acquisition transactions.

explain why banks often renegotiate with borrowers.<sup>4</sup> In particular, covenant violations allow banks to obtain significant influence over the borrower's investment and financing policy of the firm and to restrict the use of outstanding revolving lending facilities (e.g., Chava and Roberts, 2008; Nini et al 2009; Roberts and Sufi, 2009; Sufi, 2009). In contrast, bondholders' preference for less restrictive default clauses is consistent with bondholders' limited ability to renegotiate their contracts if a clause is breached.<sup>5</sup>

We investigate how the restrictiveness of default clauses varies with characteristics of the borrowing firm. First, we examine how the credit quality of the borrower affects the restrictiveness of the default clauses. Jensen and Meckling [1976], Myers [1977], and Smith and Warner [1979] argue that covenants mitigate agency problems and conflicts of interest between debt and equity holders.<sup>6</sup> The same logic can be extended to other default clauses which provide additional important monitoring mechanisms when the borrowing firm has poor credit quality. If the probability of default is high, managers are likely to underinvest because the benefits obtained accrue to debtholders (Myers, 1977) and have greater incentives to invest in riskier projects that transfer wealth from debtholders to shareholders (Barnea et al. 1980). Also, information asymmetry problems are greater when firms are closer to default (Myers and Majluf, 1984). We therefore predict that default clauses which provide control rights to lenders will be more restrictive in the debt contracts of firms with lower credit quality - these are the firms that likely face greater agency problems.

---

<sup>4</sup> Using a large sample of syndicated loans, Dou (2012) finds that 76% of loan contracts are renegotiated before maturity. Roberts and Sufi (2009) and Roberts (2010) find that loans are renegotiated before less than half of the original stated maturity.

<sup>5</sup> A lack of coordination prevents bondholders from renegotiating their claims. Typically the bond ownership is dispersed and small individual investments minimize the economic incentives of individual bondholders to take action. The coordination issue is magnified by the fact that the identity of individual bondholders changes constantly as bonds are traded in the secondary market and because some opportunistic bond investors (e.g., hedge funds) want to accelerate the payment of the principal before maturity.

<sup>6</sup> Bradley and Roberts [2004] find that loan covenant intensity is higher when the borrower is small, has high growth opportunities or is highly levered, consistent with covenants reducing the agency costs of riskier borrowers' debt.

Second, we investigate the role of expected bankruptcy costs, at the time of debt contracting, on the design of default clauses. The finance literature has long highlighted the important role of expected bankruptcy costs (or default costs) in a firm's debt financing decisions (e.g., Baxter [1976], Altman [1984]). The literature, however, has largely ignored the effect of expected bankruptcy costs on the design of debt contracts. Since the restrictiveness of default clauses is likely to be positively related to the likelihood of bankruptcy, we predict that lenders expecting higher bankruptcy costs would prefer less restrictive default clauses, for example, by requesting longer grace periods for missed debt payments or covenant violations, at the expense of other less favourable contractual terms.

In particular, we predict that the relation between expected bankruptcy costs and the restrictiveness of default clauses is weaker for syndicated loan contracts than for bond contracts. Two reasons support our conjecture. First, whether the occurrence of an event of default eventually results in a bankruptcy filing depends on the lenders' ability to renegotiate with the borrower to obtain contract modifications. Renegotiations costs of loan contracts are typically lower than those of bond contracts, given that the more concentrated ownership of loans results in a lower coordination effort across loan investors. Roberts and Sufi [2009] show that over 90% of long-term loan contracts are renegotiated prior to their stated maturity. Since the borrower is likely to renegotiate with bank lenders, the link between the occurrence of events of default on loan agreements and actual firm bankruptcies is probably fairly weak.<sup>7</sup> Therefore the association between expected bankruptcy costs and the restrictiveness of default clauses is likely to be less pronounced for loan contracts than bond contracts.

Second, bondholders are typically junior debtholders whose claims are subordinated to bank debt that is secured with the borrower's assets. In bankruptcy

---

<sup>7</sup> Dichev and Skinner [2002] document that loan covenant violations occur relatively often, and that violations are not necessarily associated with financial distress.

proceedings, secured debtholders — those who have a security interest or collateral in the debtor’s property — will be paid before unsecured debtholders.<sup>8</sup> Given the common use of cross-default and bankruptcy filings as events of default in loan contracts, a default on a bond contract or a bankruptcy automatically leads to a default on the bank loans. If a borrowing firm incurs large bankruptcy costs, the amount of proceeds available to unsecured bondholders will be significantly lower after paying out the secured loan investors. Consequently, unsecured or junior bondholders may prefer to set loose default clauses to lower the probability of default.

We measure credit quality with firm and debt contract variables that are highly correlated with credit quality including firm size, the leverage ratio, the credit rating, or the stock return volatility. We proxy for expected bankruptcy costs with the extent of intangible assets relative to tangible assets employed by the firm at the time of debt contracting. Intangible assets are often company specific and are difficult to liquidate. Specifically, we employ 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].<sup>9</sup> We find that the restrictiveness of default clauses significantly decreases with the credit quality in both bond and loan contracts. We also find that default clause restrictiveness significantly decreases with expected bankruptcy costs in bond contracts, whereas we find weaker evidence on the relation between expected bankruptcy costs and default clause restrictiveness in loan contracts, consistent with our theoretical predictions.

In a final set of tests, we investigate consequences of restrictive default clauses in debt contracts by examining the effects on the likelihood of future bankruptcy filings, loan

---

<sup>8</sup> Source: § 507 U.S. Bankruptcy Code.

<sup>9</sup> Hahn and Lee [2009] refer to this measure as Excess Debt Capacity. We provide more details on the computation in Section 3.1.2.

renegotiations, and bond repurchases. If default clauses are binding and enforced in practice, we expect the default clause restrictiveness index to be positively related to the likelihoods of bankruptcy, loan renegotiations, and bond repurchases. The first two links are straightforward. The logic for the third link is as follows. In order to avoid a bond default which results in not only the acceleration of the bond principal, but also the acceleration of loans through cross-default provisions in loan contracts, borrowing firms can repurchase the bond via an open market tender or an exercise of a call provision to make the default clauses ineffective. Our empirical results are consistent with these predictions. We find that more restrictive default clauses predict a higher probability of bankruptcy filings as well as higher likelihoods that the borrowers engage in loan renegotiations or bond repurchases.

Our paper makes several contributions. First, we contribute to the empirical debt contracting literature by providing large sample evidence on the structure, determinants, and implications of default clauses in debt contracts. We provide important evidence beyond studies on debt covenants in support of the incomplete contracting theory and the classical agency theory. Second, we also contribute to the literature on the role of expected default costs in a firm's capital structure. Introducing default costs and tax benefits in their formal models, a number of researchers (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 have attempted to estimate default costs (e.g., Warner [1977]; Altman [1984]; Weiss [1990]; Bris, Welch, and Zhu [2007], Glover [2011]). This literature, however, only focuses on the influence of expected default costs on a firm's financing policy and capital structure. We add to this literature by

demonstrating that expected default costs also play an important role in the debt contract design.

Section 2 describes our data and descriptive evidence. Section 3 investigates the effects of credit quality and expected bankruptcy costs on the restrictiveness of default clauses in the bond and loan samples. Section 4 examines the effects of the default clause restrictiveness on firm bankruptcy, bond repurchases, and loan renegotiations. Section 5 concludes the paper.

## **2 Data and Descriptive Evidence**

### **2.1 Data Collection**

We manually collect a unique sample of 4,627 bond prospectuses and 9,361 loan agreements for U.S. public firms in the period 1996-2009.<sup>10</sup> 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. Under the Securities Act of 1933, firms must disclose significant information about securities offered for public sale through the registration of securities with the SEC. 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).<sup>11</sup> FISD is the largest database of publicly offered U.S. bonds, which 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”. To further restrict the filings to those that contain bond agreements rather than equity prospectuses, we also require these filings to include

---

<sup>10</sup> We start with the year 1996 because prior to 1995 electronic filings are not available on a large scale in EDAGR, the SEC’s electronic filing system.

<sup>11</sup> Based on FISD, we identify 82 types of SEC forms that could include bond registration information.

the term “indenture”. This process allows us to extract SEC filings that may include bond agreements.

We match the identified SEC filings with FISD and Compustat based on CIKs and filing dates. Specifically, we first match FISD and Compustat by CUSIPs, issuer names and industries. We then match the merged FISD-Compustat sample with the SEC filings that may contain bond prospectuses by CIKs and filing dates. We exclude bonds issued by non-U.S. or financial firms, as well as privately placed bonds or medium-term notes.<sup>12</sup> We obtain 5,697 bond prospectuses using the procedure above. We manually check whether these bond prospectuses are really related to new bonds, and code the default clauses in each of them.<sup>13</sup> Our final bond sample consists of 4,627 bond issues for 865 non-financial firms.

To obtain a comprehensive sample of loan contracts, we start with 10-K, 10-Q and 8-K filings that were filed with the SEC between 1996 and 2009.<sup>14</sup> We extract the filings that may contain loan agreements using the keyword “event(s) of default” and the keyword “credit agreement”, “loan agreement”, or “credit facility”. We then map the extracted filings to DealScan and Compustat using loan origination dates and borrower names.<sup>15</sup> We obtain 15,519 documents that may contain loan contracts of the loans in DealScan through this procedure. We then manually check these filings and identify 10,053 loan contracts using loan origination dates and loan amounts. Finally, we manually code default clauses in these contracts and remove those without detailed information on default clauses. Our

---

<sup>12</sup> 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.

<sup>13</sup> Firms can file multiple prospectuses with the SEC for the same bond issue; typically the latest prospectus contains information about the finalized bond terms.

<sup>14</sup> Material loan agreements are typically filed in 10-K, 10-Q, and 8-K.

<sup>15</sup> 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.

final loan sample consists of 9,361 loan contracts for 4,033 non-financial firms.

## **2.2 Default Clauses in Bond and Loan Contracts**

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: the declaration of insolvency, bankruptcy or reorganization (*events of bankruptcy clause*), the failure to pay principals (*principal payment clause*), the failure to deliver interest payments (*interest payment clause*), the breach of covenants (*covenant breach clause*), default under other debt (*cross-default clause*), the failure to pay court judgments (*court judgment clause*), invalid guarantees (*invalid guarantees clause*), the failure to pay non-debt liabilities such as taxes or insurance fees (*non-debt liabilities clause*), and the 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 clause in Appendix A.1.

Some default clauses are unique to bond indentures or loan agreements. For instance, bond indentures 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 characteristics such as the presence of sinking fund provisions or a convertibility/redemption option. Appendix A.2 provides examples of these clauses.

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. Appendix A.3 provides examples of these clauses.

Panel A of Table 1 provides the frequency of each default clause in both bond and loan samples. All debt agreements include the clauses on events of bankruptcy, principal payments, interest payments and covenant breaches. The grace periods for these events, however, vary across contracts, especially for interest payment default and covenant violations. For example, the grace periods for covenant violations vary from 0 to 120 days in bond contracts and from 0 to 90 days in loan contracts (Panel B of Table 1). The frequencies of other default clauses that are commonly present in bond and loan agreements are generally higher in the loan sample than in the bond sample, except for the default on non-debt liabilities and changes in ownership clauses.<sup>16</sup> For instance, 94.7% of the loan agreements contain cross-default clauses, compared to 51.5% of the bond agreements; 91.5% of the loan agreements contain court judgment clauses, compared to 10.2% in the bond sample. This evidence is consistent with default clauses in loan contracts being more restrictive than in bond contracts.

The sinking fund and redemption clauses are common in bond contracts, with frequencies of 62.5% and 41.2% respectively, while the conversion clause is only included in 0.8% of the bond contracts. Default clauses related to pensions and changes in control are also pervasive in the loan sample, with frequencies of 94.8% and 70.9%, respectively. The pending litigation clause is only included in 1.9% of loan contracts, which is not surprising, as this clause gives the lenders acceleration rights of debt principal as long as the borrowing firm is sued, which is extremely restrictive if the firm faces high litigation

---

<sup>16</sup> The lower frequency in the changes in ownership clauses in the loan sample may be due to the fact that an alternative clause (the change of control clause) is commonly present in the loan agreements.

risk. 83% (3.6%) of the loan (bond) contracts contain other default clauses that are very infrequent in the sample. Appendix A.4 provides examples of these infrequent default clauses.

Certain default clauses state the grace periods of the events. The event of default clause will come into operation if it continues beyond the grace period. 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 the debt claim. Panel B of Table 1 presents the summary statistics for grace periods of various default clauses. The principal payment clause typically has a very short grace period. The average grace period of the principal payment clause is one day (half a day) for bonds (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. The grace periods of the common default clauses (except bankruptcy events) are generally much longer for the bonds than loans, consistent with default clauses being more restrictive in loan contracts than in bond contracts. For instance, the average grace period of the interest payment clause is 33 days for bonds, compared to 4 days for loans; the average grace period of the covenant breach clause is 71 days for bonds, compared to 6 days for loans.

A few liability-related clauses, including cross-default, court judgement, and pension clauses, also specify a minimum threshold amount for the clause to be effective.<sup>17</sup> For example, a cross-default clause usually states that a default under another debt agreement above a certain minimum amount would trigger the default of the current debt agreement. The lower the threshold amount, the more restrictive the default clause. Panel C of Table 1 provides the summary statistics for the threshold amounts of these clauses as percentages of total assets. The threshold amounts are generally low relative to the total

---

<sup>17</sup> To the extent that court judgments and pension deficits are also liabilities, court judgment and pension clauses are essentially similar to cross-default clauses.

assets. For instance, conditional on the presence of cross-default in the bond contract, on average, a default on other debt liabilities that amounts to 0.6% of total assets can trigger the default of the bond.

### **3 Credit Quality, Expected Bankruptcy Costs, and Default Clause Restrictiveness**

#### **3.1 Variable Measurement**

##### **3.1.1 Restrictiveness of Default Clauses**

Table 1 shows significant variations in the presence, grace periods, and threshold amounts of default clauses. We construct a default clause index to measure the overall restrictiveness of default clauses by taking into account these three dimensions of default clauses. We first construct an individual score for each default clause. The first group of default clauses does not specify a grace period or a threshold amount. For this group of default clauses, we assign the value of 1 to the presence of the default clause, and 0 otherwise. Examples of such default clauses include the existence of invalid guarantees, defaults on non-debt liabilities and a change of control.

The second group of default clauses states either a grace period or a threshold amount. For this group of default clauses, we first assign the value of 1 to the existence of the default clause, and 0 otherwise. We then measure the restrictiveness of the grace period or threshold amount by comparing it to the distribution of the whole sample (including both bonds and loans). For instance, the interest payment clause typically specifies a grace period. We measure the restrictiveness of the interest payment clause as:

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

where  $\text{Indicator}_{\text{IP}}$  is an indicator variable that takes the value of 1 if an interest payment clause exists in a debt agreement and 0 otherwise. To measure the restrictiveness of the

grace period, we take the difference between the grace period of the interest payment clause and the minimum grace period of interest payment clauses across the bond and loan samples, scaled by the range of the grace periods of interest payment clauses in the whole sample. This approach gives us a relative ranking of the restrictiveness of the grace period and enables the comparison of the grace period 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. We apply the same approach to the construction of scores for clauses on the default on principal payments, covenant breaches, default on sinking fund provisions, failure to redeem /convert a bond, the existence of pending litigation and the default on pensions.

The last group of default clauses, such as cross-default and court judgment clauses, specify both grace periods and threshold amounts. We employ a similar approach as in equation (1) to measure the restrictiveness of these clauses by assigning equal weights to the grace periods and threshold amounts. For example, we construct the score of the cross-default clause as follows:

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

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

After obtaining an individual score for each default clause, we sum up 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 1

provides summary statistics for the individual score for each default clause, as well as the total score for each contract. Overall default clauses are more restrictive in loan agreements than in bond agreements. The average (median) default clause index is 17.6 (17.3) in loan contracts, compared to 10.3 (10.6) in bond contracts. The default clause index also exhibits significant cross-sectional variation, with standard deviation 2.0 and 2.7 in the bond and loan contracts, respectively (untabulated).

Figure 2 plots the default clause indices for the loan and bond samples over time. The restrictiveness of default clauses in the loan agreements is relatively stable over time. The default clauses in the bond agreements exhibit more variation over time, which could be due to the fact that bonds are more sensitive to macroeconomic shocks than loans (Greenwood, Hanson and Stein, 2010). Interestingly, the default clause indices in bond contracts drop after 2008, while those of the loan contracts slightly increase after 2008. This is consistent with the notion that expected bankruptcy costs are a more important factor in the bond contract design because of the higher renegotiation costs and lower claim priority of bonds, and the argument that liquidation costs are higher in bad times because potential buyers of the assets are more likely to also experience problems during a liquidity crisis (Shleifer and Vishny [1992]). Table 2 reports the cross-industry variation of default clause indices in the bond and loan samples. The default clause index varies more significantly in the bond sample than in the loan sample, which is likely to be due to the fact that bankruptcy costs vary across industries and default clause restrictiveness is more sensitive to bankruptcy costs in bond agreements.

### **3.1.2 Expected Bankruptcy Costs**

The finance literature categorizes bankruptcy 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 bankruptcy costs (e.g., Shleifer and Vishny [1992], Acharya, Bharath and Srinivasan [2007]).

One challenge in measuring indirect bankruptcy 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 bankruptcy costs are primarily *ex-ante* liquidation costs, which can be reasonably proxied for with 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 primary cost of liquidation is the destruction of going-concern values when assets are sold. 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 the argument above, we use two accounting measures for tangible and intangible assets to proxy for expected 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]). The higher the excess debt capacity, the more tangible the assets,

and the lower the liquidation cost. Our second measure of liquidation costs is the research and development expense scaled by total assets (*R&D*), which is another proxy for a firm's asset intangibility.

Our third measure of liquidation costs is based on Shleifer and Vishny's [1992] argument that firm-specific assets have low liquidation values, and this is particularly true if the firm's industry is in distress. Liquidation costs are likely to be high for firms whose products require specialized servicing and spare parts (John [1993]). Following John [1993] we 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 (firms producing machines and equipment), and 0 otherwise.

### 3.2 Research Design

Our first set of multivariate analyses explores the determinants of the restrictiveness of default clauses, focusing on the effects of credit quality and expected bankruptcy costs. We employ the following OLS regressions:

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

The dependent variable is the default clause index in a bond or loan contract as defined in Section 3.1.2. We use *Excess Debt Capacity* and *R&D* to measure firm-level expected bankruptcy costs and *Industry Asset Specificity* to measure expected bankruptcy cost at the industry level. We include in the analyses the following firm characteristics: firm size (*Firm size*), leverage ratio (*Leverage*), interest coverage ratio (*Interest coverage*), monthly stock return volatility in the previous 12 months (*Stock return volatility*), market-to-book ratio (*Market-to-book*), Moody's expected default frequency (*EDF*), and the borrower's credit rating (*Credit rating*). Appendix B provides detailed definitions of these variables. Since most of these variables are highly correlated with credit quality, we test the effects of

credit quality on default clause restrictiveness by examining the effects of these firm characteristics.

We also control for a number of bond or loan-specific characteristics: bond rating (*Rating residual*)<sup>18</sup>, the size of the bond or loan (*Bond size, Loan size*), the maturity of bond or loan (*Maturity*), the number of covenants included in the bond or loan contract (*Number of covenants*), loan interest spread (*Interest spread*), the existence of performance pricing grids in the loan contract (*Performance pricing*), and the number of lenders of the loan (*Number of the lenders*). These bond or loan contractual terms may proxy for credit risk (e.g., bond rating and loan interest spread), or substitute or supplement the monitoring role of the default clauses. Although a covenant violation is an event of default in all contracts, the default clauses do not specify the details of covenants. Therefore it is important to control for the number of covenants in equation (3). The relation between the number of covenants and the default clause restrictiveness, however, is unclear. Lenders may require both a higher number of covenants and more restrictive default clauses when there is higher uncertainty about the future performance of the borrower. However, a higher number of covenants enhances lender's monitoring, suggesting that the number of covenants may also substitute for default clause restrictiveness.

We also include in the regressions of the bond sample 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. Finally, our regressions include year fixed effects and we cluster the standard errors at the firm level. We include year fixed effects to

---

<sup>18</sup> We regress the bond rating on other variables and use the residuals in the regressions to address the high correlation of bond ratings with other firm and bond variables that can generate multicollinearity.

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 (e.g., Collin-Dufresne, Goldstein, and Martin [2001]).<sup>19</sup>

### 3.3 Empirical Results

#### 3.3.1 The Bond Sample

Table 4 presents the regression results for the cross-sectional variation of the default clause restrictiveness in the bond sample. The sample size drops significantly due to the unavailability of firm and bond variables. The results are generally consistent with our prediction that the default clause restrictiveness of bonds decreases with expected bankruptcy costs and credit quality. The effects of *Excess debt capacity* are significantly positive, and the effects of *R&D* and *Industry asset specificity* are significantly negative in the regressions with and without bond level control variables, indicating default clauses are less restrictive for firms with more intangible assets and research and development activities, and firms in industries of higher asset specificity.<sup>20</sup> The marginal effects of expected bankruptcy costs are also economically significant. For example, the default clause index is 0.3 to 0.6 higher for firms in industries with higher asset specificity than firms in other industries. This marginal effect appears small, however it is nontrivial given the standard deviation of the default clause index in the bond sample (1.99).

Smaller firms and firms with higher leverage ratios tend to use more restrictive default clauses, consistent with more intensive monitoring for riskier firms as suggested by the agency theory (e.g., Smith and Warner [1979]). The coefficients of the bond level variables in Regressions 2 and 4 are also consistent with default clause restrictiveness being negatively associated with credit quality. For example, default clauses are less

---

<sup>19</sup> We do not control for industry fixed effects because of the inclusion of the industry dummy *Industry Asset Specificity*.

<sup>20</sup> An exception is the effect of *Industry asset specificity* which becomes insignificant in Regression 3.

restrictive when the bond rating is lower and the bond amount is larger.<sup>21, 22</sup> The coefficients of *Number of covenants* are significantly positive, indicating that covenant intensity and the default clause restrictiveness complement each other in monitoring the borrowing firm. Lenders employ both more restrictive default clauses and more intensive covenants to monitor riskier borrowers.

### 3.3.2 The Loan Sample

Table 5 reports the regression results for the determinants of the default clause restrictiveness in the loan sample. Since the firm level credit rating is only available for about 44% of the sample, we report the basic results (regressions without loan variables) for both the whole sample and the sample with credit ratings, and the results of regressions with loan variables for the sample with credit ratings to ensure that our results are robust to sample selection.<sup>23</sup> Consistent with the findings in the bond sample (Table 4), the default clause restrictiveness is also negatively associated with the credit quality of the borrowing firm. The effects of firm size are still strongly negative. The coefficients of *Credit rating* are strongly positive, indicating that default clauses are more restrictive for firms with lower credit ratings. In addition, default clauses are more restrictive when the stock return volatility is higher, and when the estimated default frequency increases. The coefficients of *Leverage* become significantly negative in Regressions 2, 3, and 6, which is probably due to the high correlation between *Leverage* and *Credit rating*. When *credit rating* is not controlled for, the coefficient of *Leverage* is either significantly positive (Regression 4) or insignificant (Regression 1).

---

<sup>21</sup> Higher numerical values of bond ratings mean lower ratings. Therefore the positive coefficients of *Rating residual* imply that default clause restrictiveness decreases with the bond rating.

<sup>22</sup> Large bond amounts are usually associated with higher credit risk.

<sup>23</sup> We do not report the results of the regressions with loan variables for the whole sample due to the space limit. The results, however, are very similar to those in Regressions 3 and 6 in Table 6.

The coefficients of the loan variables in Regressions 3 and 6 are also consistent with default clause restrictiveness being negatively associated with credit quality in loan contracts. The effects of *Interest spread* are significantly positive; firms charged higher interest rates are generally riskier. The effect of *Performance pricing* is significantly positive in Regression 3 and marginally positive in Regression 6. Asquith et al. [2005] provide evidence that loans are more likely to include performance pricing features when firms are more likely to have relatively high moral hazard or adverse selection costs. Consistent with the findings in the bond sample (Table 4), the coefficients of *Number of covenants* are significantly positive, indicating that covenant intensity and default clause restrictiveness also complement each other in monitoring the borrowing firm in loan contracts.

Although we find consistent evidence on the effects of credit quality on the default clause restrictiveness in bond and loan contracts, the effects of expected bankruptcy costs on default clause restrictiveness in loan contracts are inconsistent with those in bond contracts. As indicated in Table 5, the effects of expected bankruptcy costs are inconsistent across the three proxies (*Excess debt capacity*, *R&D*, and *Industry asset specificity*). On one hand, the effects of *R&D*, and *Industry asset specificity* tend to be negative, indicating that default clause restrictiveness is negatively associated with expected bankruptcy costs, consistent with the findings in the bond sample. On the other hand, the effects of *Excess debt capacity* are significantly negative, implying that firms with higher expected bankruptcy costs actually use more restrictive default clauses in loan contracts.

The inconsistent results regarding expected bankruptcy costs in Table 5 are consistent with our prediction that the association between default clause restrictiveness and expected bankruptcy costs is weaker in loan contracts than in bond contracts. Given the fewer lenders in loan financing than in bond financing, the renegotiation costs of loan

contracts are much lower. Therefore the occurrence of events of default is less likely to result in actual bankruptcy. In addition, since banks have more senior claims in the borrowing firm's liquidation value than bondholders, they are less concerned about bankruptcy costs than bondholders. It is also likely that banks view high bankruptcy costs as a risk and impose more intensive monitoring through more restrictive default clauses. In this sense, expected bankruptcy costs could be positively associated with default clauses restrictiveness in loan contracts.

#### **4 Consequences of Default Clause Restrictiveness**

Our second set of analyses investigates whether default clauses are binding. Specifically, we examine i) whether the firm level default clause restrictiveness is positively associated with future firm bankruptcy; ii) whether the likelihood of a bond repurchase increases with the default clause restrictiveness in the bond contract; and iii) whether the likelihood of a loan contract amendment is positively related to the restrictiveness of default clauses in loan contracts.

##### **4.1 Default Clause Restrictiveness and Firm Bankruptcy**

To the extent that more restrictive default clauses increase the likelihood that firms “default”, we 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 that captures the overall restrictiveness of default clauses in a firm's bond and loan agreements. Specifically, we calculate a weighted average of the default clause indices associated with all of the firm's outstanding bonds and loans using the bond or loan amounts as weights. Then we match the sample with Chapters 11 and 7 bankruptcy data over 1996-2010.<sup>24</sup> Our

---

<sup>24</sup> Please see Beaver, Correia and McNichols [2012] for the sources of bankruptcy data.

sample includes non-bankrupt and bankrupt firms, with the non-bankrupt firms coded zero every year they are in the sample and the bankrupt firms coded zero in every sample year except the year of bankruptcy.

Following Shumway [2001] and Beaver, Correia and McNichols [2012], we use hazard analysis as our statistical estimation method. We also follow Beaver, Correia and McNichols [2012] to include the following accounting and market variables as control variables: return on assets (*ROA*), leverage ratio (*Leverage*), the ratio of EBITDA to total liabilities (*EBITDA/liabilities*), an indicator for firms making losses (*Loss firm*), market capitalization (*Log market cap*), prior year's security returns (*Lag return*), and standard deviation of the residual return from a regression of the security's monthly return on the return of the market portfolio (*Sigma*). Appendix B provides detailed definitions of these variables.

Table 6 reports the estimation results of the hazard model for one to three years ahead bankruptcy risk. We report the hazard ratios instead of coefficients to facilitate the interpretation of the economic effects. Consistent with default clauses being binding, the firm level default clause restrictiveness is significantly and positively associated with the one-year-ahead and three-year-ahead bankruptcy risks. One unit increases in the firm level default clause index would increase the hazard of one-year-ahead bankruptcy by 6.6%, and the hazard of three-year-ahead bankruptcy by 1.5%. The effects of control variables are generally consistent with Beaver, Correia and McNichols [2012]. For example, the one-year-ahead bankruptcy risk increases with leverage ratio and decreases with market capitalization and previous returns.

## 4.2 Default Clause Restrictiveness and Bond Repurchase

Bond default results in not only the acceleration of bonds, but also the acceleration of loans through the cross-default provisions in loan contracts given that cross-default is an event of default in 95% of the loan contracts. Firms can avoid these adverse outcomes by repurchasing bonds to make bond provisions ineffective before the actual default occurs. Therefore we predict that the restrictiveness of default clauses in the bond contract is positively associated with the likelihood of a bond repurchase if the default clauses are binding.

To empirically test this hypothesis, we extract bond repurchase data from Bloomberg and merge the data with our bond sample. Bloomberg provides detailed information about each bond repurchase, including repurchase date, amount, price, repurchase type (open market vs. tender offer), and so on. We estimate probit models using as dependent variables indicator variables of whether the bond is repurchased within one, two, and three years after the bond issuance date. To mitigate the correlated omitted variable problem, we include all explanatory variables in Table 4 as control variables. The estimation results are reported in Table 7. The reported numbers are average marginal effects and the z-statistics. Consistent with our prediction, the restrictiveness of default clauses in bond contracts is significantly and positively associated with the probability of bond repurchase within two and three years after the bond issuance date. One unit increase in the default clause index would increase the likelihood of bond repurchase within two and three years after bond issuance date by about 1%. This marginal effect is nontrivial given that the likelihoods of bond repurchase within two and three years after bond issuance date are only 4% and 7% respectively. In contrast, the coefficients of *Number of covenants* are insignificant.

### 4.3 Default Clause Restrictiveness and Loan Amendments

Given the relatively low renegotiation costs of loans, the occurrence of events of default generally leads to loan renegotiation. The borrower can obtain a waiver or a loan amendment from the lenders to avoid loan acceleration or bankruptcy. Dichev and Skinner [2002] document that loan covenant violations occur relatively often, and that violations are not necessarily associated with financial distress. If default clauses of loans are binding in practice, we expect the restrictiveness of default clauses to be positively associated with the likelihood of a subsequent loan renegotiation.

We use data on loan contract amendments provided by Dealscan to empirically test this prediction. Dealscan gathers information on loan contract amendments from SEC filings and private sources. According to Nikolaev [2012], the amendments included in Dealscan are generally carried via a 51% vote (or another applicable percentage of the required lenders majority) and include modifications to a broad set of contractual provisions, such as covenants, performance pricing, and borrowing base, etc.<sup>25</sup> We estimate a probit model, using as the dependent variable an indicator variable of whether the loan is amended within one, two, and years after the loan origination date. As in the bond repurchase test in Section 4.2, we include all explanatory variables in Table 5 as control variables to mitigate the problem of correlated omitted variables.

The estimation results are reported in Table 8. The reported numbers are average marginal effects and the z-statistics. Consistent with our prediction, the restrictiveness of default clauses in loan contracts is positively associated with the probability of a loan amendment within one and three years after the loan origination date, although the effects are only statistically significant at 10% level. The marginal effects are also economically small. One unit increase in the default clause index only increase the likelihood of a loan

---

<sup>25</sup> Dealscan considers amendments that require unanimous consent (100% of votes) to be “new loans” (Nilolave [2012]).

amendment within one and three years after loan origination date by 0.4% and 0.6% respectively. In contrast, the effects of covenant intensity (*Number of covenants*) are more significant and economically larger. One more covenant in the loan contract would increase the likelihood of a loan amendment within one, two, and three years after the loan origination date by 1.6%, 1.9%, and 2.0% respectively.

## **5 Conclusions**

Although default clauses are an important aspect of the contractual mechanism that facilitates the allocation of control rights in debt contracts, no prior studies have explored this contractual feature. We fill this gap by providing novel evidence on default clauses in debt contracts using a unique hand-collected sample of bond indentures and loan agreements for U.S. public firms. We provide detailed descriptive evidence on default clauses in both bond and loan contracts by manually coding the definition of events of default in each contract. We find that the restrictiveness of default clauses decreases with the credit quality of the borrowing firm in both bond and loan contracts, and that the default clause restrictiveness decreases with expected bankruptcy costs in bond contracts. We also show that the restrictiveness of default clauses is positively associated with the likelihood of subsequent firm bankruptcy filings, bond repurchases, and loan amendments.

## References:

- Acharya, V.V., S.T. Bharath, and A. Srinivasan. 2007. "Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries", *Journal of Financial Economics* 85: 787-821.
- Aghion, P. and P. Bolton. 1992. "An incomplete contracts approach to financial contracting", *Review of Economic studies* 59(3): 473-494.
- Alderson M.J. and B.L. Betker. 1996. "Liquidation costs and accounting data". *Financial Management* 25(2): 25-36.
- Almeida, H. and M. Campello. 2007. "Financial constraints, asset tangibility, and corporate investment", *Review of Financial Studies* 20: 1429-1460.
- Altman, E.I. 1984. "A further empirical investigation of the bankruptcy cost question", *Journal of Finance* 39(4): 1067- 1089
- Asquith, P., A. Beatty, and J. Weber. 2005. Performance Pricing in Bank Debt Contracts. *Journal of Accounting and Economics* 40: 101-28.
- Baxter, N.D. 1967. "Leverage, risk of ruin and the cost of capital", *Journal of Finance* 22(3): 395-403.
- Beaver, W.H., M. Correia, and M.F. McNichols. 2012. "Do differences in financial reporting attributes impair the predictive ability of financial ratios for bankruptcy?", *Review of Accounting Studies* 2012.
- Berger, P. and E. Ofek, and I. Swary. 1996. "Investor valuation and abandonment option". *Journal of Financial Economics* 42: 257-287.
- Bradley, M. and M.R. Roberts, 2004. "The structure and pricing of corporate debt covenants", *Working Paper*.
- Bris, A., I. Welch, and N. Zhu. 2006. "The costs of bankruptcy: Chapter 7 Liquidation versus Chapter 11 Reorganization", *Journal of Finance* 61(3): 1253-1303.
- Collin-Dufresne, P., R.S. Goldstein and J.S. Martin. 2001. "The determinants of credit spread changes", *Journal of Finance* 56(6): 2177-2207.
- Datta, S., M.I. Datta, and A. Patel. 1999. "Bank monitoring and the pricing of corporate public debt", *Journal of Financial Economics* 51: 435-449.
- Dewatripont, M. and J. Tirole. 1994. "A theory of debt and equity: diversity of securities and manager-shareholder congruence", *Quarterly Journal of Economics* 109(4): 1027-1054.
- Dichev, I.D. and D.J. Skinner. 2002. "Large-sample evidence on the debt covenant hypothesis", *Journal of Accounting Research* 40(4): 1091-1123.
- Glover, B. 2011. "The expected cost of default", *Working Paper*.
- Greenwood, R., S. Hanson, and J.C. Stein, 2010. "A gap-filling theory of corporate debt maturity choice", *Journal of Finance* 65(3), 993-1028.

- Grossman S., and O. Hart, 1986. The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration. *Journal of Political Economy* 94: 691-719.
- Hahn, J. and H. Lee. 2009. "Financial constraints, debt capacity, and the cross-section of stock returns", *Journal of Finance* 64(2): 891-921.
- Hart, O., and J. Moore, 1988. Incomplete Contracts and Renegotiation. *Econometrica* 56: 755-85.
- Hart, O., and J. Moore, 1990. Property Rights and the Nature of Firm. *Journal of Political Economy* 98: 1119-58.
- Haugen, R.A. and L.W. Senbet. 1978. "The insignificance of bankruptcy costs to the theory of optimal capital structure", *Journal of Finance* 33(2): 383-393.
- Jensen, M.C. and W.H. Meckling. 1976. "Theory of the firm: managerial behaviour, agency costs, and capital structure", *Journal of Financial Economics* 3: 305-360.
- John, T.A. 1993. "Accounting measures of corporate liquidity, leverage, and costs of financial distress", *Financial Management* 22(3): 91-100.
- Kim, E.H. 1978. "A mean-variance theory of optimal capital structure and corporate debt capacity", *Journal of Finance* 33(1): 45-63.
- Kraus, A. and R.H. Litzenberger. 1973. "A state-preference model of optimal finance leverage", *Journal of Finance* 28(4): 911-922.
- Myers, S.C. 1977. "Determinants of corporate borrowing", *Journal of Financial Economics* 5: 147-145.
- Nilolaev, V. 2012. "Scope for Renegotiation and Debt Contract Design", Working Paper. University of Chicago
- Roberts, M.R. and A. Sufi. 2009. "Control rights and capital structure: an empirical investigation", *Journal of Finance* 64(4): 1657-1695.
- Scott, J.H. Jr. 1976. "A theory of optimal capital structure". *Bell Journal of Economics* 7(1): 33-54.
- Shleifer, A. and R.W. Vishny. 1992. "Liquidation values and debt capacity: a market equilibrium approach", *Journal of Finance* 47(4): 1343-1366.
- Shumway, T. 2001. "Forecasting bankruptcy more accurately: a simple hazard model", *Journal of Business* 74(1): 101-124.
- Smith, C.W.Jr. and J.B. Warner. 1979. "On financial contracting: an analysis of bond covenants", *Journal of Financial Economics* 7: 117-161.
- Weiss, L.A. 1990. "Bankruptcy resolution: direct costs and violation of priority of claims", *Journal of Financial Economics* 27: 285-314.

## Appendix A: Examples of Default Clauses

### A.1 Common Clauses:

1. **Events of Bankruptcy.** Certain events of bankruptcy, insolvency or reorganization of Kohl's Corporation.
2. **Principal Payment.** Default in the payment of principal or premium, if any, when due.
3. **Interest Payment.** Our failure for 30 days to pay interest when due on the debentures.
4. **Covenant Breach.** 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.** 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 Judgments.** 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.** 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.** 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.** We fail to provide notice of the occurrence of a fundamental change as required by the indenture.

### A.2 Bond-Specific Clauses:

1. **Sinking Fund.** Default in the deposit of any sinking fund payment when due, which default continues for 30 days.
2. **Redemption.** Default in our obligation to redeem the Notes after we have exercised our option to redeem.

3. **Conversion.** 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.

### **A.3 Loan-Specific Clauses:**

1. **Pensions.** 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.** 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.** 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.
4. **Misrepresentations.** Any representation, warranty, certification or statement made by the Company in this Agreement or in any certificate, financial statement or other document delivered pursuant to this Agreement shall prove to have been incorrect in any material respect on or as of the date made (or deemed made).

### **A.4 Other Clauses:**

- a. Failure by any Borrower to (i) furnish financial information when due or when reasonably requested, or (ii) permit the inspection of its books or records.
- b. Loss of any required government approvals, and/or any governmental regulatory authority takes or institutes action which, in the opinion of Bank, will adversely affect Borrower's condition, operations or ability to repay the loan and/or line of credit.
- c. **Uninsured Losses.** Any loss, theft, damages or destruction of any material portion of the Collateral not fully covered (subject to such deductibles as Agent shall have permitted) by insurance.

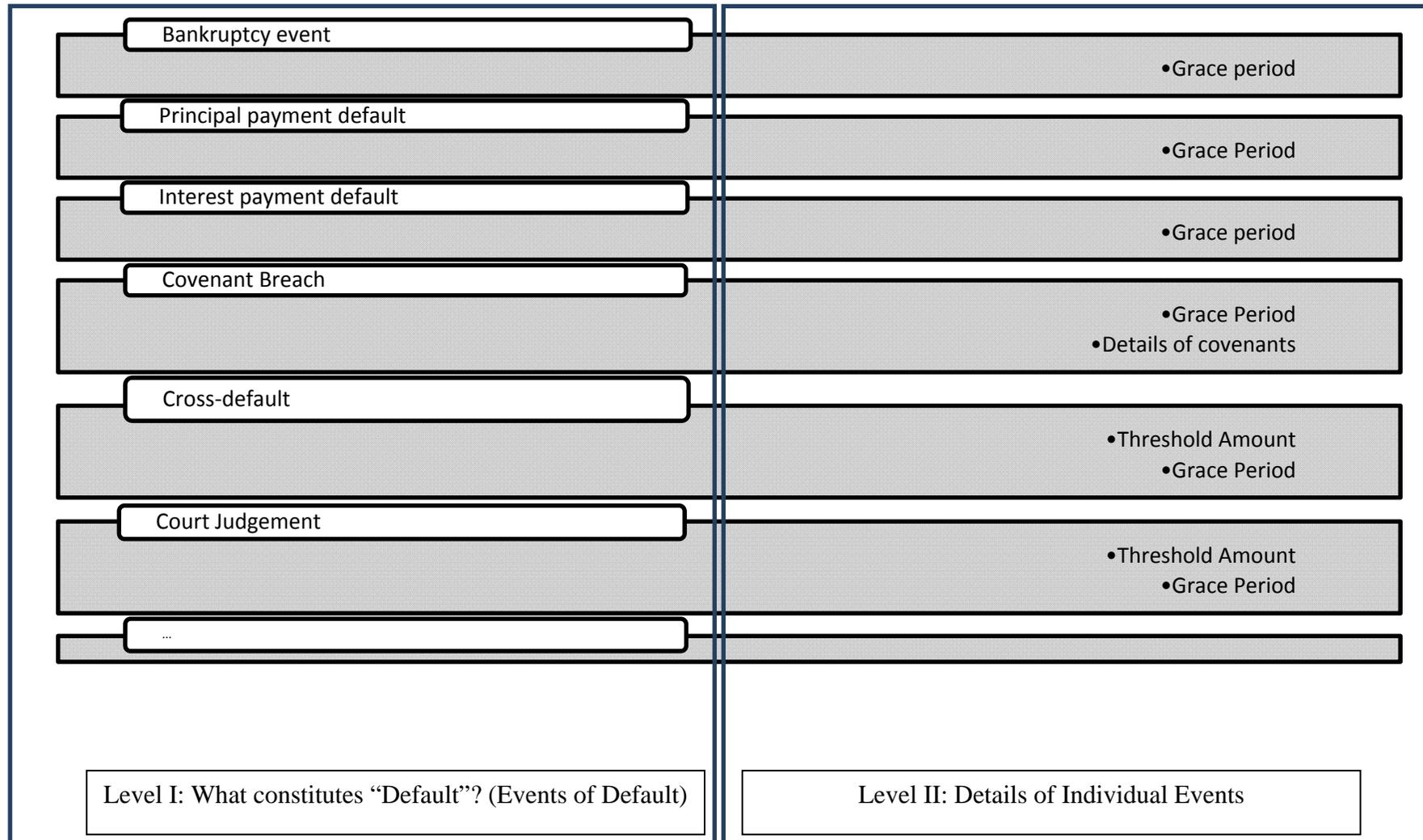
## Appendix B: Variable Definitions

<b>Variable</b>	<b>Definition</b>
<i>Bond/Credit Rating</i>	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.
<i>Bond/Loan Size</i>	Natural logarithm of a bond/loan's offering amount.
<i>EBITDA/liabilities</i>	Net income before interest, taxes depreciation, depletion and amortization divided by total liabilities.
<i>EDF</i>	Moody's KMV expected default frequency measure.
<i>Interest Coverage</i>	Operating income before depreciation / interest expense.
<i>Interest Spread</i>	Amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down.
<i>Lag return</i>	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.
<i>Leverage</i>	Long-term debt / total assets.
<i>Log market cap</i>	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.
<i>Loss firm</i>	Indicator variable equal to 1 if the return on assets (ROA) is negative.
<i>Market-to-Book</i>	Market value of a firm's equity / the book value of a firm's equity.
<i>Maturity</i>	Difference between the issue date and the maturity date.
<i>Number of Covenants</i>	Number of covenants included in a bond/loan.
<i>Number of lenders</i>	Number of lenders that participate in a loan.
<i>Performance Pricing</i>	Indicator variable equal to 1 if a loan has performance pricing provision.
<i>Prior Loan</i>	Indicator variable equals to 1 if a firm has outstanding loan when it issues a bond.
<i>R&amp;D Capital</i>	Capitalized R&D/adjusted total assets.
<i>Recent Loan covenants</i>	Number of covenants included in the most recently originated loan
<i>ROA</i>	Return on assets, defined as earnings before interest scaled by lagged assets.
<i>Sigma</i>	Standard deviation of the residual return from a regression of the security's monthly return on the return of the market portfolio (The

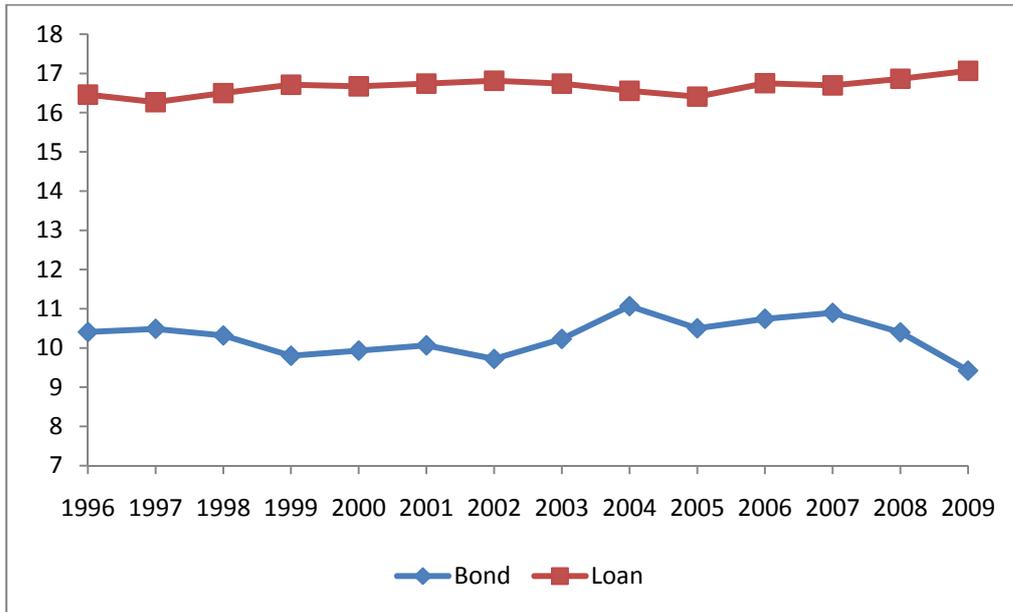
	return for a 12-month period ending with the third month of the fiscal year is used in this regression).
<i>Stock Return</i>	
<i>Volatility</i>	Standard deviation of monthly stock return in the past 12 months of the bond issuance or loan origination.
<i>Uncollateralized Debt</i>	$[\text{Total debt} - (\text{cash holdings} + 0.715 * \text{receivable} + 0.547 * \text{inventory} + 0.535 * \text{PPE})] / \text{total assets}$ .
<i>Yield spread</i>	The difference between the bond yield at issuance and the yield of a treasury bill with matched maturity

---

**Figure 1: The Full Picture of Control Right Allocation in Debt Contracts**



**Figure 2: Default Clause Indices over Time**



**Table 1: Descriptive Evidence of Default Clauses**

This table reports descriptive statistics for the individual score (Panel A), grace period (Panel B), and threshold amount (Panel C) for default clauses in the bond and loan samples.

**Panel A: Individual Score for Each Clause**

Default Clauses	Bond						Loan					
	N	Freq. (%)	Mean	Minimum	Median	Maximum	N	Freq. (%)	Mean	Minimum	Median	Maximum
<b>Common Clauses</b>												
<i>Events of Bankruptcy</i>	4,627	100	2.00	2.00	2.00	2.00	9,361	100	1.76	1.00	1.75	2.00
<i>Principal Payment</i>	4,627	100	1.98	1.00	2.00	2.00	9,361	100	1.98	1.00	2.00	2.00
<i>Interest Payment</i>	4,627	100	1.63	1.00	1.67	2.00	9,361	100	1.96	1.33	1.97	2.00
<i>Covenant Breach</i>	4,627	100	1.41	1.00	1.50	2.00	9,361	100	1.95	1.25	2.00	2.00
<i>Cross-Default</i>	4,627	51.52	0.96	0.00	1.64	2.00	9,361	94.66	1.84	0.00	1.97	2.00
<i>Court Judgment</i>	4,627	10.15	0.17	0.00	0.00	2.00	9,361	91.51	1.65	0.00	1.82	2.00
<i>Invalid Guarantees</i>	4,627	8.23	0.08	0.00	0.00	1.00	9,361	28.31	0.28	0.00	0.00	1.00
<i>Non-debt Liabilities</i>	4,627	0.60	0.01	0.00	0.00	1.00	9,361	0.10	0.00	0.00	0.00	1.00
<i>Report of Change</i>	4,627	0.23	0.00	0.00	0.00	1.00	9,361	0.10	0.00	0.00	0.00	1.00
<b>Bond-Specific Clauses</b>												
<i>Sinking Fund</i>	4,627	62.45	1.20	0.00	2.00	2.00						
<i>Redemption</i>	4,627	41.19	0.81	0.00	0.00	2.00						
<i>Conversion</i>	4,627	0.84	0.01	0.00	0.00	2.00						
<b>Loan-Specific Clauses</b>												
<i>Pension</i>							9,361	94.80	1.84	0.00	2.00	2.00
<i>Change in Control</i>							9,361	70.88	0.71	0.00	1.00	1.00
<i>Pending Litigation</i>							9,361	1.92	0.04	0.00	0.00	2.00
<b>Other Clauses</b>	4,627	3.61	0.05	0.00	0.00	2.00	9,361	82.45	2.62	0.00	2.00	11.00
<b>Default Clause Index</b>	4,627	100	10.34	6.25	10.58	16.93	9,361	100	16.63	7.50	16.32	27.84

**Panel B: Grace Period (Days)**

Default Clause	Bond						Loan					
	N	Mean	Minimum	Median	Maximum	Std. Dev.	N	Mean	Minimum	Median	Maximum	Std. Dev.
<b>Common Clause</b>												
<i>Events of Bankruptcy</i>	4,627	0	0	0	0	0	9,361	29	0	30	120	29
<i>Principal Payment</i>	4,627	1	0	0	30	2	9,361	0.58	0	0	30	2
<i>Interest Payment</i>	4,627	33	0	30	90	13	9,361	4	0	3	60	5
<i>Covenant Breach</i>	4,627	71	0	60	120	19	9,361	6	0	0	90	12
<i>Cross-Default</i>	2,384	17	0	10	90	16	8,861	1	0	0	90	6
<i>Court Judgment</i>	470	55	0	60	120	17	8,566	34	0	30	120	18
<b>Bond-Specific Clause</b>												
<i>Sinking Fund</i>	2,890	6	0	0	90	16						
<i>Redemption</i>	1,906	2	0	0	90	8						
<i>Conversion</i>	39	52	0	60	90	40						
<b>Loan-Specific Clause</b>												
<i>Pending Litigation</i>							180	14	0	0	120	23

**Panel C: Threshold Amount (% of Total Assets)**

Default Clause	Bond						Loan					
	N	Mean	Minimum	Median	Maximum	Std. Dev.	N	Mean	Minimum	Median	Maximum	Std. Dev.
<b>Common Clause</b>												
<i>Cross-Default</i>	2,384	0.60	0.00	0.20	5.70	1.00	8,861	0.78	0.00	0.41	8.40	1.18
<i>Court Judgment</i>	470	1.20	0.00	0.70	8.40	1.40	8,566	0.94	0.00	0.57	7.72	1.19
<b>Loan-Specific Clause</b>												
<i>Pension</i>							8,874	0.40	0.00	0.00	6.56	0.86

**Table 2: Default Clause Index by Industry**

This table presents the default clause index of bonds and loans by Fama-French industries.

	<b>Bond Sample</b>			<b>Loan Sample</b>		
	<b>#of bonds</b>	<b>Percentage</b>	<b>Mean Default Index</b>	<b>#of loans</b>	<b>Percentage</b>	<b>Mean Default Index</b>
Consumer Non-Durables	299	6%	9.81	687	7%	16.49
Consumer Durables	159	3%	10.50	291	3%	16.41
Manufacturing	367	8%	9.52	1,339	14%	16.49
Oil, Gas, and Coal Extraction and Products	317	7%	10.69	706	8%	16.23
Chemicals and Allied Products	289	6%	9.43	275	3%	16.23
Business Equipment	220	5%	9.73	1,246	13%	16.70
Telephone and Television Transmission	279	6%	9.97	390	4%	17.21
Utilities	892	19%	9.23	524	6%	15.46
Wholesale, Retail, and Some Services	353	8%	10.53	1,488	16%	17.10
Healthcare, Medical Equipment, and Drugs	158	3%	9.39	724	8%	16.71
Other	1,294	28%	11.79	1,691	18%	16.78
<b>Total</b>	<b>4,627</b>	<b>100%</b>		<b>9,361</b>	<b>100%</b>	

**Table 3: Summary Statistics**

This table reports summary statistics for the bond sample (*Panel A*) and the loan sample (*Panel B*). Variable definitions are presented in Appendix B.

<b>Panel A: The Bond Sample</b>						
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>P25</b>	<b>P50</b>	<b>P75</b>	<b>Std.Dev.</b>
Default clause index	2,545	9.97	8.92	9.73	11.15	1.78
R&D capital (%)	2,545	2.72	0.00	0.00	5.00	4.62
Uncollateralized debt	2,545	-0.11	-0.24	-0.12	0.00	0.18
Firm size	2,545	9.68	8.83	9.81	10.46	1.32
Leverage	2,545	0.25	0.16	0.23	0.32	0.12
Interest coverage	2,545	13.33	4.30	8.89	17.35	13.38
Market-to-book	2,545	1.87	1.23	1.56	2.29	0.85
Prior loan	2,545	0.84	1.00	1.00	1.00	0.37
Recent loan covenants	2,545	1.58	0.00	0.00	3.00	2.36
Bond rating	2,545	7.33	6.00	7.00	9.00	3.20
Yield spread	2,545	186.37	90.41	151.45	236.84	138.72
Bond size	2,545	12.05	11.92	12.61	13.22	1.94
Maturity	2,545	10.92	5.00	10.00	10.00	8.00
Number of covenants	2,545	4.38	2.00	5.00	6.00	3.31

<b>Panel B: The Loan Sample</b>						
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>P25</b>	<b>P50</b>	<b>P75</b>	<b>Std.Dev.</b>
Default clause index	3,439	16.23	14.70	15.94	17.53	2.48
R&D capital (%)	3,439	1.81	0.00	0.00	1.06	4.41
Uncollateralized debt	3,439	-0.06	-0.22	-0.08	0.06	0.24
Firm size	3,439	7.78	6.83	7.64	8.65	1.38
Leverage	3,439	0.32	0.18	0.29	0.41	0.19
Interest coverage	3,439	11.20	2.92	5.26	10.22	31.32
Credit rating	3,439	12.96	11.00	13.00	15.00	3.38
Market-to-book	3,439	1.66	1.14	1.41	1.86	0.88
Interest spread	3,439	157.19	60.00	125.00	225.00	122.88
Loan size	3,439	19.64	18.98	19.67	20.37	1.11
Maturity	3,439	45.70	25.00	56.00	60.00	23.32
Performance pricing	3,439	0.75	0.00	1.00	1.00	0.44
Number of lenders	3,439	11.66	5.00	10.00	16.00	8.43
Number of covenants	3,439	5.39	3.00	4.00	8.00	3.35

**Table 4: Determinants of Default Clause Restrictiveness in Bond Contracts.**

This table presents the OLS regression results for the relation between expected bankruptcy costs, credit quality, and the restrictiveness of bond default clauses. The dependent variable is the default clause index of a bond, calculated as the sum of the restrictiveness score for individual default clauses. The *t*-statistics are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels. Variable definitions are presented in Appendix B.

	<b>Dependent Variable: Default clause index</b>			
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<i><u>Firm characteristics</u></i>				
<i>R&amp;D Capital</i>	-0.07*** (-3.05)	-0.06*** (-2.74)		
<i>Uncollateralized debt</i>			-1.44* (-1.76)	-1.49** (-2.56)
<i>Firm size</i>	-0.28*** (-2.84)	-0.00 (-0.06)	-0.29*** (-3.04)	0.02 (0.20)
<i>Leverage</i>	1.32 (1.51)	-0.23 (-0.29)	2.89** (2.48)	1.43 (1.41)
<i>Interest coverage</i>	0.01 (0.75)	-0.00 (-0.42)	-0.00 (-0.05)	-0.01 (-1.35)
<i>Market-to-book</i>	0.05 (0.26)	0.06 (0.56)	-0.01 (-0.03)	0.02 (0.16)
<i><u>Bond characteristics</u></i>				
<i>Prior loan</i>		-0.61** (-2.42)		-0.69*** (-2.76)
<i>Recent loan covenants</i>		0.03 (1.20)		0.04 (1.54)
<i>Bond rating</i>		0.10*** (2.65)		0.08** (2.18)
<i>Yield spread</i>		-0.00 (-0.15)		-0.00 (-0.15)
<i>Bond size</i>		-0.12** (-2.34)		-0.17*** (-3.03)
<i>Maturity</i>		-0.00 (-0.41)		-0.00 (-0.80)
<i>Number of covenants</i>		0.27*** (9.61)		0.28*** (9.87)
Industry & year fixed effects	Included	Included	Included	Included
Lead underwriter fixed effects	Excluded	Included	Excluded	Included
N	2,545	2,545	2,545	2,545
Adjusted R <sup>2</sup>	0.15	0.59	0.14	0.58

**Table 5: Determinants of Default Clause Restrictiveness in Loan Contracts.**

This table presents the OLS regression results for the relation between expected bankruptcy costs, credit quality, and the restrictiveness of loan default clauses. The dependent variable is the default clause index of loan contracts, calculated as the sum of the restrictiveness scores for individual default clauses. Variable definitions are presented in Appendix B. The t-statistics are reported in parentheses. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels.

	<b>Dependent Variable: Default clause index</b>			
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<i><u>Firm characteristics</u></i>				
<i>R&amp;D Capital</i>	-0.02** (-1.98)	-0.02 (-1.43)		
<i>Uncollateralized debt</i>			0.31 (0.73)	0.22 (0.46)
<i>Firm size</i>	-0.34*** (-6.83)	-0.21*** (-2.73)	-0.35*** (-6.93)	-0.21*** (-2.79)
<i>Leverage</i>	-0.11 (-0.36)	-0.10 (-0.28)	-0.38 (-0.78)	-0.30 (-0.55)
<i>Interest coverage</i>	0.00 (0.61)	-0.00 (-1.01)	0.00 (0.54)	-0.00 (-1.00)
<i>Credit rating</i>	0.27*** (13.61)	0.19*** (6.98)	0.26*** (13.56)	0.19*** (6.97)
<i>Market-to-book</i>	-0.03 (-0.44)	0.02 (0.37)	-0.05 (-0.86)	0.00 (0.07)
<i><u>Bond characteristics</u></i>				
<i>Interest spread</i>		0.00*** (2.89)		0.00*** (2.86)
<i>Loan size</i>		0.03 (0.42)		0.03 (0.41)
<i>Maturity</i>		0.01* (1.78)		0.01* (1.84)
<i>Performance pricing</i>		0.26* (1.90)		0.27** (1.97)
<i>Number of lenders</i>		-0.01 (-0.88)		-0.01 (-0.89)
<i>Number of covenants</i>		0.07*** (2.62)		0.07*** (2.61)
Industry & year fixed effects	Included	Included	Included	Included
Lead bank fixed effects	Excluded	Included	Excluded	Included
N	3,439	3,439	3,439	3,439
Adjusted R <sup>2</sup>	0.24	0.48	0.24	0.48

**Table 6: Firm Level Default Clause Restrictiveness and Future Bankruptcy**

This table presents the hazard model results for the effects of firm level default clause restrictiveness on the likelihood of a bankruptcy filing one, two, and three years ahead. The firm level default clause index is calculated as the amount-weighted average of the default clause indices associated with a firm's outstanding loans and bonds, where the weights are the debt amount in each contract. The dependent variable is an indicator variable equal to one if the firm files for bankruptcy one, two, and three years ahead. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels.

**Panel A: Predict Bankruptcy One Year Ahead**

	<b>Coefficient</b>	<b>Hazard Ratio</b>	<b>Chi-square</b>	<b>p-value</b>
<i>Default clause index</i>	0.06***	1.06	12.44	0.000
<i>Bond covenant index</i>	0.03	1.04	0.42	0.519
<i>Loan covenant index</i>	0.01	1.01	0.12	0.734
<i>ROA</i>	-0.20	0.82	0.04	0.839
<i>EBITDA/liabilities</i>	0.24	1.28	0.51	0.475
<i>Leverage</i>	2.83***	16.96	51.02	<.0001
<i>Loss firm</i>	0.52	1.69	2.52	0.112
<i>Log market cap</i>	0.01	1.01	0.01	0.912
<i>Lag return</i>	-1.16***	0.31	16.27	<.0001
<i>Sigma</i>	0.74	2.10	0.49	0.484
<i>EDF</i>	0.07***	1.08	36.84	<.0001
Industry fixed effects		Included		
N		30,213		

**Panel B: Predict Bankruptcy Two Year Ahead**

	<b>Coefficient</b>	<b>Hazard Ratio</b>	<b>Chi-square</b>	<b>p-value</b>
<i>Default clause index</i>	0.04**	1.04	6.07	0.014
<i>Bond covenant index</i>	-0.01	0.99	0.02	0.899
<i>Loan covenant index</i>	-0.02	0.98	0.50	0.481
<i>ROA</i>	-1.48	0.23	1.83	0.176
<i>EBITDA/liabilities</i>	0.03	1.03	0.01	0.927
<i>Leverage</i>	3.05***	21.20	61.47	<.0001
<i>Loss firm</i>	-0.64	0.53	2.00	0.157
<i>Log market cap</i>	-0.07	0.93	1.62	0.203
<i>Lag return</i>	-0.83***	0.43	14.46	0.000
<i>Sigma</i>	1.88	6.62	2.37	0.123
<i>EDF</i>	0.01	1.01	0.19	0.659
Industry fixed effects		Included		
N		26,797		

**Panel C: Predict Bankruptcy Three Year Ahead**

	<b>Coefficient</b>	<b>Hazard Ratio</b>	<b>Chi-square</b>	<b>p-value</b>
<i>Default clause index</i>	0.02	1.02	1.63	0.202
<i>Bond covenant index</i>	0.01	1.02	0.07	0.795
<i>Loan covenant index</i>	-0.01	0.99	0.03	0.856
<i>ROA</i>	-1.72	0.18	2.15	0.142
<i>EBITDA/liabilities</i>	0.15	1.16	0.16	0.686
<i>Leverage</i>	2.75***	15.72	47.89	<.0001
<i>Loss firm</i>	-0.29	0.74	0.39	0.531
<i>Log market cap</i>	-0.03	0.97	0.28	0.597
<i>Lag return</i>	-0.09	0.91	0.43	0.512
<i>Sigma</i>	3.23**	25.34	6.34	0.012
<i>EDF</i>	-0.01	0.99	0.71	0.401
Industry fixed effects		Included		
N		23,597		

**Table 7: Default Clause Restrictiveness of Bonds and Future Bond Repurchases**

This table presents the probit model results for the effects of the default clause restrictiveness of bonds on the likelihood of a bond repurchase within one, two, and three years after the bond's issuance date. The dependent variable is an indicator variable for whether the bond is repurchased within six, nine, and twelve years after the bond issuance date. The reported numbers are average marginal effects and z-statistics. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels. Variable definitions are presented in Appendix B.

	<b>Dependent Variable: Bond repurchase</b>		
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
	<b>Short-term</b>	<b>Medium-term</b>	<b>Long-term</b>
<i>Default clause index</i>	0.002** (2.327)	0.002 (0.734)	0.001 (0.214)
<i>Firm size</i>	0.002** (2.341)	-0.002 (-0.648)	-0.004 (-0.813)
<i>Leverage</i>	-0.006 (-0.547)	0.010 (0.302)	-0.041 (-1.056)
<i>Interest coverage</i>	0.000 (0.566)	0.001*** (3.024)	-0.000 (-0.204)
<i>Stock return volatility</i>	-0.082*** (-2.616)	-0.175* (-1.784)	0.002 (0.019)
<i>Market-to-book</i>	0.004*** (2.962)	0.002 (0.359)	-0.003 (-0.399)
<i>Prior loan</i>	-0.011** (-2.211)	-0.047*** (-3.485)	-0.011 (-0.820)
<i>Recent loan covenants</i>	0.001*** (3.616)	-0.001 (-0.825)	0.002 (1.586)
<i>Bond rating</i>	0.001 (1.090)	-0.001 (-0.396)	0.005* (1.778)
<i>Yield spread</i>	0.000*** (2.760)	0.000*** (3.223)	0.000 (0.441)
<i>Bond size</i>	-0.005*** (-10.009)	-0.014*** (-5.802)	0.010* (1.653)
<i>Maturity</i>	-0.000 (-0.613)	-0.002*** (-3.479)	-0.000 (-0.322)
<i>Number of covenants</i>	-0.001* (-1.680)	0.009*** (5.587)	-0.002 (-1.167)
Industry & year fixed effects	Included	Included	Included
N	2,041	1,780	1,156
Pseudo R <sup>2</sup>	0.582	0.333	0.127

**Table 8: Default Clause Restrictiveness of Loans and Future Loan Amendments**

This table presents the Probit model results for the effects of firm level default clause restrictiveness on the likelihood of a loan amendment within one, two, and three years after the loan's origination date. The dependent variable is an indicator variable for whether the loan is amended within one, two, and three years after the loan origination date. The reported numbers are average marginal effects and z-statistics. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels. Variable definitions are presented in Appendix B.

	Dependent Variable: Loan amendment			Frequency of amendments
	(1)	(2)	(3)	(4)
	within 1 year	within 2 years	within 3 years	all years
<i>Default clause index</i>	0.005** (2.181)	0.004 (1.622)	0.005 (1.546)	0.005** (2.257)
<i>Firm size</i>	-0.022*** (-3.356)	-0.032*** (-3.970)	-0.032*** (-3.691)	-0.020*** (-3.102)
<i>Leverage</i>	0.015 (0.473)	0.043 (1.064)	0.063 (1.472)	0.023 (0.710)
<i>Interest coverage</i>	0.000 (0.847)	0.000** (2.276)	0.000*** (3.182)	0.000** (2.521)
<i>Stock return volatility</i>	0.207** (2.362)	0.282** (2.370)	0.241** (2.031)	0.309*** (3.237)
<i>Market-to-book</i>	-0.021*** (-3.152)	-0.038*** (-4.552)	-0.038*** (-4.241)	-0.026*** (-3.797)
<i>EDF</i>	-0.002* (-1.739)	-0.003** (-2.296)	-0.004** (-2.465)	-0.002** (-1.976)
<i>Interest spread</i>	0.000*** (3.462)	0.000*** (3.061)	0.000*** (3.148)	0.000*** (3.158)
<i>Loan size</i>	0.019** (2.323)	0.022** (2.119)	0.021* (1.815)	0.016** (1.971)
<i>Maturity</i>	0.001*** (2.891)	0.001* (1.649)	0.001 (1.462)	0.003*** (9.701)
<i>Performance pricing</i>	0.033** (2.472)	0.050*** (2.968)	0.068*** (3.666)	0.069*** (5.099)
<i>Number of lenders</i>	0.002* (1.807)	0.003** (2.380)	0.003** (2.392)	0.002** (2.188)
<i>Number of covenants</i>	0.014*** (7.055)	0.017*** (7.125)	0.018*** (6.961)	0.017*** (8.554)
Industry & year fixed effects	Included	Included	Included	Included
N	6,050	5,104	4,597	6,289
Pseudo R <sup>2</sup>	0.088	0.100	0.096	0.124