Measuring Contract Completeness: A Text Based Analysis of Loan Agreements*

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Abstract

Contractual incompleteness is one of the core principles in much of corporate finance theory, but the lack of quantitative measures of completeness has made direct empirical testing difficult. This paper helps fill this gap by proposing several measures of contractual detail using text based analysis. We analyze the default and covenant sections of a sample of private loan contracts, generating several measures of contract detail and of the use of common "boilerplate" language. Contracts are more complex when there is greater default risk, more uncertainty, longer maturities, and when lenders are nonlocal, and are associated with and increased likelihood of renegotiation. Default and covenant language also shares greater similarities for larger contracts and contracts with more lenders, suggesting a role for standardization at the expense of firm specific detail. We also find evidence that more complex loan contracts are associated with increases in operating performance suggesting that contractual completeness is associated with greater investment efficiency.

Key words: natural language processing; incomplete contracts; contract complexity; contract completeness; loan contracts; text analysis; transaction costs economics

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1 Introduction

Debt is often viewed as one of the simplest forms of financing, in which a contract specifies a fixed repayment amount and the failure to repay generates a default condition and a change in control. However, researchers have recognized that corporate debt contracts contain a large number of provisions and contingencies surrounding this somewhat simple transaction. These provisions serve to help complete the contract by spanning more specific states under which the borrower is in default of the debt. Understanding the purpose and consequences of these provisions is therefore necessary to fully understand the role of debt in firm financing.

A large and important literature has helped fill this need, describing the role which accounting based covenants, such minimum coverage ratios and capital expenditure limits play in the design of debt contracts. However, while extremely important, these specific covenants usually make up only a small portion of the debt contract itself. Debt contracts are often extraordinarily detailed, and contain hundreds of detail that result from contract negotiations. Using text based analysis of over 3000 private debt contracts, we propose direct measures of the complexity and detail of debt contracts and the extent to which these contracts contain contingencies or clauses which enrich the contract state space. These metrics capture significant detail about the contract which is not captured by existing metrics such as the number of standardized accounting covenants.

Debt contracts are subject to significant fine-tuning in the negotiation process, and for most large private debt contracts the contingencies specified in the contract are largely firm specific. Using text based measures of dissimilarity between contracts, we find that contracts to the same borrower, but from different lenders, are significantly closer to each other than contracts from the same lender to different firms. Moreover, this difference in increased similarity between common borrower and common lender is extremely large, indicating that the form of the contract is primarily being negotiated at the firm level. The language and complexity specified in the events of default is therefore primarily driven by concerns at the firm level, rather than the bank. This result also strongly rejects the idea that the events of

default are simply boilerplate language added to every contract by the loan department of a given lender.

Somewhat surprisingly, the similarity between contracts overall is actually greater for larger loans and loans with multiple lenders. This suggests that there is some scope for standardization when there is more at stake. However, the increase in common firm similarity is greater for larger loans, while the increase in common lender similarity is greater for smaller loans. This implies the need for more firm specific detail when there is more at stake.

We find that complexity is positively related to measures of ex-ante asymmetric information, consistent with the idea that the cost of contractual incompleteness is significantly higher in the presence of adverse selection. In this setting, the costs of asymmetric information are therefore partially remediated by more efficient contracting. Along similar lines, complexity is significantly higher for loans with multiple lenders, suggesting that the syndication process also increases the cost of incompleteness.

We find no evidence that the operational complexity of the firm contributes to the complexity of the loan contract. Conglomerate firms with more diverse operations and firms with foreign operations do not have more complex contracts, with the effects being insignificant and slightly negative in both cases, suggesting that if anything, operational complexity is negatively related to contract complexity. We do find evidence that more diverse capital structures leads to greater detail, where firms which finance their operations with a number of different types of financial instruments have more complex default provisions. Surprisingly, although contractual detail appears to be very firm specific, the complexity of the contract is not related to the complexity of the underlying operations of the firm. Rather, it appears to be primarily driven by the existing financial structure of the firm and the impact of the lending process on this financial structure.

We also find evidence of a partial tradeoff between the desire to specify complex contractual detail and the need for standardization. By identifying contracts through textual tokens, we are able to describe their distance from the most common set of contracts. This

distance measure forms an inverse measure of how standardized or "boilerplate" the contract is. Contracts with multiple lenders are significantly more standardized, while contracts with local lenders are more custom. The tradeoff between customization and detail creates an inherent tension between the desire to specify very firm specific contingencies with the coordination benefits provided by simply specifying a large number of common, legally unambiguous contingencies.

We find some evidence that the complexity of the default specification is positively related to the likelihood of renegotiation. Loan contracts with more detail are renegotiated more often after initiation. This supports the ideas proposed by Roberts and Sufi (2009) that contract design may be designed to shape renegotiation rather than to simply preclude it. There is weak evidence that renegotiation is negatively related to the average contract distance, meaning that more "custom" contracts are perhaps less likely to be renegotiated. This would be somewhat supportive of a Hart (2009) style framework in which complex contracts act as a reference point for future renegotiation.

We conclude our analysis by examining the impact of our measures of contractual detail on forward looking firm outcomes. Consistent with the idea that more complete contracts create less holdup and therefore allow for greater investment efficiency, we find that subsequent annual return on assets and sales growth are higher for firms which sign more detailed loan contracts, conditional on other contractual features such as loan size and covenant makeup. The overall evidence suggests that firms which are able to sign more detailed loan contracts are better able to exercise their growth opportunities.

Formally, a complete contract is one which specifies the rights and duties of each party in every possible state of the world. Since it is usually infeasible to cover the entire state space, gaps must naturally or strategically arise in which the contract parties are subject to ex-post bargaining (to fill the gaps) or inefficient ex-post transactions (when the gaps remain). Research in incomplete contracts, beginning with early work such as Williamson (1985) and Dye (1985), has produced a great deal of important debate on the form and

nature of contracts. Perfect contracting, on the other hand, is often a key assumption in a number of foundational models in finance, perhaps most notably in the Modigliani and Miller (1958) propositions. Defining perfect contracting has been critical to our understanding of the economic frictions that may prevent these economic models form holding, as well as in modeling the potential outcomes.

The literature on contracts has generated a great deal of debate on exactly why contracts may be incomplete and what potential costs may arise which cannot be solved through ex-post renegotiation. While a substantial amount of progress has been made in describing these contracting frictions, little research exists attempting to measure and test the form of contracts themselves. Part of the reason is that contract detail is often not easily quantified.

Contracts are, by definition, complex legal documents which specify duties and contingencies in formal language rather than easily defined data sets. We interpret *more complex* contracts as an attempt to span more of the future state space, arguing that complexity implies a "large number of clauses that are specified in detail" (Ariño and Reuer, 2006, 149) and a "greater [...] specification of promises, obligations, and processes for dispute resolution" (Poppo and Zenger, 2002, 708). In other words, we assume that contract completeness and contract complexity go hand in hand, and that complexity can at least partially be interpreted as an attempt to write a more complete contract.

We propose several measures of contract detail and complexity and apply them to a specific set of contracts, namely private loan contracts between firms and banks. More specifically, we consider two relatively uniform sections of a loan contract that specify the *events of default* and the *covenants* of a contract. While it is sometimes assumed that default is a simple binary condition on the timely completion of periodic repayments, in reality the default provisions of debt contracts go well beyond a simple statement of non-payment or reference to certain covenant provisions. Instead, default provisions are usually highly detailed and often specify a large number of specific contingencies in an attempt to span many different states of nature. While some are fairly simple, many are several pages long,

detailing a large number of provisions and possible outcomes that provide a highly detailed account of types of non-payment, restrictions on formal activities, and specify highly detailed descriptions of cross-default triggers. [1] Importantly for our work, default provisions are also fairly well spelled out in the uniform language of bank debt contracts. The vast majority of these loan agreements contain a well defined section entitled "Events of Default," which formalizes the states of the world in which the borrower is in default and outlines potential remedies. The covenant sections of each document contain more detail on the affirmative and negative demands placed on the firm, though this detail comes at the price of less uniformity. Covenant sections are often less well isolated defined in a contract, which reduces the sample, and the clause level detail is often more difficult to identify. Both sections however show similar results in our sample, and each provides an interesting window into the specific provisions which govern the contingencies in loan contracts.

We provide several sets of metrics for the complexity of these default sections. First, we perform a simple count of the words and sentences in the default sections and posit that longer default sections specify more clauses and contingencies. We use the number of *total words* to capture this property.[2] We further conjecture that a larger number of different or *unique words* used to describe the events of default—capturing the size or variety of vocabulary—is associated with both more distinct events of default and a more detailed description of these events of default. While these measures are obviously noisy, they are simple to understand and provide a reasonable approximation of the level of detail. We supplement this basic word approach with a dictionary approach, using an extensive dictionary of legal and financial related terms.

Next, we next use each default section to estimate a probabilistic topic model (Blei et al., 2003) to discover the general ideas or themes covered in default sections and provide a more fine-tuned measure for the number of distinct types of clauses. Topic models utilize

[1] Table A1 provides an example of an events of default section from our sample.

[2] Kosnik (2014) and Moszoro et al. (2014) use the length of individual articles or the entire contract as a measure for flexibility and complexity, respectively.

the natural distribution of words within written language to characterize the occurrence of specific topics within a given document. Generally speaking, a topic model is a latent variable model in which the distribution of topics described in a given document is estimated as a latent variable based on how the distribution of words in a document conforms to the distribution of words within a generic topic in natural language. The output of the model assigns a list of possible topics, as a distribution of words, to each document. These topics can be visually characterized by their most important words or word combinations. The number and concentration of topics within a document then provides a valuable measure of the scope of the contract. We use this approach to predict, for each clause in a default section, the distribution over topics. The most likely topic is then defined as the main topic of that sentence. This procedure then allows us to count the number of unique *main topics* in each default section. Documents with only a few main topics are relatively simple while documents with many main topics are more detailed.

Using the results from both the raw words and the identified main topics, we construct measures of similarity between contract pairs. Specifically, each contract can be thought of as a vector of words or topics over the space of N words or topics. A dissimilarity between two contracts can therefore be estimated as the cosine distance between these two vectors. The measure provides us with two important insights. First we can describe the similarity across different pairs, giving insight into which parties are driving the contract writing process. Second, we gain some insight into what factors drive the adoption of less "boilerplate" clauses, as contracts are on the periphery of one more clusters of contracts.

Taken together, these measures provide a unique set of metrics for measuring the scope of debt contracts and provide empirical evidence for the tradeoffs inherent in writing more complete contracts. By focusing on large bank loan contracts, we are able to relate these measures to various firm characteristics as well as variation in quantifiable loan features such as loan amounts and maturity. This enables us to provide important insight into what types of economic agents choose more or less complete contracts.

In addition to providing insight as to the determinants and outcomes of loan contract detail, a central contribution of this paper to the finance literature is its unique new framework for analyzing broad questions about financial contracting. The availability of textual contract data has been increasing exponentially, and our analysis provides a unique way of analyzing basic contract detail when those contracts are difficult to classify into an item based data set—either because of the sheer volume of documents or a potential researcher bias in their classification. Future research can utilize these tools to provide additional understanding of contractual completeness in other settings beyond loan contracts.

Our analysis is related and contributes to a number of strands of literature in economics and finance. For a comprehensive survey of the growing literature on textual analysis in finance and accounting, see Loughran and McDonald (2015). Masten and Saussier (2000) provide an overview of the general empirical literature of contracting. Saussier (2000) constructs an index of contract completeness (as sum of the number of key clauses included in the contract) to test predictions from transaction cost economics. More recently, Kosnik (2014) (hydroelectric license contracts), Moszoro et al. (2014) (public procurement contracts), and Beuve et al. (2015) (public and private procurement contracts) use textual analysis to study the tradeoff between flexibility and rigidity in contract language. The literature on probabilistic topic models is ever growing, and topic models have been used on a number of different types of document collections such as emails (McCallum et al., 2007), scientific abstracts (Blei et al., 2003; Griffiths and Steyvers, 2004) and articles (Blei, 2012; Hall et al., 2008), newspaper archives (Wei and Croft, 2006), and U.S. Supreme Court decisions (Livermore et al., 2015).

2 Theoretical Motivation

Ariño and Reuer (2006, 149) define complex contracts as "contracts with a large number of clauses that are specified in detail." We follow their line of reasoning and posit that

more detailed and thus more complex contracts are more complete because—as Poppo and Zenger (2002, 708) conclude from survey evidence—they hold a "greater [...] specification of promises, obligations, and processes for dispute resolution." In other words, we assume that contract completeness and contract complexity go hand in hand, and we can measure contractual completeness by using a metric for contractual detail to capture the complexity of the contract.

The economics literature on contracts has presented numerous factors that determine the degree of contractual incompleteness, i.e., lack of detail or complexity. Our approach is that contracts are not incomplete by assumption, but incompleteness is endogenously determined and parties to the contract may indeed find an incomplete contract more favorable. In this spirit, we discuss three sets of factors that have been identified as such determinants. First, drafting costs and benefits as a primary source of transaction costs; second, ex-ante asymmetric information; and third, costs of ex-post renegotiation of the contract.

2.1 Drafting Costs and Benefits

Contractual incompleteness has been broadly linked to transactions costs (Williamson, 1985, 1989). One type of such transaction costs are the costs associated with the drafting of the contract. At the early stage of drafting a contract, "search costs" represent the time and lost value inherent in researching and analyzing contingencies (e.g., Klein, 2002; Tirole, 2009), whereas at a later stage "ink costs" represent the time and lost value inherent in specifying these contingencies. These costs are associated with the actual costs or limitations of drafting a contract (Anderlini and Felli, 1994; Battigalli and Maggi, 2002, 2008; Dye, 1985; Melumad et al., 1997) and increase in the detail, precision, or complexity of the contract (Bajari and Tadelis, 2001).

A second transaction cost is the cost of enforcing and implementing contracts. A direct cost of enforcement is the cost of litigating contracts. Schwartz and Watson (2004) argue that more complex (i.e., complete) contracts may be more costly to enforce (i.e., litigate)

because more evidence is required. Another type of implementation costs are monitoring costs. More detailed contracts with more clauses imply higher costs of monitoring in order to detect violations. Given fixed costs of drafting a clause, if ex post monitoring costs increase and parties anticipate that enforcing some of these clauses will be too costly, contracts are predicted to be less complete.

We hypothesize that higher drafting costs result in less complete contracts. As such, more operationally complex companies—associated with higher drafting costs—may have simpler contracts. Alternatively, such contracts may be more complex as the benefits of specifying more detail around the company's operations may decrease the going forward cost of incompleteness.

Also related to the effect of transaction cost is the transaction benefit. We predict contracts will be more complete when there is greater value at stake since the direct tradeoff between the cost of specifying contingencies is offset by the greater value of specifying a more complete state space. In the context of debt contracts, we hypothesize more detailed contracts will be positively correlated with larger loan amounts and longer maturities, since they both increase the overall value at stake.

2.2 Asymmetric Information

Asymmetric information is an important feature in many models of contractual incompleteness. The relationship between information asymmetry and completeness depends on the specific framework. We take a broad view based on the transactions costs literature, where the costs of writing a complete contract are held fixed, but the costs of incompleteness vary with the potential for possible adverse selection and moral hazard. In these models, problems in asymmetric information can be partially remedied via more detailed contracting. Costly contracting acts as either a disciplining mechanism or as a screening mechanism for borrowers. If detailed contracting is costly in general, contracts will be less complex when information is ex-ante more symmetric. Specifically, we hypothesize that contract complex-

ity will be negatively related to firm age, asset tangibility, whether the borrower has a repeat relationship with the lender, and whether the lender is geographically close to the borrower.

3 Data and Methodology

3.1 Loan Documents

3.1.1 Document Collections

For our analysis, we use two collections of loan documents. First, our *full sample* comes from Nini et al. (2009), who extract the texts of a set of private loan contracts from their associated filings in the EDGAR database based upon a manual search starting from the Dealscan loan database.[3] Second, for our discussion of renegotiation, we collect a separate set of contracts which formed the basis for Roberts (2015) examination of dynamic contract renegotiation. These 250 contracts of the *renegotiation sample* represent 340 unique loan facilities, and are the original loan contracts whose future renegotiations have been tracked.

From each document in these two samples, we manually extract two types of sections. First, we extract the sections that specify the *events of default* to obtain a document collection $\mathcal{E}$ of 3051 events-of-default sections in the full sample and a document collection $\mathcal{E}^R$ of 250 events-of-default sections in the renegotiation sample. Second, we extract the sections that list the *covenants*[4] to obtain a document collection $\mathcal{C}$ of 2472 covenant sections in the full sample and a document collection $\mathcal{C}^R$ of 249 covenant sections in the renegotiation sample.[5]

In a final step, we split the documents in all document collections into their individual clauses. Instead of entire sections, the respective document collections ($\mathcal{E}_{Cl}$, $\mathcal{C}_{Cl}$, $\mathcal{E}^R_{Cl}$, and $\mathcal{C}^R_{Cl}$) contain the set of clauses c for all section $s \in \mathcal{E}, \mathcal{C}, \mathcal{E}^R, \mathcal{C}^R$.

[3] See Nini et al. (2009) for a detailed description of the search process. The data is available on Amir Sufi's website at http://faculty.chicagobooth.edu/amir.sufi/data.html.

[4] We extract all sections labeled Affirmative Covenants, Negative Covenants, Financial Covenants, or simply Covenants.

[5] One of the contracts in the renegotiation sample does not contain a covenant section.

3.1.2 Terms and Phrases

We can represent each document d (where d is either a full section in $\mathcal{E}$, $\mathcal{C}$, $\mathcal{E}^R$, or $\mathcal{C}^R$; or an individual clause in $\mathcal{E}_{Cl}$, $\mathcal{C}_{Cl}$, $\mathcal{E}^R_{Cl}$, or $\mathcal{C}^R_{Cl}$) by its term-frequency vector $\vec{w}_d$. Each element in this vector represents the frequency which with a given term is used in the document:

$$\vec{w}_d = (w_{d1}, \ldots, w_{dn})$$

where w_{dg} is the frequency of a term g of n different terms in document d. For the construction of the list of n terms, we take two different approaches.

- *Unigrams:* All words (i.e., *unigrams*) used in the document collection, excluding so-called "stop words."[6]
- *Dictionary:* All terms and (multi-word) phrases in the document collection that are also found in a dictionary of terms, phrases, and abbreviations from finance, accounting, and law.[7]

Table 1 provides summary statistics for our four document collections. *Terms and phrases (unigrams)* is the total number of unigrams in a given document d, $\sum_{g=1}^{n} w_{dg}$, reflecting the length of the section or clause. *Unique terms and phrases (unigrams)* is the number of distinct unigrams, $\sum_{g=1}^{n} \mathbf{1}_+ w_{dg}$ with $\mathbf{1}_+ = 1$ if $w_{dg} > 0$ and zero otherwise. *Terms and phrases (full dictionary)*, *Terms and phrases (finance)*, and *Terms and phrases (law)*, represent the number of distinct terms and phrases from the dictionary (for the *full* dictionary and, sep-

[6]These are words such as "a", "an", "the", or "that". For a list of stop words to exclude, we adapt the list provided by the SMART information retrieval system (Salton, 1971) containing 571 words. We first pre-process documents in the following steps: convert all words to lower case, remove punctuation, and delete numbers, number words (1 through 100), roman numerals, and stop words. In a last step we stem the words, that means, we erase word suffixes to obtain the words' radicals, using the R implementation of Porter's stemming algorithm (Porter, 1980).

[7]The full dictionary comprises 40,489 terms. We use Campbell Harvey's finance glossary (`http://people.duke.edu/~charvey/Classes/wpg/glossary.htm`), Black's Law Dictionary (Black et al., 1990), the legal dictionary at the Legal Information Institute (`https://www.law.cornell.edu/wex/all`), and the online version of the New Oxford Companion to Law (Cane and Conaghan, 2009). We stem the terms and phrases.

arately, the *finance* and *law* dictionaries). *Clauses* is the number of clauses per section, and the *Average length of clauses* is the average number of unigrams in the clauses of a section.

3.1.3 Topic Models

Individual clauses in the events-of-default sections (covenant sections) hold the specified events of default (affirmative, negative, as well as financial covenants). Because multiple clauses may simply represent extraneous detail on a single event of default or a covenant, we construct an alternative measure for the number of distinct events of default or covenants. We construct this measure by determining the "main topic" of each clause c and then tally the number of distinct main topics for each section s. These main topics can be uncovered by means of probabilistic topic models that help discover the themes or topics in a sample of text documents. We use the *Latent Dirichlet Allocation (LDA)* model (Blei et al., 2003) which Blei and Lafferty (2009) describe as the "simplest topic model" and "has proven hugely popular" (Taddy, 2012). These models have recently begun to see significant use in finance and accounting related research (see Ball et al., 2015; Gupta and Israelsen, 2015; Huang et al., 2015; Kogan et al., 2009) as a tool for analyzing language based data.[8]

Probabilistic topic models uncover the latent topical structure of a document by analyzing the co-occurrence of terms and phrases used in the document.[9] The underlying idea is that authors first decide which topics (i.e., which events of default or covenants) to cover before drafting the document. A document thus becomes a collection of multiple topics. The LDA topic model describes such a topic k as a *per-topic word distribution* $\vec{\beta}_k$ over the vocabulary of terms and phrases. Moreover, for a document collection $\mathcal{D}$, holding documents that cover K topics, each document $d \in \mathcal{D}$ will exhibit these K topics with different proportions

[8]Blei and Lafferty (2009), Blei (2012), or Steyvers and Griffiths (2011) provide an introduction to probabilistic topic models. Topic models have been used on a number of different types of document collections such as emails (McCallum et al., 2007), scientific abstracts (Blei et al., 2003; Griffiths and Steyvers, 2004) and articles (Blei, 2012; Hall et al., 2008), newspaper archives (Wei and Croft, 2006), and U.S. Supreme Court decisions (Livermore et al., 2015).

[9]The approach taken is a "bag-of-words" approach in which the order of terms and phrases does not matter. See Blei (2012) for a discussion of some of the assumptions and proposed extensions.

according to a *per-document topic distribution* $\vec{\theta}_d$. The data we observe are the documents in a collection $\mathcal{D}$ and the terms and phrases $\vec{w}_d$ used in each document $d \in \mathcal{D}$. The topics, however, are not observed. We apply LDA to reverse this process of topic generation and automatically discover the latent topical structure. This means, we obtain estimates for $\vec{\beta}_k$ (for $k = 1, \ldots, K$) and $\vec{\theta}_d$ (for $d \in \mathcal{D}$).

To obtain the list and number of distinct events of defaults (for $\mathcal{E}$ and $\mathcal{E}^R$) and distinct covenants (for $\mathcal{C}$ and $\mathcal{C}^R$), we follow a two-step approach. First, to obtain the main topic for a given clause, we estimate the topic model with $K = 30$ topics on our document collections with clauses, $\mathcal{E}_{Cl}$ and $\mathcal{C}_{Cl}$, for the full sample. For each clause c in a full section s, we obtain the per-document topic distribution

$$\vec{\theta}_{cs} = \left(\theta_{1|cs}, \ldots, \theta_{K|cs}\right)$$

over K topics, with $\sum_{k=1}^{K} \theta_{k|cs} = 1$. Each $\theta_{k|cs}$ represents the weight with which a topic k is covered in clause c.

Second, we assume that, in practice, each clause was written to cover only one topic. For instance, each clause in an events-of-default section is written to introduce one type of event that triggers default of the loan. We call this topic the *main topic* k_{cs} of a clause and define it as the topic with the highest topic density $\theta_{k|cs}$:

$$k_{cs} = \arg \max_{k=1,\ldots,K} \theta_{k|cs}. \tag{1}$$

For a count of main topics for each full section s in $\mathcal{E}$ and $\mathcal{C}$, the union of main topics gives us the set of topics that are a main topic for at lease one clause c. We interpret this set of main topics as the set of events of default (for $\mathcal{E}$) or covenants (in $\mathcal{C}$) specified in a full section s. We obtain a vector $\vec{k}_s$ with $K = 30$ elements, each being equal to 1 if topic k is a main topic at least once, and zero otherwise. The number of main topics as the number of

events of default or covenants is then:

$$\text{main topics}_s = \sum_{k=1}^{K} \vec{k}_s. \tag{2}$$

For the renegotiation sample, we construct the set of main topics (and distinct events of defaults or covenant) analogously, with one exception. As the first step, we predict the per-document topic distribution $\vec{\theta}_{cs}$ for the clauses in the renegotiation sample using the respective estimated topic model from the full sample.

Table 1 provides summary statistics for the number of main topics per section for both the full sample and the renegotiation sample. We estimate the topic model using the vector of unigrams and the vector of terms and phrases from the full dictionary.

Table A3 provides additional information for the 10 topics which are best described by a simple probit model as ranked by their Psuedo-R^2. First, we describe the topic through a representative list of terms and phrases that define the topic, based on the per-topic word distribution $\vec{\beta}_k$ with the density of a given term $g = 1, \ldots, n$ in topic k denoted by β_{kg}. For each topic, we list the ten most relevant terms and phrases. Sievert and Shirley (2014) define *relevance* of a term or phrase g in topic k as

$$\text{relevance}_{gk} = \lambda \log \beta_{kg} + (1 - \lambda) \log \left(\frac{\beta_{kg}}{\omega_g} \right) \tag{3}$$

where ω_g is the relative frequency of a term g in the entire document collection (full sample).[10] We also list representative clauses for each of the common topics. We rank each clause (from the full sample) that exhibits a common topic by its length and list the clauses at the 25th as well as the 75th percentile.

[10] For $\lambda = 0$ this relevance measure reduces to the *lift* of a term (Taddy, 2012), that is, the ratio of a term's probability within a topic (β_{kg}) to its probability in the entire document collection (ω_g). A value of $\lambda = 1$ ranks the terms and phrases according to their topic-specific probabilities β_{kg}. We follow Sievert and Shirley (2014) who suggest a value of $\lambda = 3/5$.

3.1.4 Boilerplate Contracts

The distance between the loan documents gives us a measure of how similar one loan contract is from another, and by extension, how similar the unique writing of a given contract is relative to the rest of the sample. For our measure of distance between two loan documents i and j, we use the *cosine similarity*, defined as the cosine of the angle between two vectors $\vec{x}_i$ and $\vec{x}_j$:

$$\text{dist}(i,j) \equiv 1 - \frac{\vec{x}_i \cdot \vec{x}_j}{||\vec{x}_i||\ ||\vec{x}_j||} \qquad \text{with } ||\vec{x}_i|| = \sqrt{\sum_{l=1}^{n} x_{i,l}^2} \tag{4}$$

For $\vec{x}_i = \vec{w}_i$, we obtain a distance measure based on word counts,

$$\text{word distance}_{ij} = 1 - \frac{\vec{w}_i \cdot \vec{w}_j}{||\vec{w}_i||\ ||\vec{w}_j||}$$

whereas for $\vec{x}_i = \vec{k}_i$, our distance measure is based on the set of main topics,

$$\text{topic distance}_{ij} = 1 - \frac{\vec{k}_i \cdot \vec{k}_j}{||\vec{k}_i||\ ||\vec{k}_j||}$$

We use these distance measures to determine how similar or dissimilar a given contract i is from a boilerplate (or standard) contract available at that time. To identify the boilerplate contract, we employ k-medoid clustering of all contracts $\mathcal{J}$ (with $i \in \mathcal{J}$) that were signed in the same or the preceding seven quarters as contract i.[11] In other words, we cluster all contracts signed within a rolling two-year window, with i signed during the most recent quarter. We denote the medoid of contract i's cluster as $m_{i\mathcal{J}}$.[12] The distance of a contract i to its boilerplate contract is then

$$\text{distance to boilerplate}_i = \text{dist}(i, m_{i\mathcal{J}})$$

[11] The k-medoid method (or *partitioning around medoids*) is a more robust variation of the k-means method.

[12] The medoid of a cluster is the element whose average dissimilarity to all other elements in that cluster is minimized. We use the cosine distance $\text{dist}(i,j)$ to measure this dissimilarity.

Table 2 provides basic summary statistics for the distance to boilerplate. We conduct our clustering approach with one cluster as well as four clusters. In the former case, all $i \in \mathcal{J}$ have the same, unique medoid. In the latter case, a contract i is assigned to one of four clusters with one of four medoids.

Our approach of defining a boilerplate (or standardized) contract as the medoid of a cluster of a moving set of contracts $\mathcal{J}$ implies that the boilerplate contract changes over time. The results with four clusters further imply that an any given point in time, there are (by definition) four boilerplate contracts. Note, however, that these clusters are not evenly populated, and the medoid of a heavily populated cluster is presumably more "boilerplate" than the medoid of a thinly populated cluster.

3.2 Loan and Firm Specific Data

We match the loan contracts to firm level data in CRSP/Compustat and to loan level data in Dealscan. For each loan contract, we match the financial data from the most recent closing quarter prior to the initiation of the loan. We calculate the daily stock return volatility over the previous four quarters up to the most recent closing period. Firm size is the log of total assets, the tangible asset ratio is the net property, plant, and equipment divided by the total assets. Firm age is the number of years the firm has appeared in Compustat. Segment concentration is calculated as the Herfindahl-Hirschman (HHI) index of sales across all business segments in the Compustat segments file as of the most recent closing year. Debt type concentration is the HHI index of debt type (ordinary, convertible, secured, subordinated debt, and preferred stock) as a fraction of total debt and preferred stock. Age is calculated as the number of years the firm has existed in Compustat, and stock return volatility is calculated as the annualized daily volatility over the previous years. Finally, in order to measure default risk more directly, we estimate the "Expected Default Probability" from a Merton (1974) model using the methodology of Vassalou and Xing (2004). This estimates the theoretical default probability for each sample firm prior to the

signing of the loan.

For each contract, we match the loan to its associated record in the LPC Dealscan database. Using the Dealscan records, we calculate the total dollar amount of all facilities in the loan package and the average maturity in months. For loan packages with multiple loans, we match the contract section in the primary facility which usually represents the most detailed terms. We match the number of unique lenders for each loan package from Dealscan records, and we record whether the loan was from a repeat lender, which we define as having borrowed from the same bank within the past five years. We calculate a "local bank" indicator which takes a value of one if one of the lead lenders has its headquarters within 100 miles of the firm's headquarters. We also count the number of loan covenants as determined by Nini et al. (2009). Summary statistics for firm and loan level data are provided in Table 3. Correlation coefficients are reported in Table 4.

4 Determinants of Contractual Detail and Similarity

4.1 Who Determines the Contract?

We begin our discussion by first examining our measures of contract similarities. As mentioned in Section 3, we calculate the similarity between two documents as the cosine distance between vectors of main topics or of words in a V-dimensional vocabulary space. Each contract pair generates a cosine distance ranging from 0 to 1, where 0 is identical occurrence of each 1 is maximally different. The difference between contracts can give us a sense of how specific each contract is to a given firm, bank, industry, or time period. Since the distance between two given contracts can be expressed as a function of having the same borrower, lender, or industry, the overall change in distance helps distinguish whether these default provisions are firm specific or whether they are largely determined at the bank level.

For the entire space of contracts, we have 5,502,903 unique contract pairs representing

3318 contracts.[13] For each pair of contracts, we observe whether the pair of contracts shares the same borrower, the same lender, the same industry (4-digit SIC code) or was written in the same year. Each of these indicators indicates the conditional difference in mean distance between contracts as a function of sharing the same characteristics. This gives us a measure of the extent to which shared similarities in the loan counter-parties affects the similarity of the loan contract itself.

We present results for both the topic distance and the overall word distance in Table 5. Column (1) presents the results for the full sample, with indicators for loans made to the same borrower, loans made from the same lead lender, loans made during the same year, and loans made to borrowers in the same industry. While each of these indicators is statistically significant, the *same borrower* indicator is an order of magnitude larger than the *same lead lender* indicator, being about 6 times larger in the case of topic distance and 10 times larger in the case of word distance. This result strongly rejects the idea that the events of default are simply a set of boilerplate terms offered by a given bank. While lenders do exert influence on the common components of the contract, this influence is dwarfed by the influence of the borrower. The firm appears to be actively negotiating similar contracts from different banks, conditional on its own needs, rather than simply acting as a passive "taker" of contract terms set by each individual bank.

In column (2) we separate contract pairs into groups which are above and below $100 million in total loan amount to understand how loan size affects the customization of default language. Similarly, in column (3) we separate contract pairs which are loans made funded by multiple syndicated lenders and loans made by a single bank. Since we are interested in comparing contract pairs within these groups, this reduces the overall sample size as we exclude, for instance, pairs in which one loan is above $100 million and another is below $100 million. Larger and more widely syndicated loans are significantly "closer" to each other than smaller, single lender loans. Larger loans appear to have less scope for customization

[13] We lose 126 contracts due to parsing errors.

in terms of allowable defaults. This may result from issues of enforceability, where larger loans demand more uniformity and give less scope to the borrower for negotiation of terms.

To test this question more directly, we interact the *same borrower* and *same lead lender* terms with the size and syndication dummies in columns (5) and (6). The results support this basic hypothesis, where the influence of having the same lead lender becomes larger for larger, syndicated loans while the same borrower impact is reduced. This indicates that the lenders appear to exert more influence over the terms of the loan when the loan is larger and funding is more complex. It also indicates that each lender is influenced by a set of unique economic circumstances which drive the negotiating process.

4.2 Determinants of Complexity

We first examine the firm and loan level determinants of our word count measures. We regress the total word count and the unique word count on firm and loan level measures of contracting costs, information, and risk in the quarter just prior to the initiation of each loan. We also add several controls for the financial condition and investment opportunities of the firm, as well as the number of covenant restrictions. Each of our specifications also contains year fixed effects to account for possible time variation in the structure of loan contracts.[14]

The results are presented in Tables 6 and 6. Each of the columns presents a different complexity measure for the contracts. Columns (1) and (2) present the number of total (1-gram) words and the number of unique words. Columns (3) and (4) use a dictionary approach, counting the number of law related terms and finance related terms identified by their respective dictionaries. Finally, to avoid simply capturing arbitrary "wordiness" in the contract, column (5) present results for the number of individual clauses, and column (6) uses the number of uniquely identified main topics from our 30 topic LDA topic model. As previously mentioned, this last approach is an attempt to capture "unique clauses" in a meaningful linguistic way.

[14]Note that we lose a number of observations in our determinant regressions due to missing data for the determinants.

The results are fairly similar across most of our measures. As might be expected, higher firm leverage higher credit risk, as proxied for by stock return volatility and our Expected Default Frequency measure, leads to a lengthier events of default section in each loan. The detail of each default section is correlated with default risk, in much the same way that the application of accounting covenants is correlated with default risk. However, even after controlling for the number of debt covenants, these items have considerable predictive power, implying that these measures are capturing additional information beyond the standard approach of counting accounting covenants.

Consistent with our hypotheses regarding stake size, both word count measures are significantly positively related to loan amount and maturity. Simply put, when the monetary stakes are larger overall in terms of both principal and cumulative interest, there is more need for greater detail in specifying the default states. This effect is fairly consistent across all specifications, with the exception of our clause count measure which appears to have slightly worse fit across the board.

When the lead lender is located in close geographic proximity to the borrower (within 100 miles), there is a general trend towards a reduction in overall complexity. Consistent with the literature on local finance, contract detail appears to exist in part to contract away adverse selection problems between the borrower and lender. This demonstrates another dimension along which local information impacts the form of firm financing. However, repeat lending relationships do not appear to affect the complexity of defaults, though there is some evidence that covenant sections are less detailed. This is perhaps surprising given the existing work on lending relationships over time, but the information benefits of repeat lending relationships do not appear to impact the specificity of defaults. Loans which are syndicated to multiple lenders contain significantly more complex language than loans with a single lender. The syndication process appears therefore to require more complexity in the loan contract in order to resolve information problems between lenders. This also lends context to our contract pair tests, where lenders appear to demand more lender specific provisions when the loan is

syndicated to multiple banks.

One further idea which we wish to examine is whether the complexity of the contract is merely a proxy for the complexity of the firm. This is important in light of the fact that the firm, rather than the bank or the industry, appears to be the most important determinant of contract specificity. To answer this question, we construct two measures of operational complexity and one further measure of financial complexity. To proxy for firm complexity we take the segment concentration, which is the HHI index of sales concentration across Compustat business segments and a dummy taking on a value of 1 where the firm reports income from foreign operations. Segment concentration appears to have little effect on contract complexity, with two of the covenant specifications indicating marginally less detail for more operationally complex firms. The presence of foreign operations has a very marginal negative effect, suggesting that the complexity of these default sections do not simply reflect the need to specify states across more operational outcomes.

Conversely, the complexity of the firm's existing financing does appear to impact the complexity of the contract. We measure debt concentration as the HHI index of the book value of the firm's debt and preferred stock financing. Specifically, we calculate the concentration measure of the percentage of financing made up by convertible debt, secured debt, subordinated debt, ordinary debt, and preferred stock. Firms with a lower existing debt concentration show significantly more complexity in their new bank loan contracts. The importance of properly specifying the default space is therefore not limited to the debt extended in the contract itself. Rather it increases as the complexity of the financial claims against the firm increases. Moreover, it appears to do so in a way that is not simply covered by a standard cross-default clause.

4.3 Contract Language Distance and "Boilerplate" Contracting

In addition to measuring the relative amount of detail of these default sections, we can also get some sense of the relative standardization of the contract detail by examining the

average distance of the contract to all other contracts in the sample. Specifically, we take the cosine distance measures described in Section 3.1.4 and take the distance between each contract and the closest cluster of contracts from a rolling window. Each of these measures is calculated for a different set of token vectors and a different set of possible clusters. We present results using both raw words and dictionary word approaches, as well as describing each document as a vector of main topics, and we present results as a distance from a single most-common contract or four most-common contracts which represent the most compact clusters for the period. This roughly measures how customized the language and terms of a given contract relative to the group. Contracts with a high distance contain more language which is not found in the majority of contracts in the sample and omit words or topics which are found in the majority of the sample. Thus a contract with a smaller distance is a contract which is more like other contracts and can therefore be described as more uniform or more "boilerplate".

Using these measures of average distance as a measure of contract customization, we estimate the determinants of overall contract distance as a similar function of firm and loan level variables. In Tables 8 and 9 we present the results of these regressions. Both default sections and covenant sections exhibit significantly more uniformity when they are syndicated by multiple lenders and exhibit more custom language when a local lender is involved. Our measures of stake size seem to be largely unrelated to contract customization as do our measures of capital structure diversity. Alternatively, operational complexity seems to matter more significantly, as companies with simpler operations tend to sign more custom contracts. This relationship appears unrelated to the size or age of the company, and suggests an inherent tradeoff between the complexity of the firm, and the difficulty of providing less boilerplate debt contracting where legal uncertainty may conflict with operational detail.

In addition, customization is negatively related to the simple count of accounting covenants. This is perhaps to be expected, since accounting covenants make up some of the most concrete and well defined restrictions that can be placed on the firm. Thus contracts may

try to trade off fewer standard accounting covenants for more specific but less well defined restrictions elsewhere in the contract.

Overall, the results suggest a tension between the complexity of the contract and the desire for standardization. Standardization provides significant benefits in coordination between multiple contracting parties, but it comes at the expense of allowing for more flexibility in the contracting space itself. The overall picture therefore appears to be one in which the majority contracts tend to specify a large number of off-the-shelf restrictions and contingencies. Those contingencies may be sub-optimal, but the nature of the firm's operations and the firm's negotiating counter-parties place restrictions on the customization which can be achieved.

4.4 Determinants of Individual Topics

To further mine the details of our topic model, we examine how specific topics vary in their level of detail. A detailed inspection of the assignment of main topics for each clause in our topic model reveals a fairly low level of misclassification for the most frequent topics. That is, taking the highest probability of a topic for each clause yields a topic assignment which only rarely seems to be unrelated to the rest of the identified clauses in other documents. However, the model also tends to assign more general ideas, such as clauses which deal with the specifics of bankruptcy filings into several different topics.

In order to further probe the nature and meaning of these topics, we estimate the inclusion of a given topic in a contract using a probit model. Some topics are either effectively universal, such as the declaration, while a few others appear to be poorly defined and not particularly meaningful. In order to reduce the sample to a set of topics which we deem economically important, we present the 10 topics for which our probit models generate the best fit in terms of Pseudo-R^2. This has the effect of both reducing our sample of topics to ones which are more likely to be meaningful and reducing the relevant analysis for the reader. We present these estimates in Tables 10 and 11. Since each topic number is effectively

arbitrary, we present on the first page of each Table a description of the topics and the key words associated with that topic. Further examination of the representative clauses can be found in the Appendix.

The most significant main topics appear to primarily deal adverse changes to either the operation of the firm or the collateral or other debt securities of the firm. Each of them seeks to provide a general prescription for dealing with changes to the basic state of the firm's state which might make repayment more difficult or could potentially give other counterparties a priority claim on the assets of the firm outside of default. For the covenant sections, the most important topics are related to either restrictions on the operations and investment of the firm and specific detailed prohibitions on any activities which may change the priority structure of the firm's debt, either explicitly in the case of subordination or implicitly in the case of further indebtedness which may come due before the loan. For these types of covenant restrictions, the complexity of the capital structure heavily influences their use, again confirming the idea that one of the most important factors in debt design is understanding potential expropriation by other existing claimholders.

Of additional interest is the topics which appear to define very specific and detailed circumstances such as what exactly constitutes receivership or involuntary bankruptcy, and those topics which are very short and describe very broadly defined items such as "A change in control." Such simple catchalls are more likely in loans by multiple lenders, whereas topics involving more specific detail detailed are more likely with single lenders. This gives additional evidence of the way in which standardized loans may specify a large number of provisions, but those provisions are designed to be overly broad in order to satisfy multiple counterparties.

4.5 Contract Detail and Renegotiation

Finally, for a subset of contracts we examine whether the complexity of the contract impacts the frequency with which a loan contract is renegotiated. For this exercise, we track down

as many of the original loan contracts from Roberts (2015) sample of renegotiated loan contracts and calculate our complexity measures based on the text of the initial contract. Similar to this analysis, we estimate a zero-inflated negative binomial model to estimate the number of times a given loan was amended as a function of our complexity and similarity measures. For our topic models and average distance measures, we calculate their values as compared to the full sample of contracts examined in the rest of the paper, rather than just the renegotiated subsample. Table 12 reports these results.

While our sample is fairly small, we do find some evidence that the number of renegotiations is positively related to the complexity of the contract and negatively related to the customization of the contract. This result implies that more complex contracts do not preclude renegotiation. Rather, they act as a loose framework for shaping renegotiation. Alternatively contracts distance does appear to have some effect, where less boilerplate contracts are renegotiated less. This suggests a roll for contracts as a benchmark for renegotiation, where standard, somewhat strict contracts are signed with the intention of being renegotiated in the future.

5 Contract Detail and Ex-post Changes in Performance

In this section, we examine the relationship between our contract completeness measures and measures of ex-post performance and cash saving behavior. More complete contracts should be related to the relative efficiency of investment. Further, if firms are willing to bear the costs of greater contract specificity, it is likely that they have an expectation of future performance increases as they exercise their growth options.

To investigate this, we examine the relationship between future return on assets and sales on our measures of contract detail. We regress the annual change in return on assets, summed over the four quarters starting after the initiation of the loan on our measures of contract detail. We also examine sales growth over the same period. Tables 13 and 14

present the results of these tests.

The annual change in ROA is positively related to each measure of complexity. Similarly, annual sales growth is also positively related to these measures. In both cases, greater contract detail is associated with an increase in overall performance. This increase in performance also appears to be distinct from any correlation with credit quality. The change in return on assets is not significantly related to the credit quality of the firm at the invitation of the loan, and the change in sales growth is negatively related to these measures, with lower quality firms having lower overall sales growth. Overall, the signing of more detailed contracts predicts an increase in subsequent performance that is unrelated to the risk of the firm as of the contract signing.

6 Conclusion

We propose several new text based measures of loan contract completeness. We find strong evidence of a cost and benefit to contractual detail, where more complete contracts come at a benefit to investment efficiency, but in which writing detailed contracts has a significant cost. We find that renegotiation and information costs play a significant role in the writing of debt contracts, and that firms which are able to write more detailed and complete contracts see greater future returns and sales growth.

Our measures provide a direct method for analyzing text based contracts without the need to categorize the details of the contract into potentially arbitrary categories. By applying analytical measures directly to the text of contract, we also open up new possibilities for research by eliminating the need to manually categorize these complex textual documents. This should open up new avenues for future research in analyzing issues in contractual completeness and the large number of detailed contractual forms which bind firms to their various stakeholders.

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Table 1: Summary Statistics - Terms and Topics

This table presents summary statistics for the document collections of *full sample* (both SECTIONS and CLAUSES) and *renegotiation sample* (both SECTIONS and CLAUSES). Terms and phrases (unigrams) represents the total number of terms and phrases from our dictionary used in the documents. Unique terms and phrases (unigrams) represents the number of distinct terms and phrases used in the document. Terms and phrases (full dictionary), Terms and phrases (finance), and Terms and phrases (law) represent the total number of terms and (multi-word) phrases for the full dictionary and broken down by finance and law terms. Clauses represents the number of clauses in a section and Average length of clauses the average number of unigrams in the clauses of a section. Main topics (unigrams) and Main topics (full) represent the number of distinct main topics that the individual clauses of a section exhibit (for the topics model based on the unigrams and the full dictionary, respectively).

	Mean	SD	Min	Max	Mean	SD	Min	Max
	FULL SECTIONS							
Full Sample	Events of Default $\mathcal{E}$ (= 3051) $n_{\mathcal{E}}$ = 3947 (full: $n_{\mathcal{E}}$ = 3115)				Covenants $\mathcal{C}$ (= 2472) $n_{\mathcal{C}}$ = 9767 (full: $n_{\mathcal{C}}$ = 6247)			
Terms and phrases (unigrams)	527	132.5	128.0	1308	2481	1272.0	252.0	9245
Unique terms and phrases (unigrams)	212	37.1	61.0	356	514	121.6	139.0	928
Terms and phrases (full dictionary)	218	39.6	59.0	362	571	135.7	161.0	1025
Terms and phrases (finance)	82	15.5	21.0	141	224	54.4	54.0	395
Terms and phrases (law)	210	38.3	56.0	347	542	127.9	152.0	961
Clauses	14	3.0	5.0	29	27	8.9	5.0	69
Average length of clauses	40	13.2	9.5	518	96	71.7	16.8	2270
Main topics (unigrams)	12	2.0	5.0	18	18	4.1	5.0	27
Main topics (full)	12	2.1	5.0	19	18	3.9	5.0	26
Renegotiation Sample	Events of Default $\mathcal{E}^R$ (= 250) $n_{\mathcal{E}^R}$ = 1577 (full: $n_{\mathcal{E}^R}$ = 1654)				Covenants $\mathcal{C}^R$ (= 249) $n_{\mathcal{C}^R}$ = 4772 (full: $n_{\mathcal{C}^R}$ = 4429)			
Terms and phrases (unigrams)	565	251.5	62.0	3437	4070	6224.2	303.0	66448
Unique terms and phrases (unigrams)	221	50.8	40.0	586	598	230.5	151.0	2107
Terms and phrases (full dictionary)	226	53.3	45.0	616	663	238.1	166.0	2103
Terms and phrases (finance)	84	18.3	17.0	217	258	85.6	60.0	712
Terms and phrases (law)	218	51.5	42.0	591	627	218.3	160.0	1927
Clauses	14	3.7	5.0	27	32	19.3	9.0	187

Continued on next page

Table 1 (continued from previous page)

	Mean	SD	Min	Max	Mean	SD	Min	Max
Average length of clauses	42	21.0	15.2	285	117	97.2	3.1	1036
Main topics (unigrams)	12	2.2	4.0	18	13	9.5	5.0	29
Main topics (full)	12	2.4	4.0	19	13	9.2	5.0	28
	Clauses							
Full Sample	Events of Default $\mathcal{E}_{Cl}$ (= 41352)				Covenants $\mathcal{C}_{Cl}$ (= 66235)			
Terms and phrases (unigrams)	39	34.2		605	93	132.1		6320
Unique terms and phrases (unigrams)	26	18.3		213	47	42.8		750
Terms and phrases (full dictionary)	27	19.0		233	51	46.7		801
Terms and phrases (finance)	10	7.6		83	21	19.1		313
Terms and phrases (law)	26	18.3		227	49	44.6		755
Renegotiation Sample	Events of Default $\mathcal{E}^R_{Cl}$ (= 3494)				Covenants $\mathcal{C}^R_{Cl}$ (= 7887)			
Terms and phrases (unigrams)	40	66.6		3036	128	899.5		50455
Unique terms and phrases (unigrams)	27	20.9		533	50	67.0		1823
Terms and phrases (full dictionary)	27	21.8		562	54	70.5		1788
Terms and phrases (finance)	11	8.4		200	22	27.5		643
Terms and phrases (law)	26	21.0		540	52	66.4		1633

Table 2: Summary Statistics - Boilerplate Contracts

This table presents summary statistics for the distance to boilerplate of the *full sample* and the *renegotiation sample*. For the *full sample*, the minimum distance to boilerplate is always zero, for the contract $i = m_{i\mathcal{J}}$. For the *renegotiation sample* the distance to boilerplate of a contract $i \in \mathcal{E}^R$ or $i \in \mathcal{C}^R$ is from the medoid of the cluster (for the *full sample*) this contract i would have been assigned to so that $m_{i\mathcal{J}} \in \mathcal{E}$ or $m_{i\mathcal{J}} \in \mathcal{C}$ with $\mathcal{J} \subseteq \mathcal{E}$ or $\mathcal{J} \subseteq \mathcal{C}$. Because $i \neq m_{i\mathcal{J}}$, the minimum distance to boilerplate may be positive.

	Mean	SD	Min	Max	Mean	SD	Min	Max
	Full Sections							
Full Sample	Events of Default $\mathcal{E}$				Covenants $\mathcal{C}$			
1 cluster, word distance, unigrams	0.291	0.0880	0	0.640	0.223	0.1128	0	0.596
1 cluster, word distance, full dictionary	0.286	0.0860	0	0.627	0.221	0.1072	0	0.594
1 cluster, topic distance, unigrams	0.288	0.1151	0	0.761	0.178	0.0950	0	0.796
1 cluster, topic distance, full dictionary	0.336	0.1087	0	0.886	0.187	0.0940	0	0.800
4 clusters, word distance, unigrams	0.229	0.0932	0	0.638	0.164	0.0797	0	0.569
4 clusters, word distance, full dictionary	0.224	0.0908	0	0.643	0.164	0.0743	0	0.534
4 clusters, topic distance, unigrams	0.206	0.1047	0	0.730	0.138	0.0784	0	0.723
4 clusters, topic distance, full dictionary	0.233	0.1003	0	0.698	0.148	0.0796	0	0.776
Renegotiation Sample	Events of Default $\mathcal{E}^R$				Covenants $\mathcal{C}^R$			
1 cluster, word distance, unigrams	0.292	0.0825	0.008	0.545	0.433	0.0861	0.304	0.703
1 cluster, word distance, full dictionary	0.289	0.0815	0.041	0.537	0.435	0.0841	0.312	0.706
1 cluster, topic distance, unigrams	0.283	0.1217	0	0.646	0.537	0.1043	0.323	0.849
1 cluster, topic distance, full dictionary	0.329	0.1190	0	0.630	0.508	0.1004	0.300	0.833
4 clusters, word distance, unigrams	0.238	0.0810	0.021	0.456	0.371	0.0610	0.251	0.562
4 clusters, word distance, full dictionary	0.234	0.0806	0.018	0.465	0.373	0.0600	0.259	0.555
4 clusters, topic distance, unigrams	0.208	0.1053	0	0.526	0.489	0.0923	0.319	0.763
4 clusters, topic distance, full dictionary	0.234	0.1009	0	0.548	0.420	0.0877	0.189	0.652

Table 3: Summary Statistics

This table presents summary statistics for the firm and loan level variables. Stock return volatility represents the standard deviation of daily stock returns for the prior year. Leverage ratio is *dlttq* + *dlcq* divided by *atq*. Tangible asset ratio *ppentq* divide by *atq*. Debt type concentration is the HHI of the firms different debt sources scaled by total debt. Segment concentration is the HHI of firm sales by Compustat business segment. Age is the number of years the firm exists in Compustat. Loan amount is the total loan amount in millions. Maturity is the average maturity of all loans in the package. Debt/ Loan Amt is the ratio of *dlcq* + *dlttq* prior to the loan divided by the total loan amount. Repeat lender is a dummy taking on a value of 1 if the firm has borrowed from the same bank in the previous 5 years. # of lenders is the number of unique lenders participating in the loan package. Lender <100 miles away takes on a value of 1 if the headquarters of at least one of the lead lenders is within 100 miles of the headquarters of the borrowing firm. # of Covenants is the total number of covenants in each loan as gathered by Nini et al. (2009).

	Mean	SD	Min	Median	Max
log(Loan Amount)	5.33	1.44	-1.97	5.4	10.1
log(Maturity)	3.62	.633	.693	3.74	4.82
# of Covenants	2.55	1.23	0	3	10
Tangible Asset Ratio	.351	.245	.0187	.285	.914
log(Age)	2.7	.909	0	2.71	4.01
Repeat lender (last 5 years)	.438	.496	0	0	1
Multiple Lenders	.847	.36	0	1	1
Lender <100 miles away	.163	.37	0	0	1
Segment Concentration	.776	.266	0	1	1
Foreign Operations	.677	.468	0	1	1
Debt Concentration	.81	.211	.254	.912	1
Leverage Ratio	.298	.176	0	.29	.965
Stock Return Vol	.0314	.0161	.00961	.0273	.0944
Expected Default Frequency	.0576	.18	0	8.37e-08	.999
log(Assets)	6.78	1.71	1.45	6.7	12.4
Debt/Loan Amt	2.26	3.9	0	.986	25.9
Repeat lender (last 5 years)	.438	.496	0	0	1
# of Accounting Covenants	2.55	1.23	0	3	10

Table 4: Correlation Coefficients

This table presents the Pearson correlation coefficients for the main variables of interest and controls in the paper. Correlations which are significantly different from zero at the 1% level are indicated with a single *.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) log(Loan Amount)	1															
(2) log(Maturity)	0.138*	1														
(3) # of Covenants	-0.216*	0.232*	1													
(4) Tangible Asset Ratio	0.0863*	0.00710	-0.109*	1												
(5) log(Age)	0.312*	-0.101*	-0.274*	0.0368	1											
(6) Repeat lender (last 5 years)	0.303*	-0.00973	-0.0733*	0.0588*	0.0988*	1										
(7) Multiple Lenders	0.563*	0.174*	-0.0112	0.0720*	0.172*	0.237*	1									
(8) Lender <100 miles away	-0.0400	-0.0709*	-0.0250	-0.126*	0.0140	0.00578	-0.0607*	1								
(9) Segment Concentration	-0.194*	0.113*	0.141*	0.0875*	-0.344*	-0.0814*	-0.130*	-0.0231	1							
(10) Foreign Operations	0.0181	-0.0178	0.0140	-0.205*	0.0140	0.0184	-0.0150	0.106*	-0.0845*	1						
(11) Debt Concentration	0.0375	-0.154*	-0.145*	-0.00885	0.172*	0.0178	0.0556*	0.00884	-0.0966*	0.0321	1					
(12) Leverage Ratio	0.223*	0.00985	-0.0180	0.249*	0.00582	0.115*	0.0966*	-0.0500*	-0.0135	-0.122*	-0.207*	1				
(13) Stock Return Vol	-0.459*	-0.133*	0.167*	-0.128*	-0.372*	-0.190*	-0.364*	0.0361	0.169*	-0.0219	-0.140*	0.0405	1			
(14) Expected Default Frequency	-0.110*	-0.159*	-0.0455	-0.0138	-0.0787*	-0.0365	-0.132*	0.00505	0.000538	-0.0170	-0.0709*	0.258*	0.492*	1		
(15) log(Assets)	0.803*	-0.131*	-0.372*	0.124*	0.472*	0.299*	0.446*	-0.0249	-0.281*	0.0199	0.103*	0.167*	-0.471*	-0.0676*	1	
(16) Debt/Loan Amt	-0.0125	-0.319*	-0.205*	0.169*	0.260*	0.0671*	-0.0533*	-0.00229	-0.148*	-0.0585*	0.0490	0.321*	-0.0872*	0.133*	0.416*	1

* $p < .01$

Table 5: Contract Pair Topic Distance - Defaults

This table presents the determinants of the cosine vector distance of each contract pair in terms of the use of main topics or words. The sample contains every unique contract-to-contract pair, where the dependent variable is the cosine distance between the two contracts in the pair. The covariates ">100M" and "Multiple Lenders" indicate that both loans in the contract pair satisfy the criteria or neither. Standard errors are clustered at the contract level.

Panel A: Main Topic Cosine

	(1) Topic Distance	(2) Topic Distance	(3) Topic Distance	(4) Topic Distance	(5) Topic Distance
Same Borrower	-0.213***	-0.227***	-0.215***	-0.158***	-0.175***
	(-36.52)	(-36.57)	(-36.26)	(-10.31)	(-7.97)
Same Lead Lender	-0.0386***	-0.0254***	-0.0346***	-0.0746***	-0.108***
	(-26.07)	(-17.79)	(-22.64)	(-16.67)	(-12.84)
Same Year	-0.00147***	-0.00217***	-0.00126***	-0.00222***	-0.00126***
	(-3.34)	(-4.39)	(-2.81)	(-4.50)	(-2.82)
Same SIC	-0.00997***	-0.0129***	-0.0114***	-0.0130***	-0.0114***
	(-5.45)	(-6.57)	(-5.77)	(-6.61)	(-5.77)
>100M		-0.0314***		-0.0328***	
		(-15.91)		(-16.57)	
>100M × Same Borrower				-0.0782***	
				(-4.77)	
>100M × Same Lead Lender				0.0524***	
				(11.12)	
Multiple Lenders			-0.0376***		-0.0390***
			(-20.49)		(-21.12)
Multiple Lenders × Same Borrower					-0.0411*
					(-1.83)
Multiple Lenders × Same Lead Lender					0.0744***
					(9.08)
Constant	0.536***	0.554***	0.569***	0.555***	0.570***
	(574.53)	(343.37)	(278.87)	(342.98)	(277.51)
N	5502903	2837641	4663396	2837641	4663396
R^2	0.00741	0.0174	0.0107	0.0182	0.0110

Panel B: Word Cosine Distances

	(1) Word Distance	(2) Word Distance	(3) Word Distance	(4) Word Distance	(5) Word Distance
Same Borrower	-0.460***	-0.493***	-0.470***	-0.326***	-0.344***
	(-40.40)	(-40.89)	(-40.49)	(-10.56)	(-7.20)
Same Lead Lender	-0.0469***	-0.0383***	-0.0447***	-0.100***	-0.168***
	(-20.78)	(-16.60)	(-19.73)	(-14.03)	(-9.65)
Same Year	-0.00306***	-0.00224***	-0.00223***	-0.00231***	-0.00223***
	(-4.96)	(-2.97)	(-3.39)	(-3.07)	(-3.40)
Same SIC	-0.0133***	-0.0149***	-0.0145***	-0.0150***	-0.0145***
	(-6.21)	(-5.29)	(-6.33)	(-5.32)	(-6.32)
>100M		-0.0129***		-0.0146***	
		(-5.92)		(-6.70)	
>100M × Same Borrower				-0.188***	
				(-5.68)	
>100M × Same Lead Lender				0.0659***	
				(8.75)	
Multiple Lenders			-0.00334		-0.00551***
			(-1.56)		(-2.60)
Multiple Lenders × Same Borrower					-0.130***
					(-2.66)
Multiple Lenders × Same Lead Lender					0.125***
					(7.22)
Constant	0.902***	0.906***	0.903***	0.907***	0.905***
	(846.73)	(609.88)	(434.81)	(604.67)	(439.87)
N	5502903	2837641	4663396	2837641	4663396
R^2	0.00716	0.00919	0.00727	0.00977	0.00758

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 6: Determinants of Default Section Complexity

This table presents the determinants of various measures of complexity in the "Events of Default" sections of each loan contract. Total Words and Unique Words represents a simple count of non stop unigrams counting all words or each unique word. Law and Finance represents term counts matching a dictionary of law words and finance words. Clauses represents a count of the total number of individual clauses in each section. Main topics represents the number of unique main topics found in each section. Standard errors are clustered at the firm level.

	(1) Total Words	(2) Unique Words	(3) Law Words	(4) Finance	(5) Clauses	(6) Main Topics
log(Loan Amount)	12.74***	3.992***	12.07**	5.117**	0.0294	-0.0289
	(2.65)	(2.88)	(2.50)	(2.32)	(0.29)	(-0.38)
log(Maturity)	14.80***	4.545***	15.61***	6.278***	0.232*	0.167**
	(2.82)	(3.01)	(2.98)	(2.71)	(1.91)	(2.21)
Tangible Asset Ratio	-41.72***	-12.35***	-40.21***	-15.91**	-0.411	-0.445**
	(-2.86)	(-3.02)	(-2.72)	(-2.51)	(-1.42)	(-2.17)
Repeat lender (last 5 years)	-5.598	-0.704	-6.095	-0.750	-0.109	0.0602
	(-1.04)	(-0.46)	(-1.12)	(-0.31)	(-0.92)	(0.72)
Multiple Lenders	43.93***	10.93***	41.96***	17.78***	0.328	0.349**
	(4.47)	(3.87)	(4.27)	(4.15)	(1.55)	(2.45)
Lender <100 miles away	-11.80	-3.019	-11.68	-4.959	-0.307*	-0.269**
	(-1.48)	(-1.31)	(-1.45)	(-1.36)	(-1.89)	(-2.35)
Segment Concentration	0.0257	-0.0169	-1.044	0.292	0.00231	0.0502
	(0.00)	(-0.00)	(-0.08)	(0.05)	(0.01)	(0.28)
Foreign Operations	-10.25	-2.334	-9.316	-1.770	-0.326**	-0.301***
	(-1.44)	(-1.17)	(-1.30)	(-0.55)	(-2.17)	(-2.82)
Debt Concentration	-57.00***	-15.71***	-57.28***	-26.30***	-0.873***	-0.371*
	(-4.08)	(-4.05)	(-4.09)	(-4.14)	(-2.92)	(-1.69)
log(Assets)	-10.09**	-4.654***	-10.39**	-4.191**	-0.311***	-0.216***
	(-2.20)	(-3.40)	(-2.26)	(-2.05)	(-3.08)	(-2.89)
log(Age)	-9.622**	-1.958*	-9.375**	-3.722**	-0.0900	-0.0597
	(-2.33)	(-1.66)	(-2.25)	(-1.99)	(-1.06)	(-0.95)
Leverage Ratio	35.96*	8.898	38.64*	18.64*	1.353***	0.861***
	(1.67)	(1.49)	(1.78)	(1.93)	(2.93)	(2.73)
Stock Return Vol	459.7*	140.2*	507.6*	167.4	15.24**	2.835
	(1.65)	(1.80)	(1.82)	(1.41)	(2.49)	(0.68)
Expected Default Frequency	56.60**	12.96**	55.70**	24.86***	1.438***	0.486
	(2.57)	(2.17)	(2.50)	(2.65)	(2.92)	(1.44)
# of Accounting Covenants	13.83***	3.365***	13.66***	5.303***	0.118**	0.153***
	(5.17)	(4.41)	(5.07)	(4.38)	(2.00)	(3.69)
Debt/Loan Amt	0.820	0.271	0.570	0.273	-0.0351	-0.0276
	(0.72)	(0.78)	(0.50)	(0.53)	(-1.29)	(-1.43)
Avg Clause Length					-0.0607***	-0.00569***
					(-15.45)	(-3.70)
Constant	463.0***	201.5***	459.8***	197.0***	16.66***	12.44***
	(12.73)	(19.22)	(12.61)	(12.47)	(20.37)	(21.49)
Observations	2,405	2,405	2,405	2,405	2,405	2,405
R^2	0.120	0.122	0.119	0.103	0.476	0.127

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 7: Determinants of Covenant Section Complexity

This table presents the determinants of various measures of complexity in the "Covenants" or "Affirmative Covenants"and "Negative Covenants" sections of each loan contract. Total Words and Unique Words represents a simple count of non stop unigrams counting all words or each unique word. Law and Finance represents term counts matching a dictionary of law words and finance words. Clauses represents a count of the total number of individual clauses in each section. Main topics represents the number of unique main topics found in each section. Standard errors are clustered at the firm level.

	(1) Total Words	(2) Unique Words	(3) Law Words	(4) Finance	(5) Clauses	(6) Main Topics
log(Loan Amount)	253.6***	20.56***	250.7***	118.5***	1.254***	0.509***
	(5.41)	(4.55)	(5.21)	(5.11)	(4.15)	(3.41)
log(Maturity)	363.1***	31.69***	369.8***	182.1***	1.036***	0.561***
	(8.14)	(7.05)	(8.14)	(8.20)	(3.33)	(3.58)
Tangible Asset Ratio	-11.87	19.46*	-32.59	-45.49	1.332	0.218
	(-0.10)	(1.78)	(-0.27)	(-0.78)	(1.55)	(0.61)
Repeat lender (last 5 years)	-95.71*	-3.422	-98.30*	-42.66	0.0128	-0.244
	(-1.75)	(-0.68)	(-1.76)	(-1.56)	(0.04)	(-1.46)
Multiple Lenders	283.8***	24.24***	298.1***	152.9***	1.077*	0.698**
	(3.19)	(2.78)	(3.26)	(3.44)	(1.67)	(2.34)
Lender <100 miles away	-84.80	-12.46**	-83.59	-37.40	-1.110**	-0.669***
	(-1.29)	(-1.98)	(-1.24)	(-1.13)	(-2.51)	(-3.05)
Segment Concentration	45.39	4.790	43.21	34.62	1.596**	0.639*
	(0.41)	(0.46)	(0.38)	(0.63)	(2.27)	(1.79)
Foreign Operations	-47.61	-11.83*	-56.81	-21.79	-0.460	-0.284
	(-0.71)	(-1.93)	(-0.83)	(-0.65)	(-1.03)	(-1.42)
Debt Concentration	-870.7***	-75.68***	-876.4***	-438.6***	-4.289***	-2.196***
	(-6.77)	(-6.17)	(-6.62)	(-6.78)	(-4.90)	(-5.31)
log(Assets)	-210.4***	-30.09***	-214.2***	-94.49***	-2.813***	-1.315***
	(-4.79)	(-7.16)	(-4.76)	(-4.30)	(-9.79)	(-9.39)
log(Age)	-149.4***	-12.56***	-151.7***	-69.88***	-0.598**	-0.388***
	(-3.94)	(-3.52)	(-3.90)	(-3.67)	(-2.34)	(-3.20)
Leverage Ratio	848.2***	56.55***	873.6***	468.0***	1.979	0.748
	(4.31)	(3.30)	(4.33)	(4.69)	(1.32)	(1.29)
Stock Return Vol	12139.9***	950.0***	12317.7***	6007.0***	39.63**	5.674
	(4.18)	(3.78)	(4.16)	(4.11)	(2.01)	(0.71)
Expected Default Frequency	192.1	23.39	192.6	77.90	2.024	0.948
	(0.84)	(1.30)	(0.83)	(0.68)	(1.44)	(1.55)
# of Accounting Covenants	160.5***	18.30***	164.8***	78.77***	1.402***	0.544***
	(6.09)	(7.63)	(6.10)	(5.84)	(7.72)	(7.21)
Debt/Loan Amt	16.55	1.078	16.06	6.187	0.132*	0.0480
	(1.45)	(0.88)	(1.37)	(1.11)	(1.76)	(1.28)
Avg Clause Length					-0.0204***	-0.00795***
					(-4.91)	(-6.08)
Constant	743.7**	433.1***	837.6**	286.0*	30.83***	21.58***
	(2.22)	(13.18)	(2.44)	(1.70)	(13.69)	(20.30)
Observations	1,977	1,977	1,977	1,977	1,977	1,977
R^2	0.290	0.346	0.288	0.285	0.363	0.362

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 8: Determinants of Contract Distance - Defaults

This table presents the determinants of various measures of distance-to-centroid for the "Events of Default" sections of each loan contract. Words/1 and Words/4 estimates the closest cosine distance to either 1 or 4 possible centroids using the raw words in each section. Main topics/4 estimates the closest distance based on a vector of main topics estimated for each section.s Full Dict, Fin Dict, and Law Dict estimate similar distances using only words found in each of their respective dictionaries. Standard errors are clustered at the firm level.

	(1) Words/1	(2) Words/4	(3) Main Topics/4	(4) Full Dict/1	(5) Full Dict/4	(6) Fin Dict/4	(7) Law Dict/4
log(Loan Amount)	-0.000869	0.00550*	0.00405	0.00173	0.00383	0.0119***	0.00480
	(-0.26)	(1.73)	(0.93)	(0.48)	(1.23)	(3.42)	(1.53)
log(Maturity)	-0.00515	-0.00394	-0.00797*	-0.00459	-0.00334	-0.000753	-0.00466
	(-1.52)	(-1.17)	(-1.70)	(-1.16)	(-0.99)	(-0.21)	(-1.40)
Tangible Asset Ratio	0.00501	0.0156*	0.0143	-0.00527	0.0164*	-0.00519	0.0159*
	(0.57)	(1.78)	(1.22)	(-0.52)	(1.87)	(-0.53)	(1.82)
Repeat lender (last 5 years)	-0.000243	-0.000426	0.00509	0.0000533	0.00157	-0.00364	0.00192
	(-0.06)	(-0.12)	(1.01)	(0.01)	(0.43)	(-0.85)	(0.52)
Multiple Lenders	-0.0237***	-0.0394***	-0.0409***	-0.0259***	-0.0408***	-0.0219***	-0.0406***
	(-3.75)	(-6.27)	(-5.19)	(-3.56)	(-6.73)	(-3.24)	(-6.69)
Lender <100 miles away	0.00878*	0.0208***	0.00945	0.0115**	0.0204***	0.0242***	0.0169***
	(1.68)	(4.07)	(1.44)	(2.02)	(4.27)	(4.24)	(3.44)
Segment Concentration	0.0254***	0.0227***	0.0218**	0.0349***	0.0178**	0.0253***	0.0187**
	(3.12)	(2.78)	(1.98)	(3.86)	(2.22)	(3.00)	(2.32)
Foreign Operations	0.0122***	0.00776	0.000407	0.0118**	0.00491	0.00552	0.00719
	(2.60)	(1.60)	(0.06)	(2.25)	(1.01)	(1.07)	(1.47)
Debt Concentration	-0.00194	-0.00198	-0.00272	0.00185	-0.00110	-0.00453	0.000528
	(-0.20)	(-0.21)	(-0.22)	(0.18)	(-0.12)	(-0.44)	(0.06)
log(Assets)	0.00347	-0.000472	-0.00676	0.000992	0.000107	-0.00345	-0.000927
	(1.03)	(-0.15)	(-1.63)	(0.28)	(0.03)	(-1.02)	(-0.30)
log(Age)	-0.000499	0.00242	0.00158	-0.000483	0.00268	-0.00311	0.00230
	(-0.18)	(0.91)	(0.47)	(-0.15)	(1.05)	(-1.12)	(0.88)
Leverage Ratio	0.0222*	0.0268**	-0.00411	0.0305**	0.0138	0.0357***	0.0225*
	(1.68)	(2.12)	(-0.23)	(2.08)	(1.10)	(2.61)	(1.77)
Stock Return Vol	0.434**	0.784***	0.264	0.433**	0.651***	0.624***	0.717***
	(2.32)	(4.32)	(1.23)	(2.11)	(3.78)	(3.04)	(4.09)
Expected Default Frequency	0.0140	0.0162	0.0103	0.00534	0.0151	0.0219*	0.0129
	(1.07)	(1.41)	(0.60)	(0.38)	(1.36)	(1.71)	(1.12)
# of Accounting Covenants	-0.00764***	-0.00780***	-0.00908***	-0.00904***	-0.00757***	-0.00565***	-0.00736***
	(-4.41)	(-4.87)	(-4.48)	(-4.57)	(-4.67)	(-3.08)	(-4.66)
Debt/Loan Amt	-0.000366	0.00101	0.000369	-0.000557	0.00125	0.00190**	0.00111
	(-0.44)	(1.26)	(0.34)	(-0.65)	(1.64)	(2.35)	(1.45)
Constant	0.292***	0.214***	0.317***	0.317***	0.223***	0.157***	0.224***
	(11.71)	(8.75)	(9.54)	(11.18)	(9.49)	(5.60)	(9.46)
Observations	2,666	2,666	2,666	2,666	2,666	2,666	2,666
R^2	0.061	0.113	0.049	0.060	0.106	0.068	0.105

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 9: Determinants of Contract Distance - Covenants

This table presents the determinants of various measures of distance-to-centroid for the "Covenants" or "Affirmative Covenants" and "Negative Covenants" sections of each loan contract. Words/1 and Words/4 estimates the closest cosine distance to either 1 or 4 possible centroids using the raw words in each section. Main topics/4 estimates the closest distance based on a vector of main topics estimated for each section.s Full Dict, Fin Dict, and Law Dict estimate similar distances using only words found in each of their respective dictionaries. Standard errors are clustered at the firm level.

	(1) Words/1	(2) Words/4	(3) Main Topics/4	(4) Full Dict/1	(5) Full Dict/4	(6) Fin Dict/4	(7) Law Dict/4
log(Loan Amount)	0.00194	0.00631*	-0.00894***	0.0000290	0.00389	0.00520	0.00313
	(0.39)	(1.83)	(-2.79)	(0.00)	(1.20)	(1.40)	(0.98)
log(Maturity)	-0.00584	-0.00613*	-0.00750**	-0.00557	-0.00529*	-0.00133	-0.00529*
	(-1.17)	(-1.77)	(-2.29)	(-0.90)	(-1.71)	(-0.37)	(-1.73)
Tangible Asset Ratio	0.00273	0.0125	0.0161**	-0.00714	0.00636	0.00673	0.00736
	(0.20)	(1.41)	(2.15)	(-0.43)	(0.78)	(0.75)	(0.90)
Repeat lender (last 5 years)	0.00367	-0.00138	0.00663*	0.00672	0.00137	-0.00422	0.000237
	(0.67)	(-0.37)	(1.83)	(1.00)	(0.40)	(-1.07)	(0.07)
Multiple Lenders	-0.0222**	-0.0341***	-0.0161***	-0.0218**	-0.0339***	-0.0231***	-0.0268***
	(-2.48)	(-4.98)	(-2.66)	(-2.04)	(-5.35)	(-3.46)	(-4.28)
Lender <100 miles away	0.00556	0.00425	0.00608	0.0000784	0.00414	0.00635	0.00487
	(0.70)	(0.77)	(1.30)	(0.01)	(0.82)	(1.11)	(0.98)
Segment Concentration	0.0235**	0.0105	0.00172	0.0366**	0.00989	0.00717	0.0135*
	(1.97)	(1.32)	(0.24)	(2.45)	(1.33)	(0.88)	(1.79)
Foreign Operations	0.0208***	0.0112**	0.0121***	0.0322***	0.00817*	0.00413	0.00974**
	(3.08)	(2.46)	(2.87)	(3.81)	(1.93)	(0.87)	(2.22)
Debt Concentration	0.00723	-0.0000877	0.0170*	0.0112	0.00798	0.00429	0.00491
	(0.51)	(-0.01)	(1.87)	(0.65)	(0.94)	(0.44)	(0.57)
log(Assets)	0.00666	-0.00180	0.0148***	0.00931	-0.00127	0.0000670	0.000436
	(1.42)	(-0.51)	(4.65)	(1.64)	(-0.41)	(0.02)	(0.14)
log(Age)	0.00625	0.000296	0.00717***	0.00962*	-0.000956	-0.00271	-0.0000279
	(1.50)	(0.11)	(2.71)	(1.90)	(-0.39)	(-0.99)	(-0.01)
Leverage Ratio	0.0401*	0.0129	-0.00851	0.0642***	0.0177	0.0202	0.0139
	(1.96)	(0.94)	(-0.66)	(2.58)	(1.39)	(1.42)	(1.08)
Stock Return Vol	0.449*	0.497***	0.0994	0.567*	0.472***	0.555***	0.373**
	(1.79)	(2.66)	(0.61)	(1.91)	(2.69)	(2.79)	(2.09)
Expected Default Frequency	0.0165	0.00722	0.0135	0.0173	0.0113	0.0248*	0.0106
	(0.93)	(0.59)	(0.92)	(0.76)	(0.99)	(1.77)	(0.88)
# of Accounting Covenants	-0.0122***	-0.00563***	-0.00989***	-0.0118***	-0.00546***	-0.00420**	-0.00415**
	(-4.71)	(-3.28)	(-6.04)	(-3.93)	(-3.33)	(-2.27)	(-2.50)
Debt/Loan Amt	-0.000483	0.00150*	-0.000912	-0.00137	0.00101	0.000752	0.000704
	(-0.42)	(1.81)	(-1.10)	(-0.95)	(1.28)	(0.84)	(0.95)
Constant	0.178***	0.171***	0.109***	0.173***	0.178***	0.121***	0.162***
	(4.78)	(6.11)	(4.74)	(3.89)	(6.92)	(4.10)	(6.34)
Observations	1,977	1,977	1,977	1,977	1,977	1,977	1,977
R^2	0.073	0.067	0.149	0.070	0.076	0.049	0.055

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 10: Determinants of Topic Inclusion - Defaults

This table presents the determinants of the individual inclusion of each of 10 of the main topics in a given contract's events of default sections. The 10 topics presented are chosen by taking the 10 models which have the highest pseudo-R^2. The topics are named by reading through the clauses which represent each main topic, and key words are provided. Further examination of the representative clauses themselves can be found in the Appendix. The following tables present the results of a probit model predicting the inclusion of each individual covenant. The coefficients reported are the marginal effects of each variable on the probability of inclusion. Standard errors are clustered at the firm level.

Topic Descriptions
Topic 28 : Impairment of collateral **Key Words:** lien secure collateral document cease valid except.for.opinion create perfect
Topic 11 : Forfeiture and dissolution **Key Words:** companies.and.the.outside.world obligor include subsidiarity limit consolidate under.and.subject other partnership partner
Topic 21 : Material adverse changes **Key Words:** materi effect adversary.counsel reason license good faith good.faith expect author
Topic 24 : Non-payment **Key Words:** due loan payable interest principal fee payment date reimburse
Topic 13 : Criminal/civil legal violations **Key Words:** parent portion asset condemn claim facilitate agencies conduct subject
Topic 10 : Change in control **Key Words:** control occur change member under.and.subject exist respective entitle liable by.reason.of
Topic 19 : Failure to meet other general indebtedness **Key Words:** default obligate agreement provide guarantee of.grace rate hedge lease instrument
Topic 2 : Receivership issues **Key Words:** attach process warrant levi writ calendar.days rehabilitation issuable proceeding
Topic 14 : Repudiation of guarantee **Key Words:** full guarantor in.full force document loan denial invalid further.advance
Topic 15 : Cross-default **Key Words:** indebtedness holder swap caus contract mature prior contingen

Table 10: Determinants of Topic Inclusion - Defaults

	(1) Topic 28	(2) Topic 11	(3) Topic 21	(4) Topic 24	(5) Topic 13
log(Loan Amount)	0.122**	-0.0853	-0.0374	0.0139	-0.128*
	(2.10)	(-0.60)	(-0.53)	(1.25)	(-1.84)
log(Maturity)	0.186***	0.144	-0.00132	-0.00779	0.0818
	(2.82)	(1.05)	(-0.02)	(-0.69)	(1.16)
Tangible Asset Ratio	-0.256	-0.701**	-0.474**	0.0849***	-0.245
	(-1.62)	(-1.98)	(-2.47)	(2.86)	(-1.26)
Repeat lender (last 5 years)	-0.0733	-0.0648	-0.0466	-0.00103	0.0182
	(-1.05)	(-0.39)	(-0.57)	(-0.07)	(0.23)
Multiple Lenders	0.133	-0.157	0.0750	0.0608**	-0.0395
	(1.16)	(-0.66)	(0.58)	(2.42)	(-0.33)
Lender <100 miles away	-0.284***	0.0258	-0.214*	0.00812	0.105
	(-2.80)	(0.13)	(-1.85)	(0.49)	(1.01)
Segment Concentration	0.175	0.806**	0.230	0.00941	-0.0777
	(1.20)	(2.13)	(1.32)	(0.34)	(-0.44)
Foreign Operations	0.0559	-0.0448	-0.232**	-0.00164	-0.253***
	(0.67)	(-0.23)	(-2.57)	(-0.11)	(-2.79)
Debt Concentration	-0.607***	0.0128	-0.249	-0.0105	-0.479**
	(-3.61)	(0.03)	(-1.30)	(-0.34)	(-2.43)
log(Assets)	-0.232***	-0.0396	-0.172***	-0.00682	-0.0487
	(-4.19)	(-0.28)	(-2.64)	(-0.65)	(-0.71)
log(Age)	-0.123***	0.0808	-0.0549	0.00820	-0.0331
	(-2.60)	(0.66)	(-1.00)	(0.96)	(-0.57)
Leverage Ratio	0.845***	0.301	-0.00580	0.0493	0.357
	(3.49)	(0.56)	(-0.02)	(1.06)	(1.23)
Stock Return Vol	13.10***	13.01*	8.471**	-0.757	8.717**
	(4.10)	(1.83)	(2.36)	(-1.30)	(2.50)
Expected Default Frequency	0.400	1.074**	0.223	-0.0855**	0.464*
	(1.63)	(2.29)	(0.87)	(-2.04)	(1.83)
# of Accounting Covenants	0.0515*	-0.288***	0.0278	0.0125**	-0.0112
	(1.67)	(-3.99)	(0.81)	(2.08)	(-0.31)
Debt/Loan Amt	0.0192	-0.103***	0.0174	0.00340	-0.0220
	(1.40)	(-2.99)	(1.00)	(1.30)	(-1.16)
Observations	2,397	2,397	2,397	2,397	2,397
Pseudo R^2	0.120	0.085	0.081	0.077	0.069
% with topic	0.39	0.09	0.29	0.91	0.30

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 10: Determinants of Topic Inclusion - Defaults (continued)

	(1) Topic 10	(2) Topic 19	(3) Topic 2	(4) Topic 14	(5) Topic 15
log(Loan Amount)	-0.0540	-0.00122	-0.180**	0.0545	0.000576
	(-1.35)	(-0.01)	(-2.46)	(1.30)	(0.02)
log(Maturity)	0.100**	0.145*	0.00982	0.0441	0.0816**
	(2.38)	(1.66)	(0.13)	(1.05)	(2.14)
Tangible Asset Ratio	0.0898	0.0726	-0.181	-0.277**	-0.205**
	(0.79)	(0.31)	(-0.87)	(-2.43)	(-2.04)
Repeat lender (last 5 years)	-0.0478	-0.0913	-0.000240	-0.0190	-0.0620
	(-1.05)	(-0.96)	(-0.00)	(-0.40)	(-1.50)
Multiple Lenders	0.310***	-0.429***	-0.0912	0.117	0.309***
	(3.45)	(-3.21)	(-0.72)	(1.44)	(3.69)
Lender <100 miles away	-0.118*	0.102	-0.486***	-0.0693	-0.109*
	(-1.73)	(0.76)	(-3.61)	(-1.03)	(-1.85)
Segment Concentration	-0.0390	0.299	-0.107	0.0673	-0.0574
	(-0.38)	(1.33)	(-0.57)	(0.66)	(-0.64)
Foreign Operations	-0.0577	0.0150	-0.101	0.0836	-0.0343
	(-1.04)	(0.13)	(-0.96)	(1.39)	(-0.65)
Debt Concentration	-0.191	0.164	-0.0599	-0.0988	0.00140
	(-1.62)	(0.68)	(-0.29)	(-0.83)	(0.01)
log(Assets)	-0.00782	-0.135*	-0.0823	-0.118***	0.00691
	(-0.20)	(-1.72)	(-1.16)	(-2.91)	(0.20)
log(Age)	-0.0953***	-0.0199	0.0258	-0.0559	-0.0786***
	(-2.82)	(-0.29)	(0.44)	(-1.61)	(-2.59)
Leverage Ratio	-0.102	0.341	-0.108	-0.270	0.170
	(-0.60)	(1.02)	(-0.33)	(-1.55)	(1.13)
Stock Return Vol	-1.409	-4.186	-3.907	-0.860	-3.545*
	(-0.66)	(-0.99)	(-1.02)	(-0.38)	(-1.79)
Expected Default Frequency	0.100	0.508	0.0816	-0.0740	-0.329**
	(0.63)	(1.59)	(0.29)	(-0.42)	(-2.29)
# of Accounting Covenants	0.0427**	-0.0339	-0.0230	0.0723***	0.0715***
	(2.00)	(-0.83)	(-0.60)	(3.24)	(3.61)
Debt/Loan Amt	-0.0189*	-0.0239	-0.0235	0.00740	0.00158
	(-1.80)	(-1.11)	(-1.22)	(0.67)	(0.16)
Observations	2,397	2,397	2,397	2,397	2,397
Pseudo R^2	0.059	0.052	0.052	0.047	0.047
% with topic	0.54	0.20	0.26	0.51	0.56

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 11: Determinants of Topic Inclusion - Covenants

This table presents the determinants of the individual inclusion of each of 10 of the main topics in a given contract's covenant sections. The 10 topics presented are chosen by taking the 10 models which have the highest pseudo-R^2. The topics are named by reading through the clauses which represent each main topic, and key words are provided. Further examination of the representative clauses themselves can be found in the Appendix. The following tables present the results of a probit model predicting the inclusion of each individual covenant. The coefficients reported are the marginal effects of each variable on the probability of inclusion. Standard errors are clustered at the firm level.

Topic Descriptions
Topic 13 : Restrictions on Specific Investments **Key Words:** subsidiarity other business except.for.opinion consolidate case year fiscal respective
Topic 4 : Restrictions on additional credit parties **Key Words:** subsidiarity acquisition permit invest indebtedness foreign domestic aggregate other amount
Topic 2 : Restricted payments **Key Words:** member other control.group business loan plan control financial respective
Topic 21 : Additional duties to the loan agent **Key Words:** partial loan agent credit other permit insurable obligate time date
Topic 17 : Transactions with Affiliates **Key Words:** restrict subsidiarity section other indebtedness asset agreement date sale payment
Topic 12 : Prohibitions on further indebtedness **Key Words:** fiscal quarter end consolidate net year fiscal.year worth net.worth period
Topic 29 : Subordination or modification of existing debt **Key Words:** plan section erisa affiliate other material respective agent event reason
Topic 15 : Sale and Lease-Back Transactions **Key Words:** subsidiarity venture joint joint.venture material obligate invest other
Topic 9 : Further Assurances **Key Words:** section other indebtedness asset permit secure loan lien business
Topic 10 : Payment of Taxes **Key Words:** administration agent lender reason section material other deliver agreement document

Table 11: Determinants of Topic Inclusion - Covenants

	(1) Topic 13	(2) Topic 4	(3) Topic 2	(4) Topic 21	(5) Topic 17
log(Loan Amount)	0.110***	0.205***	0.0852**	0.0179	0.0556**
	(3.15)	(4.36)	(2.46)	(0.23)	(2.17)
log(Maturity)	0.0368	0.200***	0.0622*	-0.00289	0.0181
	(1.03)	(3.76)	(1.77)	(-0.03)	(0.73)
Tangible Asset Ratio	0.0675	-0.188	0.0398	0.612***	-0.0269
	(0.71)	(-1.54)	(0.45)	(2.90)	(-0.39)
Repeat lender (last 5 years)	0.0181	-0.0941*	0.0537	0.0272	-0.0595**
	(0.44)	(-1.81)	(1.48)	(0.29)	(-2.13)
Multiple Lenders	0.107	0.0180	0.0291	-0.406***	0.100*
	(1.36)	(0.20)	(0.42)	(-3.18)	(1.69)
Lender <100 miles away	-0.0796	-0.106	-0.117**	-0.00105	-0.0924**
	(-1.41)	(-1.49)	(-2.20)	(-0.01)	(-2.07)
Segment Concentration	0.197**	0.107	0.0261	0.287	-0.0173
	(2.49)	(0.99)	(0.34)	(1.49)	(-0.29)
Foreign Operations	-0.00408	0.0690	-0.0806*	-0.0279	-0.0365
	(-0.08)	(1.09)	(-1.76)	(-0.25)	(-1.05)
Debt Concentration	-0.219**	-0.627***	-0.294***	-0.387*	-0.198***
	(-2.08)	(-4.71)	(-3.02)	(-1.78)	(-2.60)
log(Assets)	-0.258***	-0.300***	-0.216***	-0.297***	-0.128***
	(-6.75)	(-6.48)	(-6.12)	(-3.92)	(-4.78)
log(Age)	-0.0586**	-0.133***	-0.0616**	-0.119**	-0.0506**
	(-2.05)	(-3.73)	(-2.31)	(-2.03)	(-2.35)
Leverage Ratio	-0.0401	0.0960	-0.0184	0.202	0.180*
	(-0.27)	(0.51)	(-0.13)	(0.62)	(1.75)
Stock Return Vol	2.866	1.731	3.070*	15.74***	-0.446
	(1.53)	(0.70)	(1.65)	(3.72)	(-0.32)
Expected Default Frequency	0.0765	0.404**	0.0942	0.888***	0.0673
	(0.51)	(2.23)	(0.65)	(2.84)	(0.63)
# of Covenants	0.0903***	0.147***	0.0973***	-0.0347	0.0420***
	(4.37)	(5.77)	(4.97)	(-0.87)	(2.99)
Debt/Loan Amt	0.0116	0.0343***	0.0238***	-0.00868	-0.00179
	(1.35)	(3.04)	(2.87)	(-0.39)	(-0.29)
Observations	1,977	1,977	1,977	1,977	1,977
Pseudo R^2	0.213	0.199	0.195	0.172	0.159
% with topic	0.70	0.58	0.71	0.32	0.79

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 11: Determinants of Topic Inclusion - Covenants (continued)

	(6) Topic 12	(7) Topic 29	(8) Topic 15	(9) Topic 9	(10) Topic 10
log(Loan Amount)	0.140***	0.105**	0.00514	-0.00414	0.00921
	(4.82)	(2.38)	(0.19)	(-0.07)	(0.66)
log(Maturity)	0.0385	0.149***	0.0482*	0.0207	0.0278**
	(1.32)	(3.15)	(1.72)	(0.32)	(1.98)
Tangible Asset Ratio	-0.0272	-0.243**	-0.0846	0.427***	-0.113***
	(-0.36)	(-2.12)	(-1.15)	(2.70)	(-2.96)
Repeat lender (last 5 years)	0.0256	0.0112	-0.0297	-0.0525	-0.0399**
	(0.85)	(0.22)	(-1.02)	(-0.75)	(-2.41)
Multiple Lenders	-0.00706	0.102	0.0537	-0.108	-0.0112
	(-0.13)	(1.12)	(0.90)	(-1.02)	(-0.43)
Lender <100 miles away	-0.0367	-0.0549	-0.0771	-0.0900	0.00300
	(-0.82)	(-0.84)	(-1.64)	(-0.88)	(0.15)
Segment Concentration	0.0418	0.0861	0.0318	0.362**	-0.00222
	(0.62)	(0.82)	(0.47)	(2.43)	(-0.06)
Foreign Operations	0.0137	0.0122	-0.0247	-0.0146	-0.00888
	(0.33)	(0.20)	(-0.65)	(-0.16)	(-0.42)
Debt Concentration	-0.197**	-0.518***	-0.303***	-0.422**	-0.00797
	(-2.32)	(-4.21)	(-3.57)	(-2.48)	(-0.20)
log(Assets)	-0.191***	-0.176***	-0.0948***	-0.151**	-0.0346**
	(-6.45)	(-4.07)	(-3.47)	(-2.51)	(-2.54)
log(Age)	-0.0685***	-0.0523	-0.0148	-0.0424	0.0173
	(-2.96)	(-1.52)	(-0.64)	(-0.88)	(1.49)
Leverage Ratio	-0.113	1.029***	0.0994	-0.143	-0.00354
	(-0.92)	(5.52)	(0.85)	(-0.57)	(-0.06)
Stock Return Vol	2.158	2.978	-0.0452	11.35***	-1.472*
	(1.43)	(1.25)	(-0.03)	(3.68)	(-1.89)
Expected Default Frequency	-0.0709	0.125	0.0898	0.443*	0.0700
	(-0.63)	(0.67)	(0.75)	(1.93)	(1.11)
# of Covenants	0.0713***	0.105***	0.0578***	0.0539*	-0.000190
	(4.56)	(4.18)	(3.64)	(1.77)	(-0.03)
Debt/Loan Amt	0.0210***	-0.000231	-0.00189	-0.00985	-0.00115
	(2.97)	(-0.02)	(-0.27)	(-0.58)	(-0.35)
Observations	1,977	1,977	1,977	1,977	1,977
Pseudo R^2	0.158	0.130	0.126	0.101	0.077
% with topic	0.76	0.56	0.76	0.40	0.91

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 12: Predicting the Number of Renegotiation Rounds

This table presents the results of a negative binomial model on the number of future amendments made to the original contract as a function of the complexity of the original contract. Standard errors are clustered at the firm level.

	(1)	(2)	(3)	(4)	(5)	(6)
Unique Words - Defaults	1.002					
	(1.34)					
Main Topics - Defaults		1.051***				
		(2.76)				
Topic Distance - Defaults			0.294**			
			(-2.55)			
Unique Words - Covenants				1.000		
				(1.11)		
Main Topics - Covenants					1.003	
					(0.90)	
Topic Distance - Covenants						0.423
						(-1.35)
Maturity	1.717***	1.759***	1.720***	1.706***	1.723***	1.714***
	(4.32)	(4.32)	(4.46)	(4.33)	(4.41)	(4.34)
Loan Yield	2.802**	2.051*	2.800**	2.968***	3.053***	2.725**
	(2.55)	(1.73)	(2.56)	(2.85)	(2.89)	(2.57)
Loan-to-Assets	1.079***	1.072***	1.083***	1.082***	1.083***	1.087***
	(3.94)	(3.75)	(4.03)	(3.95)	(3.96)	(4.06)
Constant	0.164***	0.126***	0.374	0.222**	0.223**	0.390
	(-2.75)	(-3.02)	(-1.54)	(-2.38)	(-2.41)	(-1.27)
$\log(\alpha)$	0.561***	0.533***	0.553***	0.561***	0.562***	0.557***
	(-3.52)	(-3.69)	(-3.68)	(-3.55)	(-3.55)	(-3.57)
Observations	340	340	340	337	337	337
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan Type FE	Yes	Yes	Yes	Yes	Yes	Yes
Terminal Event FE	Yes	Yes	Yes	Yes	Yes	Yes

Exponentiated coefficients; t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Table 13: Contract Complexity and Future Returns

This table presents the determinants of future changes in return on assets over the four quarters following the initiation of the loan relative to the prior four quarters. Change in return on assets is defined as the sum of four quarters of Compustat item *ibq* divided by beginning of period *atq* minus the quantity over the prior four quarters. All specifications include additional risk controls: log(assets), tangible asset ratio, prior years sales growth, loan amount, repeat lender, and number of lenders, as well as fixed effects for each year and 3 digit SIC code. Standard errors are clustered at the firm level.

	Δ ROA	Δ ROA	Δ ROA	Δ ROA
Total Words (1000s)	0.0495***			
	(2.63)			
Unique Words (1000s)		0.139**		
		(2.08)		
Main Topics			0.00142*	0.00227**
			(1.81)	(2.52)
Average Topic Distance				0.105*
				(1.78)
Leverage Ratio	0.0580***	0.0588***	0.0580***	0.0578***
	(3.31)	(3.36)	(3.31)	(3.30)
Stock Return Vol	0.437*	0.451*	0.464*	0.428*
	(1.71)	(1.77)	(1.82)	(1.67)
Junk	-0.00362	-0.00279	-0.00234	-0.00266
	(-0.53)	(-0.41)	(-0.34)	(-0.39)
Rated	0.00365	0.00322	0.00358	0.00394
	(0.52)	(0.46)	(0.51)	(0.56)
# of Covenants	-0.00519**	-0.00502**	-0.00493**	-0.00454**
	(-2.40)	(-2.33)	(-2.28)	(-2.11)
Observations	2806	2806	2806	2806
R^2	0.119	0.118	0.118	0.119
Addl Risk Controls	Y	Y	Y	Y

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table 14: Contract Complexity and Future Returns

This table presents the determinants of sales growth over the four quarters following the initiation of the loan relative to the prior four quarters. Sales growth is defined as the sum of item *saleq* over four quarters divided by the previous four quarters sales minus 1. All specifications include additional risk controls: log(assets), tangible asset ratio, prior years sales growth, loan amount, repeat lender, and number of lenders, as well as fixed effects for each year and 3 digit SIC code. Standard errors are clustered at the firm level.

	Sales Growth	Sales Growth	Sales Growth	Sales Growth
Total Words (1000s)	0.0959			
	(1.41)			
Unique Words (1000s)		0.248		
		(1.11)		
Main Topics			0.00575**	0.00549*
			(2.24)	(1.81)
Average Topic Distance				-0.0320
				(-0.17)
Leverage Ratio	-0.0589	-0.0574	-0.0609	-0.0609
	(-1.08)	(-1.05)	(-1.12)	(-1.12)
Stock Return Vol	-1.535**	-1.504**	-1.478**	-1.467**
	(-2.23)	(-2.19)	(-2.17)	(-2.14)
Junk	-0.0458*	-0.0439	-0.0476*	-0.0475*
	(-1.71)	(-1.63)	(-1.75)	(-1.75)
Rated	0.0524**	0.0514**	0.0545**	0.0544**
	(2.08)	(2.04)	(2.18)	(2.17)
# of Covenants	0.0139*	0.0144**	0.0131*	0.0129*
	(1.90)	(1.98)	(1.81)	(1.81)
Observations	2821	2821	2821	2821
R^2	0.267	0.267	0.268	0.268
Addl Risk Controls	Y	Y	Y	Y

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$

Table A1: A Sample Contract f (Full Section)

SECTION 7.01. Events of Default. If any of the following events ("Events of Default") shall occur: (a) any Borrower shall fail to pay any principal of any Loan when and as the same shall become due and payable, whether at the due date thereof or at a date fixed for prepayment thereof or otherwise; (b) any Borrower shall fail to pay any interest on any Loan or any fee or any other amount (other than an amount referred to in clause (a) of this Article) payable under this Agreement, when and as the same shall become due and payable, and such failure shall continue unremedied for a period of five days; (c) any representation or warranty made or deemed made by or on behalf of the Parent or any Subsidiary in or in connection with this Agreement, the Guarantee, any Additional Borrower Agreement or any amendment or modification hereof or thereof, or in any report, certificate, financial statement or other document furnished pursuant to or in connection with this Agreement, the Guarantee, any Additional Borrower Agreement or any amendment or modification hereof or thereof, shall prove to have been incorrect in any material respect when made or deemed made; (d) any Borrower shall fail to observe or perform any covenant, condition or agreement contained in Section 5.02(a), 5.03 (with respect to the Parent's existence), 5.08, 5.09(e), 5.09(f), 5.09(i), 5.09(j) or in Article VI; (e) any Loan Party shall fail to observe or perform any covenant, condition or agreement contained in this Agreement (other than those specified in clause (a), (b) or (d) of this Article) or the Guarantee, and such failure shall continue unremedied for a period of 30 days after the earlier to occur of (i) the date on which a Financial Officer shall have discovered such default and (ii) the date on which written notice thereof has been given to the Parent by the Administrative Agent (at the request of any Lender); (f) the Parent or any Subsidiary shall fail to make any payment (whether of principal or interest and regardless of amount) in respect of any Material Obligations, when and as the same shall become due and payable beyond the applicable grace period therefor; (g) any event or condition occurs that results in any Material Obligations (other than Project Finance Indebtedness which is not guaranteed by the Parent or any Subsidiary (other than a Project Finance Company)) becoming due prior to its scheduled maturity or that enables or permits (with or without the giving of notice, the lapse of time or both) the holder or holders of such Material Obligations or any trustee or agent on its or their behalf to cause all of such Material Obligations to become due, or to require the prepayment, repurchase, redemption or defeasance thereof, prior to its scheduled maturity (unless waived); provided that this clause (g) shall not apply to secured Indebtedness that becomes due as a result of the voluntary sale or transfer of the property or assets securing such Indebtedness; (h) an involuntary proceeding shall be commenced or an involuntary petition shall be filed seeking (i) liquidation, reorganization or other relief in respect of the Parent or any Material Subsidiary or any Additional Borrower or Bidco or its debts, or of a substantial part of its assets, under any Federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect or (ii) the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for the Parent or any Material Subsidiary or any Additional Borrower or Bidco or for a substantial part of its assets, and, in any such case, such proceeding or petition shall continue undismissed for 60 days or an order or decree approving or ordering any of the foregoing shall be entered; (i) the Parent or any Material Subsidiary or any Additional Borrower or Bidco shall (i) voluntarily commence any proceeding or file any petition seeking liquidation, reorganization or other relief under any Federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect, (ii) consent to the institution of, or fail to contest in a timely and appropriate manner, any proceeding or petition described in clause (h) of this Article, (iii) apply for or consent to the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for the Parent or any Material Subsidiary or any Additional Borrower or Bidco or for a substantial part of its assets, (iv) file an answer admitting the material allegations of a petition filed against it in any such proceeding, (v) make a general assignment for the benefit of creditors or (vi) take any action to authorize any of the foregoing; (j) the Parent or any Material Subsidiary or any Additional Borrower or Bidco shall become unable, admit in writing or fail generally to pay its debts as they become due, including in respect of any Subsidiary organized under the laws of the United Kingdom for the purposes of Section 123 of the Insolvency Act 1986 (other than Section 123(1)(a), (b), (c) and (d), provided that, for purposes of this paragraph, the words "to the satisfaction of the court" shall be deemed to be omitted from Section 123(1)(e) and Section 123(2)); (k) one or more judgments for the payment of money in an aggregate amount in excess of $50,000,000 shall be rendered against the Parent, any Material Subsidiary, any Additional Borrower or any combination thereof and the same shall remain undischarged for a period of 30 consecutive days during which execution shall not be effectively stayed, or any action shall be legally taken by a judgment creditor to attach or levy upon any assets of the Parent or any Material Subsidiary to enforce any such judgment; (l) an ERISA Event shall have occurred that, in the opinion of the Required Lenders, when taken together with all other ERISA Events that have occurred, could reasonably be expected to result in a Material Adverse Effect; (m) a Change in Control shall occur; (n) the guarantee contained in Section 2 of the Guarantee shall cease, for any reason, to be in full force and effect in accordance with its terms or any Loan Party or any Affiliate of any Loan Party shall so assert; or (o) the Acquisition Agreement ceases to be in full effect in all material respects prior to the completion of the Asset Divisions;

Table A2: A Sample Contract f (Individual Sentences $s = 1, \ldots, f_s$)

If any of the following events, ("Events of Default") shall occur:
(a) any Borrower shall fail to pay any principal of any Loan when and as the same shall become due and payable, whether at the due date thereof or at a date fixed for prepayment thereof or otherwise;
(b) any Borrower shall fail to pay any interest on any Loan or any fee or any other amount (other than an amount referred to in clause (a) of this Article) payable under this Agreement, when and as the same shall become due and payable, and such failure shall continue unremedied for a period of five days;
(c) any representation or warranty made or deemed made by or on behalf of the Parent or any Subsidiary in or in connection with this Agreement, the Guarantee, any Additional Borrower Agreement or any amendment or modification hereof or thereof, or in any report, certificate, financial statement or other document furnished pursuant to or in connection with this Agreement, the Guarantee, any Additional Borrower Agreement or any amendment or modification hereof or thereof, shall prove to have been incorrect in any material respect when made or deemed made;
(d) any Borrower shall fail to observe or perform any covenant, condition or agreement contained in Section 5.02(a), 5.03 (with respect to the Parent's existence), 5.08, 5.09(e), 5.09(f), 5.09(i), 5.09(j) or in Article VI;
(e) any Loan Party shall fail to observe or perform any covenant, condition or agreement contained in this Agreement (other than those specified in clause (a), (b) or (d) of this Article) or the Guarantee, and such failure shall continue unremedied for a period of 30 days after the earlier to occur, of (i) the date on which a Financial Officer shall have discovered such default and (ii) the date on which written notice thereof has been given to the Parent by the Administrative Agent (at the request of any Lender);
(f) the Parent or any Subsidiary shall fail to make any payment (whether of principal or interest and regardless of amount) in respect of any Material Obligations, when and as the same shall become due and payable beyond the applicable grace period therefor;
(g) any event or condition occurs that results in any Material Obligations (other than Project Finance Indebtedness which is not guaranteed by the Parent or any Subsidiary (other than a Project Finance Company)) becoming due prior to its scheduled maturity or that enables or permits (with or without the giving of notice, the lapse of time or both) the holder or holders of such Material Obligations or any trustee or agent on its or their behalf to cause all of such Material Obligations to become due, or to require the prepayment, repurchase, redemption or defeasance thereof, prior to its scheduled maturity (unless waived);
provided that this clause (g) shall not apply to secured Indebtedness that becomes due as a result of the voluntary sale or transfer of the property or assets securing such Indebtedness;
(h) an involuntary proceeding shall be commenced or an involuntary petition shall be filed seeking (i) liquidation, reorganization or other relief in respect of the Parent or any Material Subsidiary or any Additional Borrower or Bidco or its debts, or of a substantial part of its assets, under any Federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect or (ii) the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for the Parent or any Material Subsidiary or any Additional Borrower or Bidco or for a substantial part of its assets, and, in any such case, such proceeding or petition shall continue undismissed for 60 days or an order or decree approving or ordering any of the foregoing shall be entered;
(i) the Parent or any Material Subsidiary or any Additional Borrower or Bidco shall (i) voluntarily commence any proceeding or file any petition seeking liquidation, reorganization or other relief under any Federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect, (ii) consent to the institution of, or fail to contest in a timely and appropriate manner, any proceeding or petition described in clause (h) of this Article, (iii) apply for or consent to the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for the Parent or any Material Subsidiary or any Additional Borrower or Bidco or for a substantial part of its assets, (iv) file an answer admitting the material allegations of a petition filed against it in any such proceeding, (v) make a general assignment for the benefit of creditors or (vi) take any action to authorize any of the foregoing;
(j) the Parent or any Material Subsidiary or any Additional Borrower or Bidco shall become unable, admit in writing or fail generally to pay its debts as they become due, including in respect of any Subsidiary organized under the laws of the United Kingdom for the purposes of Section 123 of the Insolvency Act 1986 (other than Section 123(1)(a), (b), (c) and (d), provided that, for purposes of this paragraph, the words "to the satisfaction of the court" shall be deemed to be omitted from Section 123(1)(e) and Section 123(2));

(k) one or more judgments for the payment of money in an aggregate amount in excess of $50,000,000 shall be rendered against the Parent, any Material Subsidiary, any Additional Borrower or any combination thereof and the same shall remain undischarged for a period of 30 consecutive days during which execution shall not be effectively stayed, or any action shall be legally taken by a judgment creditor to attach or levy upon any assets of the Parent or any Material Subsidiary to enforce any such judgment;

(l) an ERISA Event shall have occurred that, in the opinion of the Required Lenders, when taken together with all other ERISA Events that have occurred, could reasonably be expected to result in a Material Adverse Effect;

(m) a Change in Control shall occur.

(n) the guarantee contained in Section 2 of the Guarantee shall cease, for any reason, to be in full force and effect in accordance with its terms or any Loan Party or any Affiliate of any Loan Party shall so assert;

or (o) the Acquisition Agreement ceases to be in full effect in all material respects prior to the completion of the Asset Divisions.

Table A3: Description of Economically Important Topics

Default Topics	
Topic description	Representative terms
Topic 28: Impairment of collateral	lien secure collateral document cease valid except.for.opinion create perfect
25th percentile: (g) any Collateral Document shall for any reason fail or cease to create a valid and enforceable Lien on any Collateral purported to be covered thereby or, except as permitted by the Loan Documents, such Lien shall fail or cease to be a perfected and first priority Lien, or any Loan Party shall so state in writing; or	
75th percentile: SECTION 8.1.10 Impairment of Security, etc. Any Loan Document, or any Lien granted thereunder, shall (except in accordance with its terms or pursuant to Section 7.2.9), in whole or in part, terminate, cease to be effective or cease to be the legally valid, binding and enforceable obligation of any Credit Party thereto; any Credit Party or any other party shall, directly or indirectly, contest in any manner the effectiveness, validity, binding nature or enforceability of any Loan Document or Lien granted thereunder; or any Lien securing any Obligation shall, in whole or in part, cease to be a perfected first priority Lien, subject only to those exceptions expressly permitted by such Loan Document.	
Topic 11: Forfeiture and dissolution	companies.and.the.outside.world obligor include subsidiarity limit consolidate under.and.subject other partnership partner
25th percentile: 10.1.13 Criminal Action or Forfeiture. Any Borrower shall be criminally indicted or convicted under any law or engage 36 in any conduct which is reasonably likely to result in a forfeiture of any material Property of any Borrower.	
75th percentile: (f) the Company, any Subsidiary or any Guarantor is dissolved or liquidated (except as permitted in Sections 8.5 or 8.19) or all or substantially all of the assets of the Company are sold or otherwise transferred or encumbered without the prior written consent of each Bank; or	
Topic 21: Material adverse changes	material effect adversary.counsel reason license good faith good.faith expect author
25th percentile: (k) there shall occur any material loss or change to any Dealer Franchise Agreement between any Borrower and a Manufacturer, which has a Material Adverse Effect;	
75th percentile: (n) there shall occur the loss, suspension or revocation of, or failure to renew, any license or permit now held or hereafter acquired by 70 64 the Borrower or any of its Subsidiaries if such loss, suspension, revocation or failure to renew would have a Material Adverse Effect;	
Topic 24: Non-payment	due loan payable interest principal fee payment date reimburse

Continued on next page

Table A3 (continued from previous page)

Topic description	Representative terms
25th percentile: (a) any Borrower shall default in the payment when due of any principal of any Loan and, if such default shall result from the failure of any third party payments system used by such Borrower, such default shall continue for a period of two Business Days; *75th percentile:* (a) NonPayment. The Company fails to pay, (i) when and as required to be paid herein, any amount of principal of any Loan, or (ii) within three Business Days after the same shall become due, any interest or fee payable hereunder, or (iii) any other amount payable hereunder or pursuant to any other Company Document after the same shall become due within 30 days of notice by the Bank to such effect; or	
Topic 13: Criminal/civil legal violations	parent portion asset condemn claim facilitate agencies conduct subject
25th percentile: (m) Any attachment or garnishment proceeding or similar type of action shall be commenced against or involving the property of any Borrower or any of its Subsidiaries, which proceeding or action could affect or involve any deposits held by any Borrower or any of its Subsidiaries with any Lender; or *75th percentile:* 7.15 The Borrower or any of its Subsidiaries shall (i) be the subject of any proceeding or investigation pertaining to the release by the Borrower, any of its Subsidiaries or any other Person of any toxic or hazardous waste or substance into the environment, or (ii) violate any Environmental Law, which, in the case of an event described in clause (i) or clause (ii), has resulted in liability to the Borrower or any of its Subsidiaries in an amount equal to $3,000,000 or more, which liability is not paid, bonded or otherwise discharged within 45 days or which is not stayed on appeal and being appropriately contested in good faith.	
Topic 10: Any change in control	control occur change member under.and.subject exist respective entitle liable by.reason.of
25th percentile: (l) a Change in Control shall occur; or *75th percentile:* 10.10 Ownership. A Change of Control Event shall have occurred;	
Topic 19: Failure to meet other general indebtedness	default obligate agreement provide guarantee of.grace rate hedge lease instrument
25th percentile: (d) The Borrower shall default in the observance or performance of any other agreement contained in this Agreement (other than as provided in paragraphs (a) through (c) of this Section), and such default shall continue unremedied for a period of 30 days after notice thereof has been given to the Borrower in accordance with this Agreement; or	

Continued on next page

Table A3 (continued from previous page)

Topic description	Representative terms
75th percentile: (f) the Borrower, any Guarantor or any of its Subsidiaries (other than a Guarantor which is not a Material Subsidiary of the Borrower or a Subsidiary which is not a Material Subsidiary unless the Borrower or any Material Subsidiary has been adversely effected by the occurrence of such event (a "DeMinimis Subsidiary")) shall fail to pay at maturity, or within any applicable period of grace, any obligation for borrowed money or credit received or in respect of any Capitalized Leases, or fail to observe or perform any material term, covenant or agreement contained in any agreement by which it is bound, evidencing or securing borrowed money or credit received or in respect of any Capitalized Leases for such period of time as would permit (assuming the giving of appropriate notice if required) the holder or holders thereof or of any obligations issued thereunder to accelerate the maturity thereof;	
Topic 2: Receivership issues	attach process warrant levi writ calendar.days rehabilitation issuable proceeding
25th percentile: 7.7. Without the application, approval or consent of the Borrower or any of its Subsidiaries, a receiver, trustee, examiner, liquidator or similar official shall be appointed for the Borrower or any of its Subsidiaries or any Substantial Portion of its Property; or a proceeding described in Section 7.6(iv) shall be instituted against the Borrower or any of its Subsidiaries and such appointment continues undischarged or such proceeding continues undismissed or unstayed for a period of 60 consecutive days.	
75th percentile: (f) Insolvency Proceedings, Etc. Any Loan Party or any of its Material Subsidiaries institutes or consents to the institution of any proceeding under any Debtor Relief Law, or makes an assignment for the benefit of creditors; or applies for or consents to the appointment of any receiver, trustee, custodian, conservator, liquidator, rehabilitator or similar officer for it or for all or any material part of its property; or any receiver, trustee, custodian, conservator, liquidator, rehabilitator or similar officer is appointed without the application or consent of such Person and the appointment continues undischarged or unstayed for 60 calendar days; or any proceeding under any Debtor Relief Law relating to any such Person or to all or any material part of its property is instituted without the consent of such Person and continues undismissed or unstayed for 60 calendar days, or an order for relief is entered in any such proceeding; or	
Topic 14: Repudiation of guarantee	full guarantor in.full force document loan denial invalid further.advance
25th percentile: 10.1.13. Repudiation of or Default Under Guaranty Agreement. Any Guarantor shall revoke or attempt to revoke the Guaranty Agreement signed by such Guarantor, or shall repudiate such Guarantor's liability thereunder or shall be in default under the terms thereof.	
75th percentile: (q) Defaults Under Other Loan Documents. If any default, misrepresentation or breach should occur under any Pledge Agreement, Security Document, Guaranty or other Loan Document and is not cured or waived within the time permitted therein, or any such Loan Documents should cease to be in full force and effect, or any Loan Party thereto should assert any unenforceability of, or deny liability on, or admit inability to perform under, any such Loan Document.	

Continued on next page

Table A3 (continued from previous page)

Topic description	Representative terms
Topic 15: Cross-default	indebtedness holder swap cause contract mature prior contingent

25th percentile: 7.5. Failure of the Borrower or any of its Subsidiaries to pay when due any Indebtedness to any Person other than the Lenders aggregating in excess of $2,000,000 ("Material Indebtedness"); or the default by the Borrower or any of its Subsidiaries in the performance (beyond the applicable grace period with respect thereto, if any) of any term, provision or condition contained in any agreement under which any such Material Indebtedness was created or is governed, or any other event shall occur or condition exist, the effect of which default or event is to cause, or to permit the holder or holders of such Material Indebtedness to cause, such Material Indebtedness to become due prior to its stated maturity;

75th percentile: (g) Debt Cross Default. The Borrower or any of its Subsidiaries shall (i) default in the payment of any Debt (other than the Loans or the Notes) the aggregate outstanding amount of which is in excess of $5,000,000 beyond the period of grace, if any, provided in the instrument or agreement under which such Debt was created, or (ii) default in the observance or performance of any other agreement or condition relating to any Debt (other than the Loans or the Notes) the aggregate outstanding amount of which is in excess of $5,000,000 or contained in any instrument or agreement evidencing, securing or relating thereto or any other event shall occur or condition exist, the effect of which default or other event or condition is to cause, or to permit the holder or holders of such Debt (or a trustee or Agent on behalf of such holder or holders) to cause, with the giving of notice if required, any such Debt to become due prior to its stated maturity (any applicable grace period having expired). Other CrossDefaults. The Borrower or any of its Subsidiaries shall default in the payment when due, or in the performance or observance, of any material obligation or condition of 54 any Material Contract unless, but only as long as, the existence of any such default is being contested by the Borrower or such Subsidiary in good faith and by appropriate proceedings and adequate reserves in respect thereof have been established on the books of the Borrower or such Subsidiary to the extent required by GAAP.