

The Pricing of New Corporate Debt Issues

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ABSTRACT

We use computational linguistics to examine whether a firm's risk factors provide unique information that is useful for pricing the initial public offerings of bonds. Credit ratings incorporate textual information related to the indebtedness of the firm and its ability to repay its debt obligations. We find that the initial yield spread fully incorporates the risk factors embedded in credit ratings but additional risks associated with the financial condition of the firm and the covenants of the offering are useful in pricing. The amount of risk disclosed in the prospectus is also a good indicator of subsequent changes in bond yields. More importantly, we do not find any significant differences in the usefulness of risk factor disclosures in predicting pricing and bond outcomes between private and public firms. Our results suggest that mandated securities disclosure provides salient information to investors in both the private and public markets.

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1. Introduction

A large body of literature has examined the pricing of corporate debt and notes the inability of current models to fully predict yields (Collin-Dufresne, Goldstein, and Martin (2001), Chen, Lesmond, and Wei (2007), Huang and Huang (2012)). In order to improve the explanatory power, Duffie, Eckner, Horel, and Saita (2009) recommend that “whenever it is possible to identify and measure new significant risk factors, they should be included in the model.” In this paper, we show that the incorporation of textual disclosures of risk factors predicts the pricing and secondary market outcomes for first-time public debt issuers after controlling for issuance and issuer characteristics, credit rating, and covenant structure.

We examine the effect of textual risk disclosures on four bond pricing outcomes: initial credit rating, initial offer spread, secondary market yield spread changes, and the probability of a trade occurring within three months of issuance for a sample of 903 plain vanilla first-time public debt issues (“DIPOs”) that include both Rule 144A exchange offer and non-Rule 144A offers. In the initial part of our sample, we include only Rule 144A offerings to exploit the fact that the majority of DIPOs are first issued as private placement Rule 144A debt offerings and are then subsequently registered with the Securities and Exchange Commission (SEC) in less than six months. According to Thomson Reuters, in a Rule 144A registered exchange offer “the issuer issues new registered securities (usually non-convertible debt) with terms identical to original securities issued in a private placement and offers the new securities to the holders of the original restricted securities in exchange for those original securities. The A/B exchange offer provides freely tradeable securities to those investors that participate.”¹

Disclosure documents for Rule 144A offerings are generally unavailable and therefore, understanding what information is available and used by sophisticated investors in the private market is not well studied. Conversations with practitioners indicate that because the time period between the Rule 144A offering and registration with the SEC is so short (on average

¹[https://content.next.westlaw.com/Document/I0f9fe7f0ef0811e28578f7ccc38dcbee/View/FullText.html?contextData=\(sc.Default\)&transitionType=Default&firstPage=true&bhcp=1](https://content.next.westlaw.com/Document/I0f9fe7f0ef0811e28578f7ccc38dcbee/View/FullText.html?contextData=(sc.Default)&transitionType=Default&firstPage=true&bhcp=1) See also Fenn (2000).

less than half a year), the content of the private offering memorandum is substantially the same as that required in the subsequent public filing. Furthermore, litigation risk may also force disclosure to be similar between the two offering documents in order to reduce the probability that changes in disclosure between the time of the private offering and subsequent registration will result in investors claiming fraudulent or misleading disclosure. Thus, the public registration of Rule 144A offers allow us to understand the type of textual and quantitative information that is valuable in the pricing of private market transactions and by extension, first-time offers of corporate debt.

Each offering prospectus is required to have a dedicated “risk factors” section that delineates the individual risks associated with the firm that may impact the pricing of the bond. As evidence that these disclosures are informative, Campbell, Chen, Dhaliwal, Lu, and Steele (2014) document a positive association between specific risk factor disclosures in the 10-K and ex ante measures of risk exposures. In a related context, Kravet and Muslu (2013) find that industry-wide risk factors in the 10-K are more important than firm-specific disclosures in explaining post-filing equity return volatility and trading volume.²

We machine read this section of the prospectus and determine the relevant risk topics using a variant of Latent Dirichlet Allocation (LDA) called Non-negative Matrix Factorization (NMF). We then score each document’s exposure to five interpretable topics. These topics discuss the terms of the exchange offer, the financial condition of the firm, current indebtedness, covenants, and debt repayment. We also sum the loadings of each topic to create an aggregate index to capture the overall risk exposure of the firm that could affect the future cash flow to bondholders.

Our first contribution is to highlight that different participants in the offering process incorporate different types of information about risk. Furthermore, the impact of certain risk disclosures may change over time (Hanley and Hoberg (2019)). Using an empirical framework that controls for issuer, bond, and macroeconomic variables as well as the covenant structure

²Bonsall and Miller (2017) in their examination of readability on credit ratings includes risk related disclosures, “defined as the number of sentences in the 10-K filing containing at least one of the risk related terms identified in Kravet and Muslu (2013) divided by the total number of sentences in the 10-K filing” as a control variable but does not examine this variable in any detail.

of the bond, we find that credit rating agencies assign worse credit ratings to firms with greater aggregate risk discussion. This finding is consistent with the role of credit rating agencies in assessing both the probability of and loss given default. The topics that appear to be most influential in predicting credit ratings are discussions of the indebtedness of the firm and the ability to repay the debt, two economic risks that are central to assessing creditworthiness. Credit rating agencies do not give either better or worse credit ratings to firms that load more heavily on discussions of the exchange offer, covenants, or somewhat unexpectedly, the risks of the financial condition of the firm.

In pricing the bonds, we document that investors require higher initial offering yields when the aggregate discussion of risk exposure is greater. The residual topics that influence the premium, after incorporating the credit rating of the bond, include discussions of the financial condition of the firm and the covenants. Thus, investors appear to fully incorporate the credit ratings assessment of the firm's indebtedness and repayment risk but value other risks that the credit rating agency does not fully consider.

We examine two secondary market outcomes. The first is the probability that the bond will trade in the aftermarket within three months of issuance. We do not find any evidence that this probability is influenced by the overall aggregate risk discussion. However, we do show that when a firm has more discussion of two individual risk topics, the financial condition of the firm and the covenants, the bond is less likely to trade. Consistent with the prior literature (Alexander, Edwards, and Ferri (2000)), we also show that larger bonds with longer maturity are more likely to trade as well.

The second outcome is the change in the yield spread over the three months after issuance. Bonds that are exposed to more risk are expected to have a higher probability of an increase in yield spreads. We test whether disclosure at the time of the offering has predictive value over and above bond and offering firm characteristics. We show that bonds with greater aggregate risk discussions are more likely to have an, albeit small, increase in yields shortly after issuance. More importantly, we can pinpoint the source of the increase. We show that the topic most related to the change in yield spread is the discussion of the financial

condition of the firm.

A number of papers have examined the pricing of debt initial public offerings (DIPOs) such as Datta, Iskander-Datta, and Patel (1997), Datta, Iskander-Datta, and Patel (2000), and Cai, Helwege, and Warga (2007), and find that information asymmetry is a driving factor in the pricing of DIPOs. The benefit of examining DIPOs is that we are able to examine a “clean” information environment with respect to debt disclosure. Because issuers of DIPOs are both public and private firms (firms registered with the SEC and having publicly traded equity), we can compare the effect of registration status on bond pricing, allowing us to examine whether mandated disclosure levels the playing field between public and private firms.

Much of the prior literature, for example Cai, Helwege, and Warga (2007), predicts that private firms will have greater information asymmetry, and thus should have greater sensitivity to disclosure. To capture this prediction, we include an interaction term in the regression that captures the interplay between public/private status and the overall risk discussion in the prospectus in our regression. We find no difference in the coefficient on the aggregate risk exposure between public and private firms, indicating that the impact of risk disclosures do not differ between these two types of firms.

Because the terms of the exchange bond are the same as the terms of the Rule 144A bond, this result means two things. First, firms are likely to use similar disclosure in the private offering memorandum as that required in a public registration, and second, initial disclosure requirements are fully revealing. In other words, historical or archival information does not add additional information that affects pricing.

Last, we test whether the inclusion of non-Rule 144A DIPOs changes our findings. Of the 903 DIPOs in the sample, only 165 are not issued in the private market first. Non-Rule 144A issuers are very different from our sample of exchange offer bonds. Non-Rule 144A firms are generally less likely to be private, and much larger in terms of assets. Their bond offerings are generally larger, have smaller yields, fewer covenants and less risk disclosure. Despite these differences, their inclusion in the sample does not change the findings.

Other papers have examined textual attributes and bond pricing. For example, Ertugrul, Lei, Qiu, and Wan (2017) and Bonsall and Miller (2017) both find that firms with less readable financial statements and who use more uncertain words have a higher cost of debt. Agarwal, Chen, and Zhang (2018) document that the more negative the tone of credit analyst reports predicts both the probability and the stock price reaction to ratings downgrades. Yu (2005) documents that firms with higher disclosure rankings tend to have lower credit spreads. Sengupta (1998) documents a negative association between financial analysts' evaluations of corporate disclosure practices and bond yields particularly for firms that have greater stock price uncertainty as measured by the variance of returns. A drawback to textual elements such as readability and tone is that they cannot pinpoint the economic channel that is driving lower yields. Thus, we incorporate topic modeling to better understand the specific risks that investors use to price first-time public offers of debt.

We further contribute to the literature on bond pricing by incorporating the covenant structure of the offering in bond pricing. This is important because the risk factors in the offering prospectus include a discussion of the terms of the offering including covenants. For example, Apple's 2013 prospectus risk factor section states "The indenture governing the notes does not contain financial covenants and only provides limited protection against significant corporate events and other actions we may take that could adversely impact your investment in the notes."³ Indeed, Spiceland, Yang, and Zhang (2016) argue that "debt covenants, interest rates, and accounting quality, are all endogenously interrelated." Thus, ignoring the covenant structure could lead to an omitted variable problem as two identical firms who both issue bonds but with different covenants may face different costs of debt (Bradley and Roberts (2015) and Reisel (2014)) as well as make different disclosure choices. By including the covenant structure of debt, we overcome the observation by Leuz and Wysocki (2016) that "a major difficulty with tests involving the cost of debt is to control for default risks as well as the specifics of firm's debt contracts, in particular covenants, and their impact on the cost of debt."

³https://www.sec.gov/Archives/edgar/data/320193/000119312513191849/d527270d424b2.htm#supprom527270_6

Overall, our findings point to the important role that soft information plays in the pricing of debt securities. Fenn (2000), who finds no evidence of greater 144A premiums for first-time bond issuers or private firms, concludes that “sophisticated investors do not need, and therefore do not value, the incremental information provided by securities registration.” Our results suggest otherwise and highlight the role of mandated securities disclosure in providing salient information to investors in both the private and public markets. Furthermore, the inclusion of textual information on the risks facing the firm has explanatory impact over and above control variables traditionally used in the bond pricing literature. We also conclude that the proxies for credit risk, such as credit ratings that have been used in prior studies, may not be a fully revealing proxy for risk. Thus, the incorporation of the risk discussion in the prospectus is an important source of information regarding creditworthiness.

2. Data and Risk Topic Measures

2.1 Sample Construction

We identify first-time issuers in the U.S. corporate bond market through the Fixed Income Securities Database (FISD) from Mergent, Inc. This database maintains issuance information on all fixed income securities that are assigned CUSIPs, and instruments that are likely to receive one in the near future. FISD represents one of the most comprehensive bond-issuance databases and serves as the issuance database engine for a variety of data re-sellers.

Using FISD, we first identify all firms that completed new fixed rate bond offerings between January 1995 and June 2013, but have never issued any public debt prior to 1995. This sample of potential bond IPOs is then screened to further ascertain whether the first offering observed in FISD is indeed a DIPO. We use data on outstanding public bonds reported in SDC to eliminate firms that had outstanding public straight bonds before 1995, when FISD starts.⁴

⁴FISD includes all public bonds that mature in 1990 or later. Thus, a firm that issued a bond prior to 1990 that had already matured would be mistakenly identified as having a bond IPO were it not crosschecked

We exclude all bonds, whether they are IPOs or not, that have unusual features that could affect the yield to maturity. These include foreign issues, pay-in-kind bonds, corporate pass-through trusts, convertible, callable, and bonds issued by financial firms. We also exclude all offerings below \$5 million. In total, 1,447 bond offerings meet our criteria to be classified as DIPOs. After we identify the DIPOs, we download the bond prospectuses from forms S-1, S-4, and 424 from the SEC’s EDGAR website.⁵ Out of the 1,447 DIPOs, we are able to locate the prospectuses for 1,164 DIPOs.

The issuer of a DIPO may or may not have a traded public equity before the DIPO. For issuers with publicly traded stocks (labeled “public” issuers hereafter), we use Compustat to get firm financials; for issuers without a publicly traded stock (labeled “private” issuers hereafter), we manually collect firm financials for the fiscal year immediately proceeding the issuance from the prospectuses or the issuers’ other filings with the SEC.⁶ We remove from the sample a number of smaller or special-purpose private issuers for whom we cannot calculate meaningful long term debt ratios or interest coverage ratios. Our final sample contains 903 DIPOs with a complete risk section and available firm financials.

One prominent feature in the DIPO market is that the majority of IPO bonds are exchange offers of private debt. These bonds were previously issued to “qualified institutional buyers” based on the SEC Rule 144A (Rule 144A bond), which provides a resale exemption for privately placed securities. As documented in Fenn (2000) and confirmed with practitioners, Rule 144A bonds are often sold with registration rights that require the issuer to subsequently register the bond offer within a short period of time. Without registration

in other databases.

⁵IPO offers use Form S-1 to file preliminary prospectuses; however, exchange offers, which in our case are 144A-converted IPO bonds, use Form S-4. In cases that we cannot locate either the S-4 or S-1, we use Form 424, which is the final prospectus with the offering price. The textual content of Form 424 is typically similar to its preliminary counterpart (Hanley and Hoberg (2012)).

⁶Because we restrict the sample to only first time bond issuers, a firm can only be considered public if they have previously issued equity. Technically, any firm that is registered with the SEC and files periodic statements is a “public” firm because public status (as defined by a registered issuer with the SEC) doesn’t distinguish between the type of securities the firm offers to the public (e.g. a 10-K is the same for issuers of public debt and public equity). Other papers often ignore this distinction (an exception is Reeb and Roth (2014) who consider firms that file with the SEC “semi-public”) and by doing so, potentially obfuscate the effect of new textual information on bond pricing.

rights, the investor is required to hold the bond either six months if the issuer is a public company or one year if the issuer is a private company. In a Rule 144A exchange offer, the issuer replaces the privately placed bond with an identical bond that is now registered with the SEC under the Securities Act, thus making it freely tradeable. The benefit of the textual content of the filings of these securities is that the disclosure documents in both the private and public offerings are likely to be substantially similar. According to Morrison Foerster, a leading law firm, “Because the anti-fraud provisions apply to Rule 144A transactions, an offering memorandum typically contains information comparable to what a prospectus for a registered offering would contain.”⁷

Figure 1 shows the distribution of the 903 DIPOs in our sample by year and whether the bond was first issued in the private market (Rule 144A) or through a public registration (non-Rule 144A). It is obvious from this graph, that most initial public offerings of debt are conducted through the Rule 144A market first, regardless of the time period studied. In our sample of 903 DIPOs, 738 or 87% are Rule 144A exchange bonds. One can also see the emergence of the private-to-public market in 1996 and its subsequent growth. The number of DIPOs peaked in 1998 and was lowest in the wake of the recent financial crisis. We use the Rule 144A exchanged DIPOs as our primary sample, and supplement the primary sample with non-Rule 144A DIPOs in robustness tests.

Because typically we do not have pricing information in FISD for exchange bonds, we trace their Rule 144A predecessors, which have identical offering terms for the pricing information. We supplement missing offering yields with yields calculated from offering characteristics. We then calculate the yield spread as the bond yield minus the interpolated treasury yield over treasury terms of 1, 2, 3, 5, 7, 10, 20, and 30 years.

Table 1 shows the offering and firm characteristics of the primary sample. (All variables used in the paper are described in Appendix A.) On average, the bond issue size is \$212 million with a maturity is 8.25 years and an initial yield of 9.99%, corresponding to a yield spread of 5%. The average credit rating is 5.93, which is between BB and B but very close to

⁷<https://media2.mofo.com/documents/faqrule144a.pdf>

B. As shown in Figure 2, the majority of Rule 144A exchange bonds are rated non-investment grade (NIG). This is consistent with the observation that high-yield issuers use the Rule 144A market for a popular source of debt funding (e.g., Huang and Ramirez (2010)).

More than half of the DIPOs in the sample are issued by private firms. Issuers tend to be relatively small with an average total assets of \$1.3 billion, a long-term debt ratio of 45% and interest coverage of 17.72. Our sample is similar to other DIPO samples in previous studies. For example, Datta, Iskander-Datta, and Patel (2000) show that 62% of DIPOs have a maturity between 5 to 10 years, and Cai, Helwege, and Warga (2007) document that 67% of DIPOs are rated BB or B and 52% of DIPOs are issued by private firms.

We also collect information on covenants from Mergent and classify them into four groups based on Chava, Kumar, and Warga (2009) and Helwege, Huang, and Wang (2017). These include dividend (7 covenants), subsequent financing (22 covenants), investment (10 covenants), and event-related restrictions (6 covenants). (See Appendix B for a list of the bond covenants and their category.) We include as independent variables the number of covenants in each category. Panel B of Table 1 presents summary statistics on covenant usage in the sample both the number and percentage of covenants in each category. All offers have at least one covenant in each of the four categories. Dividend and event-related restrictions are the most prominent as the average offering includes 80% of the possible individual covenants. The average offering also contains about half of the available individual covenants that restrict subsequent financing and investments.

We obtain secondary bond prices from the National Association of Insurance Commissioners (NAIC) secondary market pricing database. We use the NAIC data primarily to obtain the longest possible sample of bond transactions because information from TRACE is not available until 2002 and even then, has virtually no coverage of Rule 144A transactions until the end of our sample period (2013). NAIC records all bond transactions by life insurance companies, property and casualty insurance companies, and health maintenance organizations starting from 1993. Campbell and Taksler (2003) note that these institutions hold about one-third of outstanding corporate bonds, making them a significant investor.

Based on accrued interests derived from FISD bond coupons, we then calculate secondary market bond transaction yields from trade information on NAIC.

2.2 Topic Analysis of the Risk Section

We are interested in how the informativeness of the risk discussion of the public offering document affects pricing outcomes. To begin, we parse each DIPO’s prospectus to isolate any section whose heading includes the word “risk”. For example, we include sections titled “Risk Factors”, “Detailed Risk”, “Risks Related to the Exchange Offer”, and “Forward-Looking Statements and Associated Risks” sections. We remove any section that has 50 words or less.

After parsing the document, we use a variant of Latent Dirichlet Allocation (LDA) called Non-negative Matrix Factorization (NMF) to determine the content of the risk disclosures. NMF is a topic modeling algorithm that describes data clusters of related documents. We use NMF rather than the traditional LDA because research has suggested that this method provides better results when the textual corpus has a more concentrated vocabulary (O’Callaghan, Greene, Carthy, and Cunningham (2015)).

Like LDA, the only input for NMF is the number of topics. Using 15, 10, and 5 topics, we manually determine that our corpus of risk factors can best be described by 5 interpretable topics. These topics are shown in Table 2 and we include the top 20 terms to gain a better understanding of the content of the topic as well as to apply a label to the topic. As can be seen in the table, Topic 1 has words related to the conditions of the *exchange offer* (notes, exchange, market, offer).⁸ Topic 2 describes the firm’s *financial condition* (results, financial, operations, condition).⁹ Topic 3 discusses the company’s *indebtedness*

⁸For example, “the liquidity of any market for the exchange notes will depend upon, among other things, the number of holders of the exchange notes, our performance, the market for similar securities, our ability to complete the offer to exchange the old notes for the exchange notes, the interest of securities dealers in making a market in the exchange notes and other factors.”

⁹For example, “any of these risks could have a material adverse effect upon our business, financial condition and results of operations.”

(credit, senior, indebtedness, facility).¹⁰ Topic 4 is related to *covenants* (description, see, change control)¹¹ and finally, Topic 5 has words associated with debt service or *repayment* (company, ability, future, capital).¹²

Panel B of Table 2 provides summary statistics of topic loadings on each of the topics as well as our aggregate index. The most heavily weighted discussion in the offering document is debt repayment and the least discussed is covenants. The documents, on average, discuss the exchange offer, financial condition and indebtedness of the issuer in relatively similar amounts. There is, however, a high degree of variation in the discussion of textual risks among issuers, with the lowest percentile having almost no discussion. In addition, we create a variable, *Aggregate Topic Score*, that is sum of an issue's loading on each individual topic. One can interpret this variable as an overall indication of the extent to which a firm discusses risks associated with the offering. A higher score indicates greater discussion of risk. The aggregate topic score has a mean of 8.16 but ranges from 1 to almost 47. Thus, we expect that differences in textual risk disclosures may meaningfully contribute to the pricing of the offering.

Obviously, the discussion of risks is related to not only the characteristics of the firm but also of the offering. In order to explore this more fully, in Table 3, we present a regression analysis on the determinants of the individual topic loadings. In this and all other regressions, we include bond characteristics such as the maturity of the bond (*Maturity*) and the size

¹⁰For example, “the new notes, like the existing notes, will be effectively subordinated to all senior secured indebtedness of the company, including indebtedness under the revolving credit facility, to the extent of the assets securing such indebtedness.”

¹¹For example, “change of control provisions in the indenture may not protect you from certain important corporate events, such as a leveraged recapitalization (which would increase the level of our indebtedness), reorganization, restructuring, merger or other similar transaction, unless such transaction constitutes a ‘change of control’ under the indenture.”

¹²For example, “the company’s high degree of leverage may have important consequences for the company, including: (i) the ability of the company to obtain additional financing for acquisitions, working capital, capital expenditures or other purposes, if necessary, may be impaired or such financing may not be on terms favorable to the company; (ii) a substantial portion of the company’s cash flow will be used to pay the company’s interest expense, which will reduce the funds that would otherwise be available to the company for its operations and future business opportunities; (iii) a substantial decrease in net operating cash flows or an increase in expenses of the company could make it difficult for the company to meet its debt service requirements and force it to modify its operations; (iv) the company may be more highly leveraged than its competitors which may place it at a competitive disadvantage; and (v) the company’s high degree of leverage may make it more vulnerable to a downturn in its business or the economy generally.”

of the issue (*Offering Amount*). Issuer variables include a dummy variable, *Private*, equal to one if the issuer is not currently registered with the SEC and has no publicly traded securities, zero otherwise. Other control variables are related to the financial condition of the firm: $\ln(\text{Assets})$, the natural logarithm of total assets for the size of the issuer, *LT Debt Ratio*, the long-term debt ratio of the firm, and *Int. Coverage*, the interest coverage ratio.

We also include two variables to capture the macroeconomic environment surrounding the issuance: market liquidity factor (the difference between 30-day LIBOR rate and three-month Treasury-Bill rate, *Ted Spread*), and equity market volatility index (*VIX*). Last, we control for the covenant structure of the issuance through the number of covenants each firm has out of the total number of covenants in each category.¹³ All regressions include year and industry (single-digit SIC code) fixed effects with standard errors clustered by industry.

In in column (1) of Table 3, where the dependent variable is the *Aggregate Topic Score*, the discussion of total risks increases, as expected, when firms are smaller in terms of total assets. But after controlling for the size of the firm, risks appear to be more prevalent when these offers have higher offering amounts but, somewhat surprisingly, lower long-term debt ratios. The discussion of risk is not related to the maturity of the bond, whether the firm is private or public, its interest coverage, or macroeconomic factors.

We surmise that covenant usage and risk discussion should go hand-in-hand. When examining the effect of covenants, we find that greater aggregate risk discussion is associated only with more covenants that are related to certain events but not to other restrictions.

In column (2), the only firm characteristics that are related to an increased discussion of the risks of the exchange offer are the long-term debt ratio and asset size. The smaller the firm and its long-term debt ratio, the greater is the risk discussion of the exchange offer but these relationships are only marginally significant. The covenant structure is not related to the risk disclosures of the terms of the exchange offering. Because the discussion of the risks of the exchange offer is likely to be similar among offers, this result is not surprising.

¹³In untabulated results, we find that the determinants of covenant usage are mainly related to the characteristics of the issuer. Smaller firms with lower interest coverage have more covenants. We do not find any differences of covenant usage between public and private firms.

In column (3), many of the same characteristics that determine the aggregate risk topic score also determine the discussion of the risks of the financial condition of the firm. In addition, the greater the number of covenants related to investment restrictions, the larger is the risk discussion of the firm's financial condition.

Risks related to the debt structure of the firm, in column (4) are more prevalent when the offering has a longer maturity and the issuer is private. More covenants that restrict investment and dividends also increase the discussion of this topic.

The topic that discusses the covenants or restrictions on the firm, as shown in column (5) is only increasing when the issuer is private, has lower interest coverage, and when the firm has more covenants that restrict certain events. Finally, the factors that determine the discussions of the risk of debt repayment in column(6) are identical to the determinants of the aggregate risk topic score.

Overall, the findings from Table 3 indicate that different topics are often influenced by different factors. Since we control for all of the independent variables in our regressions, we can isolate the marginal effect of increased risk disclosures on bond pricing and secondary market outcomes.

3. Effect of Textual Content on Initial Bond Pricing

In this section, we analyze whether there is a relationship between the specific risks in the offering document and the pricing and credit risk characteristics of the bond over and above firm, offering, and macroeconomic variables. We are interested in the relationship between textual information in the setting of the initial credit rating and offering yield spread.

3.1 Credit Rating

We begin by examining whether and to what extent credit rating agencies incorporate the firm's risk discussion into their rating. Given that credit rating agencies are most con-

cerned with downside risk, we expect that the discussion of risk in the prospectus will be an important determinate of their rating. For example, Bonsall and Miller (2017) find that less readable financial disclosures and more discussion of risk in the offering document are associated with less favorable ratings and greater bond rating agency disagreement.

Figure 2 shows the distribution of credit ratings across the sample by both public and private Rule 144A issues and non-Rule 144A issues. Consistent with the literature on Rule 144A issuance (Fenn (2000)), the majority of our sample consists of Rule144A non-investment grade bonds that have a credit rating of B or lower. This is similar to Cai, Helwege, and Warga (2007) who document that 67% of DIPOs are rated BB or B.

The distribution of credit ratings for those offers that are not previously placed in the private market, non-Rule 144A offers, is more evenly split between investment and non-investment grade. The majority of these types of DIPOs are issued by public issuers but there are a few, 37 out of 165, issued by private issuers. In a later section, we will include these bonds in the analysis but for now, will continue to concentrate on Rule 144A exchange offers.

In Table 4, we analyze the factors that determine the credit rating of the offering. We include both the overall risk score as well as the individual topics as the independent variables of interest while holding the characteristics of the bond and its covenant usage constant. The dependent variable is the bond's credit rating using the following numerical scale: AAA = 1, AA = 2, A = 3, BBB = 4, BB = 5, B = 6, CCC = 7, CC = 8, C = 9, DDD and below =10, where a lower numerical value represents a better credit rating.

In terms of characteristics of the issuer across all columns, the smaller the firm, as measured by the log of total assets and the lower the interest coverage, the worse is the credit rating. Credit ratings are also worse for bonds that have restrictions on dividends and certain events. Credit ratings tend to be better when the VIX is high, consistent with the conjecture that firms strategically time the IPO market—there are fewer lower-quality IPOs in bad times. Despite the fact that private firms may suffer from greater information asymmetry than public firms, we find only a minor effect on having worse credit ratings for

firms that are private across all specifications.

Turning to the topic loadings, as expected, the greater the overall risk discussion in the prospectus, the worse is the credit rating. This finding has explanatory power over and above more quantitative measures that may capture creditworthiness. If we estimate the economic significance by coefficient estimate times standard deviation, the effect of the overall risk discussion on credit rating would be 0.14 ($= 0.03 \times 4.75$), or about half a notch if we use the more granular credit rating such as B-, B, B+ for each category of letter rating.

Two topics appear to be influential in the setting of the credit rating. These topics discuss the indebtedness of the firm and the ability of the firm to repay the bond. The significance of topic that discuss leverage and the ability to pay is central in assessing the expected probability and expected loss of default. We do not find that variation in the discussion of the risks associated with the exchange offer, the issuer's financial condition, and the bond's covenants have any significant effect on the bond's credit rating.

These findings confirm the textual content that isolates the specific source of information that credit rating agencies find useful in setting the initial credit rating. By extension, we also show that certain risks associated with the firm and the offering are not incorporated into the rating, either because they are not useful in predicting default or because they are not correlated with other rating-informative quantitative measures. For example, untabulated, none of the risk topics is significantly related to interest coverage; year the latter is significantly related to rating.

3.2 Initial Yields

We next examine whether textual content is related to the offering spread after controlling for the credit rating of the bond. By doing so, we can better understand the factors that affect initial yields and whether it is possible to predict reaching-for-yield in non-investment grade bonds (Becker and Ivashina (2015)).¹⁴ There are two competing predictions of the

¹⁴Reaching for yield refers to investors' propensity to buy riskier assets in order to achieve higher yields.

effect of textual risk disclosure on offering yields. On one hand, if credit rating agencies fully incorporate estimates of risk in their rating, then there should be no effect of disclosure on initial yields.

On the other hand, if ratings are coarse (Goel and Thakor (2015) and do not fully capture risk (Becker and Ivashina (2015)), then textual disclosures of risk may predict initial yields. This prediction seems likely as the extant literature indicates that the more negative the disclosure tone and uncertain words (Ertugrul, Lei, Qiu, and Wan (2017)), the less readable the document, (Bonsall and Miller (2017)), and the less transparent the disclosure (Sengupta (1998), Yu (2005)), the greater are the initial yields on bonds. Our method allows us to pinpoint the source of the uncertainty in greater detail and thus, assess the information that is most useful in the setting of initial yields.

Table 5 presents the result of the regression analysis with *Offering Spread* as the dependent variable. We first begin by discussing the effect of quantitative variables on the initial yield. The analysis shows that the worse the credit rating, the higher is the offering spread.¹⁵ Issuers that are larger with better interest coverage have lower spreads. Bonds with larger offering amounts and longer maturities also have lower spreads. We find little relationship between covenants and initial yields. The only covenant group that is marginally significant is dividend restrictions.

Examining the effect of risk disclosure, we show in column (1), that when the aggregate measure of risk disclosure, *Aggregate Topic Score*, is greater, so is the offering yield. This means that textual information about the risks facing the firm capture salient information about pricing that is not present in the initial credit rating. We believe that this finding is important because the risk profile of a corporate bond issuer, particularly a first-time one, is not easily determined by other publicly available data. For example, Becker and Ivashina (2015) use CDS spreads to capture risk that may not be in credit ratings. A drawback to this approach is that CDS are not available for all issuers, particularly first-time issuers, and are written at the issuer, not bond level. Because bonds by the same issuer may differ in

¹⁵The results are robust to using credit rating fixed effects rather than including credit rating as a control variable.

their riskiness, using CDS spreads as a measure of risk makes it difficult to isolate specific riskiness of a bond itself after controlling for firm characteristics. Thus, the advantage of using textual analysis is that one can not only measure the potential riskiness of the issue but also the specific source of risk for any bond that has an offering document.¹⁶

Our findings also suggest that within credit ratings, some bonds, mainly non-investment grade, are riskier than others and this is reflected in yields. This is important because Becker and Ivashina (2015) do not find any evidence for reaching for yield in non-investment grade bonds and this result may be due to the lack of CDS data on many of these issuers to assess risk. Our method allows us to measure the issuer's assessment of the overall riskiness of any publicly issued bond without having to rely on alternate, sparsely available data.

In terms of individual topics, we find that offers that load higher on topics that discuss the financial condition of the firm and the covenants also have greater offering spread. Neither of these two topics are important in determining the credit rating. We do not find that the indebtedness nor the repayments topic are significant in the regression. We conjecture that this is the case because these two risk topics are captured by the credit rating. In untabulated results, if the issue's credit rating is not included in the regression, we find that both the repayment and indebtedness topics are significantly related to the initial offering yield spread. Only the exchange offer topic remains insignificant. Thus, our findings indicate that the risk discussion in the prospectus is useful in pricing the DIPO and in identifying bonds that have greater yields for a given credit rating.

The findings of this section highlight the importance of textual information, over and above quantitative measures, in pricing the DIPO. In particular, different participants in the market incorporate the discussion of risks in different ways. Credit rating agencies are most interested in the amount of indebtedness of the firm as well as the ability of the issuer to repay the debt. Investment bankers and investors incorporate the credit rating as well as additional information on the financial condition of the firm and covenants in the pricing

¹⁶Note that information on risk is also available in the 10-K and the research cited in this paper suggest that it could be used to understand the changing nature of risk that may affect bond yields using our similar methodology.

of the initial yield spread. In sum, primary market outcomes of DIPOs are affected by the variation in risk disclosures of issuers.

4. Secondary Market Outcomes

In this section, we examine whether textual risk disclosure in the offering document can predict two secondary market outcomes. The first is the probability that the bond will trade in the first three months after issuance. The second is the change in the bond's yield spread three months after the DIPO.¹⁷

4.1 Probability of Post-IPO Trading

In this section, we examine how risk disclosures may affect the probability of trading. Because all of the bonds in our sample are eligible for public market trading, there is no *ex ante* reason why some bonds in our sample should not trade. However, Wang and Wu (2015) find that credit risk affects the trading frequency of corporate bonds. Using data similar to ours, Hotchkiss and Jostova (2017) show that a one-standard deviation change in credit rating in high-yield bonds decreases the trading probability from 13.8% to only 7.8%. Given these relationships between risk and the probability of trading, we expect that risk disclosures may be useful in predicting which types of bonds are more likely to trade. We create a variable, *Traded*, that is an indicator variable equal to one if the bond trades in the first three months after the DIPO, zero otherwise.

We begin by examining the differences in bonds that have and do not have aftermarket trading in Table 6. Consistent with the Alexander, Edwards, and Ferri (2000) and Wang and Wu (2015), there are significant differences in issuer and offering characteristics. Bonds that do not trade have slightly shorter maturities, worse credit ratings, smaller offering amounts, and higher offering spreads. The issuers of these bonds are more likely to be private firms

¹⁷Initially, we intended to examine credit rating changes but due to the initial low credit rating, there are few changes in the first six months to one year after issuance.

and are much smaller than issuers of bonds that have aftermarket trading.

In terms of covenants, the only difference is that bonds that are not traded have more dividend restrictions. There is very little difference in the discussion of overall risk although issuers of bonds that are not traded have greater discussion of covenant risk.

In Table 7, we present the regression results with *Traded* as the dependent variable.¹⁸ It is important to note that our data is based on NAIC filings and therefore, biases us against finding any significant relationship between the probability of trading and risk disclosures. Insurance companies are known buy-and-hold investors, making trading unlikely in general.

Consistent with the Alexander, Edwards, and Ferri (2000), we find that larger issues with longer maturities are associated with a higher probability of aftermarket trading. None of the other independent variables related to the characteristics of the issuer, the bond, or macro conditions are significant. Furthermore, the covenant structure of the bond does not predict whether it will trade in the aftermarket. It is somewhat surprising given the literature that the credit rating of the issue is not predictive. For example, other studies mentioned above find that the credit rating is negatively related to trading activity and the difference in means is consistent with this finding. The lack of significance for this variable in the regression may be due to the fact that most of our issues are non-investment grade and many of the bonds are rated B.

Although the aggregate topic score does not significantly predict aftermarket trading, we do document that the more the firm discusses topics related to the financial condition of the firm and the covenants, the less likely the bond will trade in the first three months after the DIPO. Thus, some risks associated with the offering but not captured in credit ratings makes the probability of trading lower.

¹⁸Although we present results using OLS regression in order to efficiently incorporate fixed effects, we note that these results are robust to using a logistic model instead.

4.2 Change in Bond Yields

A number of papers have examined the change in yield spreads of seasoned bonds. Collin-Dufresn, Goldstein, and Martin (2001) and Huang and Huang (2012) find that changes in the yield spread of corporate bonds cannot be explained by the credit risk determinants proposed by structural models.¹⁹ The aforementioned papers propose that liquidity, not credit risk as measured by a change in credit ratings, could be the primary driver of yield spread changes. But credit rating changes often lag real-time economic shifts in credit risk (Löffler (2005)) and therefore, may not capture the potential for a yield spread change in the near term. Furthermore, credit ratings may not fully incorporate the risk of the issue (as was evidenced in the ratings of Residential Mortgage Backed Securities in the recent financial crisis) and by the analysis in Section 3.

We are able to somewhat abstract from the issue of liquidity by examining the yield spread change of the 605 DIPOs in our sample that trade within three months of issuance.²⁰ This allows us to concentrate on the role of risk in predicting subsequent changes in the secondary market yield spread.

We calculate secondary market bond yields from Mergent's National Association of Insurance Commissioners (NAIC) database, using bond clean prices and the accrued interest information based on FISD. We then derive yield spreads using benchmark Treasury yields obtained from the Federal Reserve Bank of St. Louis.²¹ The change in the bond's yield spread, $\Delta\text{Spread_3m}$, is defined as secondary-market spread minus the offering spread, averaged over the first three months post DIPO of all secondary-market trades.

We present the results of a regression analysis with $\Delta\text{Spread_3m}$ as the dependent variable in Table 8. Most of the issuer and issue characteristics have no predictive power in explaining the the changes in yield spreads. The exception is the interest coverage ratio where a

¹⁹See Eom, Helwege, and Huang (2004) for a test of the most popular models.

²⁰We acknowledge that liquidity could differ among these bonds and are not suggesting that liquidity isn't an important factor in pricing.

²¹We do not use TRACE transactions as there is little trade reporting of Rule 144A exchange bonds prior to 2014 in TRACE.

lower level is marginally associated with greater subsequent spread changes. Consistent with Collin-Dufresne, Goldstein, and Martin (2001), the macroeconomic variables related to VIX and the Ted spread are significantly related to changes in the secondary market yield spread.

We also find that the covenant structure of the bond is related to subsequent changes in bond yields. Bonds with fewer dividend restrictions but more investment restrictions have greater changes in yield spreads. This contrasts with the results in Table 5 that various forms of covenants are positively related to offering spread. The inconsistent signs of covenants on secondary market spread changes suggest that the covenant do not uniformly translate into DIPOs' secondary market yield.

Last, we examine whether the risk disclosures at the time of the offering are informative with respect to subsequent price changes. In column (1), we document that the aggregate topic score is marginally significant in predicting the change in yield. Economically, we find that a one standard deviation increase in the overall risk discussion of the issuer at the time of the offering leads to a statistically significant 14.25 basis points ($= 0.03 \times 4.75$) increase in the secondary spread, or larger than the mean ΔSpread_{3m} magnitude of -10.8 basis points.

We observe that this appears to be due to the disclosure of risks related to the financial condition of the firm. Thus, textual information at the time of the offering can be used to predict subsequent yield spread changes. Moreover, we document that the underpricing of DIPOs in Cai, Helwege, and Warga (2007), Datta, Iskander-Datta, and Patel (1997), may be due to the incomplete incorporation of information of risk into either credit ratings or offering spreads.

5. Private versus Public Firms

In this section, we examine whether there are differences in the effect of textual disclosure on the price of public and private bond issuers. There are two competing hypotheses. First, the public firms in our sample have already completed the registration process with the SEC and

have periodic filings available to investors that may be useful in pricing the bond offering. Private firms, on the other hand, have less information available to investors and therefore, the impact of risk disclosure may have a greater effect on bond pricing outcomes at the time of the DIPO. This hypothesis is consistent with the literature on DIPOs more generally (Cai, Helwege, and Warga (2007)) and Rule 144A specifically (Fenn (2000)). Alternatively, if disclosure levels the playing field between public and private issuers, then we would not expect a difference between the amount of risk disclosure and pricing.

Table 9 presents the differences between public and private issuers. Although one would expect that public firms may be larger, we find that both types of issuers are relatively the same size in terms of assets. They do differ, however, on many other dimensions. Private issuers tend to have higher long-term debt ratios and lower interest coverage. This may be due due to the fact that they do not have as much access to equity markets as public issuers. In terms of their offering characteristics, both types of issuers offer bonds with similar maturity but private firms issue bonds with smaller offering amounts, higher yields, and worse credit ratings.

We also document, consistent with Kwon and Carleton (2010), that private bonds have more covenants than public bonds. However, the differences are only significant for covenants that restrict dividends and certain events. There is no statistical differences between public and private firms in the usage of covenants that restrict subsequent financing and investment.

More importantly, private firms tend to have greater risk disclosures than public firms. The average aggregate topic score is 8.43 for private firms compared to 7.79 for public firms. Private firms discuss risks related to their financial condition, indebtedness and covenants more than public firms but both types of firms are similar in their discussion of the exchange offer and repayment risk.

Next we examine whether our findings on the effect of risk disclosure is due to private firms. Theory suggests that because public issuers have more information available to investors in the form of filings with the SEC, our results could be driven solely by the private firms in the sample. To capture this, we interact our aggregate measure of risk disclosure

with the public status of the firm. If this hypothesis is true, then we expect a significant coefficient on the interaction *Private*Aggregate Topic Score*. If, however, disclosure requirements level the playing field, then we predict that this interaction term will be insignificant.

Table 10 presents the results for our main variable of interest, *Private*Aggregate Topic Score*, and its effect on the outcomes we have previously examined. Across all pricing outcomes in columns (1)-(3), we find no evidence that private firms with greater risk disclosures have worse credit ratings, greater offering yields, or poorer post-IPO performance than public firms. The coefficient on *Private*Aggregate Topic Score* is insignificant in all specifications. Thus, we conclude that our overall findings are not driven by the inclusion of private firms in the sample. Furthermore, these results suggest that disclosure equalizes the information content of both newly and previously public issuers.

6. Rule 144A vs. Non-Rule 144A Issues

Our main sample is restricted to bonds that are first issued in the private placement, Rule 144A market. One concern is that our results may not be generalizable to bonds that are issued first through a registration with the SEC. For example, Kwon and Carleton (2010) examine private placements and public offerings of bonds and find that private placements are more likely to have restrictive covenants. Fenn (2000) finds little difference in initial yields between the two samples and concludes that disclosure is not an issue for private market participants.

We test whether risk disclosure has a differential effect on the credit rating and yields of Rule 144A and non-Rule 144A DIPOs. As noted previously, we showed in Figures 1 and 2, that few of our DIPOs are non-Rule 144A and these DIPOs are more likely to have IG ratings than Rule 144A offerings.

In Table 11, we examine other differences between Rule 144A and non-Rule 144A DIPOs. From firm and offering characteristics in Panel A, non-Rule 144A issuers are less likely to be private, are larger in terms of total assets with lower debt and higher interest coverage

ratios. Non-Rule 144A DIPOs raise more money, issue bonds with longer maturities, and have significantly better credit ratings and lower offering spreads than Rule 144A DIPOs.

Consistent with the literature, Panel B shows that non-Rule 144A bonds have significantly fewer covenants across all types of restrictions than Rule 144A bonds. Finally, Panel C documents that Rule 144A issues have significantly higher risk disclosures across all topics than non-Rule 144A issues. There are significant differences between the two indicating that the choice of issuing a private placement in advance of a DIPO is likely endogenously related to the type of firm.

Given the larger size and better financial situation of non-Rule 144A issuers, we would expect that their inclusion in the sample will bias us against finding any effect of textual disclosure on bond pricing outcomes. In Table 12 we include non-Rule 144A bonds and replicate our prior analysis. In columns (1)-(3), the coefficient of *Aggregate Topic Score*, is positive and significant. In other words, we see no attenuation of the relationship between the aggregate discussion of risk and any of the bond pricing dependent variables. Greater discussion of risk leads to worse credit ratings, higher offering spreads, and increase in subsequent yields regardless of whether we include non-Rule 144A offerings or not.

In the latter half of the table, in columns (4)-(6), we use the interaction between our aggregate topic score and a Rule 144A indicator variable equal to one if the DIPO is a Rule 144A exchange offer, zero otherwise as our main independent variable of interest. This allows us to examine whether textual disclosure within the sample affects pricing outcomes. We find that compared to non-Rule 144A debt offers, greater risk disclosure for Rule 144A debt offers leads to better credit ratings. However, we find no differential effect on risk disclosure between the two samples for either the initial offering spread or the change in yields three months after issuance. Thus, we conclude that our findings can be generalized to any DIPO, regardless of whether the firm issues its first-time debt offering first as a private placement or as a public offering.

7. Conclusion

The literature on bond pricing and DIPOs, in particular, highlight the importance of asymmetric information in pricing. By using a more homogeneous sample of debt offerings previously issued in the Rule 144A market and controlling for the covenant structure of the firm, we are able to examine whether the textual disclosure of risk factors has an effect on bond pricing and secondary market outcomes. We show that different market participants incorporate risks differently. For example, credit rating agencies are interested in the risks associated with the indebtedness of the firm and its ability to repay its debt obligations. Underwriters and investors, on the other hand, price the risks associated with the financial condition of the firm and the covenants into the initial offering yield.

The textual information on risks in the prospectus has explanatory power in predicting aftermarket outcomes such as the probability that the bond will trade and the subsequent change in the yield spread three months after issuance. Our findings suggest that the risk factors section of the prospectus may be useful in capturing the risk of the issue than other proxies for creditworthiness such as credit default swaps. This is important because many of the firms and none of those in our sample currently have credit default swaps available.

Finally, we show that the impact of risk factor disclosure does not differ between public and private firms. We provide an alternate explanation to Fenn (2000) who attributes his findings to the sophistication of institutional investors in the private placement market rather than disclosure itself. We suggest that the disclosure in the private market is driven by the expectation of public disclosure shortly after the offering as well as anti-fraud provisions that are not specific to the public market. Leuz and Wysocki (2016) point out that opponents of disclosure regulation argue that the shift from public to private debt markets is an indication that public disclosure requirements are potentially onerous. We believe that these opponents' conclusion that the "introduction of disclosure regulation may have shifted riskier securities to less regulated markets" may be overstated, at least for the sample we consider. We conclude that mandated disclosure provides valuable information to both public and private market participants.

Appendix A: Variable Definitions

This table describes all the variables used in the paper. The data sources are SEC's EDGAR website, Mergent's FISD and NAIC, Compustat and Datastream. If a financial data item is not available on Compustat, we manually collect it from the prospectus.

Exchange Offer Topic (Topic 1)	The first topic loading from Non-negative Matrix Factorization (NMF) of the prospectus risk section. We interpret the topic to be related to the exchange offer.
Fin. Condition Topic (Topic 2)	The second topic loading from NMF of the prospectus risk section. We interpret the topic to be related to financial condition.
Indebtedness Topic (Topic 3)	The third topic loading from NMF of the prospectus risk section. We interpret the topic to be related to indebtedness.
Covenants Topic (Topic 4)	The fourth topic loading from NMF of the prospectus risk section. We interpret the topic to be related to covenants.
Repayment Topic (Topic 5)	The fifth topic loading from NMF of the prospectus risk section. We interpret the topic to be related to load repayment.
Aggregate Topic Score	The sum of the topic loadings of topics 1 to 5.
Offering Spread	Primary market yield spread of the bond benchmarked to the interpolated swap yield on the issuance date.
Credit rating	The average numerical value of first non-NR credit rating by Moody's, Standard and Poor's, and Fitch. Credit ratings are converted to numerical values as follows: AAA = 1, AA= 2, A = 3, BBB = 4, BB = 5, B = 6, CCC = 7, CC = 8, C = 9, DDD and below = 10.
Δ Spread_3m	Secondary-market spread minus offering spread, averaged over the first three months post IPO.
Maturity	Maturity of the bond on bond issuance date in years.
Offering Amount	Offer (issue) amount of the bond in millions. In regressions, the variable is transformed into logarithm form for scaling.
Private	A dummy variable that equals one if the bond is issued by a private firm. A firm is treated as public if it files a 10-K with the SEC for at least two consecutive years before the DIPO.
Assets	Total assets.
LT Debt Ratio	Ratio of long-term debt to total book value of assets of the issuing firm.
Interest Coverage	Ratio of interest expense to EBIT. For firms with zero interest expense, the interest coverage ratio is set to its maximum of 262.68.
Dividend Restrictions	The number of the dividend payment restrictions covenants that the bond has over the total number of available dividend payment restrictions covenants as in Helwege, Huang and Wang (2017).
Sub. Financing Restrictions	The number of subsequent financing restrictions covenants that the bond has over the total number of available subsequent financing restrictions covenants as in Helwege, Huang and Wang (2017).
Investment Restrictions	The number of the investment restrictions covenants that the bond has over the total number of available investment restrictions covenants as in Helwege, Huang and Wang (2017).
Event-related Restrictions	The number of the event-related restrictions covenants that the bond has over the total number of available event-related restrictions covenants as in Helwege, Huang and Wang (2017).
Ted Spread	Aggregate liquidity factor, obtained as 30-day LIBOR rate minus 3-month Treasury-Bill rate.
VIX	Equity market volatility factor, obtained as VIX index.

Appendix B: Covenant Classification

This table describes the FISD covenant classification. Out of the 45 FISD covenants, we use a total of 32; we drop the rest 13 that barely appear in our sample.

FISD Covenant	Covenant Meaning
Dividend Restrictions Covenants:	
DEFEASANCE_WO_TAX_CONSEQ	Gives the issuer the right to defease the monetary portion of the security without tax consequence for bondholders.
COVENANT_DEFEAS_WO_TAX_CONSEQ	Gives the issuer the right to defease indenture covenants without tax consequences for bondholders.
RESTRICTED_PAYMENTS	Restricts issuer's freedom to make payments (other than dividend related payments) to shareholders and others.
DIVIDENDS_RELATED_PAYMENTS_SUBS	Limits the subsidiaries' payment of dividends to a certain percentage of net income or some other ratio.
DIVIDENDS_RELATED_PAYMENTS	Payments made to shareholders or other entities may be limited to a certain percentage of net income or some other ratio.
Subsequent Financing Restrictions Covenants:	
SALE_ASSETS	Restrictions on the ability of an issuer to sell assets or restrictions on the issuer's use of the proceeds from the sale of assets.
INDEBTEDNESS	Restricts user from incurring additional debt with limits on absolute dollar amount of debt outstanding or percentage total capital.
INDEBTEDNESS_SUBS	Restricts the total indebtedness of the subsidiaries.
ASSET_SALE_CLAUSE	Covenant requiring the issuer to use net proceeds from the sale of certain assets to redeem the bonds at par or at a premium.
NEGATIVE_PLEDGE_COVENANT	The issuer cannot issue secured debt unless it secures the current issue on a pari passu basis.
PREFERRED_STOCK_ISSUANCE	Restricts subsidiaries' ability to issue preferred stock.
SALES_LEASEBACK	Restricts issuer to the type or amount of property used in a sale leaseback transaction and may restrict its use of the proceeds of the sale.
SALES_LEASEBACK_SUBS	Restricts subsidiaries from selling then leasing back assets that provide security for the debtholder.
SUBSIDIARY_GUARANTEE	Subsidiary is restricted from issuing guarantees for the payment of interest and/or principal of certain debt obligations.
STOCK_ISSUANCE	Restricts issuer from issuing additional common stock in restricted subsidiaries.
LIENS	In the case of default, the bondholders have the legal right to sell mortgaged property to satisfy their unpaid obligations.
LIENS_SUBS	Restricts subsidiaries from acquiring liens on their property.
SUBORDINATED_DEBT_ISSUANCE	Restricts issuance of junior or subordinated debt.
SENIOR_DEBT_ISSUANCE	Restricts issuer to the amount of senior debt it may issue in the future.
STOCK_ISSUANCE_ISSUER	Restricts issuer from issuing additional common stock.
Investment Restrictions Covenants:	
CONSOLIDATION_MERGER	A consolidation or merger of the issuer with another entity is restricted.
VOTING_POWER_PERCENTAGE	The issue's change of control provisions are triggered if the issuer's employee retirement plan controls more than this percentage of the issuer's stock.
TRANSACTION_AFFILIATES	Issuer is restricted in certain business dealings with its subsidiaries.
STOCK_TRANSFER_SALE_DISP	Restricts the issuer from transferring, selling, or disposing of it's own common stock or the common stock of a subsidiary.
FIXED_CHARGE_COVERAGE	Issuer is required to have a ratio of earnings available for fixed charges, of at least a minimum specified level.
FIXED_CHARGE_COVERAGE_SUBS	Subsidiaries are required to maintain a minimum ratio of net income to fixed charges.
INVESTMENTS	Restricts issuer's investment policy to prevent risky investments.
Event-related Restrictions Covenants:	
CROSS_ACCELERATION	A bondholder protective covenant that allows the holder to accelerate their debt, if any other debt of the organization has been accelerated due to an event of default.
CHANGE_CONTROL_PUT_PROVISIONS	Upon a change of control in the issuer, bondholders have the option of selling the issue back to the issuer.
CROSS_DEFAULT	A bondholder protective covenant that will activate an event of default in their issue, if an event of default has occurred under any other debt of the company.
DECLINING_NET_WORTH_PERCENTAGE	Percentage of bonds to be redeemed.
RATING_DECLINE_TRIGGER_PUT	A decline in the credit rating of the issuer (or issue) triggers a bondholder put provision.

References

- Agarwal, Sumit, Vincent Chen, and Weina Zhang, 2018, The information value of credit rating action reports: A textual analysis, *Management Science* 62.
- Alexander, Gordon J, Amy K Edwards, and Michael G Ferri, 2000, The determinants of trading volume of high-yield corporate bonds, *Journal of Financial Markets* 3, 177–204.
- Becker, Bo, and Victoria Ivashina, 2015, Reaching for yield in the bond market, *Journal of Finance* 70, 1863–1902.
- Bonsall, Samuel B., and Brian P. Miller, 2017, The impact of narrative disclosure readability on bond ratings and the cost of debt, *Review of Accounting Studies* 22, 608–643.
- Bradley, Michael, and Michael R. Roberts, 2015, The structure and pricing of corporate debt covenants, *Quarterly Journal of Finance* 5, 1–37.
- Cai, Nianyun (Kelly), Jean Helwege, and Arthur Warga, 2007, Underpricing in the corporate bond market, *Review of Financial Studies* 20, 2021–2046.
- Campbell, John, Hsinchun Chen, Dan Dhaliwal, Hsin-Min Lu, and Logan Steele, 2014, The information content of mandatory risk factor disclosures in corporate filings, *Review of Accounting Studies* 19, 396–455.
- Campbell, John, and John Taksler, 2003, Equity volatility and corporate bond yields, *Journal of Finance* 58, 2321–49.
- Chava, Sudheer, Praveen Kumar, and Arthur Warga, 2009, Managerial agency and bond covenants, *Review of Financial Studies* 23.
- Chen, Long, David Lesmond, and Jason Wei, 2007, Corporate yield spreads and bond liquidity, *Journal of Finance* 62, 119–149.
- Collin-Dufresn, Pierre, Robert S Goldstein, and J Spencer Martin, 2001, The determinants of credit spread changes, *The Journal of Finance* 56, 2177–2207.
- Datta, Sudip, Mai Iskander-Datta, and Ajay Patel, 1997, The pricing of initial public offers of corporate straight debt, *Journal of Finance* 55, 715–743.
- Datta, Sudip, Mai Iskander-Datta, and Ajay Patel, 2000, Some evidence on the uniqueness of initial public debt offerings, *Journal of Finance* 52, 379–396.
- Duffie, Darrell, Andreas Eckner, Guillaume Horel, and Leandro Saita, 2009, Frailty correlated default, *The Journal of Finance* 64, 2089–2123.
- Eom, Young Ho, Jean Helwege, and Jing-zhi Huang, 2004, Structural models of corporate bond pricing: An empirical analysis, *The Review of Financial Studies* 17, 499–544.
- Ertugrul, Mine, Jin Lei, Jiaping Qiu, and Chi Wan, 2017, Annual report readability, tone ambiguity, and the cost of borrowing, *Journal of Financial and Quantitative Analysis* 52, 811–836.

- Fenn, George W., 2000, Speed of issuance and the adequacy of disclosure in the 144a high-yield debt market, *Journal of Financial Economics* 56, 3.
- Goel, Anand M., and Anjan V. Thakor, 2015, Information reliability and welfare: a theory of coarse credit ratings, *Journal of Financial Economics* 115, 541–557.
- Hanley, Kathleen, and Gerard Hoberg, 2012, Litigation risk and the underpricing of initial public offerings, *Journal of Financial Economics* 103, 235–254.
- Hanley, Kathleen Weiss, and Gerard Hoberg, 2019, Dynamic Interpretation of Emerging Risks in the Financial Sector, *The Review of Financial Studies* forthcoming.
- Helwege, Jean, Jing-Zhi Huang, and Yuan Wang, 2017, Debt covenants and cross-sectional equity returns, *Management Science* 63, 1835–1854.
- Hotchkiss, Edith, and Gergana Jostova, 2017, Determinants of corporate bond trading: a comprehensive analysis, *Quarterly Journal of Finance* 7, 1750003.
- Huang, Jing-Zhi, and Ming Huang, 2012, How much of the corporate-treasury yield spread is due to credit risk?, *The Review of Asset Pricing Studies* 2, 153–202.
- Huang, Rongbing, and Gabriel G Ramirez, 2010, Speed of issuance, lender specialization, and the rise of the 144a debt market, *Financial Management* 39, 643–673.
- Kravet, Todd, and Volkan Muslu, 2013, Textual risk disclosures and investors’ risk perceptions, *Review of Accounting Studies* 18, 1088–1122.
- Kwon, Simon, and Willard Carleton, 2010, Financial contracting and the choice between private placement and publicly offered bonds, *Journal of Money, Credit and Banking* 42, 907–929.
- Leuz, Christian, and Peter D Wysocki, 2016, The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research, *Journal of Accounting Research* 54, 525–622.
- Löffler, Gunter, 2005, Avoiding the rating bounce: Why rating agencies are slow to react to new information, *Journal of Economic Behavior & Organization* 56, 365–381.
- O’Callaghan, Derek, Derek Greene, Joe Carthy, and Pádraig Cunningham, 2015, An analysis of the coherence of descriptors in topic modeling, *Expert Systems with Applications* 42, 5.
- Reeb, David, and Lukas Roth, 2014, Soft information and creditor reliance on hard information, National University of Singapore working paper.
- Reisel, Natalia, 2014, On the value of restrictive covenants: Empirical investigation of public bond issues, *Journal of Corporate Finance* 27, 251–268.
- Sengupta, Partha, 1998, Corporate disclosure quality and the cost of debt, *Accounting review* 73, 459–474.
- Spiceland, Charlene P., Leo L. Yang, and Joseph H. Zhang, 2016, Accounting quality, debt covenant design, and the cost of debt, *Review of Quantitative Finance and Accounting* 47, 1271–1302.
- Wang, Junbo, and Chunchi Wu, 2015, Liquidity, credit quality, and the relation between volatility and trading activity: Evidence from the corporate bond market, *Journal of Banking & Finance* 50, 183–203.
- Yu, Fan, 2005, Accounting transparency and the term structure of credit spreads, *Journal of Financial Economics* 75, 53–84.

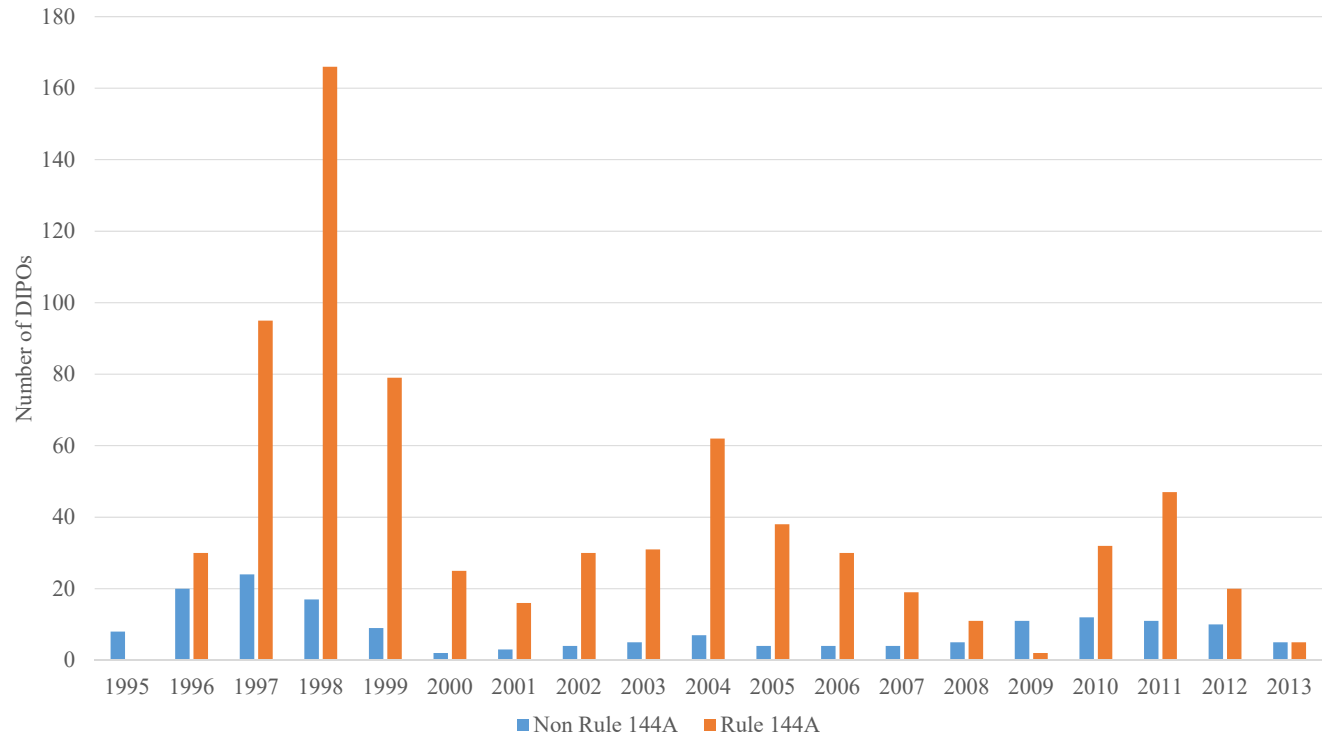


Figure 1 DIPOs by year

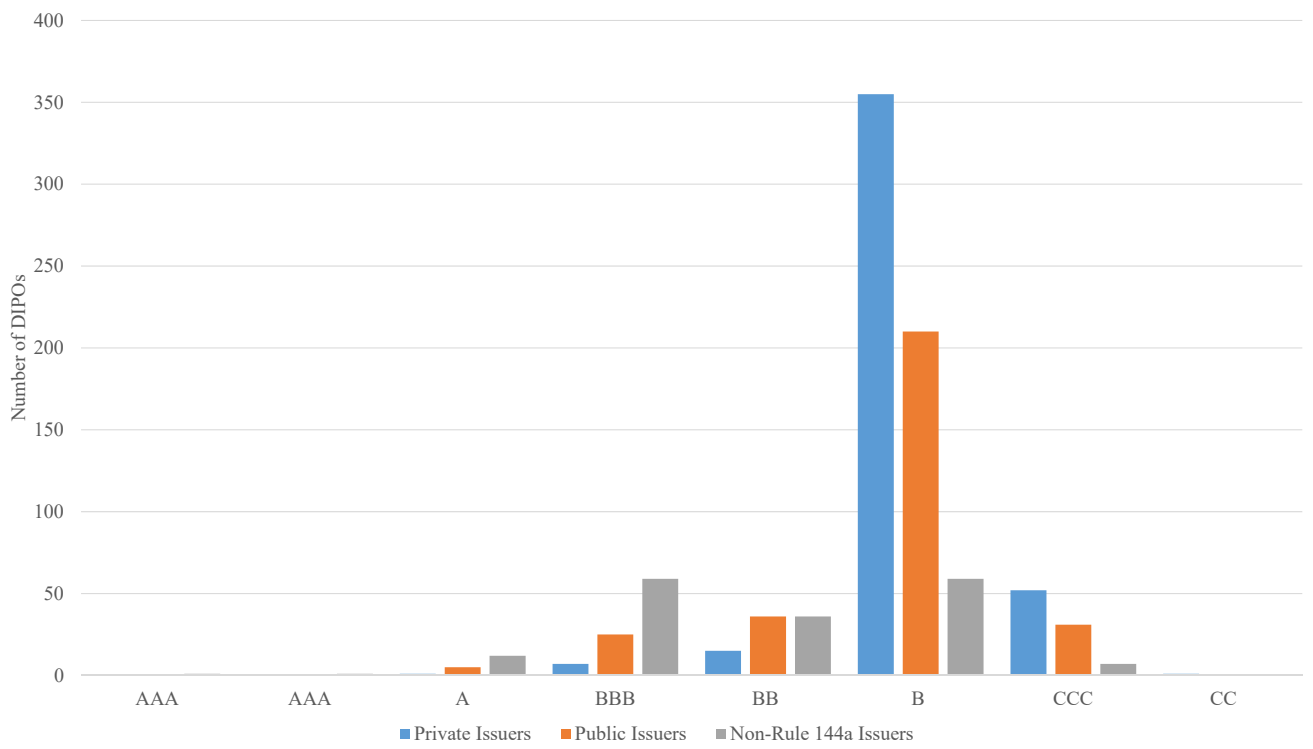


Figure 2 Distribution of Initial Credit Rating

Table 1 Offering and Firm Characteristics of Rule 144A Debt IPOs

Panel A: Offering and firm characteristics					
	Mean	Median	Std	P1	P99
Offering amount (\$1,000s)	212,501	160,000	176,407	65,000	850,000
Offering yield (%)	9.99	10.00	1.79	4.88	14.00
Offering spread (%)	5.09	4.87	1.90	1.00	10.71
Maturity (years)	8.25	9.15	1.82	4.14	9.95
Credit rating	5.93	6	0.66	4	7
Private	0.58	1.00	0.49	0.00	1.00
Total assets (\$mil)	1,300	370	4,428	19	23,728
Long-term debt ratio	0.45	0.41	0.36	0.00	1.89
Interest coverage ratio	17.72	2.09	55.01	-17.38	262.68
Panel B: Covenants					
	Mean	Median	Std	P1	P99
<u>No. of Covenants</u>					
Dividend Restrictions (out of 5)	3.99	4	0.78	1	5
Sub. Fin. Restrictions (out of 15)	7.23	7	1.89	2	12
Investment Restrictions (out of 7)	3.43	3	0.81	2	6
Event-related Restrictions (out of 5)	3.96	4	0.39	2	5
<u>Pct. of Covenants</u>					
Dividend Restrictions	0.80	0.80	0.16	0.20	1.00
Sub. Financing Restrictions	0.48	0.47	0.13	0.13	0.80
Investment Restrictions	0.49	0.43	0.12	0.29	0.86
Event-related Restrictions	0.79	0.80	0.08	0.40	1.00

This table reports the offering and firm characteristics of 738 exchange offer debt IPOs from 1996 to 2013. Variables are defined in Appendix A.

Table 2 Summary Statistics of Risk Section Topic Loadings

Panel A: Top 20 representative words (single-grams) in each topic						
Topic 1 (Exchange Offer):	notes, exchange, market, offer, securities, old, trading, holders, act, outstanding, registration, transfer, tendered, develop, original, prospectus, subject, liquidity, initial, sell					
Topic 2 (Financial Condition):	results, financial, operations, condition, business, adverse, material, effect, adversely, affect, management, materially, discussion, analysis, affected, operating, failure, risks, loss, liquidity					
Topic 3 (Indebtedness):	credit, senior, indebtedness, facility, secured, notes, debt, default, indenture, assets, subsidiaries, revolving, facilities, event, obligations, subordinated, guarantors, subsidiary, governing, lenders					
Topic 4 (Covenants):	description, see, change, control, notes, certain, repurchase, covenants, credit, discussion, analysis, management, option, facility, exchange, indebtedness, subordination, agreement, resources, transactions					
Topic 5 (Repayment):	company, ability, future, capital, cash, debt, including, assurance, service, additional, certain, able, control, subsidiaries, products, significant, flow, operating, substantial, interest					
Panel B: Summary Statistics on NMF Topic Loadings						
	Mean	Median	Std	P1	P99	Max
Topic 1 (Exchange Offer)	1.37	1.19	0.92	0.29	5.75	9.33
Topic 2 (Financial Condition)	1.69	1.41	1.09	0.10	5.33	6.35
Topic 3 (Indebtedness)	1.83	1.58	1.18	0.11	6.68	9.12
Topic 4 (Covenants)	0.73	0.66	0.44	0.03	2.47	4.14
Topic 5 (Repayment)	2.88	2.50	2.32	0.17	17.96	26.07
Aggregate Topic Score	8.16	4.23	4.75	1.00	34.75	46.95

This table reports the summary statistics of topic loadings from Non-negative Matrix Factorization (NMF) of the prospectus risk sections for the sample of 738 exchange offer debt IPOs from 1996 to 2013. Included in Panel A are the 20 most frequent single-grams in the topic. *Aggregate Topic Score* is the sum of the five topic scores for each prospectus.

Table 3 **Determinants of Topic Loadings**

	<i>Aggregate</i>	<i>Exchange</i>	<i>Fin.</i>			
	<i>Topic</i>	<i>Offer</i>	<i>Condition</i>	<i>Indebtness</i>	<i>Covenants</i>	<i>Repayment</i>
	<i>Score</i>	<i>Topic</i>	<i>Topic</i>	<i>Topic</i>	<i>Topic</i>	<i>Topic</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Maturity</i>	0.02 (1.32)	-0.02 (-1.08)	0.01 (0.31)	0.05** (2.47)	0.01 (0.71)	0.03 (1.38)
<i>Offering Amount</i>	0.10** (2.71)	0.05 (1.25)	0.19*** (3.96)	0.01 (0.07)	-0.00 (-0.04)	0.24* (2.29)
<i>Private</i>	0.17 (1.84)	0.03 (0.27)	0.30** (2.48)	0.27*** (3.57)	0.08* (1.93)	0.16 (0.92)
<i>Ln(Assets)</i>	-0.06** (-3.01)	-0.07* (-2.11)	-0.08*** (-3.60)	-0.00 (-0.03)	-0.02 (-1.14)	-0.11** (-2.59)
<i>LT Debt Ratio</i>	-0.18** (-2.58)	-0.13* (-2.24)	-0.21** (-2.85)	-0.06 (-0.58)	-0.03 (-1.01)	-0.49** (-3.21)
<i>Int. Coverage</i>	-0.01 (-0.17)	-0.01 (-0.30)	0.05 (0.89)	-0.05 (-1.53)	-0.02* (-2.30)	0.00 (0.02)
<i>Ted Spread</i>	0.03 (0.20)	-0.13 (-1.18)	-0.00 (-0.04)	0.18 (1.22)	0.02 (0.29)	0.07 (0.18)
<i>VIX</i>	-0.00 (-0.40)	-0.01 (-1.02)	-0.00 (-0.03)	-0.01 (-0.93)	-0.00 (-0.07)	-0.00 (-0.07)
<i>Dividend Restrictions</i>	0.33 (1.07)	0.16 (0.52)	0.15 (0.36)	1.12*** (4.06)	0.27 (1.71)	-0.06 (-0.10)
<i>Sub. Financing Restrictions</i>	-0.19 (-0.50)	-0.11 (-0.37)	-0.14 (-0.62)	-0.09 (-0.27)	-0.06 (-0.35)	-0.54 (-0.53)
<i>Investment Restrictions</i>	0.98 (1.69)	0.63 (1.26)	0.89** (2.74)	0.61 (1.08)	0.24 (1.04)	2.54 (1.64)
<i>Event-related Restrictions</i>	1.24** (3.16)	0.45 (0.83)	1.13** (2.47)	1.44*** (3.37)	0.55* (2.27)	2.62*** (3.63)
Constant	-1.07 (-1.63)	0.50 (0.97)	-1.79 (-1.82)	-1.31 (-1.26)	-0.14 (-0.36)	-2.60 (-1.62)
Observations	738	738	738	738	738	738
Adjusted R^2	0.126	0.088	0.321	0.316	0.157	0.097

The dependent variables are the individual topic loadings for each DIPO in the sample. Independent variables are defined in Appendix A. All regressions include year and industry (defined by single-digit SIC) fixed effects, with standard error clustering at the industry level. Numbers in parentheses are t -statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 4 **Topic Loadings and Credit Rating**

Dependent variable: Credit Rating	(1)	(2)	(3)	(4)	(5)	(6)
<i>Aggregate Topic Score</i>	0.03** (2.42)					
<i>Exchange Offer Topic</i>		-0.01 (-0.38)				
<i>Fin. Condition Topic</i>			0.04 (1.65)			
<i>Indebtedness Topic</i>				0.06** (3.15)		
<i>Covenants Topic</i>					0.03 (0.83)	
<i>Repayment Topic</i>						0.01* (2.03)
<i>Maturity</i>	-0.00 (-0.20)	-0.00 (-0.18)	-0.00 (-0.19)	-0.01 (-0.37)	-0.00 (-0.19)	-0.00 (-0.19)
<i>Offering Amount</i>	-0.02 (-0.39)	-0.01 (-0.31)	-0.02 (-0.48)	-0.02 (-0.30)	-0.01 (-0.32)	-0.02 (-0.38)
<i>Private</i>	0.10 (1.78)	0.10* (1.92)	0.09 (1.72)	0.09 (1.59)	0.10* (1.88)	0.10 (1.83)
<i>Ln(Assets)</i>	-0.07*** (-3.82)	-0.07*** (-3.90)	-0.07*** (-3.63)	-0.07*** (-3.76)	-0.07*** (-3.94)	-0.07*** (-3.88)
<i>LT Debt Ratio</i>	0.08 (1.33)	0.07 (1.24)	0.08 (1.40)	0.08 (1.28)	0.07 (1.25)	0.08 (1.30)
<i>Int. Coverage</i>	-0.11*** (-3.99)	-0.11*** (-4.06)	-0.11*** (-3.99)	-0.10*** (-3.84)	-0.10*** (-4.02)	-0.11*** (-4.01)
<i>Ted Spread</i>	-0.09 (-0.99)	-0.09 (-1.03)	-0.09 (-1.03)	-0.10 (-1.11)	-0.09 (-0.99)	-0.09 (-0.99)
<i>VIX</i>	-0.01*** (-4.43)	-0.01*** (-4.68)	-0.01*** (-4.52)	-0.01*** (-4.16)	-0.01*** (-4.55)	-0.01*** (-4.55)
<i>Dividend Restrictions</i>	1.60*** (6.46)	1.61*** (6.55)	1.60*** (6.40)	1.54*** (6.15)	1.60*** (6.41)	1.61*** (6.57)
<i>Sub. Financing Restrictions</i>	0.36 (1.74)	0.36 (1.75)	0.36 (1.76)	0.36 (1.80)	0.36 (1.74)	0.36 (1.73)
<i>Investment Restrictions</i>	-0.17 (-0.70)	-0.13 (-0.58)	-0.17 (-0.71)	-0.18 (-0.75)	-0.15 (-0.63)	-0.16 (-0.67)
<i>Event-related Restrictions</i>	1.72** (3.14)	1.76** (3.21)	1.71** (3.15)	1.67** (3.04)	1.74** (3.21)	1.73** (3.12)
Constant	3.80*** (5.95)	3.77*** (5.96)	3.84*** (5.89)	3.85*** (5.84)	3.77*** (5.99)	3.79*** (5.98)
Observations	738	738	738	738	738	738
Adjusted R ²	0.436	0.434	0.437	0.443	0.434	0.435

The dependent variable is credit rating at a numerical scale: AAA = 1, AA = 2, A = 3, BBB = 4, BB = 5, B = 6, CCC = 7, CC = 8, C = 9, DDD and below = 10. Independent variables are defined in Appendix A. All regressions include year and industry fixed effects (one-digit SIC code), with standard error clustering at the industry level. Numbers in parentheses are *t*-statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 5 **Topic Loadings and Offering Spread**

Dependent variable: Offering spread						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Aggregate Topic Score</i>	0.07* (2.07)					
<i>Exchange Offer Topic</i>		0.04 (0.88)				
<i>Fin. Condition Topic</i>			0.09* (1.88)			
<i>Indebtedness Topic</i>				0.04 (1.20)		
<i>Covenants Topic</i>					0.18* (2.03)	
<i>Repayment Topic</i>						0.02 (1.56)
<i>Credit Rating</i>	1.08*** (8.55)	1.09*** (8.55)	1.07*** (8.62)	1.08*** (8.41)	1.08*** (8.38)	1.08*** (8.60)
<i>Maturity</i>	-0.19*** (-3.54)	-0.19*** (-3.50)	-0.19*** (-3.68)	-0.19*** (-3.48)	-0.19*** (-3.46)	-0.19*** (-3.52)
<i>Offering Amount</i>	-0.42** (-3.13)	-0.41** (-3.09)	-0.43** (-3.34)	-0.41** (-2.99)	-0.41** (-2.99)	-0.42** (-3.19)
<i>Private</i>	0.28** (2.86)	0.29** (3.02)	0.27** (2.56)	0.28** (3.01)	0.28** (2.93)	0.29** (2.96)
<i>Ln(Assets)</i>	-0.19*** (-3.46)	-0.19*** (-3.50)	-0.19*** (-3.54)	-0.19*** (-3.47)	-0.19** (-3.34)	-0.19*** (-3.49)
<i>LT Debt Ratio</i>	-0.13 (-0.99)	-0.14 (-1.04)	-0.12 (-0.92)	-0.14 (-1.04)	-0.14 (-1.04)	-0.13 (-1.00)
<i>Int. Coverage</i>	-0.22*** (-3.79)	-0.22*** (-3.82)	-0.22*** (-3.97)	-0.22*** (-3.77)	-0.21*** (-3.85)	-0.22*** (-3.77)
<i>Ted Spread</i>	0.19 (0.74)	0.19 (0.77)	0.19 (0.75)	0.18 (0.73)	0.18 (0.73)	0.19 (0.74)
<i>Vix</i>	-0.01 (-1.34)	-0.01 (-1.30)	-0.01 (-1.36)	-0.01 (-1.30)	-0.01 (-1.37)	-0.01 (-1.36)
<i>Dividend Restrictions</i>	1.12* (1.89)	1.13* (1.89)	1.14* (1.92)	1.10 (1.81)	1.09 (1.84)	1.14* (1.91)
<i>Sub. Financing Restrictions</i>	0.49 (0.91)	0.48 (0.89)	0.50 (0.92)	0.49 (0.91)	0.49 (0.92)	0.49 (0.91)
<i>Investment Restrictions</i>	-0.05 (-0.15)	-0.01 (-0.02)	-0.07 (-0.19)	-0.01 (-0.03)	-0.03 (-0.09)	-0.05 (-0.13)
<i>Event-related Restrictions</i>	0.02 (0.02)	0.07 (0.08)	0.01 (0.01)	0.05 (0.06)	-0.00 (-0.00)	0.04 (0.04)
Constant	5.80*** (3.84)	5.68*** (3.74)	5.92*** (3.96)	5.79*** (3.72)	5.75*** (3.75)	5.78*** (3.88)
Observations	738	738	738	738	738	738
Adjusted R ²	0.583	0.582	0.584	0.582	0.583	0.583

The dependent variable is the offering spread defined as the primary market yield spread of the bond benchmarked to interpolated swap yield, in %, on the issuance date. Independent variables are defined in Appendix A. Numbers in parentheses are t -statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 6 Differences Between Traded and Not Traded DIPOs

	Not Traded	Traded	Diff.	t-statistic
Panel A: Offering and Firm Characteristics				
Private	0.68	0.56	0.11	2.40
Maturity	7.78	8.35	-0.56	-3.25
Offering Amt	11.83	12.14	-0.31	-5.94
Offering Spread	6.06	4.88	1.18	6.66
Credit Rating	6.15	5.88	0.26	4.22
Assets	5.61	6.10	-0.50	-3.97
LT Debt Ratio	0.50	0.44	0.06	1.78
Interest Coverage	0.85	0.97	0-18	-1.52
Panel B: Covenants				
Dividend Restrictions	4.14	3.95	0.19	2.58
Sub. Financing Restrictions	7.35	7.21	0.14	0.75
Investment Restrictions	3.45	3.43	0.03	0.34
Event-related Restrictions	4.00	3.95	0.05	1.32
Panel C: Textual Content				
Aggregate Topic Score	8.70	8.05	0.66	1.45
Exchange Offer Topic	1.41	1.32	0.09	1.03
Fin. Condition Topic	1.64	1.59	0.05	0.49
Indebtendness Topic	1.96	1.90	0.06	0.52
Covenants Topic	0.83	0.69	0.14	3.52
Repayment Topic	2.87	2.54	0.32	1.54

This table reports the difference in means between bonds that are not traded (133) and traded (605) bonds for the sample of 738 exchange offer debt IPOs from 1996 to 2013. A bond is considered as not traded if it does not have a price on TRACE within six months of issuance. All variables are defined in Appendix A.

Table 7 **Topic Loadings and Aftermarket Trading**

Dependent variable: Traded	(1)	(2)	(3)	(4)	(5)	(6)
<i>Aggregate Topic Score</i>	-0.00 (-1.34)					
<i>Exchange Offer Topic</i>		-0.02 (-1.19)				
<i>Fin. Condition Topic</i>			-0.02** (-2.47)			
<i>Indebtedness Topic</i>				-0.01 (-0.77)		
<i>Covenants Topic</i>					-0.08* (-2.13)	
<i>Repayment Topic</i>						-0.01 (-1.07)
<i>Credit Rating</i>	-0.05 (-1.76)	-0.05 (-1.68)	-0.05 (-1.72)	-0.05 (-1.70)	-0.05 (-1.76)	-0.05 (-1.73)
<i>Maturity</i>	0.03** (2.81)	0.03** (2.99)	0.03** (2.88)	0.03** (2.79)	0.03** (2.88)	0.03** (2.89)
<i>Offering Amount</i>	0.17*** (3.62)	0.17*** (3.60)	0.17*** (3.60)	0.17*** (3.50)	0.17*** (3.66)	0.17*** (3.63)
<i>Private</i>	-0.03 (-1.57)	-0.02 (-1.29)	-0.03 (-1.54)	-0.02 (-1.44)	-0.03 (-1.59)	-0.03 (-1.55)
<i>Ln(Assets)</i>	-0.01 (-0.60)	-0.01 (-0.61)	-0.01 (-0.53)	-0.01 (-0.64)	-0.01 (-0.57)	-0.01 (-0.59)
<i>LT Debt Ratio</i>	-0.01 (-0.23)	-0.01 (-0.33)	-0.00 (-0.16)	-0.01 (-0.22)	-0.01 (-0.29)	-0.01 (-0.30)
<i>Interest Coverage</i>	-0.01 (-0.48)	-0.01 (-0.40)	-0.01 (-0.48)	-0.01 (-0.54)	-0.01 (-0.46)	-0.01 (-0.46)
<i>Ted Spread</i>	0.05 (0.43)	0.06 (0.44)	0.06 (0.46)	0.06 (0.46)	0.06 (0.45)	0.06 (0.45)
<i>Vix</i>	-0.00 (-1.12)	-0.00 (-1.06)	-0.00 (-1.07)	-0.00 (-1.09)	-0.00 (-1.08)	-0.00 (-1.10)
<i>Dividend Restrictions</i>	-0.16 (-0.77)	-0.17 (-0.80)	-0.16 (-0.77)	-0.15 (-0.73)	-0.17 (-0.79)	-0.17 (-0.78)
<i>Sub. Financing Restrictions</i>	0.02 (0.13)	0.02 (0.12)	0.02 (0.13)	0.02 (0.12)	0.02 (0.11)	0.02 (0.11)
<i>Investment Restrictions</i>	0.18 (0.97)	0.18 (1.03)	0.17 (0.97)	0.18 (1.02)	0.19 (1.00)	0.19 (1.00)
<i>Event-related Restrictions</i>	0.27 (1.10)	0.28 (1.13)	0.27 (1.10)	0.30 (1.22)	0.28 (1.11)	0.28 (1.12)
Constant	-0.92 (-1.41)	-0.98 (-1.46)	-0.96 (-1.44)	-0.95 (-1.42)	-0.96 (-1.45)	-0.96 (-1.46)
Observations	738	738	738	738	738	738
Adjusted R ²	0.113	0.113	0.112	0.117	0.113	0.114

The dependent variable is an indicator variable, *Traded*, that is equal to one if the bond trades within the first three months of issuance, zero otherwise. Independent variables are defined in Appendix A. All regressions include year and industry fixed effects (one-digit SIC code), with standard error clustering at the industry level. Numbers in parentheses are *t*-statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 8 **Topic Loadings and Secondary Market Yield Spread Change**

Dependent variable: ΔSpread_{3m}						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Aggregate Topic Score</i>	0.03*					
	(2.19)					
<i>Exchange Offer Topic</i>		-0.04				
		(-1.02)				
<i>Fin. Condition Topic</i>			0.09*			
			(2.02)			
<i>Indebtedness Topic</i>				0.00		
				(0.05)		
<i>Covenants Topic</i>					-0.02	
					(-0.35)	
<i>Repayment Topic</i>						0.02
						(1.77)
<i>Credit Rating</i>	0.43	0.43	0.42	0.43	0.43	0.43
	(1.76)	(1.77)	(1.71)	(1.74)	(1.77)	(1.76)
<i>Maturity</i>	0.01	0.00	0.01	0.01	0.01	0.00
	(0.15)	(0.14)	(0.16)	(0.16)	(0.16)	(0.15)
<i>Offering Amount</i>	0.08	0.09	0.07	0.09	0.09	0.08
	(0.75)	(0.80)	(0.62)	(0.79)	(0.80)	(0.72)
<i>Private</i>	-0.18	-0.17	-0.20	-0.17	-0.17	-0.17
	(-1.09)	(-1.03)	(-1.18)	(-1.10)	(-1.03)	(-1.07)
<i>Ln(Assets)</i>	0.05	0.05	0.05	0.05	0.05	0.05
	(1.08)	(1.03)	(1.15)	(1.04)	(1.05)	(1.08)
<i>LT Debt Ratio</i>	0.04	0.03	0.06	0.03	0.03	0.05
	(0.37)	(0.25)	(0.54)	(0.31)	(0.29)	(0.41)
<i>Int. Coverage</i>	-0.08*	-0.08*	-0.08*	-0.08*	-0.08*	-0.08*
	(-2.02)	(-1.90)	(-2.16)	(-1.93)	(-1.97)	(-2.03)
<i>Ted Spread</i>	1.06***	1.05***	1.06***	1.05***	1.05***	1.06***
	(3.53)	(3.61)	(3.41)	(3.55)	(3.59)	(3.50)
<i>VIX</i>	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
	(7.97)	(8.68)	(7.92)	(8.08)	(8.33)	(7.93)
<i>Dividend Restrictions</i>	-1.04**	-1.04**	-1.03**	-1.04**	-1.04**	-1.03**
	(-2.43)	(-2.41)	(-2.42)	(-2.39)	(-2.39)	(-2.37)
<i>Sub. Financing Restrictions</i>	-0.32	-0.32	-0.29	-0.32	-0.32	-0.32
	(-0.73)	(-0.73)	(-0.67)	(-0.74)	(-0.73)	(-0.73)
<i>Investment Restrictions</i>	0.91**	0.99***	0.84**	0.95***	0.97***	0.89**
	(3.30)	(3.39)	(3.05)	(3.52)	(3.67)	(3.22)
<i>Event-related Restrictions</i>	-1.03	-0.97	-1.10	-0.99	-0.98	-1.05
	(-1.53)	(-1.44)	(-1.60)	(-1.49)	(-1.43)	(-1.54)
Constant	-4.43**	-4.47**	-4.25**	-4.48**	-4.50**	-4.41**
	(-2.51)	(-2.56)	(-2.41)	(-2.55)	(-2.57)	(-2.48)
Observations	605	605	605	605	605	605
Adjusted R ²	0.248	0.248	0.251	0.247	0.247	0.248

The dependent variable is ΔSpread_{3m} , defined as secondary-market spread minus offering spread, averaged over the first three months post IPO. All regressions include year and industry fixed effects, with standard error clustering at the industry level. Numbers in parentheses are *t*-statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 9 Differences Between Public and Private Issuers

	Private	Public	Diff.	t-statistic
Panel A: Offering and Firm Characteristics				
Maturity	8.18	8.34	-0.16	-1.18
Offering Amount	12.01	12.18	0.17	-4.12
Offering Spread	5.37	4.70	0.68	4.85
Credit Rating	6.04	5.77	0.28	5.75
Underpricing	0.17	-0.04	-0.21	-1.55
Assets	1,295	1,309	-14	-0.04
LT Debt Ratio	0.53	0.33	0.20	7.83
Interest Coverage	13.86	23.15	-9.29	-2.27
Panel B: Covenants				
Dividend Restrictions	4.05	3.90	0.14	2.50
Sub. Financing Restrictions	7.29	7.16	0.13	0.95
Investment Restrictions	3.46	3.39	0.07	1.10
Event-related Restrictions	3.99	3.92	0.06	2.21
Panel C: Textual Content				
Aggregate Topic Score	8.43	7.79	0.64	1.81
Exchange Offer Topic	1.38	1.37	0.01	0.20
Fin. Condition Topic	1.77	1.57	0.20	2.40
Indebtedness Topic	1.95	1.68	0.27	3.03
Covenants Topic	0.78	0.66	0.12	3.54
Repayment Topic	2.92	2.83	0.09	0.53

This table reports the difference in means between public (307) and private (431) issuers for the sample of 738 exchange offer debt IPOs from 1996 to 2013. All variables are defined in Appendix A.

Table 10 **Regressions Comparing Public vs. Private Issuers**

	Credit rating	Offering Spread	Δ Spread.3m
	(1)	(2)	(3)
<i>Aggregate Topic Score</i>	0.01** (3.07)	0.01 (0.85)	0.01 (0.81)
<i>Private*Aggregate Topic Score</i>	-0.01 (-1.58)	0.01 (1.13)	-0.01 (-0.46)
<i>Private</i>	0.22** (2.56)	0.20** (2.42)	-0.23 (-1.34)
<i>Credit Rating</i>		1.08*** (8.64)	0.43 (1.85)
<i>Maturity</i>	-0.00 (-0.31)	-0.19*** (-3.49)	0.03 (0.67)
<i>Offering Amount</i>	-0.02 (-0.52)	-0.41** (-3.03)	0.11 (1.28)
<i>Ln(Assets)</i>	-0.07*** (-3.73)	-0.19*** (-3.54)	0.02 (0.33)
<i>LT Debt Ratio</i>	0.08 (1.32)	-0.13 (-0.99)	-0.18 (-0.84)
<i>Interest Coverage</i>	-0.10*** (-3.84)	-0.22*** (-3.82)	-0.11 (-1.47)
<i>Ted Spread</i>	-0.08 (-0.96)	0.18 (0.73)	1.28*** (3.71)
<i>Vix</i>	-0.01*** (-4.84)	-0.01 (-1.34)	0.05*** (3.58)
<i>Dividend Restrictions</i>	1.62*** (6.37)	1.11* (1.86)	-0.92 (-1.66)
<i>Sub. Financing Restrictions</i>	0.35 (1.69)	0.50 (0.93)	-0.49 (-1.26)
<i>Investment Restrictions</i>	-0.20 (-0.83)	-0.03 (-0.08)	1.14*** (5.84)
<i>Event-related Restrictions</i>	1.69** (3.13)	0.04 (0.04)	-0.38 (-0.46)
Constant	3.80*** (5.94)	5.78*** (3.73)	-5.92*** (-3.41)
Observations	738	738	605
Adjusted R ²	0.440	0.582	0.202

Tests of differences between *Aggregate Topic Score* for public and private issuers. All regressions include year and industry fixed effects, with standard error clustering at the industry level. All other variables are defined in Appendix A. Numbers in parentheses are *t*-statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 11 **Differences Between Non-Rule 144A and Rule 144A Issues**

	Non-Rule 144A	Rule 144A	Diff.	t-statistic
Panel A: Offering and Firm Characteristics				
Private	0.22	0.58	-0.36	-8.70
Maturity	9.28	8.25	1.04	4.72
Offering Amount	12.39	12.08	0.31	5.94
Offering Spread	3.26	5.09	-1.84	-11.07
Credit Rating	4.89	5.93	-1.04	-15.65
Assets	7.05	6.01	1.04	8.62
LT Debt Ratio	0.29	0.45	-0.16	-5.37
Interest Coverage	1.27	0.95	0.32	4.62
Panel B: Covenants				
Dividend Restrictions	3.00	4.00	-0.99	-13.12
Sub. Financing Restrictions	5.24	7.23	-1.99	-11.65
Investment Restrictions	3.27	3.43	-0.16	-2.15
Event-related Restrictions	3.61	3.96	-0.35	-9.02
Panel C: Textual Content				
Aggregate Topic Score	5.18	8.16	-2.99	-7.57
Exchange Offer Topic	0.55	1.34	-0.78	-11.16
Fin. Condition Topic	1.04	1.60	-0.56	-6.31
Indebtedness Topic	1.11	1.91	-0.81	-8.10
Covenants Topic	0.47	0.71	-0.24	-6.63
Repayment Topic	2.00	2.60	-0.60	-3.29

This table reports the difference in means between non-Rule 144A (165) and Rule 144A (738) issuers for the sample of 903 debt IPOs from 1996 to 2013. All variables are defined in Appendix A.

Table 12 Regressions Including Non-Rule 144A Debt IPOs

	Credit Rating	Offering Spread	Δ Spread _3m	Credit Rating	Offering Spread	Δ Spread _3m
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Aggregate Topic Score</i>	0.01** (3.09)	0.02** (2.43)	0.01* (1.92)	0.05*** (5.18)	-0.00 (-0.07)	0.00 (0.02)
<i>Rule 144A*Aggregate Topic Score</i>				-0.04*** (-4.24)	0.02 (0.34)	0.01 (0.56)
<i>Rule 144A</i>				0.49*** (8.27)	0.10 (0.36)	-0.14 (-0.90)
<i>Credit Rating</i>		1.07*** (10.65)	0.31 (1.57)		1.05*** (10.31)	0.32 (1.68)
<i>Maturity</i>	-0.01 (-1.19)	-0.07* (-1.93)	0.00 (0.12)	-0.01 (-0.81)	-0.06* (-1.91)	0.00 (0.05)
<i>Offering Amount</i>	-0.09 (-1.34)	-0.37*** (-4.81)	0.00 (0.05)	-0.08 (-1.25)	-0.37*** (-4.62)	-0.00 (-0.02)
<i>Private</i>	0.13** (2.90)	0.40*** (4.27)	-0.33** (-3.07)	0.11** (2.36)	0.38*** (3.88)	-0.33** (-2.93)
<i>Ln(Assets)</i>	-0.07** (-3.15)	-0.17** (-3.13)	0.04 (0.69)	-0.07** (-3.10)	-0.17** (-3.04)	0.04 (0.69)
<i>LT Debt Ratio</i>	0.10 (1.56)	-0.04 (-0.28)	-0.19 (-1.16)	0.10 (1.64)	-0.05 (-0.36)	-0.19 (-1.16)
<i>Interest Coverage</i>	-0.12*** (-4.22)	-0.25*** (-4.52)	-0.10 (-1.45)	-0.12*** (-4.75)	-0.26*** (-4.60)	-0.10 (-1.43)
<i>Ted Spread</i>	-0.04 (-0.50)	0.20 (0.70)	1.09*** (3.51)	-0.07 (-0.93)	0.17 (0.58)	1.10*** (3.66)
<i>VIX</i>	-0.01** (-2.55)	-0.01 (-1.13)	0.05*** (3.78)	-0.01*** (-3.53)	-0.01 (-1.22)	0.05*** (3.70)
<i>Dividend Restrictions</i>	1.72*** (8.14)	1.55** (2.80)	-0.74* (-2.22)	1.53*** (9.05)	1.49** (2.68)	-0.70* (-2.18)
<i>Sub. Financing Restrictions</i>	0.38* (2.12)	0.39 (0.80)	-0.46 (-1.14)	0.34* (2.21)	0.37 (0.79)	-0.46 (-1.13)
<i>Investment Restrictions</i>	0.06 (0.27)	-0.28 (-0.57)	0.90** (3.35)	0.04 (0.20)	-0.24 (-0.56)	0.90*** (3.36)
<i>Event-related Restrictions</i>	2.10*** (5.30)	-0.50 (-0.52)	-0.26 (-0.35)	1.95*** (4.44)	-0.49 (-0.52)	-0.24 (-0.33)
Constant	4.08*** (6.14)	4.64*** (4.93)	-3.93*** (-4.55)	3.84*** (5.57)	4.66*** (4.77)	-3.90*** (-4.65)
Observations	903	903	749	903	903	749
Adjusted R^2	0.646	0.605	0.182	0.657	0.605	0.180

This table includes all debt IPOs (both Rule 144A-turned DIPOs and non-Rule 144A DIPOs). *Rule 144A*Aggregate Topic Score* denotes the interaction of a Rule 144A IPO dummy and *Aggregate Topic Score*. All regressions include year and industry fixed effects, with standard error clustering at the industry level. Numbers in parentheses are t -statistics. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.