Who Benefits from Bond Market Modernization? *

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ABSTRACT

We analyze how modernization shapes U.S. corporate bond market transactions. To identify the effects of technological change, we use eligibility cut-offs that allow "Well-Known Seasoned Issuers" (WKSI) to significantly accelerate issuance speeds and consequently reduce potential investors' review time. We find this innovation initiated widespread adoption of incurrence-based covenants. Together with evidence on covenant pricing and bondholding, this indicates a new rationale for covenant presence – as a substitute for investor diligence. Overall, we find the benefits of bond market modernization accrue to investors and issuers rather than intermediaries and this distribution is facilitated by covenants' role in simplifying valuation.

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The corporate bond market is the world's largest source of capital for firms and provides investment opportunities for a broad array of investors. Because bond markets play such an important role in the financial landscape, enabling their efficiency is critical. While the objective of a well-functioning bond market is clear, little is known about how the transformative power of technology affects bond market transactions and participants. Recent comments by the U.S. Securities and Exchange Commission (SEC) Chairman suggest investors would widely benefit from adopting new technologies in the bond markets (White (2014)). Yet theory suggests the benefits may not accrue as intended because intermediaries may leverage innovations to their benefit at the expense of others or heterogeneity in participant type may produce a Pareto inefficient outcome. We shed light on this debate by collecting novel data on the microstructure of bond markets and analyzing a regulatory reform that modernized the bond issuance process.

Empirically establishing the effects of modernization on bond market transactions is difficult because modernization is not randomly assigned. We overcome this challenge by examining a particular type of modernization with eligibility cut-off rules that deliver a quasi-natural experiment. We use the eligibility cut-offs to naturally assign firms to treatment as if by randomization. Thus, we have a differences-in-difference estimator. The first difference is time, pre-modernization vs. post, and the second difference is above the cut-off vs. below, which differences out the time trends that affected both treated and control firms.

The modernization we study involves the SEC defining a special type of securities issuer, a Well-Known Seasoned Issuer, or WKSI. By definition, WKSI eligibility requires a worldwide market value of outstanding common equity held by non-affiliates of $700 million or more. Whether an issuer meets this cutoff is precisely observable, and what the issuer gets for meeting it is immediate effectiveness of its registration statements. This immediacy allows an issuer to proceed as quickly as it likes from filing its registration to completing its offering, and thus to reduce potential investors' opportunity for diligence substantially. Prior to the new rule, potential buyers had days to review deal terms but with the adoption of the WKSI rule, the average (median) time fell below 84 (36) minutes. This dramatic change impacts the ability of investors to perform due diligence pre-issuance and thus may be consequential for efficient contracting.

We begin by examining the effect of modernization on bond issuances. Because accelerated issuance compresses investors' time for scrutiny, and scrutiny helps investors gauge a bond's risk and present value, acceleration may endanger subscription. If, however, a mechanism exists that simplifies investors assessment of risk, then acceleration may result in greater use of this mechanism without consequences to subscription. While the presence of covenants in debt contracts is typically rationalized with agency theory (e.g., Smith and Warner (1979)), certain classes of covenants simplify valuation, and thus could serve as a mechanism for making bonds easier to scrutinize on a tighter schedule. To test this logic, we examine the reforms effect on offerings and covenants.

We find the reform leads to faster issuance speeds, has no effect on offerings, and significantly affects covenant use. In particular, WKSI-eligible issuers adopt 3 more covenants, on average, relative to ineligible issuers in the two years following the reform. Prior to the reform, the eligible issuers included just 3 covenants, suggesting an economically meaningful change. The new covenants are incurrence-based covenants, which protect investors from events that reduce bond prices such as major asset sales or takeovers. For example, the change-of-control covenant allows bondholders to sell their bonds back to an issuer at 101% of par value in the event of a takeover. Our point estimates suggest there was 42 percentage point increase in the use of change-of-control covenants among WKSI-eligible issuers attributable to the innovation.

Why do issuers begin to include incurrence-based covenants? From an agency perspective, issuers would not want to include these covenants, which suggests an alternative rationale for covenant presence is driving this finding. Our research reveals intermediaries encouraged issuers to include the covenants. Prior to the reform when the issuance process took days, underwriters had time to answer market demands and create differentiated bond contracts, but after the reform when the issuance process could be done very quickly, some investors wouldn't invest without due diligence or covenants. So underwriters were only willing to do the fast deal if they could protect themselves from legal risk via the covenants. Because potential investors had little time to evaluate the likelihood of an issuer's event risk when faster transactions began to occur, the additional covenants served the significant economic purpose of substituting for diligence. What these specific covenants do then is serve to reduce the cost that investors must expend in learning the risk of

the bond. This role of covenants in simplifying valuation generates theoretical implications for the distribution of benefits from modernization, because it may affect who invests in these bonds, the pricing of the covenants, and the quality of the covenant underwriting.

To gauge the costs and benefits of modernization, we analyze the pricing and investor effects of the modernization-induced change in covenant usage. Typically, identifying the value of covenant is very challenging, yet the rapid onset of covenant use isolates changes in valuation with unusual precision. Because many issuers floated bonds both shortly after and before the transition, it provides us with a set of bonds from the same issuer, with similar maturity, with and without the contracting change. The market's appraisal of the effect of the change on bond value is apparent in the yield difference. We focus our analysis on the change-of-control covenant, which is economically relevant (Billet et al. (2007)) with well-established price effects (Asquith and Wizman (1990)) and substantial heterogeneity in the quality of its underwriting (Credit Roundtable (2008)).

For issuers, we find the average effect of including a change-of-control covenant is 23 basis points less in yield, which is in the neighborhood of others' findings and indicative of a large impact on bond value. Closer examination, however, reveals that *introducing* the covenant tends to *increase* the yield: we find a significant negative effect on value when an issuer uses the covenant for the first time, when covenant-inclusion represents a large deviation from recent contracting by other issuers, and when the indenture differs meaningfully from what is included in registration statement. The pricing findings suggest initially issuers bear some costs from the modernization. In the longer-term, however, we find issuers benefit from the modernization. The standardized contract attracts a new set of investors and volatility analyses show less volatile pricing once the contract terms have become familiar through use over longer periods of time.

For investors, we find mutual funds are initially the ones finding the bargain-priced covenant. Then, over the subsequent two quarters through secondary market trades, the bargain covenant becomes priced. The initial investors realize gains from trade by selling these bonds, via small volume transactions, to subsequent investors. It appears mutual funds were able to find the bargain investment because of prior due diligence on the same issuer. This suggests other investors were free-riding off of the mutual funds' due diligence rather than underwriters forewarning their favorite

clients about the bargain covenant or investors being duped into buying something they didn't want on a compressed issuance schedule.

For intermediaries, we find no evidence that a single underwriter was able to gain market share either by count or volume from introducing the covenant-heavy bond contract. In fact, within two quarters of the SEC reform, all intermediaries began to include the incurrence-based covenants. This suggests the underwriter market is highly competitive and underwriters were not able to extract rents from the modernization. Our assessment of the quality of the underwriting shows some underwriters were able to attract issuers when they wrote higher quality covenants. This supports the conclusion that the modernization did not have the adverse effect of underwriters racing to the bottom in terms of quality of underwriting.

Overall, our findings provide evidence that the benefits of bond market modernization accrued to issuers and investors and not intermediaries. An important byproduct of our research is showing debt covenants serve the significant economic role of reducing the cost of due diligence, and that this role enabled the modernization to occur without jeopardizing new offerings and benefitting those intended. Also, through our assembly of a rich dataset with measures of the precise timing of bond issuances, the information available to investors at the time orders of interest are due, the quality of the underwriting, the pricing of the bond covenants, the investors in the bonds, and the subsequent trading patterns of the bonds, we deliver a detailed description of the microstructure of the corporate bond market for which there is little information.

This article contributes to two fields of research: financial innovation and fixed income. Its primary contribution is to present clean evidence on the consequences of financial innovation using a natural experiment. Other papers examining the effect of financial innovation study markets that cater to retail investors (Henderson and Pearson (2011); Celerier and Vallee (2015)). Theory implies the consequences of financial innovation in terms of risk sharing, cost savings, volatility, and investor demand will vary given the market structure (Allen and Gale (1994); Simsek (2013b); Zingales (2015)). In contrast to research examining retail markets, we find in the corporate bond market, where sophisticated investors dominate, the rents from financial innovation are not captured by intermediaries. This finding supports studies evaluating the competitiveness of bond underwriting

(Yasuda (2005); **?**).

Next, by providing some of the first evidence on the microstructure of corporate bond market, this article expands on previous research into the pricing and inclusion of contractual features. First, we offer an alternative economic rationale to the agency theory of debt covenants (Myers (1977); Smith and Warner (1979)) and empirics supporting it (Kahan and Yermack (1998); Billet et al. (2007); Chava, Kumar, Warga (2010)). Second, by highlighting how learning externalities shape the pricing of covenants, we contribute to research on path dependence in debt contracts (Kahan and Klausner (1997)). Our empirical strategy for identifying covenant pricing is a novel approach (Bradley and Roberts (2015); Crabbe (1991)). Our finding that context-dependent decision-marking affects sophisticated investors helps to generalize similar findings about unsophisticated investors in other markets (Barber and Odean (2008); Hastings and Shapiro (2013)). Finally, our evidence on bondholders' due diligence efforts complements research examining bond market clienteles' preferences and portfolios having a real effect on prices (Becker and Ivashina (2014)).

I. SEC Regulatory Reform

In 2005, the SEC adopted a series of new rules that reformed the registration, communication and public offering processes under the Securities Act of 1933. These new rules, which became effective December 1, 2005, were meant to improve and modernize the securities issuance process, and they serve as our source of identification. The new rules incorporated the increased importance of electronic dissemination of information, including the use of the Internet, into the regulatory framework. The new rules offer a unique opportunity to study the implications of financial innovation, to the extent that the new rules had a large, sudden, and direct effect on the speed at which new bonds were issued for a segment of issuers in the corporate bond market.

The new rules modernize the communications regulatory scheme applicable to registered securities offerings for certain types of issuers. Eckbo, Masulis, and Norli (2007) provide an overview of the rules, which they describe as "sweeping changes" and "major innovation." We focus on a part of the rules that created a new category of issuers called "well known seasoned issuers" (WKSI), because they receive *treatment* from the perspective of a statistical experiment meant to isolate the

effect of innovation on the bond issuance process. The SEC definition of a WKSI-eligible issuer involves several components, however, the requirement of a worldwide market value of outstanding common equity of $700 million held by non-affiliates is the binding constraint for the vast majority of issuers. For additional details on the legal aspects of the new rules, please see Appendix B.

The treatment the WKSIs receive under the new rules is the flexibility to access the bond markets at will relative to other issuers and reductions in required information about the issuance prior to launching. In particular, in the event of a new offering, a WKSI has the ability to file a significantly simplified registration statement (S-3/ASR) that automatically and immediately becomes effective without SEC review. Under rule 424(b), the WKSI then provides potential buyers with additional details about a specific offering through a Free-writing Prospectus (FWP) and a Preliminary Prospectus Supplement. Typically, new issues trace the timeline outlined in Figure 1. As the figure shows potential investors, even if they may hear rumors of a prospective offering, do not get the Preliminary Prospectus Supplement, which is likely to include significantly more information such as covenants, until just 15 minutes or so before the deadline for expressing interest to the bookbuilder.

How different is a WKSI offering timeline from what those issuers did previously? While many commentators have stated that the reforms were a major innovation and the timeline provides a sense of the compressed timeframe investors' face, an example helps solidify the differences. Figure 2 illustrates the issuance of a new bond by General Mills prior to the reform and Figure 3 illustrates the issuance of a new bond by General Mills after the reform. The figures describe the information contained in each SEC filing, what may change from one document to the next, as well as the length of the document and the textual overlap between the information available before potential investors have to indicate interest and the final indenture. What is striking to note is that in the post-reform era there are only minutes to review a document that is 86 pages long that has changed more than 25% of the content in it.

Specifically, what we see in Figure 3 is that after the WKSI reform, the issuer registered its potential new securities issuances using the simplified Form S-3/ASR, which includes a barebones base Prospectus that provides little detail on the covenants that will be included in the bond

indenture. Because of the automatic effectiveness, at any point after submitting the S-3/ASR the WKSI issuer can go to market. When the issuer goes to market that would be the first time potential buyers learn about the issuance. In practice, rumors usually get out a few days before launch, or large bond investors have in-house models to predict when a popular credit may go to market. On that offering date, under rule 424(b), the WKSI submits a Preliminary Prospectus Supplement, which will have a detailed description of the covenants, updated risk factors, and firm financials, but the supplement often becomes available at virtually the same time the new issuance is actually priced as indicated in Figure 1. In our example, the Preliminary Prospectus Supplement was provided at 8:36 a.m. the same morning that the new issuance is priced. This timeframe gives potential investors about 40 minutes to evaluate the terms of the deal.

In contrast to the post-reform era, in the pre-reform era Figure 2 shows our example WKSI-eligible issuer filed Form S-3 which had pre-specified details about potential takedowns. If that issuer needed to increase the size or plan of distribution, it would have needed to file a post-effective amendment to the registration and wait for review, which typically takes about 48 hours. In our example, the issuer filed an S-3/A, and this filing also documented a small change in covenants. Not until the post-effective amendment is approved would it be a day when the issuer could offer/price the bond. The S-3 includes a base Prospectus, but in contrast to the S-3/ASR base Prospectus, the pre-reform S-3 base Prospectus provides details about covenants and other terms ultimately contained in the indenture. There is, therefore, never a need to file a Supplement to the base Prospectus/registration statement at the time of issuance, because investors have had substantial time to learn deal terms. In our example, investors have had more than one year to familiarize themselves with the terms of a potential issuance from General Mills.

As our description demonstrates, the new rules markedly changed the bond issuance process thereby indicating the reform provides plausible exogenous variation in innovation. As a final check of the reasonableness of the experimental setting, we review timeline leading up to the new rules. While the SEC first circulated the proposed rules on November 3, 2004, they received over 130 comment letters on the proposals. The final rules that were issued in 2005 were adopted with 8 major changes to address a number of points raised by commenters. One of the changes between

the 2004 and 2005 rules was a change to the definition of a WKSI. This suggests the exact date of the adoption of the new rules are unlikely to have been gamed by market participants. Further, it seems plausible to believe that issuers who needed to raise capital in public debt markets in a timely manner would not have delayed raising debt until the rules were in place. This suggests that the adoption of the rules did have a sudden and direct effect on those that qualified, and those that qualified vs. those that did not qualify were subject to similar pre-treatment trends from a statistical viewpoint.

II. Data

To examine the role modernization plays in shaping corporate bond market transactions and the impact of the SEC WKSI rules, which allowed faster issuance for larger issuers, we collect detailed information on firm characteristics of bond issuers, the contractual design of bond issuances, the underwriters for the issuances, the quality of the underwriting, the pricing of the bonds, the investors in the bonds, and the subsequent trading patterns of the bonds. Developing a rich dataset that captures the complexities of the bond market required us to combine standard sources used by fixed income researchers with proprietary sources and newly derived measures.

We start with bond-level data from Mergent's Fixed Income Securities Database (FISD) which is a comprehensive database of publicly-offered U.S. bonds. FISD provides details on corporate debt issues and the issuers. Mergent provides its' own unique identifier for each issuer, the nine-character Committee on Uniform Securities Identification Procedures (CUSIP) that uniquely identifies an issuer and the type of security, the name of the issuer as recorded in the prospectus, and the name of the issuer as reported to the CUSIP. Using the unique CUSIP, we cross-reference this database with Thomson Reuters' eMAXX database for U.S. corporate bond issuances as well as FINRA's Trade Reporting and Compliance Engine (TRACE) database. Approximately 90% of bonds are consistently recorded across the three databases; for those with conflicting data, we search on Bloomberg and SEC's Edgar database to resolve discrepancies. Based on the available issuer details such as CUSIP, ticker, and name from the bond-level dataset, we match the issuance data with Compustat to obtain financial and accounting data for these firms. Further, we match

the data with corporate governance data from FactSet.

Next, we web scraped the SEC filings associated with new bond issuances from the SEC Edgar website. As is outlined in Section I, the SEC reforms altered the required filings, timing of the filings, and type of information recorded in the filings. As such, we gather the timestamps for the filings and we analyze the text contained in these filings in multiple ways. First, we gather information on all the covenants included in the indenture. Second, we compute the linguistic similarity between the information available about the contract terms at the time of pricing and the final summary of the terms that will be included in the indenture. Appendix C details the natural language processing techniques used to compute the linguistic similarity. The intuition for the similarity measure is that a score of 1 means the documents are identical, a score of 0.75 would indicate 75% overlap in the documents, and 0 would indicate no overlap. Third, we analyze the quality of the underwriting by analyzing a specific covenant, the change-of-control covenant.

One reason we focus on the underwriting of the change-of-control covenant is because its underwriting exhibits significant heterogeneity that have potentially large consequences for valuation. In fact, two Delaware Supreme court cases have grappled with the interpretation of change-of-control covenant clauses. Based on the court findings and best practices published by Credit Roundtable (2008), there is solid legal precedent for determining the quality of the underwriting. One of the fundamental issues in the design of a change-of-control covenant is the extent to which the covenant's effectiveness depends on a credit rating change. Almost all investment grade bonds have some ratings condition. There is variance as to whether the bond must (1) cross from investment grade to high yield; (2) be high-yield; or (3) be lowered from investment grade to high-yield or from high-yield to an even lower rated high-yield. The second fundamental design issue is what defines a change-of-control event. There are five common triggers: (1) a person acquires more than 50% of the voting stock of the issuer; (2) a sale of substantially all assets; (3) a merger where the issuer's shareholders don't continue to own a majority of the merged firm; (4) a continuing directors test; and (5) adoption of a plan of liquidation or dissolution. Finally, there is also a "holding company" exception that can affect the operation of these triggers. The holding company exception nullifies some of the five common triggers, because in an acquisition of the issuer by another public

company, the merger transaction does not result in a surviving corporation that is more than 50 percent owned by any single "person" or "group" then the trigger event legally did not occur.

Based on these design feature, we evaluate the underwriting of the covenant. For a covenant to have strong underwriting, it cannot be subject to the defective holding company clause, it must have all five of the triggers, it must be dual triggered, and it must not require rating verification. For the covenant to have moderate underwriting, it cannot be subject to the defective holding company clause, it must have at least four of the triggers, it must be dual triggered, but it can require rating verification. For the covenant to have moderate underwriting, it can be subject to the defective holding company clause, it must have at least three of the triggers, it must be dual triggered, but it can require rating verification. For the covenant to have weak underwriting, it either has two or fewer triggers or it is not dual triggered.

Finally, because modernization may also affect who invests in these bonds, the pricing of the covenants, and the quality of the covenant underwriting. We merge our issuer, issuance, and underwriting data with bondholding data. Specifically, we use Thomson Reuters' eMAXX database. This proprietary data provides comprehensive coverage of quarterly fixed income holdings by individual insurance companies, mutual funds, pension funds, annuity funds, hedge funds, and other institution-like investors (e.g., governments and hospitals). This allows us to construct a panel dataset with the total par value held by these investors; we also calculate the number of bondholders continuing to hold an issuance, buying into an issuance, or selling an issuance. Together with details on the other holdings held by these investors, we calculate the bondholders' experience holding bonds from a specific-issuer and holding bonds when a firm becomes the target of a leveraged buyout (LBO). We combine the bondholder information with trade information from FINRA's TRACE database. This database provides intra-day transaction level trades. We use this data to determine the liquidity, trading volume, return volatility, and price paths for our sample of bonds. To ensure accurate liquidity calculations, we remove interdealer trades from the TRACE data by deleting trades with the same bond, date, time, price, and volume as the previous trade.

III. Theoretical Framework

Our research question is related to the theoretical literature that demonstrates when financial process innovation is and is not welfare-enhancing. To answer this question, theory separates the rent-seeking components of financial innovation from those that benefit society. We categorize the theoretical implications of bond market modernization into four categories: (1) traditional costs and benefits (i.e., through transactions costs or risk-sharing); (2) costs from exploiting investors; (3) costs from exacerbating managerial agency problems; and (4) costs from intermediary rent capture.

First, Allen and Gale (1994) demonstrate that efficiency gains from financial innovation are realized either through transaction costs savings or the allocation of risk. In our setting, enhanced efficiency in this traditional sense can be observed in many ways. The most natural way is through market timing. In a survey of CFOs, Graham and Harvey (2001) found a market-timing factor ranked above long-established factors in the decision to issue debt. Issuers want to be able to time the market, and the reforms made this easier. Additional efficiency gains may be realized indirectly through debt contracts' allocation of risk or through intermediaries adjusting to the WKSI rules in a manner that brings cost savings to issuers. In contrast to theories demonstrating efficiency gains, other theories demonstrate how with the additional assumption of belief disagreement among investors, financial innovation reduces efficiency through these exact same transaction cost and risk-sharing channels (e.g., Simsek (2013a); French (2008); Simsek (2013b)).

Second, exploitation of investors is a potential cost of financial innovation (Zingales (2015)). For example, investors may be directly sold a bond they do not understand and would have never wanted had they understood it. In our setting, if after modernization, investors buy a bond with covenants that they would not have wanted had they understood it or had the time to understand it, this would be evidence of a detrimental effect of modernization. Free-riding by investors potentially amplifies any of the harmful consequences to time-constrained investors brought about by financial innovation. The free-rider problem is simple: a bond is placed with many investors, each of whom benefits if others make the costly effort to ensure that the bond is worth the offering price. If financial innovation leads to the development of a new contractual term such as covenants, this has implications for who invests in the bond and the pricing of the bond covenants.

Third, because financial engineering provides an extremely flexible tool to exploit contractual relationships, managerial agency problems may be exacerbated by financial innovation. In our setting, the firm's investors may be unaware that their agents, the managers, are putting in place covenants such as anti-takeover provisions which insulate managers from the market for corporate control. Billet et al. (2007) show the inclusion of a change-of-control covenant, which is the dominant anti-takeover covenant in bonds, reduces the probability of becoming a takeover target by 50%.

Fourth, rent-capture by financial intermediaries is an important theoretical implication of financial innovation. Gennaioli, Shleifer, and Vishny (2015) theorize that financial intermediaries cater to investor preferences by engineering securities perceived to be safe but exposed to neglected risks. Because the risks are neglected, issuance volume is excessively high and intermediaries profit from such transactions. Similarly, Dang, Gorton, Holmstrom, and Ordonez (2014) suggest intermediaries may leverage the timely information to their benefit at the expense of other market participants. These rent-capture theories compete with more traditional reputation arguments which suggest financial firms' value their reputations and intend to be infinite-lived, so any innovation in underwriting or transactions will be value-added.

Overall, the theoretical literature demonstrates that examining market timing, bond design, investor composition, and pricing effects are critical for determining the costs and benefits of bond market modernization. Further, the theory demonstrates that issuers, investors, and intermediaries each have the potential to be positively or negatively impacted. As such, in the remaining sections, we consider these facets in our empirical assessment of the effects of bond market modernization.

IV. Empirical Strategy and Results

To analyze how modernization shapes bond market transactions, we begin by analyzing the effect of the WKSI rules on bond offerings and contract design. We first describe our empirical strategy and then our results in subsection A.1 and A.2 respectively. To gauge the costs and benefits of modernization, we analyze how the modernization-induced changes to bond offerings and contract design affect issuers, investors, and intermediaries. We first describe our empirical strategy and then our results in subsection B.1 and B.2 through B.4 respectively. Finally, section

B.5 considers the generalizability of our findings.

A. Impact of SEC Reform

A.1. Difference-in-Differences Estimator

To empirically identify the effect of modernization on corporate bond market transactions, we use eligibility cut-offs from the SEC rules defining a WKSI. The 2005 SEC rules established that firms with WKSI status were eligible to make primary offerings at significantly accelerated speeds. The threshold for eligibility creates a natural experiment. The firms just below the $700 million threshold in market value of non-affiliated common equity outstanding remain subject to regulatory delays while those just above the threshold are not. As long as the firms that are close to the threshold are indistinguishable along other dimensions, the firms that do not qualify for WKSI status serve as an ideal counterfactual or control group to those treated firms that are subject to the modernization. Hence, the threshold for eligibility creates a natural experiment in which a difference-in-differences estimator captures the average treatment effect of modernization.

In our difference-in-differences design, we compare treated issuers with a control issuers in the quarters pre and post reform. To ensure our control firms are very similar to our treated firms, we limit our sample to issuers within $700 million of the qualifying threshold; doing so reduces the potential bias from unobservable factors that might be correlated with the threshold and with outcomes of interest. Further, we limit our sample to U.S. domiciled nonfinancial, non-utility bond issuers that issue fixed rate corporate debentures or corporate medium term notes. We exclude Rule 144a, callable, Yankee, Canadian, and foreign currency bond issuances. Finally, because most firms visit the capital markets infrequently, firms are not required to be in the sample for all time periods around the event.

We estimate the average treatment effect of the SEC reforms for WKSI issuers using the following issuer-panel regression:

$$Y_{jit} = \alpha + \beta Eligible_i + \delta \left(Eligible \times Post\right)_{it} + \gamma X_{jit} + g\left(CE_{jit}, Tot_{jit}\right) + f_t + \varepsilon_{jit} \qquad (1)$$

where Y_{jit} represents outcome variable such as offering amounts or covenants for issuance j by issuer i in quarter t, *Eligible* is an indicator for issuers that are eligible for WKSI status, *Post* is an indicator for the post-reform period, and X_{jit} is a vector of issuer and issuance controls, including the issuance's offering amount, offering yield, and maturity as well as the issuer's market-to-book, profitability, ROE, investment intensity, cash growth, asset growth, sales growth, financial distress, credit rating, and firm size. We include time fixed effects, f_t, to control for any fixed differences in issuances across time. An indicator for *Post* is not included in the specification as it is collinear with the time fixed effects. To account for potential covariance among issuer outcomes, we cluster the standard errors at the issuer level. Finally, $g\left(CE_{jit}, Tot_{jit}\right)$ is a flexible polynomial that controls for how far the treated and control issuers are from *Eligible* based on the conditions of non-affiliated common equity market capitalization (CE_{jit}) and total offerings in the past three years (Tot_{jit}). The flexible polynomial is a more conservative approach to difference-in-differences estimation, because it safeguards against comparing firms that are far from the qualifying threshold.

A.2. Difference-in-Differences Results

A causal interpretation for our difference-in-differences estimator is predicated on the assumption that absent the SEC reform, the WKSI-eligible issuers would, on average, have had the same *changes* in bond issuance outcomes as ineligible issuers. To assess the merits of this identifying assumption, we begin by examining the actions of eligible and ineligible issuers prior to the reform. Firms eligible for the WKSI status are very similar to our sample of ineligible firms in the years before the SEC reform. Table I reports the ex-ante characteristics of WKSI-eligible firms in column (1) and the ex-ante characteristics of WKSI-ineligible firms in column (2). The p-value from a t-test of differences in means is reported in column (3). The two groups are similar in market-to-book, profitability, ROE, investment intensity, recent growth in cash, assets, and revenue, and financial distress as proxied by Altman's Z-score. Across all of these dimensions, we are unable to reject the null hypothesis that WKSI-eligible issuers are statistically indistinguishable from ineligible issuers.

The evidence from Table I supports the interpretation that the effects of the SEC reforms aimed at modernization are caused by innovations in the bond issuance process, rather than other

unobservable contemporaneous changes differentially affecting control and treatment issuers. As expected, the WKSI-eligible issuers, however, are slightly different in terms of firm size. The WKSI-eligible issuers are larger firms by definition and this also spills over to WKSI-eligible issuers also being more likely to have an investment grade credit rating at issuance. For this reason, we include additional controls for distance from the qualifying size-based threshold to ensure issuers far from the threshold are not driving the result as well as controls for all variables listed in Table I as well as a host of issuance controls such as maturity and offering yield.

Our competing hypotheses regarding the effect of the SEC reforms aimed at modernization on bond issuances require an examination of offerings and covenants. Because accelerated issuance compresses investors' time for scrutiny, and scrutiny helps investors gauge a bond's risk and present value, acceleration may endanger subscription. The reduced interest in the issuance could manifest itself in lower offering amounts (intensive margin) or fewer new offerings (extensive margin). If, however, a mechanism exists that simplifies investors assessment of risk, then acceleration may result in greater use of this mechanism without consequences to offerings. Contract design features, such as certain types of covenants, could serve as a mechanism for making bonds easier to scrutinize on a tighter schedule.

Table II presents our difference-in-differences estimates that evaluate the reforms effect on covenants and offerings. We find, on average, treated issuers statistically significantly increase covenant usage as a result of the new SEC rules relative to ineligible issuers. The estimates reported in Column (1) indicate that, after the SEC reform, WKSI-qualifying issuers increased their total use of covenants by adding 2.96 covenants, on average, relative to the issuers that did not qualify for WKSI status. Column (2) through (5) show the specific covenants for which issuers increased their use. All of the covenants are incurrence-based covenants such as asset sale, change-of-control, fixed charge, and negative pledge covenants. In contrast to the effect on covenants, we find, on average, no effect on offerings on the extensive or intensive margin for treated issuers relative to untreated issuers. The initial finding that the margin of adjustment is covenant inclusion supports the hypothesis that covenants serve as a mechanism for simplifying valuation on a compressed schedule.

Our point estimates in Panel A of Table II suggest the change-of-control covenant is the most common covenant to be adopted as a result of the modernization event followed by the negative pledge covenant. We find WKSI-eligible issuers, on average, increased change-of-control covenant use by 43 percentage points as a result of the reform. The 43 percentage point estimate is based on a two-year window around the reform and is significantly different from 0 at a 1% level. Such an increase in covenant usage is very economically meaningful. In fact, prior to the reform, less than 10% of new issuances included the change-of-control covenant but after the reform 70% of new issuances included the covenant. While the reform cannot explain all of the increase in change-of-control covenant usage, it does explain a meaningful portion of it. The other covenants that WKSI-eligible issuers began to include more frequently are the asset sale clause, which increased use by 19 percentage points, the fixed charge covenant, which increased use by 6 percentage points, and the negative pledge covenant, which increased use by 22 percentage points.

Figure 4 illustrates visually the evidence supporting the point estimates reported in Table II for the WKSI-eligible issuers after the SEC regulatory reform. They show that the precise timing again suggests that it is the modernization causing the inclusion of covenants. Plot (1), the upper left plot, illustrates an increase in total number of covenants included in a bond indenture for the treated issuers. Plot (2) illustrates the percentage point increase in use of asset sale clauses. Plot (3) illustrates the percentage point increase in change-of-control covenants. Plot (4) illustrates the percentage point increase in fixed charge covenants. In each plot, the navy line represents the 8 quarters before the reform, the reform is demarcated by a black vertical line, the maroon line represents the 8 quarters after the reform, and 90% confidence intervals are shaded in light blue and red. In every case, the change occurs right after the reform and persists post the reform despite changing market conditions.

A potential concern when using a difference-in-differences specification is that there is some preexisting trend in the outcome variable confounding the point estimate. As such, we examine this identifying assumption, namely that the treatment and control group would have evolved along parallel paths had it not been for the SEC WKSI rules. We assess the validity of this assumption by examining the data to determine if the issuers with varying status post reform displayed similar

trends prior to the reform. Figure 5 illustrates that the issuers did indeed display parallel trends prior to the reform, but post reform the trends diverged. This suggests there are no preexisting trends. Because there does not appear to be a violation of the parallel trends assumption and our results are robust to the inclusion of a flexible polynomial that enables comparison of the most similar issuers, it is plausible the identifying assumptions for our difference-in-differences research design are satisfied.

In robustness tests reported in Appendix Table DII, we find that covenant inclusion as a response to modernization is relatively constant across various cuts of the data. First, we test the sensitivity of our results to the years included in the sample. Our results are robust when the sample is expanded from a two-year window around the event to a four-year window around the event. Further, our results are robust to excluding the financial crisis. Second, we test the sensitivity of our results to a potentially heterogeneous underlying sample of issuers. We find our results are robust to the inclusion of only issuers with an investment grade at the time of issuance, only issuers in industries with low M&A activity, and only issuers in industries with low LBO activity. Next, we run a placebo test, where the event year is changed to a fictitious event year, and our point estimates reveal no change in covenant use. Finally, given the endogenous nature of corporate choices, we could run the risk of including bad controls, where the control variable is itself an outcome of the SEC reform. Our results are robust to excluding all controls. Taken together, these robustness checks along with the checks of the identification assumptions suggest any inferences based on our point estimates can be interpreted causally.

Having established that the modernization led to an increase in covenants, what features do the covenants added by WKSIs have in common? All of the covenants are incurrence-based covenants that protect investors from highly speculative events such as major asset sales, takeovers, and acquisitions. Estimating takeover probabilities or major asset sale likelihoods take time and can hardly be completed in the limited amount of time investors had after the WKSI reforms to determine the pricing of a potential new issuance. When time is compressed, having the protection of these covenants can serve the economic purpose of substituting for investor due diligence.

The conditions under which these specific incurrence-based covenants give rise to action high-

lights their role in simplifying valuation relative to other types of covenants. First, the asset sale clause requires the issuer to use net proceeds from the sale of major assets to redeem the bonds at par or at a premium. This significant simplifies valuation as it eliminates the need to calculate this risk. Similarly, a change-of-control covenant leads to redemption at a 101% premium over par in the event of a change-of-control. A fixed charge covenant is only tested in the event that the issuer incurs additional debt that is not part of ordinary business. For example, a firm violates its fixed charge covenant if in the event of an acquisition it doesn't have enough retained earnings to cover all interest expenses. Finally, a negative pledge covenant prevents the issuer from issuing secured debt unless it also secures existing bonds on a pari passu basis. What all of these covenants don't feature are maintenance tests, which typically require management to comply with financial metrics in order to avoid default.

Why do issuers begin to include incurrence-based covenants? It is well-known that the primary reason for the presence of covenants in bond contracts is to protect investors from managerial agency concerns (Myers (1977); Kahan and Yermack (1998)). But from an agency perspective, issuers would not want to include restrictive covenants such as these incurrence-based covenants, which suggests an alternative rationale for covenant presence is driving this finding. Appendix Table DIII uses the covenant classification proposed by Smith and Warner (1979) to evaluate how all agency-related restrictive covenants changed following the modernization reform. Table DIII shows no specific pattern of covenant adoption related to agency concerns, which serves to refute the hypothesis that an agency rationale explains the presence of these covenants. Instead, these findings reinforce the notion that the economic purpose behind the inclusion of the incurrence-based covenants is different and related to compressed timing from the modernization event.

To provide additional evidence about issuers' rationale for including incurrence-based covenants, we test for standardization of covenants in the bond indentures post reform. If certain covenants became standard to alleviate investors' fears of adverse selection and reduce the required due diligence, this would support the hypothesis that covenants serve the economic purpose of substituting for due diligence. In particular, evidence of standardization is consistent with a setting where intermediaries encouraged issuers to include the covenants after the reform. Prior to the reform

when the issuance process took days, underwriters had time to answer market demands and create differentiated bond contracts, but after the reform when the issuance process could be done very quickly, some investors wouldn't invest without due diligence or covenants. So underwriters were only willing to do the fast deal if they could protect themselves from legal risk via the covenants. Because potential investors had little time to evaluate the likelihood of an issuer's event risk when faster transactions began to occur, the additional covenants served the significant economic purpose of substituting for diligence. What these specific covenants do then is serve to reduce the cost that investors must expend in learning the risk of the bond. Figure 6 examines the extent to which WKSI-eligible issuers standardized their debt contracts post reform. Consistent with the interpretation that covenants facilitate faster transactions by reducing the costs of contract evaluation, we find that WKSI-eligible issuers standardized their contracts more after the reform as evidenced by lower variance in the covenants included post reform.

B. Costs and Benefits of Modernization

B.1. Estimating the Distribution of Benefits

The economic role of covenants in simplifying valuation generates theoretical implications for the distribution of benefits from modernization. To test these theoretical implications, we assess the pricing of the newly included covenants to determine if issuers, investors, or intermediaries are benefitting from their use. The rapid change in the bond issuance process and subsequently in bond covenant usage isolates changes in covenant pricing with unusual precision. Because many issuers floated bonds both shortly after and before the transition, it provides us with a set of bonds from the same issuer, with similar maturity, with and without any modernization-induced contractual changes. This byproduct of the reform allows us to control for all issuer-specific variables by comparing the post-onset bond with a same-issuer, similar-maturity pre-onset bond. We use this within-issuer estimator to isolate different mechanisms via which modernization impacts the market participants.

Our within-issuer sample focuses on WKSI-eligible issuers that changed contractual terms after the reform. By collecting a sample that spans a 10-year horizon, we started with a sufficiently

large number of issuers that transitioned. The large sample size allows us to use a within-issuer estimator (i.e., fixed-effects estimator) for our analyses. The within-issuer estimator measures the association between individual-specific deviations of dependent and independent variables from their respective average values over the observations. Because our issuer-specific pairs always involve two observations, the dataset can also be viewed as a panel dataset with two periods. In this case, the fixed effects estimator is statistically equivalent to a first difference estimator.

To examine the pricing of contractual changes, we focus our analysis on the change-of-control covenant, which is economically relevant (Billet et al. (2007)) with well-established price effects (Asquith and Wizman (1990); Crabbe (1991)) and substantial heterogeneity in the quality of its underwriting (Credit Roundtable (2008)). We estimate the following two observation issuer-panel regression:

$$Y_{jik} = \alpha + \beta Cov_{jik} + \gamma X_{jik} + f_i + f_k + \varepsilon_{jik} \tag{2}$$

where Y_{jik} is the dependent variable for issuance j by issuer i at offering period k. Example outcome variables include yield less treasury ... Cov_{jik} is an indicator for a covenant of interest. We include issuer fixed effects, offering year fixed effects, as well as a vector of issuance controls X_{jik}, which includes credit rating, liquidity, maturity, offering amount, offering yield, and underpricing. To mitigate any effects of liquidity on pricing, we restrict our sample in addition to controlling for liquidity. Specifically, we remove any within-issuer bond pair in which the seasoned bond does not trade on the same day as the new issuance.

To explore potential heterogeneity in pricing empirically, we return to the first-difference estimator and focus on heterogeneity in the issuance attributable to context-dependent decision-making. Our exact first-differences specification is as follows:

$$\Delta Y_{ji} = \beta \Delta Context_{ji} + \gamma \triangle X_{ji} + \Delta f_k + \Delta \varepsilon_{ji} \tag{3}$$

where ΔY_{ji} is the difference in the dependent variable for issuance j by issuer i with and without the covenant. $Context_{ji}$ is an indicator representing heterogeneity in the issuance attributable to

context-dependent decision-making. The three proxies for context-dependent decision-making are (1) $Salient_{ji}$ which indicates the covenant is the salient attribute, (2) $First_{ji}$ which indicates when the covenant is the first time that issuer has ever included such a covenant, and (3) $Dissimilar_{ji}$ which indicates the contract terms summarized at the time of pricing had changed significantly from the base prospectus (defined as below median textual similarity). Because of the differencing in this specification, we have effectively controlled for issuer fixed effects, but we continue to control for offering year fixed effects. Further, we control for differences in a vector of issuance controls X_{ji}, which includes credit rating, liquidity, maturity, offering amount, offering yield, and underpricing.

While the within-issuer analyses allow us to estimate the effects of modernization on issuers and investors, we are also interested in the effects of modernization on intermediaries. To examine the effects on underwriters, we estimate the following regression:

$$Y_{it} = \alpha + \beta UnderwritingQuality_{it} + \gamma X_{it} + f_i + f_t + \varepsilon_{it} \tag{4}$$

where Y_{it} is the dependent variable of interest for underwriter i in in quarter t. Example outcomes include the number of new bond issuances, dollar volume of new bond issuances, market share, and underwriting fees. $UnderwritingQuality_{it}$ measures aspects of the quality of the underwriting in the bond contract such as the inclusion of covenants, changes from what is summarized in the base prospectus to the final bond indenture, the quality of the legal language used to write the covenants as well as the time allowed for investor due diligence. We include underwriter fixed effects, quarter fixed effects, as well as a vector of other issuance controls including credit rating, maturity, offering amount, offering yield, and underwriter fees when appropriate.

B.2. Costs and Benefits to Issuers

Table III summarizes the characteristics of our within-issuer bond pairs, where the issuances have similar maturities but one bond includes the post reform covenant package and one does not. We observe that bonds with the covenant have similar offering amounts and yields, ratings at issuance, and gross spread. As expected, the time to evaluate the contract is significantly shorter for the issuances with the covenants at only 84 minutes on average or 36 minutes at the median. The

average issuance with a change-of-control covenant has 3.3 of the 5 triggers, but 48% of issuances include the holding company exception that can prohibit the effective operation of the triggers. The majority of issuances require at least two agencies to publicly verify the cause of the downgrade is attributable to the change-of-control event. Our text-based analysis of the SEC filings show that the bonds with the change-of-control covenant have slightly longer prospectuses and that the contract terms summarized at the time of pricing had changed meaningfully from the base prospectus.

Based on the within-issuer sample of bonds, Table IV provides evidence that on average, all else equal, including the covenant reduces the issuers' yield by 23 basis points. The observed pricing effect suggests issuers are being compensated from the new contractual arrangement, which suggests there are no costs to issuers from issuing under the compressed timeline. This results stems from examining the initial pricing for the issuer-specific bond pairs, in which issuers floated bonds both before and after the change, and thus had concurrently-outstanding bonds both with and without the covenant. The finding is statistically significant and robust to the inclusion of issuance controls, liquidity controls, issuer fixed effects, and year fixed effects. Further this finding cannot be explained by accrued interest because all of our yields are adjusted to account for this.

Because the presence of covenants after the WKSI rules serve the economic purpose of substituting for investor diligence, covenant presence may also attract a new set of investors to the offering. At the same time, when there are more investors interested in a bond, this increases the potential pool of buyers and sellers for a bond and may alter the volatility of the pricing in the secondary market. Table V Panel A evaluates these longer-term benefits to issuers from the modernization. It reveals a statistically significant increase in investors holding the bond issued under the faster timeline relative to the bond issued by the same issuer under the slower timeline beginning in the first quarter following issuance and extending two years after issuance. This finding suggests the standardized contract attracts a new set of investors. Analyzing the return volatility shows less volatile pricing in the first and second year after issuance. Both of these findings support the notion that issuers benefit in the longer-term from the modernization.

So far we have established that issuers benefit on average, but this may belie underlying heterogeneity in the distribution of benefits to issuers. In particular, research suggests earlier adopters

of technological change may be disproportionately affected by the change (Tufano (2003)). To test this logic, we evaluate potential heterogeneity in pricing effects attributable to constraints on investors' time to evaluate the offering terms at issuance. We explore price differences that stems from context-dependent decision-making by potential investors (i.e., investment and pricing decisions that depend on the composition of the choice set). Specifically, we examine three measures that capture different features of context-dependent decision-making: (1) saliency of the covenant; (2) if the covenant is the first issuance by that issuer with that covenant; (3) if the contract terms summarized at the time of pricing had changed significantly from the base prospectus (defined as below median textual similarity). The choice of these variables stems from a large literature on context-depend decision-making (e.g., McFadden (2001); Kamenica (2008); Bordalo, Gennaioli, Shleifer (2013)).

Table IV Columns (2)-(4) reveal significant heterogeneity underlies the initial pricing of the covenant and thereby the distribution of benefits to issuers. For each of the three measures of context-dependent decision-making, issuers receive significantly less in terms of yield reduction. In contrast, to the average benefit for investors from including the covenant, the combined treatment effect indicates that these issuers whose issuances are being evaluated by investors in a context-dependent way are not being compensated for the covenant. This evidence suggests early adopters bear some type of compliance cost from the modernization.

To summarize, issuers benefit directly from the reforms aimed at modernization through greater flexibility to time the market and reduced transaction costs in terms of regulatory registration requirements. In addition, issuers benefit indirectly from the reforms through a greater number of bondholders and lower volatility. Issuers face a neutral adaptation to the reform with regards to offerings and pricing. We find no change in bond offerings on either the intensive or extensive margin. For pricing, we find issuers receive fair compensation for including the modernization-induced change-of-control covenant, on average, but heterogeneity in pricing suggests early adopters of the modernization bear some costs from the modernization. The costs appear are associated with context-dependent decision-making by investors, suggesting investors are benefiting from the modernization.

B.3. Costs and Benefits to Investors

The results on price heterogeneity reported in Table IV suggest investors in the bonds issued by WKSIs benefited from the modernization in terms of a bargain-priced change-of-control covenant in certain contexts. Understanding how long it takes for bond investors to arbitrage away the price inconsistency associated with these contexts, who the bondholders are that are finding the bargain covenant, and what characterizes such investors will shed further light on the cost and benefits of modernization. For example, suppose there were some investors who always had a cost of due diligence greater than other investors. Prior to the reform, these investors might use covenants as a signal of issuer quality to figure out how to invest ex-post. Their investment is not helping to differentiate between types of issuers. In contrast, if some investors with a lower cost of due diligence that allows them to quickly analyze issuances, then, under the new rules, these investors would be helping to differentiate type of issuers with their investment. If these investors are the ones investing in the bonds with the bargain covenant this suggests a more efficient distribution of benefits than alternative rationalizations for the observed pricing heterogeneity.

How long it takes for bond investors to arbitrage away the price inconsistency associated with the context-dependent decision-making? Figure 7 indicates it takes about 3 quarters to arbitrage away the inconsistency. Specifically, the figure examines the persistence of the pricing heterogeneity over time. The y-axis plots the reduction in yield accrued to the issuer and the x-axis plots the quarters since issuance. The maroon dashed line represents the covenant pricing determined using the within-issuer strategy for the "bargain" covenant bonds, which we define as having one of the three ex-ante characteristics associated with context-dependent decision-making. The navy solid line represents the covenant pricing determined using the within-issuer strategy for the non-bargain covenant bonds. Similar to what we saw in Table IV, for "bargain" covenants associated with context-dependent decision-making the pricing differential at issuance nullifies the 23 basis point gain issuers typically receive. Next, what we observe is that it takes three quarters for the solid navy line and the red-dashed line to converge. And then over the next eight quarters the two types of bonds converge in their pricing of the covenant. This suggests that while the modernization reform initially brought benefits to investors in terms of a bargain covenant after three quarters

sufficient trading had occurred to arbitrage away the price inconsistency.

Were the investors associated with context-dependent decisions different in some way? Using the bondholder data, Figure 8 examines which investors initially invested in the bonds with the favorable covenant pricing. The figure plots the percentage of new holdings with the covenant for three types of bondholders – mutual funds, insurance companies, and pension funds. The figure reveals that mutual funds, as evidenced by the navy dashed line, are the initial investors buying the bonds that are priced as though they have a free covenant. Insurance companies begin purchasing those bonds about three quarters after the mutual funds. Pension funds, however, take nearly 10 quarters to converge to similar levels as those of mutual funds and insurance companies. The heterogeneity across type of investor in terms of bondholdings may indicate differences in cost of due diligence across type.

Table V provides statistical evidence about the bondholders and bond trades that impact the covenant pricing. The statistical evidence supports inferences that reiterate what Figure 7 and Figure 8 depict. Panel B, C, and D of Table V focus specifically on the issuances with "bargain" covenants. They reveal that in the second quarter there is statistically significant evidence for pricing heterogeneity, but by a year post issuance no statistically significant price heterogeneity is detectable. In the second year post issuance, the point estimates are virtually zero and indicate no significant pricing heterogeneity. What we consistently see is that mutual funds are the ones who initial bought the bargain covenants and sold the bonds as the covenant became priced in the market. Overall, this evolution increases the number of bondholders relative to the within-issuer sample of bonds without covenants.

So far, our findings suggest the benefits of bond market modernization are not evenly distributed across different types of investors. While the evidence is consistent with mutual funds having a lower cost of due diligence in terms of time and being able to profit from the bargain-priced covenant, it could also be consistent with a scenario where underwriters were forewarning their favorite institutional clients in hopes of gaining future business or market share. To distinguish between such scenarios, we explore the characteristics if these investors. If the mutual funds are associated with characteristics known to reduce the costs of due diligence this would lend favor to

the first interpretation.

Table VII delves into why a difference exists in trading and bondholding behavior between the bargain and priced covenants. Specifically, we examine the role of bondholder characteristics in terms of ability to perform due diligence and prior issuer-specific and LBO experience as potential explanations. Tests of differences across the two types of pricing reveals that despite the shorter time for diligence, many of the mutual fund investors had prior issuer experience which helped facilitate evaluation of the contractual terms. Surprisingly, prior LBO experience does not seem to affect subsequent bondholding suggesting that the specific form of the covenant is not what mattered but rather that the covenant serves to simplify due diligence by protecting downside risk in highly idiosyncratic events.

To summarize, sophisticated investors, and mutual funds in particular, found the bargain covenant. Through secondary market trades over the subsequent two quarters, the bargain covenant became priced and these initial investors reaped gains from trade by selling these bonds to subsequent investors. It appears mutual funds were able to find the bargain investment, because of prior due diligence on the same issuer. We find no evidence to suggest any investors were tricked into buying a bond with covenants they did not want. Overall, our evidence supports the notion that investors benefitted from the modernization largely because covenants substituted for due diligence protecting them from potential adverse selection.

B.4. Costs and Benefits to Intermediaries

Why did underwriters start including covenants in the new bonds? Were the underwriters doing it to gain market share? Or did underwriters that faced increasing pressure to deliver bonds at fast speeds reduce the quality of their underwriting or were they trying to protect themselves from legal risk by strengthening their underwriting? To answer these questions, we analyze the benefits and costs intermediaries captured following the rules that allowed WKSIs to accelerate issuance speeds.

Table VIII explores the extent to which underwriters benefited from the SEC reforms that modernized the bond issuance process. The specification is as in Eq.(4). The dependent variable looks at various dimensions on which underwriters could profit, including new issuance count and

dollar volume, as well as market share and fees. We find no evidence that underwriters benefit from the modernization. The underwriters that protect themselves from legal liability by writing stronger contracts with more restrictive covenants appear to lose a small amount of business and see no changes in their fees. When focuses on the bond issuances with restrictive covenant packages, underwriters that provide investors with greater time for scrutiny appear to receive smaller fees and less market share. While strong underwriting in terms of legal language leads to some additional business, it does not appear to be enough to offset the reduction in business from simply including the restrictive covenant. Overall, these results suggest that underwriters do not benefit from bond market modernization.

Additional tests reveal that all underwriters quickly adopted the new covenant-heavy contracts. The underwriters' market share pre and post the reform show suggest the underwriting market for corporate bonds is quite competitive as no firm was able to achieve a statistically significant gain in market share by three quarters after the reform. Overall, for intermediaries, we find no evidence that a single underwriter was able to gain market share either by count or volume from introducing the covenant-heavy bond contract. In fact, within two quarters of the SEC reform, all intermediaries began to include the incurrence-based covenants. This suggests the underwriter market is highly competitive and underwriters were not able to extract rents from the modernization. Our assessment of the quality of the underwriting shows some underwriters were able to attract issuers when they wrote higher quality covenants. This supports the conclusion that the modernization did not have the adverse effect of underwriters racing to the bottom in terms of quality of underwriting.

B.5. Robustness

As with any natural experiment, there could be concerns that our findings do not extrapolate to other contexts or beyond the sample of complier firms. Because accelerating the speed of bond issuances is a very specific type of modernization event, it is plausible that other types of financial innovations proposed for the bond market that focus on transparency, trading speed, and changes in the number and nature of trading venues would impact market participants differently. Therefore,

an important limitation of our study is that it only speaks to the costs and benefits of the WKSI rule.

We can however address the extent to which our findings generalize beyond those "complier" firms closest to the qualifying threshold. We do by examining an alternative sample of issuers that is mutually exclusive to the sample we already studied. If the results from studying this alternative sample of issuers are similar, this provides suggestive evidence that the results do generalize beyond the "complier" firms. Specifically, we construct a matched sample based on a propensity score estimator. While this sample cannot be considered as randomly assigning contract design to issuers, because it takes a significantly different approach to testing the underlying hypotheses, when the results from the two samples coincide that suggests the original results do generalize. This approach enhances the previous results for several reasons. Unlike the previous sample, where we limited our sample size by requiring the match to be homogenous by issuer, maturity, liquidity, and covenant transition status, the propensity score sample is drawn from the universe of all investment grade bond issuers. Thus, this constructed sample allows us to generalize our results and also because it's a mutually exclusive sample it provides a robustness check for the previous method. Further, previous studies have confirmed that propensity score matching methods allow for more accurate inferences in an observational study. Finally, since the pool of potential matches is large, the data is well suited for using this method.

The fundamental results from the within-issuer sample do not change when using the larger more representative sample of issuers. Appendix Table DIV shows the characteristics of the issuers and issuances that the matched sample is drawn from. The propensity score is estimated using issuer characteristics that include market-to-book, profitability, ROE, investment intensity, cash growth, asset growth, sales growth, financial distress, credit rating, and firm size as well as issuance characteristics that include offering year, maturity, and offering amount. Appendix Table DV shows the results from examining the initial pricing for the propensity-score matched bond pairs. Column (1) of Panel A reveals that on average, all else equal, including the covenant reduces the issuers' yield by 27 basis points. This finding is statistically significant and robust to the inclusion of issuance controls, issuer fixed effects, and year fixed effects. It is also qualitatively similar to the

23 basis points found using the issuer-specific sample. Column (1) of Panel B provides suggestive evidence that covenant inclusion is associated with greater underpricing, which is again similar to the findings in the issuer-specific sample. Appendix Table V shows that the subsequent trading behavior also coincides fairly closely with the previous findings. Comparing the inferences from the two samples suggests that the results from the smaller transition sample generalize to the universe of investment-grade bonds. Further, because the two approaches had different identifying assumptions, this suggests our inferences are not fragile to a single identifying assumption.

V. Conclusion

In this paper, we study the role modernization plays in shaping U.S. corporate bond market transactions. In 2005, the SEC adopted a series of rules that allowed large issuers to significantly accelerate issuance speeds. Under the new rules, potential investors have 36 minutes, at the median, to evaluate Prospectus terms, the issuer's credit story, and pricing expectations. For the large majority of new issue transactions, there is no conference call with the management of the issuer. At the same time, the new issue market has grown substantially and multiple issuers often come to market at the same time, which exacerbates the constraints on investors' time to review each transaction. To identify the effects of this modernization event, we exploit eligibility cut-off thresholds that are part of the SEC rules.

We find modernization meaningfully affects risk-sharing with widespread adoption of covenants, which serve the economic purpose of simplifying the analysis required to value the bond. We find a set of incurrence-based covenants gained popularity after the regulatory change. Because incurrence-based covenants provide value to bondholders in idiosyncratic, highly speculative situations such as future business combinations, spin-offs, or asset sales, we contend the inclusion of such covenants serves as a labor-reducing device when time for contract scrutiny is compressed. Put another way, the additional covenants serve the significant economic purpose of substituting for investor diligence.

In contrast to the critics that suggest financial innovation largely benefits the financial intermediaries who capture rents from exploiting new rules to their advantage, our evidence from bond

placement and secondary market trades suggests the modernization of the bond issuance process mostly benefits those intended – issuers and investors. We find underwriters operate in a competitive landscape and no underwriter captured market share or additional fees as a result of the modernization. Learning externalities from transitioning to covenant-heavy bonds coincide with a contract uncertainty premium, which benefits sophisticated investors. In particular, mutual funds are rewarded for the superior information they gather in their due diligence process. We find issuers bear some costs in terms of initial underpricing but benefit from an expanded set of bondholders and reduced volatility once the new contract terms are learned.

Overall, our evidence highlights the importance of standardization in conjunction with modernization as regulators assess ways to improve current bond market practices. Our evidence is consistent with the notion that repetition reduces the cost that investors must expend in learning the meaning of contract terms. Hence, standardization of corporate bond issuances provides issuers and investors a channel for improvement. Primary among these improvements is the prospect of a more stable, less volatile issuance environment with improved transparency and lower new issue concessions. Of course, in any setting, the features included in the standardized contract need to be carefully assessed. In particular, our findings that change-of-control covenants are included in over 60% of new issuances and the potential externality that places on the market for corporate control should be carefully considered.

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Figures and Tables

Time	Step
9:00 AM	Underwriters *announce* a new issue and alert investors via Bloomberg and phone. Sales force begins discussions regarding investors' interest and pricing expectations. Investors attempt to evaluate the issuer's credit quality and potential terms. Investors *submit an order* without finalized pricing or terms.
9:15 AM	Preliminary prospectus is provided to investors. Offering *goes subject* and *books are closed* (i.e. orders of interest stop being accepted).
10:00 AM	*Price guidance* is announced.
11:00 AM	Deal is *launched* with final pricing terms which can differ meaningfully from guidance.
3:00 PM	Underwriters set and release allocations to investors.
3:30 PM	Deal is *priced* near market close.

Figure 1. Example bond offering timeline post reform.

Pre-SEC Reform, WKSI-eligible Issuer (General Mills) 2.625% Notes due October 24, 2006							
Date	**Time**	**SEC Filing**	**File Description**	**Description**	**Info in File**	**Page Count**	**Similarity Measure**
December 21, 2001		S-3	Shelf Registration and Prospectus	The issuer registers $8 billion of debt securities that are to be offered on a delayed or continuous basis.	Company information (financials), intended use of proceeds, description of debt securities the company may offer including restrictive covenants (e.g., asset sale), plan of distribution, and information about what terms of the indenture can be changed.	25	NA
February 8, 2002		S-3/A	Amendment No. 1 to S-3 Shelf Registration and Preliminary Prospectus	The issuer amends the registration statement, which will become effective when the SEC, acting pursuant to Section 8(a), determines. The information in the Preliminary Prospectus Supplement and the accompanying Preliminary Prospectus is not complete and may be changed. The issuer cannot sell securities until the registration statement has been declared effective by the SEC.	Company information (risk factors, recent developments, financials), description of the notes including restrictive covenants (e.g., asset sale), underwriters, use of proceeds, and firm capitalization.	65	NA
September 17, 2003 (Offering Date)				Prospectus Supplement dated September 17, 2003, but filed September 19, 2003.			
September 19, 2003	12:09 PM	424B5	Prospectus Supplement (Final Prospectus)	This document is a Prospectus Supplement and supplements the attached Prospectus, which is part of a registration statement that the issuer filed with the SEC. This Prospectus Supplement contains the terms of this offering of notes.	Description of the notes including pricing information, restrictive covenants, underwriters, use of proceeds, and firm capitalization.	36	0.906
September 24, 2003	9:44 AM	8-K	Current report	Agreements related to issuance	Underwriting agreement dated September 17, 2003.	3	NA

Figure 2. Example of bond issuance filings before the SEC reform: This figure describes the SEC filings and information contained in the filings for a WKSI-eligible issuer prior to the reform. To quantify the due diligence required to understand the terms of the contract, a page count and a text-based similarity measure are included. A similarity of 1 indicates the Final Prospectus is identical to the terms available at the time of pricing, whereas a similarity of 0 indicates no overlap in content.

Post-SEC Reform, WKSI-eligible Issuer (General Mills) 5.650% Notes due February 15, 2019							
Date	**Time**	**SEC Filing**	**File Description**	**Description**	**Info in File**	**Page Count**	**Similarity Measure**
December 4, 2008	5:15 PM	S-3ASR	Automatic Shelf Registration	General registration of unidentified amount of debt securities. Statement becomes effective automatically without SEC review. Each time the issuer sells debt securities, the issuer will provide a Prospectus Supplement that will contain specific information about the terms of that offering, and the issuer may add, update or change information from what is contained in this Prospectus.	Company information, risk factors, use of proceeds, plan of distribution, information about what terms of the indenture can be changed, and a notice that the Prospectus Supplement relating to any debt securities that the issuer offers using this Prospectus will describe the amount, price, and other specific terms including any restrictive covenants, if applicable.	42	NA
January 29, 2009 (Offering Date)	8:36 AM	424B5	Preliminary Prospectus Supplement	The information in this Preliminary Prospectus Supplement is not complete and may be changed.	Description of bond terms, including restrictive covenants (e.g., change-of-control covenant), underwriters, use of proceeds, and firm capitalization.	86	NA
January 29, 2009	3:45 PM	FWP	Free-writing Prospectus	Distributed for marketing on offering date	Bond terms	1	NA
January 30, 2009	5:09 PM	424B5	Final Prospectus Supplement	Substantively identical to preliminary prospectus	Finalized bond terms including pricing and any negotiated changes such as covenants.	86	0.721
February 3, 2009	10:46 AM	8-K	Current report	Agreements related to offering	Underwriting agreement dated April 20, 2015	4	NA

Figure 3. Example of bond issuance filings after the SEC reform: This figure describes the SEC filings and information contained in the filings for a WKSI-eligible issuer after the reform. To quantify the due diligence required to understand the terms of the contract, a page count and a text-based similarity measure are included. A similarity of 1 indicates the Final Prospectus is identical to the terms available at the time of pricing, whereas a similarity of 0 indicates no overlap in content.

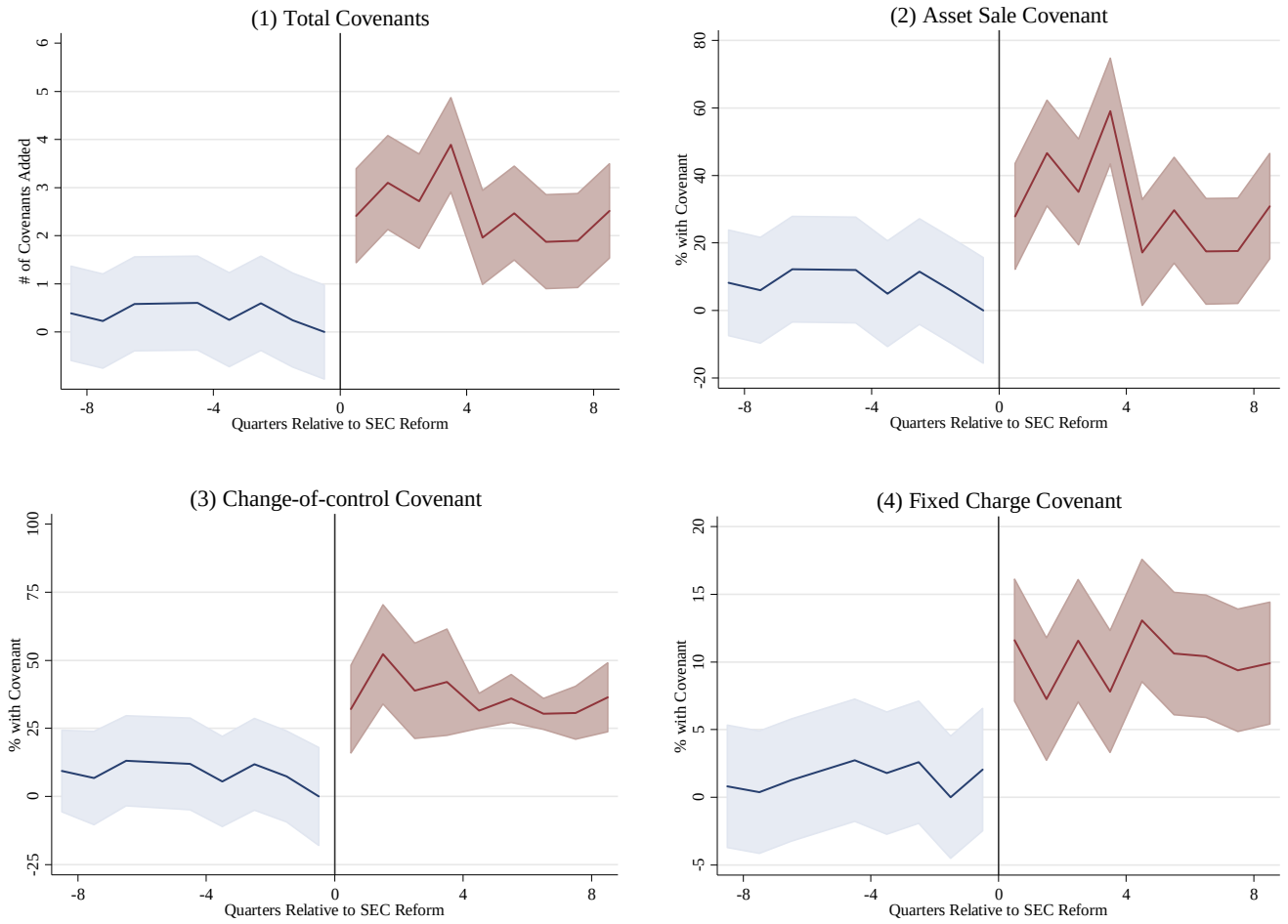

Figure 4. The effect of SEC modernization reform: The four plots illustrate the change in risk-sharing associated with the SEC modernization reform for treated issuers (i.e., WKSI-eligible issuers). Plot (1), the upper left plot, illustrates an increase in total number of covenants included in a bond indenture for the treated issuers. Plot (2) illustrates the percentage point increase in use of asset sale clauses. Plot (3) illustrates the percentage point increase in change-of-control covenants. Plot (4) illustrates the percentage point increase in fixed charge covenants. In each plot, the navy side represents the 8 quarters before the reform, the reform is demarcated by a black vertical line, the maroon side represents the 8 quarters after the reform, and ninety-percent confidence intervals are shaded.

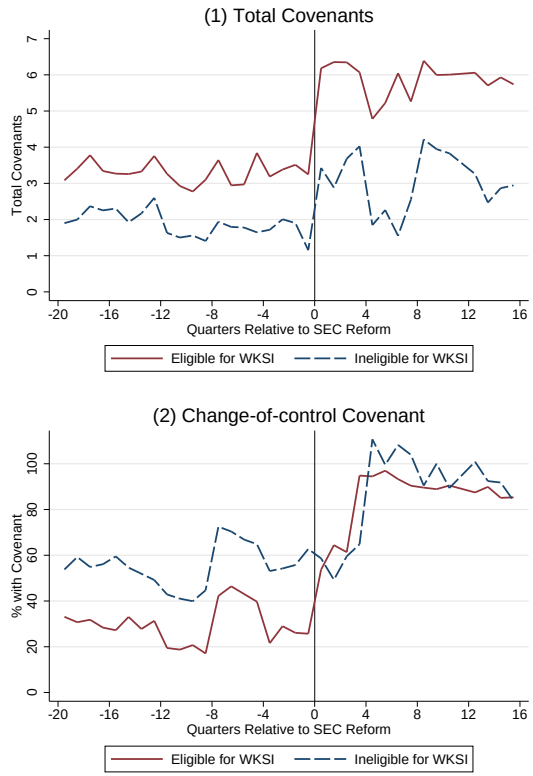

Figure 5. Parallel paths prior to the SEC modernization reform: In each plot, the treated issuers (i.e., the WKSI-eligible issuers) are depicted with a maroon line and control issuers (i.e., the WKSI-ineligible issuers) with a navy, dashed line. Plot (1), the upper plot, depicts total covenants. Plot (2), the lower plot, depicts change-of-control covenants. The plots show the issuers follow parallel paths pre-reform but sharply diverge post-reform in the two plots related to risk-sharing. The observed "parallel trends" pre-reform suggest difference-in-differences estimates are unbiased estimates of the effect of the SEC reform, because absent the reform the paths are likely to have been the same for the treatment and control issuers.

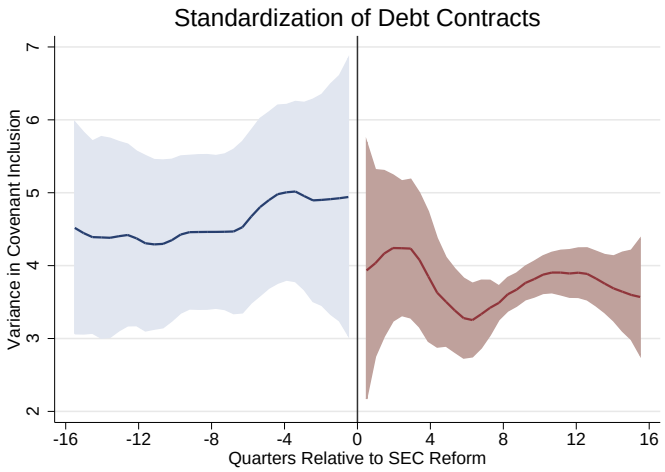

Figure 6. Standardization of debt contracts: The plot examines the heterogeneity in covenant inclusion before and after the reform aimed at modernization. The navy side represents the 8 quarters before the reform, the reform is demarcated by a black vertical line, the maroon side represents the 8 quarters after the reform, and ninety-percent confidence intervals are shaded. The plot reveals that after the reform, WKSI-eligible issuers exhibited less variation in the covenants included in their bond contracts.

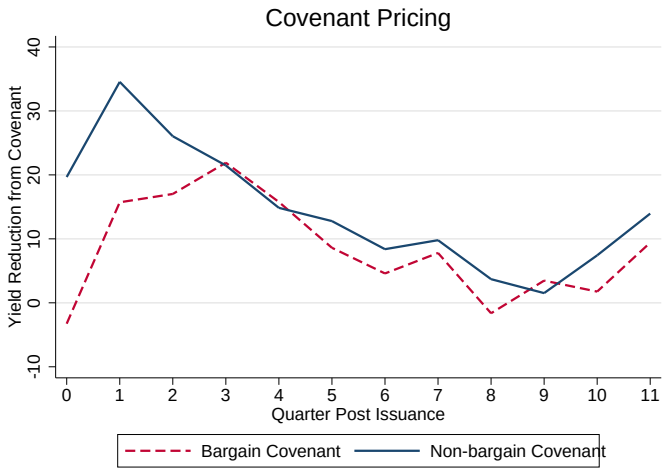

Figure 7. Persistence in covenant pricing heterogeneity: The plot examines heterogeneity in covenant pricing associated with context-dependent decision-making by investors. The y-axis represents the reduction in yield accrued to the issuer and the x-axis represents the quarters since issuance under the WKSI rules. The maroon dashed line represents bonds with the bargain covenant while the navy solid line represents bonds without the bargain covenant. "Bargain" covenant is defined as having at least one of the three ex-ante characteristics associated context-dependent decision-making. The plot uses the within-issuer sample of bonds where same day trades of bonds issued by the same issuer with similar maturity with and without the covenant are used to isolate the price of the covenant. All yields are adjusted for accrued interest.

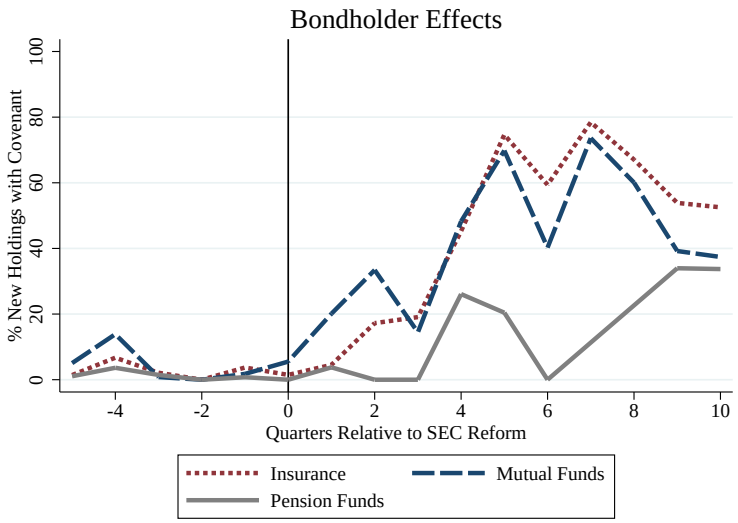

Figure 8. Bondholder effects: This graph shows the difference in new bondholdings with covenants among three types of bond holders. After the SEC reform, a greater percentage of new holdings of insurance funds and mutual funds contained the change of control covenant, compared to pension funds. However, 10 quarters after the reform, pension funds' new holdings are converging to similar levels as those of mutual funds.

Table I Ex Ante Bond Issuer Characteristics

This table reports summary statistics for bond issuers in the five years before the enactment of the SEC reform that modernized the bond issuance process. The sample is limited to the bond issuers within $700 million of common equity eligibility cut-off threshold. The mean and standard deviation (in parentheses) for each variable are reported separately for two samples of issuers. Column (1) reports estimates for modernization ineligible issuers and Column (2) reports estimates for modernization-eligible issuers. Column (3) reports the p-value from a t-test for the difference between the ineligible and eligible issuers. Appendix A provides the definition of each of the covariates.

Ex ante Issuer Characteristics			
	WKSI-Eligible	WKSI-Ineligible	p -value of difference
	(1)	(2)	(3)
Market-to-book	1.229	1.214	(0.774)
	(0.583)	(0.586)	
Profitability	0.135	0.136	(0.758)
	(0.058)	(0.072)	
ROE	0.438	0.445	(0.955)
	(0.303)	(1.642)	
Investment / Assets	0.221	0.205	(0.397)
	(0.231)	(0.220)	
Cash Growth	1.211	1.585	(0.305)
	(3.534)	(4.465)	
Asset Growth	0.219	0.198	(0.499)
	(0.344)	(0.373)	
Sales Growth	0.213	0.308	(0.680)
	(0.677)	(3.253)	
Altman's Z-score	1.394	1.330	(0.447)
	(0.820)	(0.927)	
Investment Grade	0.596	0.225	(0.000)
	(0.492)	(0.418)	
Firm Size	7.981	7.687	(0.005)
	(7.743)	(8.112)	
Observations	366	203	

Table II Effect of Modernization on Bond Issuance

This table shows difference-in-differences estimates of the average change in bond issuance practices attributable to the SEC reform that modernized the bond issuance process. The sample is limited to U.S. domiciled nonfinancial, non-utility bond issuers within $700 million of the eligibility thresholds. We consider only fixed rate corporate debentures or corporate medium term notes. We exclude Rule 144a, callable, Yankee, Canadian, and foreign currency bonds. Test-statistics calculated using robust standard errors, clustered at the issuer level, are in parentheses. The exact specification is as in Eq.(1): $Y_{jit} = \alpha + \beta Eligible_i + \delta\left(Eligible \times Post\right)_{it} + \gamma X_{jit} + g\left(CE_{jit}, Tot_{jit}\right) + f_t + \varepsilon_{jit}$, where Y_{jit} is an outcome variable representing offering amounts or covenants for issuance j by issuer i in quarter t, $Eligible$ is an indicator for issuers that are eligible for WKSI status, $Post$ is an indicator for the post-reform period, and X_{jit} is a vector of issuer and issuance controls including the issuance's offering amount, offering yield, and maturity as well as the issuer's market-to-book, profitability, ROE, investment intensity, cash growth, asset growth, sales growth, financial distress, credit rating, and firm size, f_t are year fixed effects, and $g\left(CE_{jit}, Tot_{jit}\right)$ is a flexible polynomial that controls for how far the treated and control issuers are from the eligibility thresholds (i.e., non-affiliated common equity market capitalization (CE_{jit}) and total offerings in the past three years (Tot_{jit})). ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A. The Effect of Modernization on Covenants

Dependent Variable = Covenant	Total Covenants	Asset Sale Clause	Change of Control	Fixed Charge	Negative Pledge
Difference-in-Differences	2.96***	0.19**	0.43***	0.06**	0.22**
	(1.13)	(0.09)	(0.11)	(0.03)	(0.11)
Flexible Polynomial for Cut-offs	Yes	Yes	Yes	Yes	Yes
Issuer & Issuance Controls	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	7%	3%	22%	12%	18%
Observations	306	306	306	306	306

Panel B. The Effect of Modernization on Offerings

Dependent Variable = Offerings	Intensive Margin	Extensive Margin (Monthly)	Extensive Margin (Quarterly)
Difference-in-Differences	-23.06	284.94	583.89
	(44.80)	(414.77)	(1809.72)
Flexible Polynomial for Cut-offs	No	No	No
Issuer & Issuance Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Adjusted R^2	35%	1%	-4%
Observations	306	82	32

Table III Descriptive Statistics for Within-Issuer Sample

This table provides descriptive statistics for a sample of bond issuers eligible for the SEC modernization reform that issued similar maturity bonds both before and after the reform. The mean and standard deviation (in parentheses) are reported separately for eligible issuers in Column (1) and (2) and issuances in Column (3) and (4). Column (1) and (3) report estimates for bonds that include the restrictive covenant (i.e., after the reform) and Column (2) and (4) report estimates for bonds that exclude the restrictive covenant (i.e., before the reform). Appendix A provides the definition of each of the covariates.

Descriptive Statistics for Within-Issuer Sample

Issuer Characteristics	Including Covenant (1)	Excluding Covenant (2)
Market-to-book	1.241	1.535
	(0.554)	(1.417)
Profitability	0.031	(0.004)
	(0.019)	(0.084)
ROE	0.131	0.090
	(0.266)	(0.300)
Investment / Assets	0.022	0.011
	(0.035)	(0.130)
Cash Growth	1.216	1.126
	(1.219)	(0.965)
Asset Growth	0.901	0.862
	(0.379)	(0.339)
Sales Growth	0.879	0.750
	(0.390)	(0.549)
Leverage	0.325	0.238
	(0.113)	(0.179)
Firm Size	9.688	6.577
	(0.845)	(2.703)
E-index	1.603	2.304
	(1.144)	(1.171)
Observations	590	590
Unique Issuers	118	118

Issuance Characteristics	Including Covenant (3)	Excluding Covenant (4)
Offering Amount ($mm)	566,545	514,385
	(393,102)	(428,653)
Maturity (Years)	6.85	10.36
	(4.87)	(5.35)
Offering Yield	5.15	5.38
	(1.80)	(1.37)
Rating at Issuance	7.84	7.25
	(1.54)	(1.84)
Gross Spread	5.21	5.70
	(1.76)	(1.50)
Number of Book-running Managers	3.24	2.30
	(1.74)	(1.34)
Time to Evaluate Contract	1.39	413.49
(Column (3) in hours, Column (4) in days)	(2.63)	(438.58)
Length of Contract (Pages)	59	50
	(23)	(27)
Similarity to S-3 Filing	0.748	0.834
	(0.151)	(0.169)
Covenant Quality	2.60	
	(1.19)	
Trigger Count	3.32	
	(1.46)	
Holding Company Clause	0.484	
	(0.500)	
Number of Ratings Needed to Downgrade	2.37	
	(0.55)	
Agency Must Verify Downgrade Cause	0.656	
	(0.48)	
Covenant Word Count	19.68	16.32
	(15.97)	(13.60)
Change in Covenant Word Count	8.39	4.66
	(15.64)	(13.63)

Table IV Initial Covenant Pricing for Within-Issuer Sample

The table shows the initial price effects from covenant inclusion for the within-issuer sample, which compares concurrently trading bonds issued by the same issuer with maturities within two years where one issuance has the restrictive covenant and the other does not. Test-statistics calculated using robust standard errors, clustered at the issuer level, are in parentheses. The specification for Column (1) is as in Eq.(2): $Y_{jik} = \alpha + \beta Cov_{jik} + \gamma X_{jik} + f_i + f_k + \varepsilon_{jik}$, where Y_{jik} is the dependent variable for issuance j by issuer i at offering period k and Cov_{jik} is an indicator for the change-of-control. Column (1) shows the average price effect while Column (2) - (4) examine heterogeneity in the price effect attributable to context-dependent decision-making by investors. The specification for Columns (2) - (4) include indicators for covenant saliency, if the covenant is the first by that issuer, and if the contract terms summarized at the time of pricing had changed meaningfully from the base prospectus (defined as below median textual similarity). In all specifications, we include issuer fixed effects, year fixed effects, as well as a vector of issuance controls X_{jik}, including credit rating, maturity, total covenants, and offering amount. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

The Effect of Modernization-induced Contractual Changes on Covenant Pricing				
	Avg. Price Effect	Heterogeneity in Price Effect		
Dependent variable = Tresury less yield at offering	(1)	(2)	(3)	(4)
Covenant Inclusion	0.227	0.311	0.459	0.420
	(1.78)*	(2.18)**	(2.93)***	(1.07)
Covenant is Salient		-0.323		
		(2.34)**		
First with Covenant			-0.516	
			(3.46)***	
Dissimilar to Base Prospectus				-0.320
				(1.78)*
Issuer & Issuance Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	62%	63%	64%	65%
Observations	399	399	399	399

Table V Subsequent Bondholdings for Within-Issuer Sample

The table shows the subsequent average price effects and bondholdings from covenant inclusion for the within-issuer sample, which contains concurrently trading bonds that had maturies within the same two year window. Test-statistics calculated using robust standard errors, clustered at the issuer level, are in parentheses. For Panel A, the specification is as in Eq.(2): $Y_{jik} = \alpha + \beta Cov_{jik} + \gamma X_{jik} + f_i + f_k + \varepsilon_{jik}$, where Y_{jik} is the dependent variable for issuance j by issuer i at offering period k and Cov_{jik} is an indicator for the change-of-control. Each column represents a different time period post issuance. For Panel B, C and D, the specification is as in Eq.(3): $\Delta Y_{ji} = \beta \Delta Context_{ji} + \gamma \triangle X_{ji} + \Delta f_k + \Delta \varepsilon_{ji}$, where ΔY_{ji} is the difference in the dependent variable for issuance j by issuer i with and without the covenant. $Context_{ji}$ is an indicator for one of three different proxies for context-dependent decision-making. In both specifications, X_{ji} is a vector of controls which includes credit rating, maturity, offering amount, offering yield, underpricing, and trading volume. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Independent Variable = COVENANT INCLUSION			
Panel A. Dependent Variable =	(Qtr1)	(Qtr2)	(Year1)	(Year2)
TREASURY LESS YIELD	0.018	0.679	0.477	0.427
	(0.02)	(4.94)***	(1.94)*	(1.34)
INVESTORS HOLDING	24.2	29.7	28.3	50.4
	(2.33)**	(2.89)***	(3.00)***	(5.31)***
RETURN VOLATILITY	0.14	0.05	-0.03	-0.08
	(1.03)	(0.97)	(1.71)*	(2.11)**
	Independent Variable = COVENANT IS SALIENT			
Panel B. Dependent Variable =	(Qtr1)	(Qtr2)	(Year1)	(Year2)
TREASURY LESS YIELD	-0.170	-0.112	-0.070	-0.009
	(2.56)**	(3.36)***	(1.79)*	(0.22)
MUTUAL FUND HOLDINGS	11.6%	10.6%	8.6%	8.8%
	(2.39)**	(1.82)*	(1.45)	(1.82)*
	Independent Variable = FIRST WITH COVENANT			
Panel C. Dependent Variable =	(Qtr1)	(Qtr2)	(Year1)	(Year2)
TREASURY LESS YIELD	0.044	0.132	0.057	0.062
	(0.75)	(2.01)**	(1.29)	(1.49)
MUTUAL FUND HOLDINGS	0.7%	-4.8%	-5.1%	-6.0%
	(0.14)	(0.90)	(1.20)	(1.46)
	Independent Variable = DISSIMILAR TO BASE PROSPECTUS			
Panel D. Dependent Variable =	(Qtr1)	(Qtr2)	(Year1)	(Year2)
TREASURY LESS YIELD	-0.133	-0.104	-0.045	-0.037
	(2.23)**	(2.15)**	(1.54)	(1.18)
MUTUAL FUND HOLDINGS	14.7%	12.5%	6.8%	3.4%
	(2.45)**	(2.07)**	(1.01)	(0.47)
Issuance & Issuer Controls	Yes	Yes	Yes	Yes
Liquidity/Trading Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	302	298	290	258

Table VI Sophisticated, Duped, or Lucky Investors?

This table explores the relationship between investors' experience evaluating an issuance and the pricing of the issuances' covenants. Column (1) examines bonds with "bargain" covenants and Column (2) bonds without bargain covenants following the modernization to bond issuance process. "Bargain" covenants are defined as having the ex-ante characteristic of covenant saliency, if the covenant is the first by that issuer, or if the information available to potential buyers at issuance is dissimilar to the base prospectus (defined as below median textual similarity). Column (3) tests if there is a statistical significant difference in the time available to review the bond, LBO experience and prior issuer experience for these two pricing outcomes. In both specifications, a vector of issuance controls are used which include credit rating, maturity, offering amount, offering yield, underpricing, and trading volume. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

Independent Variable =	Bargain Covenant	Priced Covenant	Test of Difference
Dependent Variable =	(1)	(2)	(3)
Time for Due Diligence	-1.788	0.882	(2.41)**
	(2.05)**	(1.15)	
LBO Experience	0.268	0.041	(0.48)
	(1.75)*	(0.35)	
Prior Issuer Experience	0.421	-0.415	(3.21)***
	(2.26)**	(2.46)**	
Controls and Fixed Effects	Yes	Yes	Yes
Observations	302	302	302

Table VII The Benefits Gained by Underwriters from Modernization

This table explores the extent to which underwriters benefited from the SEC reforms that modernized the bond issuance process. Test-statistics calculated using robust standard errors, clustered at the underwriter level, are in parentheses. The specification is as in Eq.(4): $Y_{it} = \alpha + \beta UnderwritingQuality_{it} + \gamma X_{it} + f_i + f_t + \varepsilon_{it}$ where Y_{it} is the dependent variable of interest for underwriter i in in quarter t and $UnderwritingQuality_{it}$ is the independent variable of interest that measures aspects of the underwriting quality such as the inclusion of restrictive covenants, changes from the base Prospectus to the final Prospectus, the quality of the legal language used in the indenture as well as the time allowed for investor due diligence. We include underwriter fixed effects, quarter fixed effects, as well as a vector of issuance controls including credit rating, maturity, offering amount, offering yield, and spread when appropriate. Panel A focuses on all bond issuances while Panel B focuses on the bond issuances that have the restrictive covenant package. The sample is limited to underwriters with at least 3% market share in a given quarter in the sample. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A. All Bond Issuances

Dependent Variable =	New Issuance (N)	New Issuance Volume ($)	Market Share (N)	Market Share Volume ($)	Underwriter Fees
Adding Restrictive Covenants	-0.08*	-0.13***	-0.08*	-0.15***	0.016
	(0.05)	(0.05)	(0.05)	(0.04)	(0.02)
Change from Base Prospectus	-0.03*	-0.04**	-0.02*	-0.05**	0.012
	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)
Issuance Controls	Yes	Yes	Yes	Yes	Yes
Quarter & Underwriter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	55%	53%	21%	21%	68%
Observations	753	753	735	735	753

Panel B. Bond Issuances with Restrictive Covenant Packages

Dependent Variable =	New Issuance (N)	New Issuance Volume ($)	Market Share (N)	Market Share Volume ($)	Underwriter Fees
Quality of Underwriting	0.17***	0.17***	0.65***	0.68***	0.70***
	(0.05)	(0.05)	(0.15)	(0.15)	(0.05)
Time for Diligence	-0.07	-0.11*	-0.07***	-0.08***	-0.07**
	(0.05)	(0.06)	(0.03)	(0.03)	(0.03)
Issuance Controls	Yes	Yes	Yes	Yes	Yes
Quarter & Underwriter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	57%	51%	45%	42%	49%
Observations	335	335	332	332	335

Appendix A. Variable Definitions

Bond issuer financial and accounting data come from the Compustat-CRSP fundamental quarterly and annual database. Bond issuance data combines Mergent's Fixed Income Securities Database (FISD), FINRA's TRACE data, and SEC Edgar filings. Bondholder data comes from eMAXX. Definitions are as follows.

Market Equity $= MEQ$

Firm Size = Log(Revenue) $= \text{Log}(REVTQ)$

Market Value of Assets $(MVA) = MEQ + DLCQ + DLTTQ + PSTKQ - TXDITCQ$

Market-to-book $= MVA/ATQ$

Profitability $= OIBDPQ/ATQ$

Return on Equity $= (OIBDPQ - DVCQ)/CEQQ$

Investment / Assets $= ((CAPXY - SPPEY) - (CAPXY_{t-1} - SPPEY_{t-1}))/PPENTQ_{t-1}$

Cash Growth $= (CHEQ)/CHEQ_{t-1}$

Asset Growth $= (ATQ)/ATQ_{t-1}$

Sales Growth $= (REVTQ)/REVTQ_{t-1}$

Market Equity $= MEQ$

Altman's Z-Score $= 3.3 * (PIQ/ATQ) + .99 * (SALEQ/ATQ) + 1.4 * (REQ/ATQ) + 1.2 * ((ACTQ - LCTQ)/ATQ) + .6 * (MEQ/LLTQ)$

Firm Size $= \text{Log}(REVTQ)$

Entrenchment-Index (E-index) is based on a subsample of the most relevant governance matters (e.g., takeover defenses) for firm value as shown by Bebchuk, Cohen, and Ferrel (2009).

Offering Amount = FISD offering amount

Maturity (Years) = (FISD maturity date - FISD offering date) /365.25

Offering Yield = FISD yield to maturity (YTM) at the time of issuance. It is based on the coupon and any discount or premium to par value at the time of sale.

Rating at Issuance = FISD rating at issuance, which includes ratings from S&P, Moody's, Fitch, and Duff & Phelps. All ratings are converted into a numeric variable that preserves the ranking (i.e., Aaa = 1 for Moody's and AAA = 1 for S&P, Aa1 = 2 for Moody's and AA+ = 2 for

S&P, etc . . .). If FISD is missing ratings data, S&P Ratings Xpress from Compustat is used as a supplement.

Investment Grade = $RatingatIssuance$ greater than or equal to 10 (i.e., BBB- or higher on S&P scale and Baa3 or higher on Moody's scale).

Gross Spread = The difference between the price that the issuer receives for its bond issuance and the price that investors pay for them.

Yield Less Treasury = (TRACE last trade by time stamp YTM - U.S. Treasury maturity equivalent risk-free rate) where YTM accounts for any accrued interest.

Number of Book-Running Managers is the count of book-running managers as listed in the SEC final prospectus.

Time to Evaluate Contract = This is the difference between the time orders of interest are due and the time a detailed prospectus that summarizes the terms of the indenture is available.

First with Covenant is an indicator variable for the first issuance by an investment-grade issuer to include a change-of-control covenant during the sample period from 2002-2012.

Covenant is Salient is an indicator variable for if the covenant is the salient attribute relative to the yield and the size of the float. The salience of an attribute is defined according to Bordalo, Gennaioli, Shleifer (2012) as $Salience\left(a_k, \overline{a}_{90}\right) = \frac{|a_k - a_{90}|}{a_k + a_{90}}$, where a_k is the observed attribute for a issuance k and $\overline{a}_{90}$ is the attribute's average level in the set of investment-grade bonds that were available to the investor in the previous 90 days.

Total Word Count is a simple count of the total number of words in the SEC filing.

Change in Total Word Count is the change in simple count of the total number of words in the final prospectus relative to the base prospectus. The prospectuses summarize the final terms that will be included in the indenture.

Contract Similarity is text-based measure of the similarity between the final prospectus and the base prospectus from the most recently filed shelf registration by that firm.

Dissimilar is an indicator for the text-based measure $ContractSimilarity$ falling below the median.

Number of Bondholders is the number of holding portfolios as recorded in eMAXX.

Total Par Held is the total par amount held in portfolios recorded in eMAXX.

Institutional Coverage Ratio is the percent of the issuance amount held by institutional investors that provide portfolio data to eMAXX.

LBO Experience is defined based on the portfolios held at the managing firm sub-account level (e.g., managing firm is Fidelity and one sub-account is their intermediate-term, investment-grade bond fund). If the portfolio contained bonds that were affected by an LBO deal where the bonds had an investment-grade rating at the time of the LBO announcement, then in subsequent quarters the managing firm sub-account is defined as experienced.

Investment-Grade Experience is defined based on the portfolios held at the managing firm sub-account level (e.g., Managing Firm is Fidelity and Sub-Account is their Investment Grade Bond Fund). It represents the percentage of investment-grade issuances held in the portfolio in the previous period.

Prior Issuer Experience is defined based on the portfolios held at the managing firm sub-account level (e.g., Managing Firm is Fidelity and Sub-Account is their Investment Grade Bond Fund). It is an indicator variable if at any time in the previous year, the managing firm sub-account held a different bond by the same issuer.

Well-known Seasoned Issuers (WKSI) are publicly listed rms eligible to issue shelf oerings, which are current and timely in their reporting obligations over the past year. They must also (1) have outstanding a minimum of $700 million of common equity market capitalization world-wide that is held by non-aliates or (2) if they are only registering non-convertible securities other than common equity, they have issued non-convertible securities other than common equity in registered primary offerings for cash $1 billion aggregate amount of during the past three years.

Low M&A Industries Using SDC data for public and private firm mergers and acquisitions where the transaction involved at least a 50% stake, 3-digit SIC industries are ranked by frequency of transactions. The bottom quartile are low M&A industries.

Low LBO Industries Using SDC data for leveraged buyouts and going private transactions, 3-digit SIC industries are ranked by frequency of transactions. The bottom quartile are low LBO industries.

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Appendix B. Details on the SEC Regulatory Reforms

The series of new rules that the SEC issued in 2005 defined four types of issuers: well-known seasoned issuers (WKSIs); seasoned issuers; unseasoned reporting issuers; and non-reporting issuers. A WKSI is a large-scale, seasoned issuer that: (1) meets the registrant requirements of Form S-3 or Form F-3, which include being current and timely in its reporting obligations under the Securities Exchange Act of 1934; (2) as of a date within 60 days of the determination date[1], has either a worldwide market value of outstanding voting and non-voting common equity held by non-affiliates of $700 million or more; or both (i) registered and issued at least $1 billion in aggregate principal amount of non-convertible debt or preferred stock for cash, not exchange, during the past three years, and (ii) will only offer non-convertible debt or preferred stock (unless the issuer is also eligible to register a primary offering of its securities on Form S-3 or Form F-3); and (3) is not an "ineligible issuer[2]" or "asset backed issuer."

Reporting companies that qualify as WKSIs benefit most from the new rules because they are now able to access the capital markets at will through on-demand automatic shelf registration. Consequently, the new rules impacted the timeline of WKSIs' securities issuances by providing such issuers with market timing flexibility, which is the primary focus of this study. Other components of the reform include changes to registration fees, liberalized communication rules, and safe harbors. We highlight those changes in the paragraphs that follow. We do not believe these changes are driving the findings in our paper.

[1] The determination date is the later of (i) the filing date of the issuer's most recent shelf registration statement (S-3); (ii) the date of the most recent amendment to the issuer's shelf registration for purposes of satisfying Section 10(a)(3) of the Securities Act; and (iii) the filing date of the issuer's most recent 10-K or 20-F (if the issuer has not filed a shelf registration statement for the prior 16 months).

[2] "Ineligible issue" includes issuers that (i) are not current in their Exchange Act reporting requirements; (ii) are blank check companies, shell companies, penny stock issuers or limited partnerships offering other than through a firm commitment underwriting; (iii) within the past three years, have filed for bankruptcy; (iv) within the past three years, have been convicted of any felony or misdemeanor under certain provisions of the Exchange Act; (v) within the past three years, were made the subject of any judicial or administrative decree or order arising out of a governmental action that prohibits certain conduct regarding (including future violations of) the U.S. federal securities laws, requires them to cease and desist from violating the anti-fraud provisions of the U.S. federal securities laws or determines that they have violated those anti-fraud provisions; or (vi) within the past three years, have had any registration statement subject to an SEC refusal order or stop order.

Under new Rules 456 and 457, the WKSI need not pay filing fees upon filing of the ASR, but rather can wait until the securities are taken off of the shelf and the actual offering commences (these are known as "pay-as-you-go" registration fees). In practice, registration fees are a very small percentage of the offering amount and this could not be driving our findings.

WKSIs gained liberalized communications rules. Specifically, the new rules and safe harbors clarified when SEC may take action for premature securities offerings or inappropriate communications during the offering process. For example, before 2005 public communications during the offering process were highly restricted by the SEC rules then in effect. Section 5(c) of the 1933 Securities Act broadly prohibits all "offers," in whatever form (e.g. advertising or even talking about the securities), prior to the filing of a registration statement. Issuers could only: (1) continue to advertise their products and services; (2) issue press releases containing factual business information and financial developments in accordance with the issuer's past practice; and (3) issue a limited notice regarding a potential registered offering under Rule 135. Section 5(c)(1) requires that communications (written, broadcast, or otherwise) related to the securities offering between the filing of a registration statement and its effective date must be limited to a "statutory prospectus" that adheres to many substance and form requirements. The SEC might view any violations of these communication restrictions as "offers," and such violations are known as "gun-jumping."

New Rule 163 exempts WKSIs from the Section 5(c) prohibition on pre-filing orders. Thus, WKSIs can now make "offers" to sell their securities before filing their registration statement and without regard to the previously applicable gun-jumping rules. While Rule 163 alleviates WKSIs' fear of gun-jumping, the practical implications of the rule are likely limited. Since WKSIs can file a short ASR for an unlimited amount of unspecified securities without even paying a filing fee, WKSIs will likely rely on their immediately effective ASR to avoid Section 5(c)'s prohibition on pre-filing offers.

In addition, the new rules include several pre-offering communication safe harbors that protect all issuers, including non-WKSIs, from gun-jumping infractions. As a result, all issuers enjoy more freedom to communicate with the market prior to filing their registration statements. For example, Rule 163A provides a non-exclusive safe harbor for all communications that are made at least 30

days before the registration statement is filed and do not refer to the securities offering. Such communications are not considered "offers" under 5(c) and are therefore exempt from the gun-jumping restrictions. Rule 163A communications must be authorized by the issuer (as opposed to the underwriter or dealers). Moreover, the issuer must take "reasonable steps within its control" to prevent further distribution of the information during the 30 day period leading up to filing. Two additional new safe harbors permit the continued regular release of (i) factual business information and (ii) forward-looking information during the offering process by exempting such information from the definition of "offer" under Section 5(c). The key to these safe harbors is that these communications must be made regularly as part of the issuer's ordinary course of business. Again, in practice, these rules are unlikely to be driving the changes we observe.

Appendix C. Deriving Text-based Similarity Measures

In this paper, we use natural language processing techniques to develop measures of similarity between the information available about the contract terms at the time of pricing and the final summary of the terms that will be included in the indenture. A prospectus summarizes the terms to be included in the bond indenture. Typically, a baseline prospectus from the shelf registration statement or an amendment to it is available at the time bookbuilders are taking orders of interest. Textual similarity is a linguistic measure that makes strides to capture the degree to which two texts are the same. The technique makes use of the full distribution of words in the text, and the intuition is that the meaning of a word is related to the distribution of words around it, and the co-occurrence of multiple words indicates similarity.

The mathematical intuition for the similarity measure comes from geometry. Although in geometry the Euclidean distance is the typical measure for the distance between two vectors, it is not appropriate for textual similarity since Euclidean distance is very sensitive to extreme values. Instead, linguists found that the dot product between normalized co-occurrence vectors achieves a much higher correlation than the Euclidean distance measure in terms of what humans would classify as similar. Co-occurrence vectors contain the unique words from each of the texts as well as an appropriate weight, which may be a count, a binary indicator, or a weighted-association. Since the raw dot-product favors longer vectors and frequent words, normalization allows for comparison across texts of varying lengths. Geometrically, the normalized dot product is equivalent to the cosine of the angle between two vectors and therefore has an intuitive interpretation. The range of the measure is between $[-1, 1]$ and higher, positive values indicate greater similarity. Mathematically, the similarity between text A and text B is as follows:

$$similarity_{cosine}\left(\overrightarrow{v}_A, \overrightarrow{v}_B\right) = \frac{\overrightarrow{v}_A \cdot \overrightarrow{v}_B}{|\overrightarrow{v}_A|\,|\overrightarrow{v}_B|} = \frac{\sum_{i=1}^{N} v_{A,i} \times v_{B,i}}{\sqrt{\sum_{i=1}^{N} v_{A,i}^2}\sqrt{\sum_{i=1}^{N} v_{B,i}^2}} \tag{A.1}$$

The advantages of the similarity measure derived from this distributional technique are the computational ease and clear intuition, but there are some limitations. One of the limitations of this method is that it only considers words in their raw form and does not account for variation in

word meaning by context. For example, bank has multiple senses both as a noun and as a verb. As a noun it could mean financial institution, sloping mound, biological repository, or the building belonging to a financial institution. As a verb bank could mean to tip, to do business with a bank, or to have confidence in. Beyond the measurement noise from such sense ambiguity, the distributional techniques also does not account for word morphologies such as plurals, possessive suffixes, or verb form. To the extent, however, that underwriters use boilerplate contracting language such morphologies and word variation would be less of a limitation.

Appendix D. Internet Appendix of Additional Tables

Table DI Descriptive Statistics for Bondholders

This table reports summary statistics for bondholders at the time of issuance. The mean and standard deviation (in parentheses) for each variable are reported separately for two samples of issuers. Column (1) reports estimates for issuances that included the restrictive covenants and Column (2) reports estimates for issuances that excluded the restrictive covenant. Appendix A provides the definition of each of the covariates.

Bondholders at Issuance	Including Covenant (1)	Excluding Covenant (2)
Number of Bondholders	116.8	99.5
	(86.8)	(88.2)
Total Par Held	230,880	248,805
	(192,680)	(211,768)
Coverage Ratio	43.6%	39.5%
	(18.6%)	(19.6%)
Percent Held by Annunity Funds	4.9%	3.7%
	(7.7%)	(7.3%)
Percent Held by Insurance	67.9%	72.1%
	(26.0%)	(25.9%)
Percent Held by Mutual Funds	26.1%	20.9%
	(22.6%)	(21.9%)
Percent Held by Pension Funds	0.8%	2.7%
	(4.3%)	(7.4%)
Percent Held by Others (e.g., Hospital, Government, etc…)	0.3%	0.6%
	(0.8%)	(2.4%)
Percent Investing With LBO Experience	48.6%	23.1%
	(22.4%)	(24.8%)
Percent of Investors Portfolio in Investment-Grade Bonds	80.5%	80.1%
	(10.5%)	(9.9%)
Percent of Investors with Prior Experience with Issuer	41.4%	45.9%
	(20.1%)	(20.1%)
Number of Other Issuances Held	1284.6	1155.3
	574.2	(667.9)
Observations	778	1,554
Unique Issuers	284	376

Table DII Robustness Checks for Difference-in-Differences Estimates

This table shows various robustness checks for the difference-in-differences estimates of the average effect of the SEC WKSI rules on covenant inclusion. The sample is limited to U.S. domiciled nonfinancial, non-utility bond issuers within $700 million of the eligibility thresholds. We consider only fixed rate corporate debentures or corporate medium term notes. We exclude Rule 144a, callable, Yankee, Canadian, and foreign currency bonds. Test-statistics calculated using robust standard errors, clustered at the issuer level, are in parentheses. The exact specification is as in Eq.(1): $Y_{jit} = \alpha + \beta Eligible_i + \delta\left(Eligible \times Post\right)_{it} + \gamma X_{jit} + g\left(CE_{jit}, Tot_{jit}\right) + f_t + \varepsilon_{jit}$, where Y_{jit} is an outcome variable representing offering amounts or covenants for issuance j by issuer i in quarter t. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

Dependent Variable = Covenant	Total Covenants	Asset Sale Clause	Change of Control	Fixed Charge	Negative Pledge
Robustness Check (4-year Window Around Event)	1.70**	0.05	0.30***	0.09***	0.19***
	(0.72)	(0.05)	(0.07)	(0.03)	(0.07)
Adjusted R^2	9%	2%	24%	8%	23%
Observations	697	697	697	697	697
Robustness Check (Excluding Financial Crisis)	3.18***	0.21**	0.43***	0.07**	0.22
	(1.13)	(0.09)	(0.11)	(0.03)	(0.11)
Adjusted R^2	7%	4%	20%	12%	17%
Observations	303	303	303	303	303
Robustness Check (Limiting to Only Investment Grade)	2.94*	0.10	0.31**	0.05	0.39*
	(1.67)	(0.13)	(0.14)	(0.04)	(0.21)
Adjusted R^2	16%	4%	58%	9%	22%
Observations	107	107	107	107	107
Robustness Check (Limiting to Low-M&A Industries)	3.46***	0.19**	0.52***	0.05	0.26*
	(1.33)	(0.09)	(0.13)	(0.04)	(0.14)
Adjusted R^2	10%	4%	31%	4%	28%
Observations	170	170	170	170	170
Robustness Check (Limiting to Low-LBO Industries)	3.89***	0.21**	0.54***	0.09**	0.35***
	(1.42)	(0.10)	(0.13)	(0.05)	(0.13)
Adjusted R^2	9%	1%	30%	15%	21%
Observations	178	178	178	178	178
Robustness Check (Placebo Event Year)	0.00	-0.06	0.10	-0.00	-0.01
	(1.08)	(0.08)	(0.11)	(0.06)	(0.10)
Adjusted R^2	13%	6%	21%	3%	32%
Observations	334	334	334	334	334
Robustness Check (No Controls)	2.53**	0.17**	0.44***	0.06**	0.16
	(1.13)	(0.09)	(0.10)	(0.03)	(0.12)
Adjusted R^2	7%	1%	21%	9%	10%
Observations	306	306	306	306	306

Table DIII Effect of Modernization on All Covenant Classes

This table shows the effects of the SEC WKSI rules on all classes of covenants. Columns (1) and (2) show the mean number of covenants by category for WKSI-eligible issuers while Columns (3) and (4) do so for WKSI-ineligible issuers. Column (5) show the difference-in-differences estimate. The exact specification is as in Eq.(1): $Y_{jit} = \alpha + \beta Eligible_i + \delta\left(Eligible \times Post\right)_{it} + \gamma X_{jit} + g\left(CE_{jit}, Tot_{jit}\right) + f_t + \varepsilon_{jit}$, where Y_{jit} is an outcome variable representing the inclusion of the listed covenant for issuance j by issuer i in quarter t. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively. This covenant classification was proposed by Smith and Warner (1979) to study the agency theory of covenants. The sample is limited to U.S. domiciled nonfinancial, non-utility bond issuers within $700 million of the eligibility thresholds. We consider only fixed rate corporate debentures or corporate medium term notes. We exclude Rule 144a, callable, Yankee, Canadian, and foreign currency bonds. Merger restrictions are covenants that restrict a consolidation or merger by the issuing firm. Indirect investment restrictions include restrictions on transactions with affiliates, fixed charge coverage, maintenance of minimum net worth, restrictions on redesignating subsidiaries, subsidiary fixed charge coverage ratio, and the after acquired property clause. Debt priority restrictions include restrictions on funded debt, indebtedness, liens, and senior debt issuance of parent and subsidiary firms. The stock issuance restriction includes restrictions on issuance of stock and preference stock of parent and subsidiary firms. Subordinate debt covenants include subordinate debt issuance, net earnings test, leverage test, subsidiary borrowings, subsidiary guarantees, subsidiary leverage test, and the negative pledge covenant. Default-related event covenants include cross default, cross acceleration, rating decline trigger put, and declining net worth covenant.

Classification of Covenants	WKSI-eligible		WKSI-ineligible		Difference-in-
Panel A: Investment restrictions	Pre	Post	Pre	Post	Differences
Total investment restrcitions	0.58	1.17	0.43	0.50	0.67***
Indirect investment restrictions	0.16	0.51	0.19	0.14	0.44***
Merger restrictions	0.40	0.64	0.18	0.31	0.21**
Secured	0.02	0.02	0.06	0.06	0.01
Stock sale restrictions	0.00	0.00	0.00	0.00	0.00
Direct investment restrictions	0.00	0.00	0.00	0.00	0.00
Panel B: Dividend restrictions					
Total dividend restrictions	0.18	0.38	0.26	0.21	0.33*
Dividend payment restrictions	0.09	0.19	0.14	0.10	0.18**
Restrictions on other payments	0.09	0.19	0.12	0.11	0.15*
Pancel C: Subsequent financing restrictions					
Total financing restrictions	1.76	2.96	0.98	1.32	1.39**
Restrictions on subordinate debt issuance	0.47	0.74	0.26	0.36	0.28*
Restrictions on sale and lease obligations	1.15	1.89	0.48	0.68	0.87***
Restrictions on debt priority	0.11	0.19	0.14	0.11	0.16*
Stock issuance restrictions	0.04	0.13	0.11	0.17	0.07
Pancel D: Event-related restrictions					
Total event restrictions	0.45	1.21	0.31	0.53	0.55***
Default related covenant	0.36	0.51	0.17	0.24	0.11
Change-of-control covenant	0.09	0.70	0.14	0.29	0.43***
All covenant restrictions	2.98	5.72	1.98	2.56	2.96***

Table DIV Covariate Balance for Matched Sample

This table provides descriptive statistics for all bond issuers eligible for the SEC modernization reform from 2002-2012. This set of issuers is used to find a matched sample of issuers with covariate balance. The mean and standard deviation (in parentheses) are reported separately for eligible issuers in Column (1) and (2) and issuances in Column (3) and (4). Column (1) and (3) report estimates for bonds that include the restrictive covenant (i.e., after the reform) and Column (2) and (4) report estimates for bonds that exclude the restrictive covenant (i.e., before the reform). Appendix A provides the definition of each of the covariates.

Descriptive Statistics for All Issuers

Issuer Characteristics	Including Covenant (1)	Excluding Covenant (2)
Market-to-book	1.369	1.351
	(0.709)	(1.335)
Profitability	0.035	-0.008
	(0.020)	(0.078)
ROE	0.108	0.060
	(0.201)	(0.277)
Investment / Assets	0.029	0.028
	(0.035)	(0.046)
Cash Growth	1.470	1.041
	(1.362)	(0.775)
Asset Growth	1.006	0.867
	(0.296)	(0.337)
Sales Growth	0.963	0.622
	(0.319)	(0.566)
Leverage	0.304	0.209
	(0.128)	(0.174)
Firm Size	9.385	6.125
	(0.944)	(2.846)
E-index	1.957	1.990
	(1.182)	(1.242)
Observations	1,756	1,014
Unique Issuers	376	284

Issuance Characteristics	Including Covenant (3)	Excluding Covenant (4)
Offering Amount ($mm)	563,945	705,957
	(395,151)	(556,206)
Maturity (Years)	11.06	11.22
	(8.43)	(9.87)
Offering Yield	5.10	4.84
	(1.83)	(1.73)
Rating at Issuance	8.30	6.83
	(1.53)	(2.27)
Gross Spread	6.41	5.50
	(2.35)	(2.62)
Number of Book-running Managers	3.11	2.93
	(1.50)	(1.53)
Time to Evaluate Contract	0.78	390.75
(Column (3) in hours, Column (4) in days)	(2.04)	(375.98)
Length of Contract (Pages)	65	56
	(23)	(31)
Similarity to S-3 Filing	0.736	0.837
	(0.174)	(0.174)
Covenant Quality	2.97	
	(1.11)	
Trigger Count	3.80	
	(1.27)	
Holding Company Clause	0.505	
	(0.500)	
Number of Ratings Needed to Downgrade	2.26	
	(0.55)	
Agency Must Verify Downgrade Cause	0.511	
	(0.50)	
Covenant Word Count	23.99	17.45
	(16.67)	(15.40)
Change in Covenant Word Count	10.86	5.78
	(13.86)	(15.71)

Table DV Initial Covenant Pricing for Matched Sample

The table shows the initial price effects from covenant inclusion for the matched sample, which compares concurrently trading bonds deemed statistically indistinguishable on all observable dimensions via a propensity score matching design but where one issuance has the restrictive covenant and the other does not. Test-statistics calculated using robust standard errors, clustered at the issuer level, are in parentheses. The specification for Column (1) is as in Eq.(2): $Y_{jik} = \alpha + \beta Cov_{jik} + \gamma X_{jik} + f_i + f_k + \varepsilon_{jik}$, where Y_{jik} is the dependent variable for issuance j by issuer i at offering period k and Cov_{jik} is an indicator for the change-of-control. Column (1) shows the average price effect while Column (2) - (4) examine heterogeneity in the price effect. The specification for Columns (2) - (4) include indicators for covenant saliency, if the covenant is the first by that issuer, and if the contract terms included at the time of issuance had changed significantly from the base prospectus (defined as below median textual similarity). In all specifications, we include issuer fixed effects, year fixed effects, as well as a vector of issuance controls X_{jik}, including credit rating, maturity, total covenants, and offering amount. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Avg. Pricing	Heterogeneity in Pricing		
Dependent variable = Treasury Less Yield at Offering	(1)	(2)	(3)	(4)
Covenant Inclusion	0.274	0.330	0.385	0.302
	(2.17)**	(1.94)*	(2.60)***	(1.68)*
Covenant is Salient Attribute		-0.416		
		(2.72)***		
First Issuance with Covenant			-0.312	
			(2.60)***	
Large Change from Base Prospectus				-0.374
				(2.18)**
Issuance & Issuance Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	69%	70%	70%	71%
Observations	754	754	754	754