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**THE ROLE OF ACCOUNTING-BASED FINANCIAL COVENANTS IN
PREVENTING SUBSTANTIVE DEFAULTS OF PUBLIC DEBT**

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by

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ABSTRACT

This paper hypothesizes that the presence of accounting-based financial (ABF) covenants in public debt will have an impact on a lender's ability to monitor and the borrower's response to enhanced monitoring, leading to a reduced likelihood of substantive defaults. Because of the relative ease of their monitoring, ABF covenants may serve to increase the frequency of technical defaults. It is hypothesized, however, that this same characteristic of ABF covenants would reduce the likelihood of substantive default since the presence of ABF covenants provides an incentive mechanism for managers of firms to take actions ahead of technical default to prevent acceleration and bankruptcy. The evidence presented is consistent with this hypothesis: the presence of ABF covenants increases the probability of renegotiation and thus reduces the probabilities of substantive default and credit rating downgrade in below investment grade debt. Further, this reduction is positively associated with the extent of the quality of the firm's information environment and financial reporting. Additional evidence provided shows that the presence of ABF covenants reduces initial offering yields. The findings of the paper have implications for public debt contract design and are therefore relevant to contracting parties in terms of i) enhancing the ability of lenders to assess risks and recover investment and ii) lowering the cost of debt and reducing the likelihood of bankruptcy for borrowers.

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*In a recent panel discussion on debt management, one senior executive at Bank of America proclaimed "the covenant-lite market is gone," further noting "lenders will be very focused on financial covenant defaults in the coming quarters."*¹

1. Introduction

Covenants are intended to protect the interests of lenders who wish to avoid substantive default and minimize losses and economic inefficiencies associated with such outcomes.² Within the covenant choice set, one such incentive mechanism lenders can impose on borrowers are accounting-based financial (ABF) covenants. Relative to boilerplate covenants (e.g., transactions with affiliates), ABF covenants arguably provide lenders with a more effective monitoring tool since determination of their violation is fairly straightforward. When faced with the possibility of breaching an easily verifiable ABF covenant, borrowers may take preventative actions (e.g., less risky decision making *ex-ante*) in order to maintain compliance. Alternatively, evidence from private debt suggests that breach of a covenant can trigger renegotiation which may force borrowers to make changes in real actions *ex-post*, such as reductions in issuance or investment activities (Chava and Roberts (2008), Roberts and Sufi (2009)). This study seeks to determine if the presence of covenants which rely on accounting inputs, i.e., ABF covenants, impacts the actions borrowers take to prevent adverse credit events in response to the increased observability and verifiability afforded to lenders by such covenants.

Although a robust literature exists on the role of covenants in private debt, the role ABF covenants play in public debt is less clear given the paucity of such covenants in this setting. In private debt, covenants serve as a trigger for renegotiating *upon violation* with a small class of well-informed lenders. In public debt, however, the option to renegotiate upon violation is typically unavailable. First, renegotiation of public debt is generally more difficult than private debt due to strict reliance on publicly available information and the need to establish consensus amongst a diffuse body of bondholders. Second, given how loosely covenants are set in public debt as a result of coordination problems, once a

¹ "Best Practices in Debt Management," February 2008.

² Substantive default is default due to bankruptcy or non-payment of principal or interest, which is in contrast to technical default, or default due to covenant violation.

covenant has been violated, public firms are likely to be too near bankruptcy to allow for successful renegotiation—which leads lenders to hasten acceleration in order to maximize recovery after covenant violation. Because of the threat of acceleration, borrowers will try to avoid technical default by, for example, making less risky operating or investing decisions or renegotiating ahead of default.

Rather than allow lenders to minimize losses in recovery *after* an event of default, the presence of an ABF covenant in public debt reduces the likelihood of default by providing borrowers with a credible incentive mechanism to take preventative actions which minimize their own losses associated with an event of default, and in doing so, avoid potential deadweight loss. Without such covenants, preventative actions are likely to occur on a less timely basis, which may translate into a higher frequency of "surprise" substantive defaults. To test the above conjectures, the paper analyzes the relation between ABF covenants and, alternately, renegotiation, substantive defaults, and credit rating downgrades, where managerial preemption is expected to be the first order effect. This analysis is supplemented with an investigation of offering yields to determine if lenders compensate borrowers for the additional constraint.

Next, as noted above, an observed negative relation between ABF covenants and substantive default can be consistent with borrowers either making less risky decisions or renegotiating in advance of default. If proactive renegotiation is the mechanism by which default is reduced, information is likely to play a role in the relation. Specifically, a less opaque information environment provides lenders with greater confidence in their assessment of future firm performance and more reliable financial reporting allows firms to more credibly convey a positive future outlook. This, in turn, helps lenders to better assess credit risks once renegotiation is on the table, leading to greater efficiency in the renegotiation process and to an incremental reduction in the likelihood of substantive default. Similar to above, this analysis is supplemented with an investigation of offering yields to determine if lenders compensate borrowers for higher quality information environments and/or financial reporting.

The empirical results show that the presence of ABF covenants increases the probability of renegotiation and reduces probabilities of substantive default and credit rating downgrade in below

investment grade debt, with the reduction positively associated with the extent of the quality of the firm's information environment and financial reporting. Supplemental tests show that the presence of ABF covenants reduces initial offering yields, which is consistent with firms' benefiting at contract inception through a reduced cost of debt by constraining themselves with ABF covenants. Given that self-selection is likely to be a concern insofar as borrowers select into constraining themselves with ABF covenants, results from employing a propensity score matching approach are shown to be robust, and in some cases strengthen, in terms of both magnitude of response and level of statistical significance. While the perceived benefits of ABF covenants are clear, the paucity of ABF covenant use in public debt suggests that, either because of managerial myopia, hubris, or simply anchoring solely on the incremental rate reduction, borrowers appear to favor the flexibility of being unconstrained by ABF covenants.

The paper contributes to the literature by shedding new light on the role ABF covenants play in public debt after contracts are in place. The findings of the paper are consistent with ABF covenants serving as an effective contractual device to assess compliance, which is of particular importance in public debt given lax trustee monitoring and a diffuse body of bondholders. In particular, in contrast to the existing debt covenant literature that focuses on the *determinants* of covenant inclusion, this paper provides evidence on the *consequences* ABF covenant inclusion has on contracting outcomes. The findings of the paper have implications for public debt contract design and are therefore relevant to contracting parties in terms of i) enhancing the ability of lenders to assess risks and recover investment and ii) lowering the cost of debt and reducing the likelihood of bankruptcy for borrowers.

2. Motivation

Some literature considers public debt covenants to be boilerplate (Smith and Warner (1979)), potentially calling into question their usefulness. In contrast, other literature shows that covenants are often tailor-made to meet the needs of borrowers (El-Gazzar and Pastena (1990); Beatty et al. (2002); Nash et al. (2003)). For example, Beatty et al. (2002) find that borrowers elect to pay roughly 80 basis points more in interest to preserve accounting flexibility (i.e., discretion under GAAP or frozen GAAP) in

order to help maintain covenant compliance. Further, some have cast doubt on the usefulness of covenants on the basis that they are frequently—at least for private loans—violated and waived (Dichev and Skinner (2002)), yet others have found that although covenants are waived, costly concessions are extracted from the firm (Chen and Wei (1993); Beneish and Press (1993)). For example, Beneish and Press (1993) estimate refinancing and restructuring costs (e.g., increased interest costs and asset divestitures, respectively) resulting from technical covenant violation to be up to two percent of a firm's market value of equity. More recent evidence corroborating the latter viewpoint can be found in Gao et al. (2009) who study incidents of bondholder activism following firms' untimely filing of financial reports. In addition to extracting fees to settle the violation, stock prices were found to suffer for firms whose bondholders enforced their contractual right to effect technical default. Despite the apparent conflict as to the usefulness of debt covenants, no study to date has explored the impact debt covenant choice has on preventing one of the most costly, and potentially catastrophic, events to the firm: issue defaults and the bellwether downgrade events that precede them.

Although the debt contracting literature is replete with examples of what determines covenant inclusion (Begley (1994); Bradley and Roberts (2004); Nash et al. (2003)), it is fairly silent on what impact inclusion has on outcomes. All else equal, adding another covenant should increase instances of default as lenders would have additional means to trigger default and firms would have additional restrictions to satisfy in order to prevent default (see, for example, Beneish and Press (1993), Roberts and Sufi (2009)). On the other hand, it could be the case that ABF covenants—insofar as they serve as an observable and verifiable early warning device—may encourage bringing contracting parties to the table more quickly when performance begins to deteriorate. Trustees and bondholders can declare an event of default and accelerate debt when an ABF covenant is violated.³ Since few firms, whether distressed or

³ Note the terminology "event of default" versus "default" as they imply distinct states of the world with non-trivial consequences. To the extent that Dichev and Skinner's (2002) calculations imply default, there is little legal teeth until an "event of default" *has been declared* by the trustee or bondholders. Their argument is consistent with technical defaults occurring but not being declared. Only once a default has been declared can legal action be taken, and at that, only after a cure period has passed.

healthy, have the cash on hand to pay off an entire bond issue on demand, and since cross-default and cross-acceleration provisions can be triggered when an issue goes into default, declaration of an event of default may in effect force a firm to seek bankruptcy protection. Thus, proactive renegotiation is in both the lender's and firm's best interest as a more flexible, less costly alternative to bankruptcy where proceedings can drag out for several years rather than several months.⁴

If contracting parties possessed perfect rationality and foresight such that the need for learning were obviated, then there would be little need to question why some parties agree to contract on ABF covenants and others do not. Bounded rationality and excessive contract costs resulting from attempts at contracting on every conceivable contingency may provide a partial explanation. Indeed, Huberman and Kahn (1988) take this view and argue that renegotiation serves as a substitute for contract complexity. Therefore, in some cases contracts are designed to prevent renegotiation, such as with performance pricing (Asquith et al. (2005)), while in other cases, such as ABF covenants, contracts are designed to prompt renegotiation contingent upon the realization of a state variable in order to re-assess credit risks (Roberts and Sufi (2009)). Yet another rationale is that for some firms the cost of adhering to an additional monitoring mechanism may outweigh the benefit of a rate reduction (Beatty et al. 2002), while for others the incremental rate reduction may be sufficient to offset the costs of increased monitoring. By relaxing these simplifying assumptions and allowing for a world with bounded rationality, finite contracting costs, and where learning and contingent renegotiation occurs, it may be instructive to investigate the outcomes when relatively homogenous firms differ contractually, and potentially, in outcomes.

Whereas much of the recent debt covenant literature focuses on private loans, this paper is one of few which examines covenants in the bond market, where the monitoring function and information

⁴ Gilson et al. (1990) provide evidence that restructurings by consent solicitations typically last two months whereas Chapter 11 bankruptcy can take roughly two years. They also provide evidence that announcement returns are more negative and direct costs are greater for bankruptcies than restructurings.

transmission mechanism are significantly different from that of the private loan market.⁵ In the private loan market the lender is much closer to the firm in terms of its privileged status in obtaining non-public information, while the indenture trustee of the bond market is relegated to relying on information contained only within public information sources. Furthermore, the private lender typically enjoys the use of a greater number of covenants, all typically possessing less slack. As noted previously, covenants in private debt are frequently violated and renegotiated upon violation—consistent with there being less costs, as well as consequences, associated with both—which provides little incentive to renegotiate prior to violation. In the case of public debt, the firm is motivated to renegotiate ahead of covenant violation since violation serves not as a mere trip-wire, as is the case with private debt, but rather as a signal of a more dire financial situation. As a result, the costs and consequences of renegotiation post-violation are greater with public debt since the firm is closer to bankruptcy and bargaining rights have shifted to the lender. Stated differently, previous literature on private debt has generally shown that ABF covenants have provided a trigger upon which to re-assess the lending relationship *at* violation, whereas this paper argues that ABF covenants in public debt serve as a renegotiation mechanism *prior* to violation. Finally, unlike public debt, the private lender is relatively devoid of moral hazard and free-rider problems. As Amihud et al. (2000) succinctly state, the indenture trustee "...has little responsibility to monitor compliance with bond covenants, no authority to renegotiate the terms of an indenture, and limited ability to choose what action to take following breach of a covenant..." (i.e., with respect to waivers and amendments). For these reasons, the bond market is an area inherent with monitoring problems and, given the shortage of literature in this area, warrants further academic research.

⁵ See, for example, Reisel (2007), Billett et al. (2007), Begley and Chamberlain (2008), Chava et al. (2009), Gao et al. (2009), and Nikolaev (2010).

3. Institutional Background

A recent survey of more than four hundred companies by The Financial Executives Consulting Group (FECG) found that nearly a quarter of companies surveyed did not have an internal review process in place to proactively manage financial covenants.⁶ Furthermore, nearly forty percent of these companies did not forecast financial covenant compliance nor review non-financial covenants, the latter being consistent with firms expending greater levels of effort to prevent financial covenant violations due to the costs and consequences of such violations. For borrowers without a financial covenant review process, upon covenant violation, the survey found that renegotiation took up to three months to complete, at a cost of roughly 10-25 basis points. However, firms with a formal review process were able to communicate early and often with lenders, making renegotiation less costly and less time consuming, according to the survey. If firms contracting on ABF covenants renegotiate on a more timely basis, such covenants may help to preempt substantive defaults through modification of contract terms. Furthermore, if borrowers and lenders are better able to *ex-ante* grasp which covenants effectively serve as early warning signals, then both parties may benefit through a continued business relationship by way of proactive renegotiation rather than resort to bankruptcy.⁷

3.1 The Process of Public Debt Renegotiation: The Consent Solicitation

Contract terms modification can take many forms, though all fall under the umbrella of what is known as a consent solicitation.⁸ In a consent solicitation, the firm hires a third-party agent to notify bondholders of and seek their consent on proposed changes to the indenture and possibly of a proposed restructuring. Bondholders agree to give their consent and forego remedies in exchange for a consent payment. In the most benign of cases, firms may negotiate a standstill agreement, or forbearance on

⁶ "Why a Formal Loan Agreement Covenant Review Process Could Help CFOs Avoid Default," December 2007.

⁷ While this paper does not preclude the possibility that accounting choice or real activities can be used to manipulate the metrics covenants rely on, given the extensive extant literature (e.g., Healy and Palepu (1990), Sweeney (1994), Roychowdhury (2006) and so on), I instead emphasize a relatively unexplored aspect of contracting dynamics in the public debt covenant literature: renegotiation by way of consent solicitation, which can arguably be accomplished with less lead time and at lower cost.

⁸ See Appendix A for recent examples of consent solicitation announcements.

principal and interest payments, under the auspice that the firm's operating environment is only temporarily impaired and will soon improve. Another strategy used is to modify the non-payment terms of the existing indenture to allow the firm greater flexibility to meet payment needs, such as allowing for a covenant amendment to facilitate increased borrowing. In a more dire situation, the firm may combine a consent solicitation with an exchange offer where the original indenture's terms are modified and bondholders agree to exchange old debt for new where the new debt's payment terms (e.g., increased rate and maturity, lower principal and interest) are changed. While consent solicitations are widely successful according to discussions with bankruptcy and trust practitioners as well as academics (Gilson et al. (1990); Kahan and Tuckman (1993)), a firm's ability to successfully undergo the process is an increasing function of the amount of time between problem detection and non-payment, as bondholders are more likely to declare default and accelerate debt once a payment has been missed.⁹ In such cases of non-payment, the less expensive and less time consuming option of negotiating outside of bankruptcy is typically off of the table as lenders' expected recovery amounts are higher via the courts at this stage.

3.2 Features of Covenant Compliance

Public borrowers attest to covenant compliance through certificates of compliance and SEC filings. Extant accounting and finance literature implicitly assumes that indenture trustees, who are intended to act in the interests of bondholders, are diligent and conscientious monitors who can readily detect borrower non-compliance, an assumption which an extensive body of law literature calls into question.¹⁰ In actuality, trustees need only rely on the firm's certificate of compliance at minimum and

⁹ Gârleanu and Zwiebel (2009) note the more time that passes where the lender is uninformed places the lender at an informational disadvantage, which implies a lower likelihood of renegotiation and higher likelihood of acceleration.

¹⁰ Despite the legal deterrents to mis-reporting (viz., The Federal Bank Fraud Statute, 18 U.S.C. § 1344), such deterrents hinge on the probability of fraud detection, and most importantly, establishing scienter. Other deterrents include reputational concerns as they relate to future borrowing possibilities. Although reputation may be an effective self-policing mechanism to facilitate representationally faithful reporting, firms concerned with future borrowing aren't the most costly to the lender—firms that mis-report due to severe financial difficulties are. While workouts through bankruptcy may be the eventual outcome for such lenders, the sooner the lender can detect mis-reporting, the sooner it can prevent the firm from undertaking further value-destroying activities, increasing the likelihood of a remedy and thus the amount of restitution.

supporting documentation as reported in SEC filings at maximum.¹¹ Moreover, the trustee has no authority, unless specified otherwise by the indenture, to access non-public information, as is commonly the case with private loans. As long as the trustee acts in good faith, the trustee may take the information provided at face value and, barring gross negligence in the monitoring process, is insulated from any liability stemming from misrepresentations made in the reporting process. In effect, the role of the trustee is passive. Combine the trustee's passivity with the free riding of individual bondholders and we arrive at a breakdown in the compliance monitoring process. Given differences across covenants in terms of the trustee's ability to monitor based on minimal information search costs, and given differences in reported numbers based on the discretion afforded to borrowers in their accounting system, the potential for early detection of problems within the firm and prevention of adverse outcomes is likely decreasing in both of these factors. In other words, early detection and prevention are less likely the greater the difficulty in determining covenant compliance and the lower the quality of the firm's information environment and financial reporting.

4. Development of Hypotheses

Triantis and Daniels (1995) point out that the intent of a covenant is to serve as an early detection mechanism meant to alert contracting parties well in advance of severe declines in firm financial performance such that renegotiation can occur—for if the firm is well beyond the point where a mutually beneficial renegotiation of contract terms can take place, bankruptcy may be the only option. Accordingly, it is first hypothesized that ABF covenants, relative to other covenants, are more likely able to serve such an early warning and preemption role, especially since moral hazard exists in the covenant compliance monitoring process. It is then hypothesized that the quality of the firm's information environment and financial reporting may help to facilitate effective monitoring by improving the ability

¹¹ Section 315(a)(2) of the Trust Indenture Reform Act (TIRA) of 1990 states "The indenture trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, in the absence of bad faith on the part of such trustee, upon certificates or opinions conforming to the requirements of the indenture; but the indenture trustee shall examine the evidence furnished to it pursuant to Section 314 to determine whether or not such evidence conforms to the requirements of the indenture."

of lenders to detect possible violations, which in turn increases the incentive for borrowers to prevent defaults and downgrades through preemptive means.

Covenants contained within a bond indenture are categorized into the following four groups: accounting-based financial (ABF) covenants, financing covenants, legal covenants, and restrictive covenants.¹² The ABF covenants are maintenance covenants and are based on inputs from the financial statements.¹³ The financing covenants are those restricting further debt or equity issuances and are designed to prevent dilution. The legal covenants are those focusing on a variety of contractual provisions, from defeasance and control to voting and rating provisions. The restrictive covenants are those intended to prevent value from leaving the firm, such as restrictions on liens or sale leasebacks.

Covenants are designed to ensure the overall viability of the firm to repay its obligations, though these ends are achieved by differing means: the ABF covenants emphasize the maintenance of solvency and earnings, the financing covenants relate to potential dilution, the restrictive covenants focus on value disgorgement, and the legal covenants pertain primarily to control. The level of expertise, efforts and search costs required by the trustee of public debt in determining covenant compliance varies by the type of covenant. ABF covenants are arguably the easiest type of covenants to monitor since determination of their violation requires only a straightforward reference to readily available financial statement information and certificate of compliance by the trustee (henceforth, 'traceability'). In contrast, determining compliance with non-ABF covenants is relatively less straightforward since the information

¹² See Appendix B for a representative list of the Mergent FISD covenants along with their descriptions. Smith and Warner (1979) postulate four kinds of covenant categories (dividend, financing, production/investment, and bonding covenants) and argue that the monitoring costs involved with the former two are less than that of the latter two. The bond covenants in the Mergent FISD database, however, do not necessarily fall along these lines and therefore do not allow for this particular categorization.

¹³ To be more concrete with respect to the primary covenants of interest, in the Mergent FISD database, there are three covenant types within the category of accounting-based financial covenants: fixed charge, net worth, and leverage covenants. A fixed charge covenant is an earnings coverage type of covenant where a sufficient ratio of earnings to fixed charges (i.e., principal payments, long-term rent or lease payments) must be maintained. Net worth covenants are those requiring a minimum level of assets less liabilities. Leverage covenants specify a maximum amount of debt relative to EBITDA. Incurrence covenants, e.g., "net earnings issuance test," are excluded from the categorization.

transmission mechanism is neither as direct nor public (e.g., transactions with affiliates, asset sales, liens, etc.). Indeed, inspecting actual covenant contracting language from filing statements (see Appendix C) reveals the greater contracting specificity with ABF covenants and greater contracting boilerplate with the non-ABF covenants. Discussions with bankruptcy and contract lawyers support this categorization.¹⁴

The easy traceability of possible ABF covenant default by the trustee would lead the trustee to timely action and a rational borrower to preempt the default through preventative actions (such as making less risky operating or investing decisions) or possibly initiate a renegotiation via a consent solicitation, where the latter can arguably be accomplished with less lead time and at lower cost. If borrowers take preventative actions or undergo renegotiation, it may seem obvious that the presence of ABF covenants leads to a lower likelihood of technical default. However, all else equal, more covenants “box in” the borrower with more constraints, and they are therefore more likely—relative to the case of no covenants—to technically default. Further, if, as some literature has suggested, covenants are truly boilerplate, then there may be no relation between ABF covenants and default. While a negative relation between the presence of ABF covenants and technical default is seemingly straightforward, it is less so with respect to substantive default since, if it were, all borrowers would include ABF covenants in their indentures. Given how loosely covenants are set in public debt, by the time a firm violates an ABF covenant, it is likely nearing bankruptcy. In such circumstances, upon violation, renegotiation is unlikely to occur successfully, which would lead bondholders to exert their right to accelerate. By accelerating, firms are likely to seek bankruptcy protection since few firms are able to pay off an entire issue on demand, even when performance is sound.¹⁵ Faced with the threat of acceleration and possible bankruptcy, a firm aware

¹⁴ One legal expert suggests that "In drafting a loan, the lender will insist on 'verifiable' covenants—that is, covenants which relate to financial conditions of the borrower that the lender can verify based on information the borrower agrees to provide to the lender." She adds that "*Sometimes covenants are non-verifiable by the lender* and these are intrinsically less valuable as control devices. For example, a covenant that the borrower will not default on another loan to another lender, or will not incur indebtedness from another lender (of a certain size and type)—*a lender can't really verify the borrower's compliance with these by just bargaining for and reviewing routinely generated financial information.*" (Italics added for emphasis.)

¹⁵ According to Hahn (2010), "Acceleration facilitates the commencement of the debtor's bankruptcy and thus curtails any prospective losses to the creditors resulting from the borrower's continuous moral hazard."

of its condition and options will prefer to renegotiate ahead of violation.^{16, 17} Therefore, the enhanced monitoring and resulting incentive mechanism provided by the inclusion of ABF covenants may potentially serve to reduce substantive defaults or credit rating downgrades. The preceding discussion leads directly to the primary set of hypotheses tested (stated in the alternative):

H1: ABF covenant inclusion increases the likelihood of undergoing a consent solicitation.

H2a: Increases in ABF covenant intensity reduce the likelihood of substantive bond default (credit rating downgrade).

From an alternative perspective, one could argue that, if the use of ABF covenants reduces incidences of default, it could be the case that the complete absence of covenants could also reduce defaults. Here, the difference between substantive and technical default becomes important as, clearly, fewer covenants would be positively associated with fewer instances of technical default. However, fewer covenants would not necessarily be positively associated with fewer instances of substantive default. In the complete absence of covenants to technically violate, while the firm could undergo renegotiation of payment terms if it foresees a substantive default looming, the firm may instead delay renegotiation if it believes conditions will improve, especially since the firm typically must give up cash and rate concessions, as well as possibly constrain itself further through additional covenants, in the renegotiation process.¹⁸ However, if the firm does delay renegotiation and conditions do not improve, lenders may reject renegotiation, allowing the firm to default so that acceleration may take place. Although ABF

¹⁶ For example, FairPoint Communications *anticipated* violating an ABF covenant and preempted the default through an exchange offer in order to "eliminate or amend substantially all of the restrictive covenants and modify a number of the events of default" as the company was concerned that lenders would accelerate upon technical default.

¹⁷ There are, however, several reasons why renegotiation may not occur or fail. If the borrower is uninformed (see Footnotes 6 and 19), forms an expectation that the trustee is passive or uninformed, or wishes to ride out poor performance, renegotiation may not be initiated. If the borrower attempts renegotiation at a point in time where performance has severely declined, the lender may reject renegotiation and instead wait for a shift in control rights in order to extract greater concessions. Lenders may also reject renegotiation if investment recovery values in bankruptcy are greater than allowing the firm to continue as a going concern.

¹⁸ Other reasons to delay renegotiation include holdout problems and, to a lesser extent, renegotiation costs. Holdout problems, while more severe in a public setting, can be dealt with through the use of exit consents, which are used in the majority of exchange offers (Daniels and Ramirez (2007)).

covenants do not directly serve to prevent defaults, their existence does obligate contracting parties to come to the table well in advance of non-payment since violation provides for the threat of acceleration. The early monitoring and detection nature of ABF covenants therefore allows parties to not only re-assess risks and rewards, but possibly grant the firm flexibility such that the probability of substantive default is reduced.

To the extent that the easy traceability of ABF covenants is valued by investors *ex-ante*, it is expected that issuers may be compensated through lower initial offering yields:

H2b: Increases in ABF covenant intensity lower the initial bond offering yield.

The above positive role of ABF covenants hinges on low information asymmetry between the firm and the trustee. As such, the extent of ABF covenants' traceability may further depend upon the trustee's ability to assess firm performance—an assessment which may rely on the quality of the firm's information environment generally and its financial reporting specifically.

From a theoretical perspective, Berlin and Loeys (1988) argue that the more precise or informative the signal or indicator of performance, the more beneficial strict contracts will be. The rationale falls along the lines of there being less opportunity for true defaults going undetected and false defaults being triggered the greater is signal precision. In a similar vein, Berlin and Mester (1992) argue that no separating equilibrium will occur when lenders are uninformed. As a result, renegotiation occurs only when the lender is informed and able to separate out good credit risk firms from bad. From a practitioner perspective, according to a prominent bankruptcy attorney, representationally faithful financial information is key to sound lending relationships given lax monitoring and today's increasingly complex business environment where information sometimes does not flow as freely.¹⁹ Therefore, the

¹⁹ According to the experience of this attorney, "...lenders are increasingly relationship people with not that much experience or knowledge about finance or the important operating metrics of each business they are responsible for. *The entire system relies on honest borrowers.*" He further added that, in the past, "...a good lender could tell if the business was having problems from just looking at accounts receivable agings, sales, days of A/P outstanding and talking to the CFO. *Serious signs of trouble just do not filter through an accounting system any longer unless volunteered by the borrower itself.*" He related a recent bankruptcy example of "...Collins & Aikman, an extremely

less opaque the system which generates the inputs of ABF covenants, the greater the ability trustees and bondholders have in detecting potential problems and thus the greater the incentive managers have to take preventative actions or engage in proactive renegotiation, which would lead to a reduction in substantive defaults and credit rating downgrades, and to Hypothesis 3 (stated in alternate form):

***H3a:** The decrease in the likelihood of substantive bond default (credit rating downgrade) as ABF covenant intensity increases is more (less) pronounced for firms with higher (lower) information environment quality.*

***H3b:** The decrease in initial bond offering yield as ABF covenant intensity increases is more (less) pronounced for firms with higher (lower) information environment quality.*

The quality of a firm's information environment is indicative of possible information asymmetries between the firm and the firm's financial information users and differential interpretations and beliefs of those users. The easy traceability of ABF covenants may also provide incentives for management to manipulate or mis-represent accounting numbers. With this in mind, if the numbers reported by the firm are deemed to be more reliable, lenders will be better able to separate out credit risks as they assess their option to renegotiate. Therefore, the reliability of the financial information upon which ABF covenants are based is further examined. An attempt to more directly gauge the source of potential information asymmetries is made by assessing the financial reporting quality of the firm, which leads to Hypothesis 4 (stated in alternate form):

***H4a:** The decrease in the likelihood of substantive bond default (credit rating downgrade) as ABF covenant intensity increases is more (less) pronounced for firms with higher (lower) quality financial reporting.*

large automotive supplier with about \$750 million of senior secured debt, the bankruptcy caught everyone, including a Board of Directors that was full of smart and sophisticated business people, totally by surprise. Looking at the company in hindsight, it was incredible that no one saw the disaster coming. Even with a very sophisticated bond trustee - JPM - no one foresaw the \$3 billion in revenue company literally running out of money." (Italics added for emphasis.)

H4b: *The decrease in initial bond offering yield as ABF covenant intensity increases is more (less) pronounced for firms with higher (lower) quality financial reporting.*

5. Methodology

The following regression is estimated to assess the relation between ABF covenants and, alternately, probability of consent solicitation (logit regression), probability of substantive default (logit regression), probability of credit rating downgrade (logit regression), and bond offering yield (OLS).

$$Dependent = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \gamma_v \cdot Controls_i + \xi \quad (\text{Eq. 1})$$

where α is the intercept, ξ is the error term, and

$$Controls_i = f(Size, MB, Leverage, Maturity, Amount, Financial, Utility, Senior, Convertible, Secured, Spread).$$

The dependent variable, simply called *Dependent* for notational convenience, is a vector which comprises one of four variables contingent upon the hypothesis being tested: an indicator variable set equal to one when a consent solicitation occurs (H1), an indicator variable set equal to one when a substantive default or first credit rating downgrade event occurs (H2a – H4a), or the initial offering yield (H2b – H4b). Covenant intensity is defined as the number of covenants contained within an issue (see, for example, Bradley and Roberts (2004), Nikolaev (2010)) and, as discussed in the preceding section, grouped into accounting-based financial (*ABF*), financing (*Fin*), legal (*Legal*), and restrictive (*Restr*) covenants. To be consistent with H1, a positive coefficient is predicted for β_1 when consent solicitations are the dependent variable of interest and, consistent with H2, a negative coefficient is predicted on β_1 in all other cases.

Numerous factors have been proposed in the debt and bankruptcy literatures that may affect the relation between ABF covenants and the dependent variables of interest.²⁰ As such, these factors have to

²⁰ Begley (1994) shows that covenant inclusion varies greatly between senior and subordinated debt and Kahan and Yermack (1998) show that convertible bonds rarely contain restrictive covenants. Nash et al. (2003) find that firms with high growth opportunities tend to issue bonds which are less likely to restrict dividends or additional debt

be controlled for in the tests of the hypotheses. They are: *Size* (total assets), *MB* (market value of equity / total assets), *Leverage* (long term debt / total assets), *Maturity* (number of days between bond inception and maturity), *Amount* (amount of offering), *Financial* (indicator if the firm is in the financial industry, SIC codes: 60-62, 67), *Utility* (indicator if the firm is in the utilities industry, SIC code: 49), *Senior* (indicator if the bond is senior rather than subordinated), *Convertible* (indicator if the bond is convertible), *Secured* (indicator if the bond is secured) and *Spread* (Moody's Baa – Aaa bond interest rate). *Spread* is included to gauge the economy-wide perception of bond risk insofar as credit terms may be more lenient when spreads narrow. Continuous variables have been winsorized at the 1% level.

In testing H3, regression (1) is augmented by the addition of a comprehensive set of variables designed to capture the information environment (*IE*) of the firm from the perspective of several different groups of information users and processors: bond analysts, stock market participants, and equity analysts. The information environment (*IE*) variables are ratings agreement (*Agreement*) following Morgan (2002), return volatility (*RetVol*), and dispersion in analyst forecasts (*Dispersion*) where non-split bond ratings imply a more transparent information environment and more volatile market returns or less precise analysts imply a more opaque information environment. *Agreement* is measured at contract inception using all available ratings, *RetVol* the year prior to contract inception using daily returns, and *Dispersion* using all available earnings forecasts made within and for the year prior to contract inception.

$$Dependent = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \lambda_1 \cdot IE + \kappa_1 \cdot ABF * IE + \gamma_v \cdot Controls_i + \xi \quad (\text{Eq. 2})$$

Consistent with H3, I expect κ_1 , the coefficient on the interaction between the information environment variables and ABF covenants, to be negative for *Agreement* (i.e., greater transparency) and positive for

issuances. Bradley and Roberts (2004) show borrower size, growth opportunities, and leverage to all be determinants of covenant inclusion.

RetVol and *Dispersion* (i.e., greater opacity).²¹ These tests will provide evidence on the extent to which covenant traceability and the information environment of the firm can help to minimize the probabilities of substantive default or credit rating downgrade and reduce bond offering yields.

In testing H4, regression (1) is augmented by the addition of variables designed to capture reporting quality (*RQ*). The reporting quality (*RQ*) variables are Audit Integrity's accounting and governance score (*AGS*) and accounting score (*AS*) where larger values imply a more reliable financial reporting system insofar as they capture "...the risk that financial results are misrepresented in public disclosures."²² Price et al. (2010) find that Audit Integrity's derived scores are better detectors and predictors of accounting irregularities (e.g., SEC enforcement actions, accounting restatements, and shareholder lawsuits) as compared to traditional reporting quality measures found in the accounting literature, such as those based on accruals. Audit Integrity derives its scores from a proprietary model trained and tested to predict the likelihood of financial misreporting based on extreme factors (e.g., abnormally high work in progress, deferred income taxes, or pension underfunding) found to be associated with successful SEC lawsuits brought against firms for fraudulent reporting. *AGS* and *AS* are measured by taking the average score in the four quarters prior to contract inception.

$$Dependent = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \lambda_1 \cdot RQ + \kappa_1 \cdot ABF * RQ + \gamma_v \cdot Controls_i + \xi \quad (\mathbf{Eq. 3})$$

Consistent with H4, I expect κ_1 , the coefficient on the interaction between the upper quintile of the reporting quality variables and ABF covenants, to be negative for both *AGS* and *AS*. These tests will provide evidence on the extent to which covenant traceability and reporting quality can help to minimize the probabilities of substantive default or credit rating downgrade and reduce bond offering yields.

²¹ Interaction terms in logit models cannot be interpreted as is done in their OLS counterparts. Therefore, the marginal effect of the interaction is properly calculated and interpreted as suggested in Ai and Norton (2003) by use of full cross-partial derivatives.

²² The Audit Integrity AGR Model: Measuring Accounting and Governance Risk in Public Corporations, 2005.

Testing will emphasize the below investment grade sub-sample since covenants are likely to play a larger monitoring role in below investment grade debt as well as to mitigate endogeneity concerns that primarily high credit quality firms contract upon ABF covenants. To address some of this concern up front, the overall ABF covenant mean for below investment grade issues is 0.23 compared to 0.05 for investment grade issues. Further, to formally address the possibility of self-selection, after discussing the main results, a matched pair design—matching ABF covenant issues to non-ABF covenant issues via propensity scores—is employed to determine if outcomes differ across types prior to concluding.

6. Sample and Descriptive Statistics

Bond data are from the Mergent Fixed Income Securities Database (FISD) which provides data on covenants, historical bond ratings, and historical records of default. The Mergent FISD sample begins in 1994 and extends through to 2008. Firm data are from Compustat and market data are from CRSP. The credit spread (yield difference between Moody's Baa and Aaa corporate bonds) is from the Federal Reserve Economic Database (FRED). Firm data on reporting quality are from Audit Integrity and data on consent solicitations are from Morningstar Document Research (MDR).²³ After merging CRSP and Compustat data with Mergent FISD data, the initial sample contains 10,754 issues representing 1,896 unique firms.

In Table 1, Panel A the covenants appearing with the greatest frequency are legal covenants with a mean of 3.16 covenants per indenture. On the other end of the spectrum, ABF covenants are represented in indentures the least, with a mean of 0.10, which implies that most indentures do not have ABF covenants. Turning to the outcome variables, only 3% of issues experience substantive defaults while over half have experience a credit rating downgrade event. Most issues are investment grade (70%) and senior (84%) though few are secured (5%) or convertible (12%). The average firm in the sample has a leverage ratio of 0.26 (median of 0.25) and a market-to-book ratio of 0.75 (median of 0.51). Panel B of

²³ I would like to thank Valeri Nikolaev for the suggestion to use MDR, which is employed to extract consent solicitation events from SEC filings where issuers sought indenture or covenant waivers or amendments. While this approach does not facilitate issue level tests, it does allow for a test to determine if firms whose issues contain ABF covenants are more or less likely to undergo a consent solicitation.

Table 1 compares the values found in Panel A across ABF covenant inclusion categories. Issues with ABF covenants are more likely to contain covenants of all types, have higher rates of default, and are less likely to be investment grade. Further, issue amounts and maturities are lower. Panel C of Table 1 compares the values found in Panel A across investment grade categories, where investment grade is defined as BBB and above. Below investment grade issues are more likely to contain covenants of all types, have higher rates of defaults, and lower rates of downgrade. As with Panel B, issue amounts and maturities are lower.

Univariate correlations in Table 2 reveal that ABF covenants are positively correlated with substantive defaults, which is consistent with conventional wisdom (insofar as increased reliance on ABF covenants gives lenders more power to declare defaults and borrowers more constraints to satisfy) though, once credit rating is taken into consideration, inconsistent with Hypothesis 2a above. The analogous correlation with credit rating downgrades is negative though statistically insignificant. ABF covenants are negatively correlated with investment grade, implying that these covenants are typically contained in below investment grade debt.

Table 3, Panel A shows that the vast majority of issues do not contain ABF covenants. Over 90% of the indentures (9,781) in the sample contain no ABF covenants while roughly only 8% (864) carry exactly one ABF covenant. Panel B of Table 3 shows that the most frequent covenant package combination is financing, legal, and restrictive (55%). The second most frequent combination is comprised of legal and restrictive covenants (28%). This is consistent with indentures containing a preponderance of boilerplate legal and restrictive covenants. The next most frequent case is the presence of all covenant types (8%). This last statistic, which is combination sixteen (c16) in the table, jumps to 19% for below investment grade issues and declines to 3% for investment grade issues (untabulated).

In Table 4, Panel A the use of ABF covenants declined during the early 2000's and increased later in the decade most likely in response to increased riskiness in the lending market. Overall market conditions may only provide a partial explanation for this trend, as it may also be driven by declining

credit quality of the issuers themselves. While Panel A of Table 4 shows that the *average number* of ABF covenants increased in the late 2000's, Panel B reveals that their use (in terms of existence, not means) actually declined, implying that when ABF covenants are deemed necessary (e.g., for below investment grade issuers), more than one may be included in the indenture. In fact, untabulated calculations show that only 16 investment grade issues contain two or more ABF covenants while 93 below investment grade issues contain two or more. Furthermore, there is a much clearer time trend in ABF covenants (see Figures 1 and 2) for below investment grade issues where, contrary to Begley and Freedman (2004), such issuers are using ABF covenants more in recent years. Again corroborating the notion that legal covenants, and to a slightly lesser extent restrictive covenants, are boilerplate, Panel B of Table 4 shows that at minimum 97-100% (83-97%) of indentures contain at least one legal (restrictive) covenant.

Table 5 presents the outcome variables by event year. The sample contains 308 substantive default events and 5,585 credit rating downgrade events overall. The earlier part of the sample contains very few default and downgrade events as issues do not begin to enter the sample until 1994. Issues are prevented from entering the sample after 2007 to allow for some time to pass between issuance activity and outcome events. For this reason, Table 5 shows outcome events in 2008 while Table 4 shows no issuance activity in 2008 by sample design. Interestingly, while the investment grade sub-sample comprises 70% of the issues, it only contains 25% (n=79) of substantive default events.

The last set of descriptive results, on the determinants of ABF covenant inclusion, can be found in Table 6. While the public debt literature on covenant determinants is less expansive than what can be found in the private setting, there are nonetheless a few recent public debt studies which do examine debt covenant determinants to varying degrees. For example, some studies cover a limited set of covenants, such as covenants restricting dividends or additional debt (Begley and Chamberlain (2008), Nash et al. (2003)) while others cover covenant determinants more broadly by use of an index (Billett et al. (2007)). In light of the vast literature on private debt covenant determinants yet, especially as related to ABF

covenants, sparse literature on public debt covenant determinants, the determinants of ABF covenants are presented in Table 6 as a descriptive exercise.²⁴ With the exception of restrictive covenants for investment grade issues, issues with ABF covenants are more likely to contain covenants of all types. Further, the higher the credit quality of the issue, the lower the likelihood of ABF covenant inclusion, which is consistent with greater monitoring and control restrictions being placed on riskier issues. Issues of larger firms, which are typically more credit-worthy, are less likely to contain ABF covenants and firms with more growth opportunities or leverage are more likely to contain ABF covenants.

7. Results

7.1 Primary Results

Table 7 provides logistic regression results on the impact of ABF covenant inclusion on the likelihood of consent solicitation at the issuer level for the full sample as well as the below investment grade sub-sample. For both the full sample and the below investment grade sub-sample, the results are statistically significant and in the predicted direction. While the coefficient on *ABF Covenant* is 0.84 in the full sample and 0.73 in the below investment grade sub-sample, these coefficients are not readily interpretable. Calculation of marginal effects, holding all other variables in the model at their means, reveals that firms whose issues contain ABF covenants are 14.2% and 13.3%, respectively, more likely to undergo a consent solicitation, which is consistent with Hypothesis 1.

Table 8 provides logistic and OLS regression results on the impact of ABF covenant intensity on credit risk and initial offering yields. While the results are significant and in the predicted direction for the full sample in Panel A, as noted previously, the remaining analysis will focus on the below investment grade sub-sample, where covenants play a greater role in monitoring credit risk as well as to partially address endogeneity concerns that primarily high credit quality firms contract upon ABF covenants.

²⁴ Although a covenant classification used by Chava et al. (2009)—indirect investment restrictions—is close to how the current study classifies ABF covenants, their grouping additionally covers covenants which do not reflect the same financial statement information captured and conveyed by ABF covenants (e.g., transactions with affiliates, subsidiary redesignation, etc.). Further, Chava et al., in examining how managerial entrenchment impacts covenant choice, do not investigate the determinants of indirect investment restrictions, as they are a subset of a larger, more broad group of investment restrictions.

Turning to the below investment grade sub-sample in Panel B of Table 8, the coefficient on *ABF Covenant* in the substantive default regression is negative and significant at the 5% level, which is the opposite sign of its univariate relation. The coefficient on *ABF Covenant* in the logistic regression is -0.27. Interpretation of the coefficient by way of marginal effects reveals that the inclusion of an additional ABF covenant reduces the probability of substantive default by 1.1%. The coefficient on *ABF Covenant* for the credit rating downgrade regression is negative and significant at the 1% level. Calculation of marginal effects reveals that the inclusion of an additional ABF covenant decreases credit rating downgrades by 6%. These results are consistent with Hypothesis 2a insofar as ABF covenants increase observability, verifiability, and control such that firms proactively undertake actions which foster reductions in substantive bond defaults and credit rating downgrades. The last column of Table 8 provides evidence on the trade-off between ABF covenants and initial offering yields. The coefficient on *ABF Covenant* in this regression is negative and significant at the 10% level, which is consistent with H2b insofar as the enhanced monitoring and control device provided to trustees by the presence of ABF covenants affords issuers lower bond offering yields by nearly 35 basis points.²⁵

Table 9 provides logistic and OLS regression results on the interaction of ABF covenant intensity and the information environment of the firm for the below investment grade sub-sample across the dependent variables of interest. Only the variables relevant to the hypotheses under consideration are tabulated for expositional economy. Focusing on the substantive default regressions across the proxies for the information environment of the firm, all interaction terms are significant and in the predicted direction. The coefficient on the interaction between ABF covenants and bond rating agreement (*ABF*Agreement*) is negative (marginal effect = 2.2%) and significant at the 10% level. The coefficient on the interaction between ABF covenants and return volatility (*ABF*RetVol*) is positive (marginal effect = 0.59%) and significant at the 10% level. The coefficient on the interaction between ABF covenants and

²⁵ While slightly disconcerting that some non-ABF covenants load positively in Table 8, statistical significance disappears for most all non-ABF covenants in the robust (propensity score matched) analysis, with the exception of restrictive covenants. This finding, however, is not too surprising insofar as restrictive covenants, such as those preventing asset sales, could hinder issuers' liquidity for debt service precisely when it is needed most.

analyst dispersion ($ABF*Dispersion$) is positive (marginal effect = 0.26%) and significant at the 1% level. Similar results are found in the credit rating downgrade regressions. The coefficient on $ABF*Agreement$ is negative (marginal effect = 6.2%) and significant at the 5% level, $ABF*RetVol$ is positive (marginal effect = 1.7%) and significant at the 10% level, and $ABF*Dispersion$ is positive (marginal effect = 0.58%) and significant at the 5% level. Collectively, these results are consistent with H3a insofar as the decreasing probability of substantive bond default and credit rating downgrade in ABF covenant intensity is more negative (less negative) for firms which exhibit a more transparent (opaque) information environment. Untabulated analysis of main effects reveals that *ABF Covenant* is negative and statistically significant across all interaction specifications.

The last column of Table 9 provides evidence on the trade-off between ABF covenants and initial offering yields in conjunction with the information environment of the firm. With the exception of $ABF*RetVol$, the coefficient on the interaction terms across information proxies is generally insignificant. This result is not surprising, however, given the necessary reduction in sample size due to data availability. Therefore, only partial evidence consistent with H3b is provided insofar as the decreasing bond yield in ABF covenant intensity is less negative for issues which exhibit a more opaque information environment. While there appears to be a trade-off between offering yields and ABF covenants in general, the information environment of the firm does not appear to impact this trade-off consistently. Untabulated analysis of main effects reveals that *ABF Covenant* is negative and statistically significant in all specifications except the $ABF*Dispersion$ interaction specification where the main effect remains negative though is insignificant.

Table 10 provides logistic and OLS regression results on the interaction of ABF covenant intensity and the reporting quality of the firm for the below investment grade sub-sample across the dependent variables of interest. Only the variables relevant to the hypotheses under consideration are tabulated for expositional economy. Focusing on the substantive default regressions across the proxies for the reporting quality of the firm, the interaction terms are significant and in the predicted direction.

The coefficient on the interaction between ABF covenants and the accounting and governance score ($ABF*AGS$) is negative (marginal effect = 0.06%) and significant at the 5% level. The coefficient on the interaction between ABF covenants and the accounting score ($ABF*AS$), which is the more direct measure of reporting quality between the two measures, is also negative (marginal effect = 1.4%) and significant at the 5% level. Similar results are found for $ABF*AGS$ in the credit rating downgrade regressions. The coefficient on $ABF*AGS$ is negative (marginal effect = 0.1%) and significant at the 5% level and, although $ABF*AS$ is signed negative (marginal effect = 1%), it is not significant at conventional levels. In the offering yield regressions, the coefficients are not significant. Collectively, these results are fairly consistent with H4a in that the decreasing probability of substantive bond default and credit rating downgrade in ABF covenant intensity is more negative for firms which exhibit higher quality financial reporting. No support is found for H4b insofar as reporting quality does not appear to affect offering yields. Untabulated analysis of main effects reveals that *ABF Covenant* is negative and statistically significant across all interaction specifications.

7.2 Robust Results

Given the potential that certain types of issuers may self-select into contracts containing ABF covenants, Tables 12 - 15 replicate Tables 7 - 10 though employ a robust, propensity score matched sample to mitigate endogeneity concerns. By way of logistic regression, each of the 973 issues containing ABF covenants is matched without replacement to a counterfactual, i.e., another issue similar along all dimensions found in the full model though not possessing an ABF covenant. Formally, I estimate $E[Y_1|\exists ABF, P(X)] - E[Y_0|\nexists ABF, P(X)]$ where Y_1 is the potential outcome with treatment and Y_0 is the potential outcome without treatment, conditional on the existence of an ABF covenant and the propensity score, $P(X)$, which is a function of X covariates. Analysis of covariate balance in Table 11 reveals that the treatment and non-treatment samples are well balanced.

In comparing Table 12 to Table 7, the results remain qualitatively unchanged insofar as firms whose issues contain ABF covenants are more likely to undergo a consent solicitation. In comparing

Table 13 to Table 8, the results uniformly strengthen. For example, the inclusion of an additional ABF covenant in below investment grade debt is found to marginally reduce the probability of substantive default by 3.2% and the probability of credit rating downgrade by 7.1%. Turning to Table 14, while the magnitude of a few coefficients slightly weaken compared to Table 9, overall the results strengthen. For example, in terms of marginal effects, transparent firms ($ABF*Agreement$) incrementally decrease defaults by 3.9% and opaque firms ($ABF*RetVol$) incrementally increase defaults by 1.1%. Notably, the offering yield regressions become fairly consistently statistically significant in the predicted directions. Finally, in Table 15, the results remain qualitatively unchanged and in many cases strengthen. Of particular interest is the coefficient on $ABF*AS$ in the substantive default regression, which produces a marginal effect of 3.3%. In consideration of the collective evidence provided by Tables 12 - 15, the baseline results, results on the information environment of the firm, and firm reporting quality results are considered to be robust to the potential for self-selection.

7.3 Additional Robustness Checks

In addition to the issue of self-selection addressed above, several other issues have arisen in the course of methodological choice. To ensure that such choices are not driving the results, several robustness checks have been completed. First, in regards to the robust results using propensity score matching, the results were estimated both unconditionally and conditional upon the matched-pair design by way of matched-pair fixed effects. Second, standard errors clustered on firm and year were included. Third, offering yields were transformed into spreads by way of maturity-matched treasury yields. Fourth, firm performance controls (e.g., earnings growth, sales growth) were included in the information environment of the firm tests. Fifth, full controls were included in the robust results. The results are qualitatively unchanged by the varying design choices. Lastly, given that the univariate relation between ABF covenants and substantive defaults is positive and the multivariate negative, concerns of multicollinearity were raised. Conventional multicollinearity diagnostics reveal a variance inflation factor on *ABF Covenant* of 1.23 and an overall condition number of 10.23, which combined with the statistically

significant results, provides additional assurance that multicollinearity does not appear to pose a problem.²⁶

8. Conclusion and Future Directions

This paper examines the role accounting-based financial (ABF) covenants have on the actions borrowers take to prevent adverse credit events in response to the increased observability and verifiability afforded to lenders by such covenants in a public setting. The findings of the paper show that ABF covenant inclusion increases the probability of consent solicitation and reduces probabilities of substantive default and credit rating downgrade in below investment grade debt, with the reduction positively associated with the extent of the quality of the firm's information environment and financial reporting. The evidence presented is consistent with the inclusion of accounting-based financial covenants providing not only a credible threat for lenders to accelerate, but also an incentive mechanism for firms to renegotiate ahead of technical default to prevent acceleration and bankruptcy. The results further show that firms initially gain at contract inception through a reduced cost of debt by constraining themselves with ABF covenants. A potentially unforeseen long-term benefit of the additional constraint is that it reduces the likelihood of bankruptcy. While the perceived benefits of ABF covenants are clear, the paucity of ABF covenant use in public debt suggests that, either because of managerial myopia, hubris, or simply anchoring solely on the incremental rate reduction, borrowers appear to favor the flexibility of being unconstrained by ABF covenants.

In the matched sample analysis, ABF covenant inclusion is found to increase the probability of consent solicitation by 11.3%, reduce the probability of substantive default by 3.2%, and reduce the probability of credit rating downgrade by 7.1% in below investment grade debt. Evidence is also found

²⁶ The variance inflation factor (VIF) is computed as $(1/(1-R^2))$ from a regression of *ABF Covenant* on all other independent variables. The rationale is that the independent variables shouldn't be highly predictive of the dependent variable if multicollinearity isn't present. A VIF of 5 or above is generally considered indicative of possible multicollinearity problems. A condition number is the maximum condition index, which is calculated by taking the square root of the largest eigenvalue amongst all variables divided by the eigenvalue for each variable. The rationale is that eigenvalues close to 0 explain little variation uniquely and so a larger distance between eigenvalues may imply the presence of multicollinearity. A condition number of 15 or above is generally considered indicative of possible multicollinearity problems.

that ABF covenant inclusion reduces offering yields by up to 50 basis points. In addition, the information environment and reporting quality of the firm is found to fairly consistently incrementally impact the monitoring and control ability of covenants across outcome variables in the predicted directions. For example, transparent firms are found to incrementally reduce the probability of default by 3.7% and high reporting quality firms by 3.3%.

The paper contributes to the literature by shedding new light on the role ABF covenants play in public debt after contracts are in place. The findings of the paper are consistent with ABF covenants serving as an effective contractual device to assess compliance, which is of particular importance in public debt given lax trustee monitoring and a diffuse body of bondholders. In particular, in contrast to the existing debt covenant literature that focuses on the *determinants* of covenant inclusion, this paper provides evidence on the *consequences* ABF covenant inclusion has on contracting outcomes. The findings of the paper have implications for public debt contract design and are therefore relevant to contracting parties in terms of i) enhancing the ability of lenders to assess risks and recover investment and ii) lowering the cost of debt and reducing the likelihood of bankruptcy for borrowers. Future research will possibly examine the role of trustee quality in monitoring, Rule 144a issues in facilitating renegotiation, and the substitution effect private debt cross-monitoring may have on public debt covenants.

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APPENDIX A – Examples of Consent Solicitation Announcements (underline added for emphasis)

E*TRADE FINANCIAL Announces Debt Exchange Offer and Consent Solicitation

The Company is offering to exchange more than \$1 billion of newly-issued zero coupon Convertible Debentures due 2019 (the "Debentures") for all of its 8% Senior Notes due 2011 (the "2011 Notes") and a portion of its 12.5% Springing Lien Notes due 2017 (the "2017 Notes", and together with the 2011 Notes, the "Notes"). The Exchange Offer is designed to significantly reduce the Company's debt service burden by eliminating interest costs relating to those debt securities that are exchanged and lengthening the weighted-average maturity of its debt securities.

GeoEye, Inc. Commences Cash Tender Offer and Consent Solicitation for its Floating Rate Senior Secured Notes Due 2012

GeoEye, Inc. today announced that it has commenced a cash tender offer to purchase any and all of its outstanding \$250.0 million aggregate principal amount of Floating Rate Senior Secured Notes due 2012. In conjunction with the Tender Offer, GeoEye is also soliciting consents to adopt certain proposed amendments to the indenture under which the Notes were issued that would eliminate substantially all of the restrictive covenants and certain event of default provisions and modify certain other provisions.

General Growth Announces Commencement of Bondholder Consent Solicitation

General Growth Properties, Inc. announced that its subsidiary, The Rouse Company LP ("TRCLP"), launched a solicitation today to obtain consents from the holders of TRCLP's unsecured notes (five series with an aggregate outstanding principal amount of approximately \$2.25 billion at December 31, 2008) to forbear from exercising remedies with respect to various payment and other defaults under the notes through December 31, 2009. The material terms of the forbearance are as follows:

- Consenting holders...would agree to forbear from exercising their remedies with respect to TRCLP's failure to pay such notes at scheduled maturity.
- Consenting holders...would agree to forbear from exercising their remedies with respect to TRCLP's failure to pay cash interest on these notes during the forbearance period (interest would continue accrue on such notes at the applicable contractual rate but will not be paid in cash and instead would be added to the principal amount of the notes).
- Consenting holders would agree to forbear from exercising their remedies with respect to certain other potential defaults and cross-defaults under the indentures governing the TRCLP Notes.

Excerpted 10-Q MD&A Highlights of FairPoint Communications 2009 Exchange Offer

[W]e believed that we were at risk of failing to comply with the interest coverage ratio maintenance covenant...we initiated preliminary discussions with the administrative agent...regarding a waiver of this potential breach of the interest coverage ratio maintenance covenant...the administrative agent indicated that such a waiver would require a significant cash fee, likely result in additional restrictive provisions being placed on us and likely require us to renegotiate certain provisions... We ultimately elected not to pursue a waiver and instead launched an offer on June 24, 2009 to exchange...to help us maintain compliance with the interest coverage ratio maintenance covenant...we solicited consents from holders of the notes for certain amendments to the indenture...to eliminate or amend substantially all of the restrictive covenants and modify a number of the events of default and certain other provisions... If we are unable to comply with either the interest coverage ratio maintenance covenant and/or the leverage maintenance covenant, such failure would constitute an event of default...permit the lenders...to accelerate the maturity of the loans outstanding thereunder, seek foreclosure upon any collateral securing such loans and terminate any remaining commitments to lend to us.

APPENDIX B – Sample List of Mergent FISD Covenants

<i>ABF Covenants</i>	<i>Mergent FISD description</i>
Fixed charge coverage	Issuer is required to have a ratio of earnings available for fixed charges, of at least a minimum specified level.
Leverage test	Restricts total-indebtedness of the issuer.
Maintenance net worth	Issuer must maintain a minimum specified net worth.
<i>Financing Covenants</i>	
Indebtedness	Restricts issuer from incurring additional debt with limits on absolute dollar amount of debt outstanding or percentage total capital.
Debt issuance	Restricts issuer to the amount of senior (or junior or subordinated) debt it may issue in the future.
Stock issuance issuer	Restricts issuer from issuing additional common stock.
Negative pledge covenant	The issuer cannot issue secured debt unless it secures the current issue on a pari passu basis.
<i>Legal Covenants</i>	
Change control put provisions	Upon a change of control in the issuer, bondholders have the option of selling the issue back to the issuer.
Consolidation merger	Indicates that a consolidation or merger of the issuer with another entity is restricted.
Cross acceleration	A bondholder protective covenant that allows the holder to accelerate their debt, if any other debt of the organization has been accelerated due to an event of default.
Cross default	A bondholder protective covenant that will activate an event of default in their issue, if an event of default has occurred under any other debt of the company.
Legal defeasance	Gives the issuer the right to defease the monetary portion of the security. Legal defeasance occurs when the issuer places in an escrow account an amount of money or U.S. government securities sufficient to match the remaining interest and principle payments of the current issue.
Transactions with affiliates	Issuer is restricted in certain business dealings with its subsidiaries.
<i>Restrictive Covenants</i>	
Dividends related payments	Flag indicating that payments made to shareholders or other entities may be limited to a certain percentage of net income or some other ratio.
Liens	In the case of default, the bondholders have the legal right to sell mortgaged property to satisfy their unpaid obligations.
Restricted payments	Restricts issuer's freedom to make payments (other than dividend related payments) to shareholders and others.
Sale assets	Restrictions on the ability of an issuer to sell assets or restrictions on the issuer's use of the proceeds from the sale of assets. Such restrictions may require the issuer to apply some or all of the sales proceeds to the repurchase of debt through a tender offer or call.
Sales leaseback	Restricts issuer to the type or amount of property used in a sale leaseback transaction and may restrict its use of the proceeds of the sale.

APPENDIX C – Covenant Examples from Registration Statements (S-3)

Fixed Charge

- Fixed Charge Coverage Ratio 1.72 1.25 minimum
"Fixed Charges" consists of interest expensed and capitalized, and an estimate of the interest within rental expense. Earnings is pretax income from continuing operations.
- ...a consolidated fixed charge coverage ratio (the ratio of EBITDA less capital expenditures and cash income taxes to senior debt cash interest expense plus dividends and senior debt principal payments for Walter Industries' and its Restricted Subsidiaries) as of the end of each four-quarter period of at least 1.25 to 1.00.

Leverage

- ... debt to EBITDA ratio test of 3.25 to 1.00 and a senior debt to EBITDA ratio test of 2.50 to 1.00 in the covenant that limits our ability to incur indebtedness ...
- One existing covenant requires that we maintain a ratio of funded indebtedness to EBITDA (the "Funded Debt to EBITDA Ratio") of not more than 4.0 to 1.0 for any four fiscal quarter period ending on or before December 31, 2001 or 3.5 to 1.0 for any four fiscal quarter period ending after December 31, 2001. At September 30, 2001, we had a Funded Debt to EBITDA Ratio of 3.45 to 1.0.

Net Worth

- The minimum required consolidated tangible net worth of Nortel Networks Limited may not be less than \$1,888 million at any time.
- The 7.66% senior notes purchase agreement contains certain financial covenants with which we must comply relating to, among other things, the following matters: our and our subsidiaries' consolidated net worth at any point in time may not be less than \$201 million plus 50% of consolidated net income...

Transactions with Affiliates²⁷

The Company will not, and will not permit any of its Restricted Subsidiaries to, directly or indirectly, enter into or permit to exist any transaction or series of related transactions (including, without limitation, the purchase, sale, lease or exchange of any property or the rendering of any service) with, or for the benefit of, any of its Affiliates (an "Affiliate Transaction"), other than (x) Affiliate Transactions permitted under paragraph (b) below and (y) Affiliate Transactions entered into on terms that are fair and reasonable to, and in the best interests of, the Company or such Restricted Subsidiary, as the case may be, as determined in good faith by the Company's Board of Directors...

Asset Sales

The Company will not, and will not permit any of its Restricted Subsidiaries to, consummate an Asset Sale unless (i) the Company or the applicable Restricted Subsidiary, as the case may be, receives consideration at the time of such Asset Sale at least equal to the fair market value of the assets sold or otherwise disposed of (as determined in good faith by the Company's Board of Directors, whose determination shall be conclusive); (ii) in the case of any Asset Sale (or series of Asset Sales) having a fair market value (as determined in good faith by the Company's Board of Directors, whose determination shall be conclusive) of \$25.0 million or more, at least 75% of the consideration received by the Company or such Restricted Subsidiary, as the case may be, from such Asset Sale shall be cash or Cash Equivalents and is received at the time of such disposition...

Liens

The Company will not, and will not permit any Restricted Subsidiary to, create, incur, assume or suffer to exist any Lien on any of its assets or properties of any character, or any shares of Capital Stock or Indebtedness of any Restricted Subsidiary, without making effective provision for all of the senior notes and all other amounts due under the senior notes indenture to be directly secured equally and ratably with (or, if the obligation or liability to be secured by such Lien is subordinated in right of payment to the senior notes, prior to) the obligation or liability secured by such Lien.

²⁷ An affiliate of, or person affiliated with, a specified person, is a person that directly, or indirectly through one or more intermediaries, controls or is controlled by, or is under common control with, the person specified.

APPENDIX D – Tables

Table 1, Panel A: Descriptive Statistics

Accounting, Financing, Legal and Restrictive are all covenant count variables. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk.

	N	Mean	Standard Deviation	Median
Accounting	10,754	0.10	0.36	0
Financing	10,754	1.24	1.39	1
Legal	10,754	3.16	1.60	3
Restrictive	10,754	2.18	1.81	1
Default	10,754	0.03	0.17	0
Downgrade	10,754	0.52	0.50	1
Invest_grade	10,754	0.70	0.46	1
Senior	10,754	0.84	0.37	1
Secured	10,754	0.05	0.22	0
Convertible	10,754	0.12	0.32	0
Issue_amt (\$m)	10,754	490	2702	250
Maturity (yrs)	10,754	13.20	11.84	9.99
Assets (\$b)	10,754	77	196	11
M/B	10,754	0.75	0.82	0.51
Leverage	10,754	0.26	0.18	0.25
Fin_industry	10,754	0.22	0.41	0
Util_industry	10,754	0.15	0.36	0
Spread	10,754	0.86	0.22	0.81

Table 1, Panel B: Descriptive Statistics, By ABF Covenant Inclusion

Summary statistics for the variables found in Panel A of Table 1 grouped by issues with and without ABF covenants. Accounting, Financing, Legal and Restrictive are all covenant count variables. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are two-sided.

	Mean, with ABF	Mean, without ABF	Difference	P-value
Financing	2.96	1.06	1.89	0.00
Legal	4.92	2.99	1.94	0.00
Restrictive	4.15	1.98	2.16	0.00
Default	0.05	0.03	0.03	0.00
Downgrade	0.51	0.52	-0.01	0.39
Invest_grade	0.36	0.73	-0.37	0.00
Senior	0.84	0.84	0.00	0.85
Secured	0.16	0.04	0.12	0.00
Convertible	0.00	0.13	-0.13	0.00
Issue_amt (\$m)	279	511	-232	0.00
Maturity (yrs)	9.63	13.56	-3.93	0.00
Assets (\$b)	14.4	83.4	-69.0	0.00
M/B	0.69	0.75	-0.06	0.00
Leverage	0.38	0.25	0.13	0.00
Fin_industry	0.23	0.22	0.02	0.19
Util_industry	0.14	0.15	-0.01	0.37
Spread	0.87	0.85	0.01	0.09
N	973	9,781		

Table 1, Panel C: Descriptive Statistics, By Investment Grade

Summary statistics for the variables found in Panel A of Table 1 grouped by below investment grade (BIG) and investment grade (IG) issues. Accounting, Financing, Legal and Restrictive are all covenant count variables. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are two-sided.

	Mean, BIG	Mean, IG	Difference	P-value
Accounting	0.23	0.05	0.18	0.00
Financing	2.01	0.90	1.12	0.00
Legal	4.10	2.76	1.34	0.00
Restrictive	3.25	1.71	1.53	0.00
Default	0.07	0.01	0.06	0.00
Downgrade	0.38	0.58	-0.19	0.00
Senior	0.84	0.84	0.00	0.85
Secured	0.06	0.05	0.01	0.01
Convertible	0.32	0.03	0.30	0.00
Issue_amt (\$m)	289	578	-289	0.00
Maturity (yrs)	10.82	14.24	-3.42	0.00
Assets (\$b)	14.6	104.5	-89.9	0.00
M/B	0.92	0.67	0.25	0.00
Leverage	0.34	0.22	0.12	0.00
Fin_industry	0.10	0.27	-0.17	0.00
Util_industry	0.06	0.18	-0.12	0.00
Spread	0.88	0.84	0.04	0.00
N	3,270	7,484		

Table 2: Pearson Correlations (*p-values italicized*)

	Accounting	Financing	Legal	Restrictive	Default	Down- grade	Invest_ grade	Senior	Secured	Convert- ible	Issue_ amt	Maturity	Assets	M/B	Leverage	Spread
Accounting	1.00															
Financing	0.37 <i>0.00</i>	1.00														
Legal	0.33 <i>0.00</i>	0.68 <i>0.00</i>	1.00													
Restrictive	0.35 <i>0.00</i>	0.70 <i>0.00</i>	0.69 <i>0.00</i>	1.00												
Default	0.05 <i>0.00</i>	0.17 <i>0.00</i>	0.15 <i>0.00</i>	0.16 <i>0.00</i>	1.00											
Downgrade	-0.02 <i>0.32</i>	0.08 <i>0.00</i>	0.01 <i>0.44</i>	0.08 <i>0.00</i>	0.14 <i>0.00</i>	1.00										
Invest_grade	-0.23 <i>0.00</i>	-0.37 <i>0.00</i>	-0.39 <i>0.00</i>	-0.39 <i>0.00</i>	-0.16 <i>0.00</i>	0.18 <i>0.00</i>	1.00									
Senior	0.01 <i>0.92</i>	0.23 <i>0.00</i>	0.30 <i>0.00</i>	0.13 <i>0.00</i>	0.00 <i>0.87</i>	0.03 <i>0.01</i>	0.00 <i>0.85</i>	1.00								
Secured	0.13 <i>0.00</i>	0.02 <i>0.52</i>	0.01 <i>0.45</i>	0.11 <i>0.00</i>	0.04 <i>0.00</i>	-0.03 <i>0.01</i>	-0.02 <i>0.01</i>	-0.53 <i>0.00</i>	1.00							
Convertible	-0.10 <i>0.00</i>	-0.29 <i>0.00</i>	-0.14 <i>0.00</i>	-0.24 <i>0.00</i>	0.00 <i>0.96</i>	-0.20 <i>0.00</i>	-0.42 <i>0.00</i>	0.00 <i>0.88</i>	-0.08 <i>0.00</i>	1.00						
Issue_amt	-0.02 <i>0.00</i>	-0.02 <i>0.00</i>	-0.02 <i>0.00</i>	-0.03 <i>0.00</i>	-0.01 <i>0.00</i>	0.01 <i>0.00</i>	0.05 <i>0.00</i>	0.03 <i>0.00</i>	-0.02 <i>0.00</i>	-0.02 <i>0.00</i>	1.00 <i>0.00</i>					
Maturity	-0.09 <i>0.00</i>	-0.19 <i>0.00</i>	-0.19 <i>0.00</i>	-0.13 <i>0.00</i>	-0.04 <i>0.00</i>	0.09 <i>0.00</i>	0.13 <i>0.00</i>	-0.28 <i>0.00</i>	0.00 <i>0.37</i>	0.01 <i>0.60</i>	-0.02 <i>0.00</i>	1.00				
Assets	-0.09 <i>0.00</i>	-0.11 <i>0.00</i>	-0.18 <i>0.00</i>	-0.21 <i>0.00</i>	-0.06 <i>0.00</i>	0.00 <i>0.00</i>	0.21 <i>0.00</i>	-0.06 <i>0.00</i>	-0.06 <i>0.00</i>	-0.12 <i>0.00</i>	0.12 <i>0.00</i>	-0.04 <i>0.00</i>	1.00			
M/B	-0.01 <i>0.00</i>	-0.04 <i>0.04</i>	0.04 <i>0.00</i>	0.03 <i>0.00</i>	0.00 <i>0.55</i>	-0.08 <i>0.00</i>	-0.14 <i>0.00</i>	0.15 <i>0.00</i>	-0.08 <i>0.00</i>	0.29 <i>0.00</i>	-0.02 <i>0.00</i>	-0.01 <i>0.00</i>	-0.27 <i>0.00</i>	1.00		
Leverage	0.20 <i>0.00</i>	0.28 <i>0.00</i>	0.27 <i>0.00</i>	0.28 <i>0.00</i>	0.11 <i>0.00</i>	0.05 <i>0.00</i>	-0.31 <i>0.00</i>	0.04 <i>0.00</i>	0.12 <i>0.00</i>	0.03 <i>0.50</i>	-0.04 <i>0.00</i>	-0.06 <i>0.11</i>	-0.29 <i>0.00</i>	-0.03 <i>0.00</i>	1.00	
Spread	0.01 <i>0.03</i>	0.01 <i>0.33</i>	0.01 <i>0.15</i>	0.01 <i>0.37</i>	-0.07 <i>0.00</i>	-0.12 <i>0.00</i>	-0.09 <i>0.00</i>	0.02 <i>0.26</i>	0.02 <i>0.10</i>	0.07 <i>0.00</i>	0.01 <i>0.00</i>	-0.08 <i>0.00</i>	0.09 <i>0.00</i>	-0.07 <i>0.00</i>	0.05 <i>0.00</i>	1.00

Table 3, Panel A: Covenants Counts By Type

The number of issues with n covenants by type. For example, 4,275 issues have one financing covenant while 1,926 issues possess the same number of legal covenants.

n	Accounting	Financing	Legal	Restrictive
0	9,781	3,661	153	767
1	864	4,275	1,926	5,120
2	76	1,073	1,562	588
3	32	700	2,775	2,613
4	1	604	2,461	499
5		321	522	375
6		96	1,296	343
7		24	59	307
8				79
9				41
10				15
11				7

Table 3, Panel B: Covenant Package Combinations

The percent of all issues (N=10,754) across all possible covenant combinations. For example, combination 16 (c16) represents the case where all covenant types are present in an issue, which is found in 8.1% of all issues.

Combination	Accounting	Financing	Legal	Restrictive	Percent
c1	0	0	0	0	0.14%
c2	0	0	0	1	0.40%
c3	0	0	1	0	4.24%
c4	0	1	0	0	0.71%
c5	1	0	0	0	0.00%
c6	0	0	1	1	28.41%
c7	0	1	0	1	0.16%
c8	0	1	1	0	1.74%
c9	1	0	0	1	0.02%
c10	1	0	1	0	0.19%
c11	1	1	0	0	0.00%
c12	0	1	1	1	55.16%
c13	1	0	1	1	0.65%
c14	1	1	0	1	0.00%
c15	1	1	1	0	0.12%
c16	1	1	1	1	8.07%

Table 4, Panel A: Number of Covenants by Year and Type

The mean number of covenants by year of issuance and covenant type. For example, for the 830 issues in 2004, the mean number of accounting covenants was 0.15 (the average issue did not have an accounting covenant) while the mean number of financing covenants was 1.23 (the average issue did possess a financing covenant).

Year	N	Accounting	Financing	Legal	Restrictive
1994	339	0.14	1.13	3.01	1.91
1995	529	0.10	1.18	2.99	1.97
1996	646	0.10	1.30	3.16	2.26
1997	796	0.08	1.30	3.10	2.32
1998	965	0.09	1.29	3.08	2.28
1999	825	0.12	1.60	3.37	2.54
2000	735	0.05	1.11	2.95	1.96
2001	931	0.08	1.28	3.07	2.13
2002	845	0.08	1.42	3.13	2.18
2003	961	0.09	1.20	3.15	2.22
2004	830	0.15	1.23	3.29	2.38
2005	654	0.13	1.30	3.33	2.23
2006	755	0.13	1.09	3.32	2.14
2007	943	0.14	0.84	3.22	1.81

Fig. 1 - Mean ABF Covenants

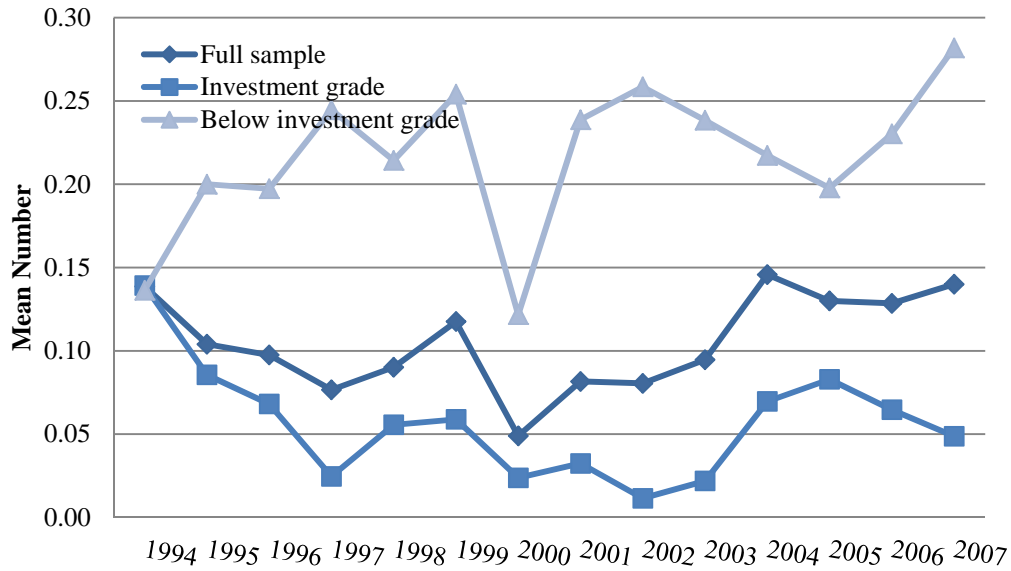


Table 4, Panel B: Presence of Covenants by Year and Type (%)

The presence of covenants (that is, the percent of issues with at least one covenant) by year of issuance and covenant type. For example, in 1997, 6% of all issues contained at least one accounting covenant while almost all issues (99%) contained at least one legal covenant.

Year	N	Accounting	Financing	Legal	Restrictive
1994	339	13%	61%	98%	86%
1995	529	10%	69%	99%	91%
1996	646	9%	70%	98%	96%
1997	796	6%	68%	99%	95%
1998	965	7%	74%	97%	93%
1999	825	11%	73%	98%	93%
2000	735	5%	66%	99%	91%
2001	931	8%	72%	99%	96%
2002	845	8%	71%	99%	97%
2003	961	9%	67%	99%	96%
2004	830	14%	57%	99%	96%
2005	654	12%	62%	97%	91%
2006	755	10%	60%	98%	92%
2007	943	7%	51%	100%	83%

Fig. 2 - Presence of ABF Covenants

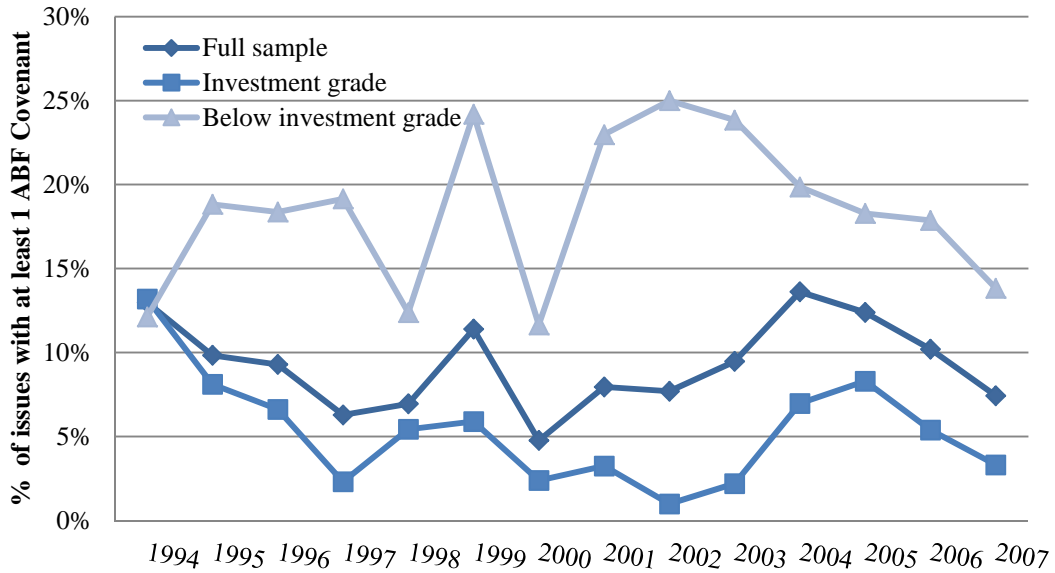


Table 5: Outcomes by Event Year

The number of consent solicitations, defaults, and downgrades by event year as well as the days between issuance and event. For example, in 2003, 24 issues defaulted (failure to pay principal or interest; bankruptcy) and it took those issuers 987 days (roughly 3 years) to default on those issues.

Year	Consent Solicitations		Defaults		Downgrades	
	N	Days	N	Days	N	Days
1996	113	244	2	665	18	592
1997	71	216	2	621	225	595
1998	259	519	16	833	352	693
1999	154	700	24	986	325	708
2000	219	1,120	23	917	644	820
2001	293	1,165	86	1,070	702	911
2002	744	1,418	80	1,206	846	923
2003	668	1,700	24	987	382	836
2004	1,320	1,695	6	823	360	998
2005	1,619	1,570	17	1,019	421	1,133
2006	2,316	2,009	9	2,139	404	1,156
2007	1,721	2,030	10	2,124	581	1,300
2008	912	2,283	9	2,173	325	1,219

Table 6: Determinants of ABF Covenant Inclusion

Logistic regression results on the determinants of ABF covenant inclusion for the full sample as well as by initial investment grade. Accounting (ABF Covenant) is a covenant indicator variable. Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. Two-sided p-values are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

$$ABF\ Covenant = \alpha + \beta_1 \cdot Fin + \beta_2 \cdot Legal + \beta_3 \cdot Restr + \beta_4 \cdot Invest_grade + \beta_5 \cdot Senior + \beta_6 \cdot Secured + \beta_7 \cdot Convertible + \beta_8 \cdot Maturity + \beta_9 \cdot Issue_amt + \beta_{10} \cdot Assets + \beta_{11} \cdot M/B + \beta_{12} \cdot Leverage + \beta_{13} \cdot Financial + \beta_{14} \cdot Utility + \beta_{15} \cdot Spread + \xi$$

Variable	Full	Sample BIG	IG
<i>Fin Covenant</i>	0.279*** (0.00)	0.107** (0.02)	0.453*** (0.00)
<i>Legal Covenant</i>	0.355*** (0.00)	0.348*** (0.00)	0.513*** (0.00)
<i>Restr Covenant</i>	0.0800*** (0.01)	0.221*** (0.00)	-0.402*** (0.00)
<i>Invest_grade</i>	-0.466*** (0.00)	-	-
<i>Senior</i>	16.34*** (0.00)	16.39*** (0.00)	16.58*** (0.00)
<i>Secured</i>	17.87*** (0.00)	16.27*** (0.00)	20.11*** (0.00)
<i>Convertible</i>	-2.627*** (0.00)	-3.892*** (0.00)	-0.975 (0.12)
<i>Maturity</i>	-1.82e-05 (0.25)	-0.000142** (0.01)	-2.95e-05 (0.15)
<i>Issue_amt</i>	-2.89e-07* (0.06)	5.19e-08 (0.76)	-8.31e-08 (0.74)
<i>Assets</i>	-4.91e-06*** (0.00)	1.14e-06 (0.21)	-8.52e-06*** (0.00)
<i>M/B</i>	0.123** (0.04)	0.109 (0.17)	0.213* (0.06)
<i>Leverage</i>	0.862*** (0.00)	-0.417* (0.10)	3.424*** (0.00)
<i>Financial</i>	1.807*** (0.00)	0.141 (0.55)	2.069*** (0.00)
<i>Utility</i>	0.569*** (0.00)	0.308 (0.14)	-0.0439 (0.87)
<i>Spread</i>	0.184 (0.29)	1.203*** (0.00)	-1.918*** (0.00)
<i>Constant</i>	-21.20 (.)	-21.16 (.)	-21.29 (.)
Observations	10,754	3,270	7,484
R-squared	0.318	0.299	0.395

Table 7: ABF Covenant Inclusion and Consent Solicitations

Logistic regression results on the impact of ABF covenant inclusion on the likelihood of consent solicitations at the issuer level for the full sample as well as the below investment grade (BIG) sub-sample. CS is an indicator variable which takes the value of 1 when a consent solicitation event occurs. Accounting (ABF Covenant), Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant indicator variables. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are in parentheses and are one-sided where a directional prediction is given. *** p<0.01, ** p<0.05, * p<0.1

$$CS = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \beta_5 \cdot Invest_grade + \beta_6 \cdot Senior + \beta_7 \cdot Secured + \beta_8 \cdot Convertible + \beta_9 \cdot Maturity + \beta_{10} \cdot Issue_amt + \beta_{11} \cdot Assets + \beta_{12} \cdot M/B + \beta_{13} \cdot Leverage + \beta_{14} \cdot Financial + \beta_{15} \cdot Utility + \beta_{16} \cdot Spread + \xi$$

Variable	Predicted		
	Sign	Full Sample	BIG Sample
<i>ABF Covenant</i>	+	0.844*** (0.00)	0.731*** (0.00)
<i>Fin Covenant</i>		0.00802 (0.91)	0.0387 (0.65)
<i>Legal Covenant</i>		0.0300 (0.73)	-0.0428 (0.71)
<i>Restr Covenant</i>		0.0662 (0.26)	0.0572 (0.42)
<i>Invest_grade</i>		-0.545** (0.01)	-
<i>Senior</i>		1.329*** (0.00)	1.246*** (0.01)
<i>Secured</i>		1.532*** (0.00)	1.395** (0.02)
<i>Convertible</i>		-0.177 (0.50)	-0.447 (0.14)
<i>Maturity</i>		6.55e-06 (0.82)	-1.34e-05 (0.77)
<i>Issue_amt</i>		7.00e-08 (0.43)	8.71e-07* (0.05)
<i>Assets</i>		-4.57e-07 (0.74)	2.08e-05 (0.24)
<i>M/B</i>		-0.257*** (0.00)	-0.291*** (0.01)
<i>Leverage</i>		1.561*** (0.00)	1.612*** (0.00)
<i>Financial</i>		-0.243 (0.28)	-0.374 (0.29)
<i>Utility</i>		-0.445 (0.12)	-0.783 (0.15)
<i>Spread</i>		1.380*** (0.00)	1.764*** (0.00)
<i>Constant</i>		-4.272*** (0.00)	-4.331*** (0.00)
Marginal Effect of ABF Covenant		14.2%	13.3%
Observations		1,896	1,025
R-squared		0.136	0.161

Table 8, Panel A: ABF Covenant Intensity and Credit Risk, Full Sample

Logistic and OLS regression results on the impact of ABF covenant intensity on credit risk and initial offering yields for the full sample. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. Accounting (ABF Covenant), Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are in parentheses and are one-sided where a directional prediction is given. *** p<0.01, ** p<0.05, * p<0.1

$$\begin{aligned}
 \text{Dependent} = & \alpha + \beta_1 \cdot \text{ABF} + \beta_2 \cdot \text{Fin} + \beta_3 \cdot \text{Legal} + \beta_4 \cdot \text{Restr} + \beta_5 \cdot \text{Invest_grade} + \beta_6 \cdot \text{Senior} + \beta_7 \\
 & \cdot \text{Secured} + \beta_8 \cdot \text{Convertible} + \beta_9 \cdot \text{Maturity} + \beta_{10} \cdot \text{Issue_amt} + \beta_{11} \cdot \text{Assets} + \beta_{12} \cdot \text{M/B} \\
 & + \beta_{13} \cdot \text{Leverage} + \beta_{14} \cdot \text{Financial} + \beta_{15} \cdot \text{Utility} + \beta_{16} \cdot \text{Spread} + \xi
 \end{aligned}$$

Variable	Predicted	Dependent Variables		
	Sign	Default	Downgrade	Yield
<i>ABF Covenant</i>	-	-0.227** (0.05)	-0.143*** (0.01)	-0.133* (0.06)
<i>Fin Covenant</i>		0.126** (0.03)	0.182*** (0.00)	0.238*** (0.00)
<i>Legal Covenant</i>		0.104 (0.12)	-0.103*** (0.00)	0.0474** (0.02)
<i>Restr Covenant</i>		0.0541 (0.21)	0.104*** (0.00)	0.077*** (0.00)
<i>Invest_grade</i>		-1.162*** (0.00)	1.042*** (0.00)	-1.610*** (0.00)
<i>Senior</i>		-0.387 (0.16)	-0.0577 (0.47)	-0.881*** (0.00)
<i>Secured</i>		0.195 (0.57)	-0.624*** (0.00)	-0.373*** (0.01)
<i>Convertible</i>		0.0359 (0.89)	-0.514*** (0.00)	-3.087*** (0.00)
<i>Maturity</i>		-4.90e-05** (0.05)	3.97e-05*** (0.00)	4.84e-05*** (0.00)
<i>Issue_amt</i>		-1.18e-08 (0.85)	2.06e-09 (0.79)	-6.91e-08*** (0.00)
<i>Assets</i>		-6.01e-06*** (0.01)	7.02e-07*** (0.00)	-1.06e-06*** (0.00)
<i>M/B</i>		-0.194** (0.03)	-0.195*** (0.00)	-0.249*** (0.00)
<i>Leverage</i>		0.721** (0.02)	1.070*** (0.00)	0.212 (0.17)
<i>Financial</i>		-0.613** (0.02)	-0.966*** (0.00)	0.0564 (0.39)
<i>Utility</i>		-0.351 (0.12)	-0.111 (0.10)	-0.168** (0.02)
<i>Spread</i>		-2.641*** (0.00)	-1.053*** (0.00)	-1.895*** (0.00)
<i>Constant</i>		-0.855* (0.06)	0.118 (0.41)	9.980*** (0.00)
Marginal Effect of ABF Covenant		0.3%	3.1%	-
Observations		10,754	10,754	7,333
R-squared		0.166	0.088	0.308

Table 8, Panel B: ABF Covenant Intensity and Credit Risk, Below Investment Grade Sample

Logistic and OLS regression results on the impact of ABF covenant intensity on credit risk and initial offering yields for the below investment grade (BIG) sub-sample. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. Accounting (ABF Covenant), Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are in parentheses and are one-sided where a directional prediction is given. *** p<0.01, ** p<0.05, * p<0.1

$$\begin{aligned}
 \text{Dependent} = & \alpha + \beta_1 \cdot \text{ABF} + \beta_2 \cdot \text{Fin} + \beta_3 \cdot \text{Legal} + \beta_4 \cdot \text{Restr} + \beta_5 \cdot \text{Invest_grade} + \beta_6 \cdot \text{Senior} + \beta_7 \\
 & \cdot \text{Secured} + \beta_8 \cdot \text{Convertible} + \beta_9 \cdot \text{Maturity} + \beta_{10} \cdot \text{Issue_amt} + \beta_{11} \cdot \text{Assets} + \beta_{12} \cdot \text{M/B} \\
 & + \beta_{13} \cdot \text{Leverage} + \beta_{14} \cdot \text{Financial} + \beta_{15} \cdot \text{Utility} + \beta_{16} \cdot \text{Spread} + \xi
 \end{aligned}$$

Variable	Predicted	Dependent Variables		
	Sign	Default	Downgrade	Yield
<i>ABF Covenant</i>	-	-0.266** (0.03)	-0.263*** (0.00)	-0.348* (0.06)
<i>Fin Covenant</i>		0.0539 (0.41)	0.0362 (0.33)	0.352*** (0.00)
<i>Legal Covenant</i>		0.265*** (0.00)	0.166*** (0.00)	0.114 (0.20)
<i>Restr Covenant</i>		0.142*** (0.00)	0.0931*** (0.00)	0.039 (0.59)
<i>Senior</i>		-1.038*** (0.00)	0.0351 (0.83)	-0.838** (0.01)
<i>Secured</i>		-0.888** (0.04)	-0.398* (0.09)	1.452** (0.01)
<i>Convertible</i>		0.377 (0.22)	-0.390*** (0.00)	-2.803*** (0.00)
<i>Maturity</i>		-0.000136*** (0.01)	-2.60e-06 (0.89)	-6.64e-05* (0.08)
<i>Issue_amt</i>		-8.58e-07** (0.03)	3.65e-07*** (0.00)	-1.31e-07 (0.65)
<i>Assets</i>		-1.27e-05* (0.07)	1.08e-06** (0.04)	-5.86e-07 (0.66)
<i>M/B</i>		-0.0931 (0.33)	-0.321*** (0.00)	-0.302*** (0.00)
<i>Leverage</i>		0.966*** (0.00)	0.543*** (0.00)	-0.0755 (0.87)
<i>Financial</i>		0.0699 (0.81)	-0.664*** (0.00)	0.633* (0.05)
<i>Utility</i>		-0.320 (0.37)	-0.0772 (0.62)	-0.163 (0.67)
<i>Spread</i>		-2.475*** (0.00)	-0.431** (0.02)	-1.732*** (0.00)
<i>Constant</i>		-1.056* (0.08)	-1.000*** (0.00)	9.883*** (0.00)
Marginal Effect of ABF Covenant		1.1%	6%	-
Observations		3,270	3,270	1,345
R-squared		0.121	0.117	0.324

Table 9: ABF Covenant Intensity and Firm Information Environment (IE)

Logistic and OLS regression results on the interaction of ABF covenant intensity and the information environment (IE) of the firm for the below investment grade sub-sample across the dependent variables of interest. The information environment variables are ratings agreement (Agreement) following Morgan (2002), return volatility (RetVol), and dispersion in analyst forecasts (Dispersion) where non-split bond ratings imply a more transparent information environment and more volatile market returns or less precise analysts imply a more opaque information environment. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. Accounting (ABF Covenant), Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are in parentheses and are one-sided where a directional prediction is given. *** p<0.01, ** p<0.05, * p<0.1

$$Dependent = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \lambda_1 \cdot IE + \kappa_1 \cdot ABF * IE + \gamma_v \cdot Controls_i + \xi$$

Variable	Predicted	Dependent Variables		
	Sign	Default	Downgrade	Yield
<i>ABF Covenant</i>	-	-0.174 (0.21)	-0.103 (0.21)	-0.350 (0.12)
<i>ABF*Agreement</i>	-	-0.470* (0.08)	-0.279** (0.05)	-0.125 (0.38)
Marginal Effect of Interaction		2.2%	6.2%	-
Observations		2,432	2,432	1,152
R-squared		0.117	0.151	0.302
<i>ABF Covenant</i>	-	-0.659** (0.02)	-0.458*** (0.01)	-1.044*** (0.01)
<i>ABF*RetVol</i>	+	0.142* (0.07)	0.074* (0.09)	0.276** (0.04)
Marginal Effect of Interaction		0.59%	1.7%	-
Observations		3,270	3,270	1,345
R-squared		0.123	0.118	0.325
<i>ABF Covenant</i>	-	-0.371** (0.03)	-0.248*** (0.01)	-0.183 (0.25)
<i>ABF*Dispersion</i>	+	0.0916*** (0.00)	0.0254** (0.02)	0.0246 (0.30)
Marginal Effect of Interaction		0.26%	0.58%	-
Observations		2,452	2,452	964
R-squared		0.186	0.138	0.299
Controls		Yes	Yes	Yes

Table 10: ABF Covenant Intensity and Reporting Quality (RQ)

Logistic and OLS regression results on the interaction of ABF covenant intensity and reporting quality (RQ) for the below investment grade sub-sample across the dependent variables of interest. The reporting quality variables are Audit Integrity's accounting and governance score (AGS) and accounting score (AS) where larger values imply a more reliable financial reporting system. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. Accounting (ABF Covenant), Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Invest_grade, Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is initially rated as investment grade, of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are in parentheses and are one-sided where a directional prediction is given. *** p<0.01, ** p<0.05, * p<0.1

$$Dependent = \alpha + \beta_1 \cdot ABF + \beta_2 \cdot Fin + \beta_3 \cdot Legal + \beta_4 \cdot Restr + \lambda_1 \cdot RQ + \kappa_1 \cdot ABF * RQ + \gamma_v \cdot Controls_i + \xi$$

Variable	Predicted Sign	Dependent Variables		
		Default	Downgrade	Yield
<i>ABF Covenant</i>	-	-0.182* (0.09)	-0.231*** (0.01)	-0.303* (0.09)
<i>ABF*AGS</i>	-	-0.015** (0.03)	-0.005** (0.03)	-0.005 (0.27)
Marginal Effect of Interaction		0.06%	0.10%	-
Observations		3,270	3,270	1,345
R-squared		0.129	0.190	0.324
<i>ABF Covenant</i>	-	-0.213* (0.06)	-0.263*** (0.00)	-0.317* (0.08)
<i>ABF*AS</i>	-	-0.365* (0.06)	-0.048 (0.18)	-0.085 (0.29)
Marginal Effect of Interaction		1.4%	1%	-
Observations		3,072	3,072	1,241
R-squared		0.128	0.193	0.320
Controls		Yes	Yes	Yes

Table 11: Covariate Balance of Propensity Score Matching (PSM)

Results on the balance of the match between each of the 973 issues that contain ABF covenants and its counterfactual. Accounting (ABF Covenant) is a covenant indicator variable. Financing (Fin Covenant), Legal (Legal Covenant) and Restrictive (Restr Covenant) are covenant count variables. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade. Ratings_notch is the major ratings category (e.g., BB = 6, B = 5 and so forth), which allows for a finer credit ratings match by requiring the match to be within the major notch. Senior, Secured and Convertible are indicator variables taking the value of 1 if the issue is of senior or secured status, or contains a conversion provision, respectively. Issue_amt is the face amount of the issue. Maturity is the number of years between issue offering and redemption. M/B is the issuer's market equity to total assets ratio, Leverage is long term debt to total assets, and Fin_industry and Util_industry is an indicator if the issuer is in a financial or utilities industry. Spread is the difference between Moody's Baa and Aaa bond interest rates, which proxies for economy-wide bond risk. P-values are two-sided.

$$ABF\ Covenant = \alpha + \beta_1 \cdot Fin + \beta_2 \cdot Legal + \beta_3 \cdot Restr + \beta_4 \cdot Senior + \beta_5 \cdot Secured + \beta_6 \cdot Convertible + \beta_7 \cdot Ratings_notch + \beta_8 \cdot Issue_amt + \beta_9 \cdot Maturity + \beta_{10} \cdot Assets + \beta_{11} \cdot M/B + \beta_{12} \cdot Leverage + \beta_{13} \cdot Financial + \beta_{14} \cdot Utility + \beta_{15} \cdot Spread + \xi$$

	Mean, with ABF	Mean, without ABF	Difference	P-value
Financing	2.96	2.96	0.00	0.98
Legal	4.92	4.94	-0.02	0.78
Restrictive	4.15	3.96	0.19	0.09
Senior	0.84	0.85	-0.01	0.42
Secured	0.16	0.15	0.01	0.42
Convertible	0.00	0.00	0.00	0.05
Ratings_notch	5.91	5.96	-0.05	0.43
Issue_amt (\$m)	279	259	19	0.08
Maturity (yrs)	9.63	9.66	-0.03	0.91
Assets (\$b)	14.4	14.7	-0.3	0.94
M/B	0.69	0.66	0.03	0.23
Leverage	0.38	0.38	0.00	0.89
Fin_industry	0.23	0.26	-0.03	0.14
Util_industry	0.14	0.12	0.02	0.12
Spread	0.87	0.85	0.02	0.05
N	973	973		

Table 12: ABF Covenant Inclusion and Consent Solicitations, with propensity score matching (PSM)

Propensity score matched logistic regression results on the impact of ABF covenant inclusion on the likelihood of consent solicitations at the issuer level for the full sample as well as the below investment grade (BIG) sub-sample. Y_1 is the potential outcome with treatment and Y_0 is the potential outcome without treatment, conditional on the existence of an ABF covenant and the propensity score, $P(X)$, which is a function of X covariates found in Table 11. Accounting (ABF Covenant) is a covenant indicator variable. CS is an indicator variable which takes the value of 1 when a consent solicitation event occurs. One-sided p-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$$E[Y_1 | \exists ABF, P(X)] - E[Y_0 | \nexists ABF, P(X)] \approx CS = \alpha + \gamma_1 \cdot ABF + \xi$$

Variable	Predicted Sign	Full	Sample BIG
<i>ABF Covenant</i>	+	0.540*** (0.00)	0.467** (0.02)
Marginal Effect of ABF Covenant		12.3%	11.3%
Observations		758	436
R-squared		0.013	0.010

Table 13: ABF Covenant Intensity and Credit Risk, with PSM

Propensity score matched logistic and OLS regression results on the impact of ABF covenant intensity on credit risk and initial offering yields for the full sample and below investment grade (BIG) sub-sample. Y_1 is the potential outcome with treatment and Y_0 is the potential outcome without treatment, conditional on the existence of an ABF covenant and the propensity score, $P(X)$, which is a function of X covariates found in Table 11. Accounting (ABF Covenant) is a covenant count variable. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. One-sided p-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$$E[Y_1 | \exists ABF, P(X)] - E[Y_0 | \nexists ABF, P(X)] \approx \text{Dependent} = \alpha + \gamma_1 \cdot ABF + \xi$$

Sample	Variable	Predicted Sign	Default	Dependent Variables Downgrade	Yield
Full	<i>ABF Covenant</i>	-	-0.282** (0.03)	-0.165*** (0.01)	-0.263*** (0.01)
	Marginal Effect of ABF Covenant		1.8%	4.1%	-
	Observations		1,946	1,946	1,032
	R-squared		0.171	0.037	0.451
	BIG	<i>ABF Covenant</i>	-	-0.341*** (0.01)	-0.284*** (0.00)
	Marginal Effect of ABF Covenant		3.2%	7.1%	-
	Observations		1,230	1,230	439
	R-squared		0.094	0.027	0.168

Table 14: ABF Covenant Intensity and Firm IE, with PSM

Propensity score matched logistic and OLS regression results on the interaction of ABF covenant intensity and the information environment (IE) of the firm for the below investment grade sub-sample across the dependent variables of interest. Y_1 is the potential outcome with treatment and Y_0 is the potential outcome without treatment, conditional on the existence of an ABF covenant and the propensity score, $P(X)$, which is a function of X covariates found in Table 11. Accounting (ABF Covenant) is a covenant count variable. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. The information environment variables are ratings agreement (Agreement) following Morgan (2002), return volatility (RetVol), and dispersion in analyst forecasts (Dispersion) where non-split bond ratings imply a more transparent information environment and more volatile market returns or less precise analysts imply a more opaque information environment. One-sided p-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$$E[Y_1|\exists ABF, P(X)] - E[Y_0|\nexists ABF, P(X)] \approx \text{Dependent} = \alpha + \beta_1 \cdot ABF + \lambda_1 \cdot IE + \kappa_1 \cdot ABF * IE + \xi$$

Variable	Predicted Sign	Default	Dependent Variables Downgrade	Yield
<i>ABF Covenant</i>	-	-0.369** (0.05)	-0.131 (0.16)	-0.452*** (0.01)
<i>ABF*Agreement</i>	-	-0.395* (0.10)	-0.296** (0.04)	-0.076 (0.38)
Marginal Effect of Interaction		3.9%	7.3%	-
Observations		893	893	392
R-squared		0.100	0.027	0.166
<i>ABF Covenant</i>	-	-0.661*** (0.01)	-0.521*** (0.00)	-1.224*** (0.00)
<i>ABF*RetVol</i>	+	0.115* (0.09)	0.091** (0.04)	0.292*** (0.00)
Marginal Effect of Interaction		1.1%	2.3%	-
Observations		1,230	1,230	439
R-squared		0.193	0.042	0.208
<i>ABF Covenant</i>	-	-0.535*** (0.00)	-0.361*** (0.00)	-0.324** (0.02)
<i>ABF*Dispersion</i>	+	0.0743*** (0.00)	0.0250*** (0.01)	0.0306* (0.10)
Marginal Effect of Interaction		0.6%	0.62%	-
Observations		888	888	292
R-squared		0.097	0.029	0.186

Table 15: ABF Covenant Intensity and Reporting Quality (RQ), with PSM

Propensity score matched logistic and OLS regression results on the interaction of ABF covenant intensity and reporting quality (RQ) for the below investment grade sub-sample across the dependent variables of interest. Y_1 is the potential outcome with treatment and Y_0 is the potential outcome without treatment, conditional on the existence of an ABF covenant and the propensity score, $P(X)$, which is a function of X covariates found in Table 11. Accounting (ABF Covenant) is a covenant count variable. Default and Downgrade are indicator variables representing an issue default or credit rating downgrade and Yield is the initial offering yield. The reporting quality variables are Audit Integrity's accounting and governance score (AGS) and accounting score (AS) where larger values imply a more reliable financial reporting system. One-sided p-values are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$$E[Y_1 | \exists ABF, P(X)] - E[Y_0 | \nexists ABF, P(X)] \approx \text{Dependent} = \alpha + \beta_1 \cdot ABF + \lambda_1 \cdot RQ + \kappa_1 \cdot ABF * RQ + \xi$$

Variable	Predicted Sign	Dependent Variables		
		Default	Downgrade	Yield
<i>ABF Covenant</i>	-	-0.241* (0.05)	-0.221*** (0.01)	-0.462*** (0.01)
<i>ABF*AGS</i>	-	-0.016** (0.02)	-0.006*** (0.01)	-0.004 (0.245)
Marginal Effect of Interaction		1.5%	0.14%	-
Observations		1,230	1,230	439
R-squared		0.015	0.010	0.022
<i>ABF Covenant</i>	-	-0.277** (0.03)	-0.266*** (0.00)	-0.479*** (0.00)
<i>ABF*AS</i>	-	-0.372** (0.05)	-0.043 (0.185)	-0.045 (0.325)
Marginal Effect of Interaction		3.3%	1.1%	-
Observations		1,230	1,230	439
R-squared		0.014	0.007	0.022

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EDUCATION

Ph.D., Business Administration, Accounting Concentration (2011)
The Pennsylvania State University – State College, PA

M.A., Economics, with an emphasis in Finance (2003)
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Research: Debt contracting, corporate disclosure

Teaching: Financial (including FSA), empirical research methods

PUBLICATIONS

"Managerial Motivation and Timing of Open Market Share Repurchases," 2010, *Review of Quantitative Finance and Accounting*, Vol. 34, 517-531.

WORKING PAPERS

"The Role of Accounting-based Financial Covenants in Preventing Substantive Defaults of Public Debt"

"When Does Soft Talk Matter?: Evidence from Officer Quotations in Earnings Press Releases," with Sam Bonsall and Paul Fischer (Revise and Resubmit)

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Instructor for Accounting 471 – Intermediate Financial Accounting I (2009)

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