

Sticky Covenants*

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Abstract

This study examines the factors that explain the level of protection provided by covenant packages in public bond contracts. We employ a unique covenant dataset constructed by Moody's that allows us to measure the restrictiveness of bond covenant packages beyond the bond covenant inclusion measures used in prior literature. We find that measures capturing information asymmetry about the borrower and bondholders' bargaining power are associated with more restrictive covenants, but that the effect of these measures is relatively modest. In contrast, we find that the covenant restrictiveness of a bond is very sticky over time: it is primarily determined by the covenant restrictiveness of the borrower's previous bond issues. We also find that covenant restrictiveness is affected by the restrictiveness of the covenant packages in previous bonds issued by industry peers, the previous bonds arranged by the firm's underwriter and the previous bonds advised by the firm's and underwriter's legal counsels. The latter results are consistent with the idea of bond contract rigidity and "boilerplate" economics proposed by the corporate law literature.

1. Introduction

This study examines the factors that determine the strength of bond covenant packages in protecting bondholders' interests. Bondholders demand mainly incurrence-based covenants that mitigate event risks and preserve a bond's priority of claims. These covenants restrict events that facilitate asset substitution, such as aggressive investments or additional borrowing, and outright wealth expropriation, such as excessive payments of dividends, stock repurchases or distributions to junior debt holders. The literature on the determinants of the protective strength of bond covenant packages is currently limited to a few studies that focus on the inclusion of individual covenants in bond contracts or a bond covenant count index (Malitz 1986; Begley 1994; Kahan and Yermack 1998; Nash, Netter, and Poulsen 2003; Billett, King, and Mauer 2007 and Chava, Kumar, and Warga 2010). These studies assume that the presence of a greater number of covenants in a bond contract enhances lenders' protection by facilitating their contingent control in more states of the world. However, a high number of bond covenants may not indicate stronger bondholder protection if the covenants are poorly specified or allow significant exceptions to the restrictions they impose.

Our analysis extends prior literature by studying the restrictiveness of bond covenants beyond mere covenant inclusion. We employ the Moody's Covenant Assessment database, which has been developed in response to bond investors' increased concern about the failure of covenants to protect bondholders against events that destroy the value of their claims (Moody's 2010). Moody's covenant assessments summarize the principal strengths and structural gaps in the protection provided by individual bond covenants based on a critical review of each covenant's specification. This is a highly challenging task, as the descriptions of bond covenants' terms and conditions often consist of more than 20 pages in the bond indenture agreement.

Bond covenants are “negative” covenants because they prohibit the issuer from certain actions. The specification of the covenant begins with a *prohibitory* section that establishes the scope of the restrictions. This section is followed by a provision, labeled *proviso*, which allows for an exception to the restrictions in the prohibitory section, typically subject to conditions such as a financial ratio test. The last section in the specification of the bond covenant presents any *carve-outs*, which are additional exceptions to the prohibitory paragraph that are not required to satisfy the proviso’s conditions. The proviso and the carve-outs may significantly dilute a covenant’s ability to protect bondholders. Each term in the three abovementioned covenant sections, including the financial accounting terms and ratios used, has an extensive definition, which varies across issues and sometimes across different covenants in the same issue. The covenant restrictiveness is assessed based on the comprehensiveness of the restrictions in the *prohibitory* section, the strictness of contractual terms’ definitions (e.g., whether the definition of financial ratios give management the discretion to adjust the ratios), the headroom in the financial ratios in the *proviso* section (the difference between the ratio’s threshold and the borrower’s financial ratio at the time of bond issuance), and the extent of both the qualitative and quantitative carve-outs.

Two strands of prior literature motivate our selection of determinants of bond covenant restrictiveness. First, the debt contracting literature suggests that covenants are designed to mitigate agency problems between debt and equity holders (Jensen and Meckling 1976; Myers 1977; Smith and Warner 1979; Aghion and Bolton 1992). We therefore predict that to restrict shareholder-friendly events that facilitate asset substitution and wealth expropriation, bond covenants will be more restrictive when debt agency problems are exacerbated. In particular, we expect borrowers that have historically engaged in actions perceived as detrimental to

bondholders, such as share repurchases or divestitures, will receive more restrictive bond covenant packages that minimize such opportunistic behaviour in the future (e.g., Jensen and Meckling 1976; Aghion and Bolton 1992). We also expect bondholders to demand stronger covenant protection if they face higher information asymmetry, as low quality information impedes bond investors from effectively assessing a borrower's agency risk (e.g., Garleanu and Zwiebel 2009). In addition, we expect bondholders with stronger bargaining power to impose more restrictive covenants to protect their claims (Dell'Ariscia and Marquez 2006).

Second, the corporate law literature (Kahan and Klausner 1993; Kahan and Klausner 1997; Bratton 2006; Wood 2011; Choi and Triantis 2012) suggests that covenant restrictiveness can persist over time. When developing the bond contract, each party involved in the bond issuance process – firm managers, underwriters, the legal counsels of issuers and underwriters – has typically had experience with other bond contracts, and switching away from these prior contracts would entail additional contracting costs. For example, the use of a common covenant term (that is already in the public domain of the firm and its peers) may reduce the time spent drafting the covenant and lower the expected costs of litigating disputes. There is a substantial risk to using a covenant that departs from provisions that have been previously scrutinized and enforced by the courts (Choi and Triantis 2012). This risk applies, in particular, to covenants in public bond contracts because of the very high cost of renegotiation with bond investors if covenants are breached.

Furthermore, the use of common covenant terms reduces the information processing costs incurred by bond investors and analysts and facilitates comparisons with alternative bond securities (Kahan and Klausner 1997). Finally, the underwriter may also prefer common covenant structures to facilitate the placement of the bonds. Based on these arguments, we expect

covenant restrictiveness to be sticky with respect to covenant restrictiveness in previous bonds issued by the borrower or its peers, previous bonds arranged by the firm's underwriter, and previous bonds advised by the firm's or underwriter's legal counsels.

We examine the determinants of covenant restrictiveness using a sample of 1,825 bonds issued by U.S. firms over the period from 2000 to 2009. We measure the strength of the bond covenant protection at the bond issue level, by summing the Moody's assessment score of each individual covenant. To more precisely measure the restrictiveness of the covenant package versus the mere inclusion of covenants in a bond contract, we control for the number of covenants throughout our analyses.

Our results provide modest support for agency-based explanations of covenant restrictiveness. First, we find weak evidence that borrowers engaging in shareholder-friendly activities receive more restrictive covenants, where our primary measure of managers' likely pursuit of shareholder-friendly activities is a borrower's engagement in activities, such as stock repurchases or acquisitions, prior to the bond issuance. Second, we find a significant and positive relation between covenant restrictiveness and information asymmetry between the firm and the bond investors, where our primary measure of information asymmetry is based on the absolute value of the difference between the rating assigned to an issue by Moody's and S&P (e.g., Morgan 2002). Third, we find support for our prediction that bondholders' bargaining power significantly increases the restrictiveness of the covenant package. Our primary measure of bargaining power is the tightening of the credit supply in the economy (e.g., Bassett et al. 2012), which is based on changes in bank lending standards for businesses and households, as reported in the Federal Reserve Board's quarterly Senior Loan Officer Opinion Survey on Bank Lending Practices. While covenant restrictiveness and our information asymmetry and bargaining power

measures show strong statistical relations, the economic effect on covenant restrictiveness is modest. In robustness tests, we show that our inferences generally hold for alternative measures of debt-equity conflicts of interest, information asymmetry, and bargaining power.

Consistent with the contract rigidity hypothesis, we find that bond covenant restrictiveness is very strongly explained by its level in the firm's preceding bond issues. For example, the coefficient on the firm's lagged covenant restrictiveness variable is 0.83 and the inclusion of this variable in the regression increases the adjusted R^2 by around 35 percent. This high persistence level in the covenant restrictiveness is evident for each covenant and remains high for bonds issued up to ten years prior to the current bond issue. In additional analyses, we find that a change in a firm's covenant restrictiveness seems to occur only in the presence of a change in bondholders' bargaining power or a significant reduction in bond ratings.

Lending additional support to the idea of contract rigidity, we find that the typical restrictiveness of the covenant structure in the previous bonds of peers is an important determinant of the strength of covenant protection. Similarly, a lagged measure of the covenant restrictiveness of bonds previously issued by the same underwriter explains the strength of the covenants' protection. In addition, lagged covenant restrictiveness of the firm's and the underwriter's respective legal counsels are both economically important determinants of the covenant restrictiveness. To shed further light on the importance of the underwriter and the two legal counsels in determining covenant restrictiveness, we provide evidence that a firm's use of the same underwriter and legal counsels that it employed for its previous bonds helps to explain the high persistence of covenant restrictiveness with respect to the lagged firm's covenants.

An important caveat to our analyses is that we cannot rule out the possibility that the agency factors are also persistent over time, which could partially explain why the covenant

restrictiveness of the borrowers' previous bonds explains the restrictiveness of the current bond. This caveat, however, more likely applies when interpreting our result of persistence with respect to the covenants of bonds issued previously by the firm and its industry peers. Persistence in agency factors across the bonds arranged by the underwriter or the two legal counsels is less likely. Another caveat is that our proxies for debt-equity conflicts of interest, information asymmetry, and bargaining power contain measurement error. For example, the weak effect of our debt-equity conflicts of interest measure on covenant restrictiveness may reflect the difficulty in assessing future shareholder-friendly activities based on the firm's prior engagement in conflict generating events. While we employ various measures of agency factors, we acknowledge that measurement error limits our ability to make inferences about the effect of agency factors on covenant restrictiveness. Also, we note that our evidence on overtime persistence in covenant restrictiveness does not imply that debt contracting practices are inefficient. Rather, our results are consistent with the existence of contracting-based frictions that suggest that bond covenant packages may not fully adjust, or may adjust slowly, to changes in the agency factors expected to explain covenant restrictiveness.

Our study fills an important gap in the literature by examining the restrictiveness of covenants in public bond contracts. We document the multifaceted structure of bond covenants and highlight that the inclusion of individual covenants or covenant count measures may not appropriately capture the strength of bond covenant protection. We also provide new evidence on the determinants of the restrictiveness of covenants in public debt contracts. Skinner (2011) argues that the literature still does not have a good understanding of the economic determinants of debt contractual terms and, in particular, of covenants and their characteristics.

Despite extensive theoretical arguments that suggest that covenant protection is stronger

when debt agency problems are more prevalent, empirical evidence on how agency problems drive the strength of covenant protection in bond covenants is scant. Prior studies primarily examine how borrower characteristics that are likely to exacerbate agency costs, such as growth potential and leverage, affect the occurrence of certain bond covenants or the overall number of bond covenants. We extend these studies by investigating how novel factors – the borrower’s prior engagement in activities detrimental to debt holders, information asymmetry regarding the borrower and bondholders’ bargaining power – affect the strength of bondholders’ protection.

Next, while prior literature has largely focused on agency theory, our analysis highlights the importance of considering contract rigidity as a determinant of covenant restrictiveness. We document significant persistence in covenant restrictiveness, consistent with the debt contract rigidity proposition and the economic underpinnings of boilerplate legal provisions (e.g., Bratton 2006; Kahan and Klausner 1993). We also identify how important players in the public bond market – the bond underwriter and the legal counsels – contribute to the persistence in covenant restrictiveness. Thus our findings significantly expand the rather limited evidence on the time-series variation in covenant structure (Billett et al. 2007).

Finally, our findings emphasize the importance of the economic trade-off between the benefits of a tailored covenant package versus the costs of changing the covenant structure due to contracting frictions in public bond market, such as high switching and renegotiation costs. The high persistence of covenant restrictiveness suggests these costs are likely to be substantially larger relative to what academic literature typically presumes. In this respect, our evidence echoes Skinner’s (2011) argument in the context of syndicated loans that one potential explanation for the limited number of financial covenants in syndicated loans is the possibility that the costs of negotiating and enforcing the covenants are relatively high.

The next section develops our research question and reviews the related literature. Section 3 describes our data and the measurement of the empirical constructs. Section 4 discusses the results and Section 5 concludes.

2. Research Question

2.1. *Background on Bond Covenants*

Incentive conflicts between debtholders and shareholders arise because debtholders face wealth expropriation risk through shareholders' financing and investment activities. Contracting theory, advanced by Jensen and Meckling (1976), Myers (1977), Smith and Warner (1979), Aghion and Bolton (1992), and Haugen and Senbet (1988), among others, argues that these conflicts can be mitigated by including a package of covenants in the bond indenture contract that specify the rights and obligations of the contracting parties. As the covenant package is the debt holders' primary way of protecting the value of their investment in the borrowing firm, the covenants' objectives are to prevent activities that could divert the cash flows to third parties as well as to preserve the relative priority of debtholders' claims. The covenant packages typically attempt to strike a balance between achieving these objectives and giving the bond issuer the flexibility to execute its strategy and run its operations during the term of the bond.

Public debt contracts involve a large number of debt investors that have limited incentives to monitor the borrower on a continuous basis (e.g., Diamond 1984; Ramakrishnan and Thakor 1984). Also, coordination costs and free riding incentives make renegotiations with bondholders extremely difficult when a borrower defaults (Gertner and Scharfstein 1991; Bolton and Scharfstein 1996). Consequently, bond contracts typically offer incomplete covenant protection by using mainly "incurrence-based" covenants; these are provisions that restrict the activities of the issuer and some of its subsidiaries. An issuer only needs to test compliance with

such covenants if it proactively intends to take an action such as issuing more debt, distributing cash to shareholders, engaging in a transaction with a subsidiary or selling assets. Bondholders prefer to avoid “maintenance” covenants that require the issuer to maintain compliance with specified financial terms on an ongoing basis and thus give “early warning signals” when the financial condition of the issuer deteriorates.¹ If these covenants are breached, an issuer will find it costly to organize a disperse set of bond investors on short notice to consider and agree to a revised maintenance covenant.²

Smith and Warner (1979) provide a detailed analysis of the different types of "incurrence-based" covenants included in public debt indentures and the types of stockholder-bondholder conflicts that these covenants are designed to mitigate. They identify three major groups of covenants that protect bondholders from shareholders' value extraction activities. The first group restricts distributions to shareholders via dividend payments or share repurchases. These covenants limit the outright expropriation of bondholders' wealth because cash disbursements leave bondholders with fewer assets to protect their claims. Retained cash can instead be available to service the debt and other obligations.³ The second group of covenants places limits on additional borrowing and the issuance of certain types of debt (e.g., secured debt, more senior debt). These covenants prevent an increase in default risk, which is associated with higher leverage, ensuring that borrowers have the capacity to service their current debt

¹ In contrast to public debt contracts, covenant packages in loan agreements include both maintenance covenants, which require compliance with a financial performance measure on a regular basis, and incurrence-based covenants, which restrain borrowers' ability to engage in certain activities, such as asset sales, dividends payments, share repurchases, mergers and acquisitions or additional borrowing. Because maintenance covenants are set tightly, they are often violated, allowing lenders to use acceleration rights to initiate renegotiations of the credit agreement (Dichev and Skinner 2002; Chava and Roberts 2008; Roberts and Sufi 2009; Nini, Smith and Sufi 2009, 2012). The relatively small number of lenders in bank lending, and the fact that these lenders often operate under reputational constraints, facilitate ongoing renegotiations over the duration of the credit agreement.

² Although bondholders are represented by a trustee in their relation with the bond issuer, its role is largely administrative and does not involve a fiduciary duty. The bond trustee cannot renegotiate a bond indenture on behalf of the bondholders.

³ These covenants can also help to resolve the of managers' incentives to under-invest in growth opportunities (e.g., Myers 1977; Kalay 1982).

obligations and limit the dilution of bondholders' claims generated by the issuance of debt that is equal or more senior to the bond. The third group of covenants restricts borrowers' investment activities, ranging from prohibitions on certain types of transactions, such as mergers, acquisitions or sale/leasebacks, to restrictions on the disposition of assets, particularly at prices less than their equivalent value. These covenants are designed to protect bondholders from transactions that substitute less risky assets for riskier ones (e.g., Jensen and Meckling 1976; Galai and Masulis 1976).⁴ Covenants that restrict investments also mitigate shareholders' incentives to overinvest in negative present value projects instead of paying down the debt.

All the covenants discussed above are "negative" covenants because they prohibit the issuer from certain actions.⁵ As a result, the specification of the bond covenants begins with a *prohibitory* section that establishes the scope of the restrictions. For example, the covenant might state that the issuer will not incur any additional indebtedness. The prohibitory paragraph is typically followed by a provision section, labeled *proviso*, which allows for an exception to the restriction in the prohibitory paragraph, subject to conditions such as a financial ratio test. Continuing the example above, the proviso could state that the issuer can incur additional indebtedness if the consolidated fixed charge coverage ratio (CFCCR) computed after the additional debt is taken remains above a threshold, such as 2:1. The last section in the specification of the bond covenant presents any *carve-outs*, which are exceptions to the prohibitory paragraph in addition to the exceptions in the proviso. For instance, a typical carve-out for the covenant above is to allow the firm to issue bank debt. Another common carve-out is the issuance of public debt with a face value that is lower than a certain percentage of the

⁴ Some transactions often compound the risk by using excessive leverage to finance the purchase of risky assets. Asquith and Wizman (1990) and Warga and Welch (1993) provide evidence concerning the negative effects on bondholder wealth that occurred during the leveraged buyout wave of the 1980s.

⁵ One covenant exception that requires affirmative action is the requirement to deliver periodic financial reports. These ensure a steady flow of readily accessible information to current and prospective bond holders.

borrower's consolidated tangible assets. The proviso and the carve-outs may significantly dilute a covenant's ability to protect bondholders.

The measurement of the incurrence-based covenants' restrictiveness is challenging and requires significant institutional knowledge. The descriptions of bond covenants' terms and conditions are extensive and, based on our reading of bond indentures, often span more than 20 pages in the bond indenture agreement. Moody's covenant assessments summarize the principal protections and the structural gaps in the protection provided by individual bond covenants based on a critical review of each covenant's specification. For example, in assessing the level of protection offered by a covenant that limits debt incurrence, Moody's analysts evaluate a variety of qualitative and quantitative factors, such as the aggregate amount of debt that the firm can issue, the types of debt included in the definitions, the restrictions on debt issued by restricted subsidiaries and restrictions on debt reclassifications. Moody's analysts also pay considerable attention to the definition of the financial ratio that permits the incurrence of debt. Moody's negatively views covenants whose EBITDA definition allows add-backs of non-cash charges and other items that give management the discretion to adjust the ratio in order to issue more debt.⁶

The assessment of covenant restrictiveness also includes the estimation of the headroom in the financial ratios in the *proviso* section (the difference between the ratio's threshold and the borrower's financial ratio at the time of bond issuance). Continuing the debt incurrence covenant example, in Appendix B, we present examples of headroom estimation for this covenant in the bond indentures of Meritage Homes Corporation from October 2008 and K. Hovnanian Enterprises, Inc., from October 2007. Meritage Homes Corporation's indenture specifies that only one of the two financial ratios in the proviso section, CFCCR or consolidated net worth

⁶ For example, the assessment of the quality of the debt incurrence covenant in the bond indenture of Atlas Pipeline Partners from February 2009 emphasizes that "certain undefined terms such as 'non-recurring items' and 'non-cash items give discretion to the issuer in determining the presumptive cash flow under the covenant.'"

ratio, needs to be met. Under the first ratio test, the headroom is negative, as the CFCCR of 0.52 at the time of bond issuance is below the ratio's threshold of 2:1. This negative headroom indicates that the firm cannot issue additional debt under the CFCCR test. However, the consolidated net worth ratio test reveals sizeable positive headroom, which allows Meritage Homes Corporation substantial flexibility in issuing additional debt. Moody's analysts indicate that this flexibility significantly reduces the protection strength of the debt incurrence covenant. In contrast, for the Hovnanian Enterprises, Inc.'s indenture, there is only one financial ratio test, CFCCR, which is set relatively tight (i.e., the headroom is relatively low). Thus, the protection provided by the debt incurrence covenant is substantially enhanced.

Finally, Moody's evaluates whether the carve-outs are limited or extensive. Continuing to build on the Meritage Homes Corporation's indenture, its carve-outs are extensive and allow the company to issue an additional \$505.7M of debt (relative to consolidated total assets of \$1,619.8M) without satisfying the CFCCR or the consolidated net worth ratio tests in the proviso section. For Hovnanian Enterprises, Inc., further contributing to the strength of the debt incurrence covenant, the carve-out allows the issuance of only \$60M of additional debt (relative to consolidated total assets of \$5,363M) without satisfying the CFCCR test.

Academic research on the determinants of the restrictiveness of bond covenant packages is limited and largely relies on the number of covenants to measure covenant restrictiveness or the presence of individual covenants on bond contracts. Malitz (1986) finds that the number of covenants is negatively related to firm size and positively related to firm leverage. Similarly, Begley (1994) finds that firms that have a higher probability of bankruptcy, fewer assets in place and lower operating cash flows are more likely to receive covenants restricting dividends and additional borrowing. Kahan and Yermack (1998), Nash, Netter, and Poulsen (2003) and Chava,

Kumar, and Warga (2010) find that high growth firms are less likely to include covenants, suggesting that the benefits of preserving operating flexibility outweigh the benefits of reducing the agency cost of debt for these firms. In contrast, Billett, King and Mauer (2007) show that the incidence of various types of bond covenants is increasing in growth opportunities.

However, the occurrence of a covenant or an index that counts the number of covenants may not fully capture the true level of protection provided to debt investors. As illustrated above, bond contracts could include poorly specified covenants or covenants with substantial exceptions that render them ineffective. Hence, an evaluation of the covenant restrictiveness based on a detailed examination of the covenants' terms is critical. Covenant restrictiveness in public debt contracts has not yet received any attention in the literature, mainly because of the difficulty in measuring the restrictiveness of incurrence-based bond covenants. Our study addresses this gap.⁷

2.2. Factors Affecting Covenant Restrictiveness

Our first agency theory related prediction is rooted in the fundamental relation between covenants and the conflict between debtholders and shareholders (as discussed above). If covenants in debt contracts represent a critical way to address this conflict, then in equilibrium, all else being equal, we would expect more restrictive covenants when the debt-equity incentive conflicts are greater. More specifically, we expect that firms with more pronounced debt-equity holder conflicts of interest to receive more restrictive covenant packages in bond contracts.

Bondholders' covenant protection choice also depends on the availability of credible information to accurately evaluate a borrower's agency risk. Lower quality information impedes

⁷ A number of studies examine the covenant restrictiveness of syndicated loans by assessing the slack of financial covenants (e.g., Dichev and Skinner 2002; Beatty and Weber 2006; Chava and Roberts 2008; Drucker and Puri 2009; Demiroglu and James 2010; Murfin 2011). However, the slack can only be estimated with significant measurement error due to the fact that lenders often make substantial adjustments to GAAP numbers when defining covenant thresholds (Leftwich 1983; Dichev and Skinner 2002; Beatty et al. 2008; Li 2012). These adjustments also vary across both different covenants in the same loan contract and across different loan contracts. Further complicating the slack estimation, financial covenant thresholds frequently change over the life of the loan (Li, Vasvari, and Wittenberg-Moerman 2012).

bond market participants from effectively assessing a borrower's existing credit risk or from monitoring potential changes in this risk over the duration of the bond contract. The theoretical model of Garleanu and Zwiebel (2009) explores the implications of information asymmetry on the design of debt covenants and suggests that debtholders should receive stronger decision rights, in the form of more restrictive covenants, when the asymmetric information about a borrower is higher.⁸ Thus, we expect that the bond covenant package will be more restrictive when information asymmetry between the borrower and the investors is higher.

Next, we predict that covenant protection increases as bondholders' bargaining power strengthens. While the construct of bargaining power is difficult to measure, we expect it to depend to a large extent on the availability of the credit supply in the debt market (see Bassett et al. (2012) who discuss and provide evidence of the link between lending standards and macroeconomic changes). Credit supply factors highlight the importance of borrowers' outside options in altering the relative bargaining power of the contracting parties. Dell'Ariccia and Marquez (2006) present a model where, in a period of credit expansion, a sudden increase in the demand for loans from new borrowers lessens a bank's concern about whether a loan application is from a new borrower or from one that was rejected by another bank. As the likelihood that a loan application is from a new borrower rises, the banks, in perfect competition, are more likely to lower their protection to extend credit to the borrower and gain market share.⁹ These theoretical predictions also apply to the bond market; borrowers are likely to issue bonds with weaker covenant protection during periods of credit expansion. We thus predict that when the

⁸ Although Garleanu and Zwiebel (2008) allows for debt contract renegotiations that characterize bank loan contracts, their theoretical framework models the restrictiveness of covenants in any debt contract, including public bonds. While renegotiations in bond contracts are unlikely, borrowers often restructure the bond issues to avoid covenant breaches by exercising their call option or by repurchasing the bonds in the open market via tender offers.

⁹ Consistent with this argument, the extensive credit supply in the years preceding the recent financial crisis induced the "covenant-lite" loan phenomenon in the syndicated loan market (Leverage World 2006; Fitch Ratings 2007; Moody's Investor Services 2007).

supply of credit is tight and bondholders gain bargaining power, bond indentures will demand more restrictive covenant packages.

While the three predictions above are tightly linked to agency theory, a number of practical matters in designing bond contracts imply that bond covenants may not fully adjust, or may adjust slowly, to changes in the agency factors expected to explain covenants. Anecdotal evidence suggests that, except for a handful of custom terms, bond contracts often adopt standard provisions that are functionally, if not literally, identical to those used in other bond contracts. For example, Kahan and Klausner (1997) argue that significant portions in the bond indenture are boilerplate and are often taken from the files of law firms, the commentaries of the American Bar Foundation, or the indenture of a firm's earlier bond (see also Weidemaier 2009). We highlight a number of factors that potentially influence this rigidity in bond contracts.

The first factor is the switching cost of modifying covenants. When developing the bond contract, each party involved in the process has a set of prior bond contracts; switching away from these would be costly. For example, if a firm has issued a previous bond, changing covenant terms would require its management to spend time reviewing, discussing, and approving any new terms. Legal expenses also add to the switching cost. Lawyers must spend more time composing, reviewing and assessing covenant terms that deviate from contracts with which they are familiar, either from the firm's previous indenture or from indentures issued by their other clients. Given the institutional features of the legal profession such as hourly billing, saving legal time translates into reduced legal fees. In addition, the use of a common covenant may improve the quality of the legal advice because of the lawyers' familiarity with the covenant from past experience. More broadly, an additional cost of deviating from covenants used in bonds previously issued by the firm or its peers is the higher expected cost of litigating future

disputes. Firms are typically reluctant to take the risk of departing from provisions that have been previously interpreted, scrutinized and enforced by the courts (Choi and Triantis 2012).¹⁰ Judicial opinions reduce uncertainty regarding the validity and meaning of a covenant and the interaction of the covenant with relevant legal requirements, such as those contained in corporate, securities, and bankruptcy laws. This concern applies, in particular, to covenants in public bond contracts because of the very high cost of renegotiation with bond investors if covenants are breached.

Second, the corporate law literature highlights that firm managers, underwriters and their respective legal counsels can learn from the analysis of the debt contractual terms employed by peers. This leads to greater efficiency in the drafting of the bond contract. Next, Kahan and Klausner (1997) argue that the use of common covenant terms reduces the information processing costs that investors and analysts incur when evaluating a firm's bond indentures and facilitates comparisons with other bond issues. In the primary market, common covenants also allow investors to decide quickly whether they want to purchase the bond when it is offered. These benefits for bond investors can, in turn, increase bond liquidity and thereby potentially reduce the borrower's cost of capital. Finally, bond underwriters have substantial influence on covenant restrictiveness because of their contracting expertise and their responsibility for marketing the bond securities. Underwriters possess information regarding the needs and expectations of their investor base with respect to covenant protection and might prefer certain covenant terms to facilitate the marketing of the bonds.

In sum, based on the arguments above, because of the many costs associated with deviating from existing covenant structures, we expect covenant structures to persist over time. More specifically, we predict that covenant quality is explained by the restrictiveness of the

¹⁰ For example, in a series of cases, courts have clarified how an indenture clause should be worded in order to subordinate the claims of junior creditors to unsecured senior creditors' claims for interest accrued after the filing of a bankruptcy petition (Kahan and Klausner 1997).

covenant packages in bonds previously issued by the firm, bonds previously issued by the firm's peers, bonds previously underwritten by the bond's lead underwriter and bonds advised by the firm's and underwriters' respective legal counsels.

3. Description of Data and Tests

3.1. Covenant Restrictiveness Measures and Sample

Our covenant restrictiveness measure is based on a novel dataset of individual bond covenant restrictiveness as assessed by Moody's covenant analysts. Moody's Covenant Quality Assessment (CQA) service provides an informed opinion of covenant restrictiveness, targeted at helping institutional bond investors to make better investment decisions. Moody's covenant analysts consider eight key bond covenants that protect bondholders against event risk that fit in the three covenant groups discussed by Smith and Warner (1979). In the group that restricts distributions to shareholders, Moody's includes the restrictions on payments to shareholders and other parties (*Restricted Payments*). In the group that limits additional borrowing and the issuance of certain types of debt, Moody's includes: restrictions on debt issuance, debt reclassifications or debt retirement through asset sales (*Debt Incurrence*), restrictions on debt issuance, reclassifications or retirement by any subsidiaries (*Subsidiary Debt Incurrence*), and restrictions on the issuances of pledges to secure other subordinated debt (*Liens*). Finally, in the group that restricts risky investment activities, Moody's includes: restrictions on the sale of assets (*Asset Sales*), restrictions on sale and leaseback transactions (*Sale/Leaseback*), restrictions on mergers or asset conveyance (*Mergers*), and restrictions on changes in the ownership of the issuer (*Change of Control*). In Appendix A, we define these covenants and provide a discussion of how Moody's assesses the quality of each.

The Moody's CQA database covers 3,075 bonds issued during the 2000 – 2009 period.

Conditioning the sample on the U.S. market and after controlling for the availability of bond- and firm-level control variables, we obtain a sample comprising 1,825 bond issues. Table 1 summarizes the sample selection process. The individual covenant scores receive values of 0 (does not exist), 1 (minimal protection), 2 (moderate protection) or 3 (strong protection). The primary dependent variable for our tests (*Covenant Restrictiveness*) is the sum of each individual bond-level covenant quality score provided by Moody's. Hence, higher aggregate values of *Covenant Restrictiveness* indicate better covenant protection. Note that all our results are robust to the use of an alternative aggregation method in which we weight each covenant based on the importance suggested by Moody's.

As discussed earlier, the measurement of covenant restrictiveness for bond contracts is a complex exercise and can involve subjective judgments. Accordingly, it is important to establish the validity of these CQA scores. First, to help establish internal validity, we document a strong correlation between carve-outs (an objective numerical measure) and CQA scores for a subsample of covenants assessed by Moody's for which we have both covenant quality scores and quantitative information on carve-outs (i.e., the ratio of the carve-out amounts to total assets). This test is conducted at both the individual covenant level and a combined level across the three covenants in which there are significant carve-outs. The pair-wise Pearson correlation coefficients between CQA scores and carve-outs for payment restrictions, debt restrictions, investment restrictions, and at the combined level are -0.39, -0.58, -0.33, and -0.49, respectively (all significant at the 1% level). This negative correlation indicates that, as expected, greater carve-out amounts lead to weaker covenant protection scores.

Second, to help establish external validity, we compare Moody's CQA scores to similar covenant quality scores provided by Xtract Research LLC, another provider of covenant quality

assessments for speculative grade bonds. We match 328 bonds from these two datasets and observe a strong positive correlation between the covenant quality assessments provided by these two independent firms. As Xtract has only two categories, weak and normal, we convert our Moody's CQA scores to a binary score, using the median value of *Covenant Restrictiveness* by rating category. We find that the scores of Moody's and Xtract correspond with each other in 79.6 % of the cases (i.e., either both scores are weak or both scores are normal).

3.2. Tests

To test how agency-based factors affect covenant restrictiveness, we estimate various specifications of the following regression:

$$\begin{aligned} \text{Covenant Restrictiveness}_{it} = & \beta_0 + \beta_1 \text{Conflict}_{it} + \beta_2 \text{Information Asymmetry}_{it} + \beta_3 \text{Lender Power}_{it} \\ & + \beta_4 \text{Number Covenants}_{it} + \beta_5 \text{Investment Grade} \\ & + \beta_6 \text{Firm Characteristics}_{it} + \beta_7 \text{Bond Characteristics}_{it} + \eta_{it}. \end{aligned} \quad (1)$$

Conflict is measured as an indicator variable that takes on a value of one if the firm issuing the bond engaged in a potential bondholder-shareholder conflict activity (i.e., a stock repurchase or acquisition) in the quarter preceding the issuance. Alternative aggregation windows that include the prior two and four quarters produce similar results. Our primary information asymmetry measure (*Information Asymmetry*) is based on the absolute value of the difference between the rating assigned to an issue by Moody's and S&P. When either of the two ratings is not available, Fitch ratings are used for comparison. Absolute difference values of less than two (i.e., adjacent ratings) are assigned a value of zero. Empirical evidence suggests that split ratings result from a borrower's information opacity, which triggers differences in how credit quality is assessed by the rating agencies (Morgan 2002).

We anticipate that significant contraction and expansion in the supply of credit in the economy shifts the contractual bargaining power between borrowers, who seek operational flexibility, and lenders, who seek adequate protection (Tung 2009; Choi and Triantis 2012).

Consistent with Bassett et al. (2012), among others, we measure lenders' bargaining power by using changes in bank lending standards for mid-sized and large commercial loans as reported in the Federal Reserve Board's quarterly Senior Loan Officer Opinion Survey on Bank Lending Practices. *Lender Power* is an indicator variable for whether the bond is issued during a period of consistently tight credit supply, defined as a period of four or more consecutive quarters of tightening in lending standards for mid-sized and large commercial loans.

Number Covenants is the total number of bond covenants as identified in the Mergent FISD database. We control for the number of covenants because our empirical focus is on explaining the part of covenant restrictiveness that is orthogonal to the number of covenants. *Investment Grade* is an indicator for whether the debt is rated investment grade by at least one of the three major credit rating agencies. Prior research has shown that investment grade debt has less restrictive covenant packages than covenants in speculative grade debt (e.g., Berlin and Mester 1992; Billett, King, and Mauer 2007; Rauh and Sufi 2010).

We also control for firm and bond characteristics associated with higher credit riskiness. *Firm Characteristics* include the firm's size, leverage, tangibility, and interest coverage. We also include a variable that indicates whether the bond issue has private debt outstanding in the syndicated loan market, to control for the potential benefits of private banks' monitoring of the firm's creditworthiness (Datta, Iskandar-Datta, and Patel, 1999).¹¹ Our *Bond Characteristics* include bond features that likely reflect a borrower's credit riskiness: the initial yield to maturity at the time of bond issuance, the time to maturity, the principal amount of the bond offering, and an indicator variable for whether the issue is secured. For a more detailed description of these and other variables, see Appendix C.

¹¹ In untabulated analysis, we control for the effect of growth as measured using the market to book ratio. We exclude this particular control variable in our tabulated regressions because its data availability leads to a substantially smaller sample size. No inferences are affected by its inclusion.

To examine whether covenant restrictiveness is persistent over time (i.e., that the restrictiveness of the bond covenant package is “sticky”), we augment Equation 1 with lagged *Covenant Restrictiveness* scores. *Lag Firm Covenant Restrictiveness* is the covenant restrictiveness score of the previous bond issued by the same firm, provided the previous bond is issued at least six months prior to the current issue. *Lag Peer Covenant Restrictiveness* is the average covenant restrictiveness of bonds within the same rating category (investment grade or high yield) and industry sector prior to the current bond issue. *Lag Underwriter Covenant Restrictiveness* is the average covenant restrictiveness of bonds with the same rating category (investment grade or high yield) and underwritten by the same lead underwriter prior to the bond issuance. *Lag Legal (Issuer) Covenant Restrictiveness* and *Lag Legal (Underwriter) Covenant Restrictiveness* are defined similarly. For all our tests, we cluster the standard errors at the firm level. Positive coefficients on these variables are consistent with the covenant restrictiveness being persistent over time.

4. Results

4.1. Descriptive Statistics and Analysis

Descriptive statistics for the main variables used in our tests are provided in Panel A of Table 2. The mean *Covenant Restrictiveness* is 11.8, out of a maximum possible score of 24. A mean of 0.21 for *Conflict* shows that 21% of the bond issues in our sample had a conflict activity (e.g., stock repurchase or M&A) in the prior quarter. A mean *Information Asymmetry* of 0.09 indicates that 9% of the issues in our sample receive a split rating at the time of the issuance. A mean *Lender Power* value of 0.29 indicates that 29% of the bonds are issued during periods of tight credit supply. Note that variables with a number suffix (e.g., #2) represent alternative measures of our main agency theory constructs and are discussed in our robustness tests. The

average bond issue has about five covenants, a maturity of 14 years, a yield to maturity of 642 basis points and an offering amount of \$580 million. Firms issuing these bonds have, on average, debt ratios of 28% and tangibility ratios of 40%.

In Panel B of Table 2, we present some descriptive analysis of changes in the covenant restrictiveness score relative to the firm's previous bond issue. We immediately notice that aggregate covenant restrictiveness is very persistent, as there is no change in *Covenant Restrictiveness* in 83.4% of the cases. Also, the restrictiveness of each individual covenant remains essentially unchanged when there is no change in *Covenant Restrictiveness*. In 1.8% of the cases *Covenant Restrictiveness* increases by 1 relative to the previous bond issue. This change is driven primarily by the increase in the restrictiveness of *Restricted Payments*, *Change of Control*, and *Sale/Leaseback* covenants. When *Covenant Restrictiveness* decreases by 1, the same set of individual covenants contributes to this change. *Covenant Restrictiveness* increases by 2 in 9.1% of the cases. This change is driven to a large extent by the increase in the restrictiveness of the *Change of Control* covenant. When there is a substantial increase of 3 or more in *Covenant Restrictiveness*, it can be attributable to a change in the restrictiveness of many individual covenants.

4.2. Tests: Debt-Equity Conflicts, Information Asymmetry, and Bargaining Power

Table 3 presents the results of estimating various specifications of Equation 1. Before proceeding to a discussion of our variables of interest, we note that as expected, all specifications show that the number of covenants is positively related to the covenant restrictiveness score. We emphasize that by controlling for the number of covenants, our test variables can be interpreted as mainly explaining the restrictiveness of the covenant package. In untabulated analyses, if we exclude the number of covenants, the results and inferences are similar.

Column 1 of Table 3 reveals that the relation between *Conflict* and *Covenant Restrictiveness* is marginal. Although the coefficient on *Conflict* is positive, it is at a low level of statistical significance (t -statistic = 1.38, significant at 10%, one sided). Also, the economic magnitude of this effect is small: borrowers engaging in shareholder-friendly activities receive covenant packages that are stricter by about 3% relative to the sample mean.

Column 2 of Table 3 presents the effect of information asymmetry on covenant restrictiveness. The coefficient on *Information Asymmetry* is positive and statistically significant, which indicates that covenant restrictiveness is higher for firms with split ratings, our proxy for higher information asymmetry. The economic significance of this effect is modest: the restrictiveness of the overall covenant package of bonds with split ratings is higher by about 3% relative to the sample mean. As a benchmark to assess this economic significance, a one-standard-deviation change in asset tangibility (an important firm characteristic that loads in our regression) leads to a change in the restrictiveness of the overall covenant package by about 2% relative to the sample mean.

In Column 3, we provide evidence in support of the effect of bondholders' bargaining power on covenant restrictiveness. The coefficient on *Lender Power* is positive and statistically significant, showing that covenant restrictiveness is greater if the bond is issued during periods of tight credit supply, when bargaining power shifted away from borrowers to bond investors. The economic significance of the effect is again relatively modest. The issuance of bonds during tight credit supply periods is associated with an increase in the overall restrictiveness of the covenant package of about 7% of the sample mean.

In the first three columns, we have separately included the proxies for debt-equity conflicts of interest, information asymmetry and lender bargaining power. In Column 4, we show

the results when we include all the proxies together. These results are similar in terms of statistical and economic significance, corroborating our inferences from the first three columns. In terms of control variables, the Table 3 regression results reveal that covenant restrictiveness is greater for high-yield relative to investment grade bonds and that it is decreasing in firm size and tangibility. The restrictiveness is higher for bonds with a higher yield to maturity and when the bond is secured, and it is decreasing in the bond's maturity.

Panel B of Table 3 provides robustness tests for our main results in Panel A. We start by providing the results using alternative measures of our agency factors. The number of observations for each test depends on the availability of data to calculate these alternative measures. Hence for some tests with smaller samples, we cannot rule out the possibility that weak results could reflect reduced power. Our alternative measure for debt-equity conflict, *Conflict #2*, is the average of an indicator variable that takes a value of one if a sell-side debt analyst issued a sell recommendation when the average equity analyst recommendation was a buy, calculated within the six-month period prior to the bond issuance under consideration. This variable captures situations where debt analysts, who represent the interests of debt holders, and equity analysts, who cater to shareholders, are in disagreement. De Franco et al. (2012) show that the disagreement between debt and equity analysts reflects bondholder-shareholder conflicts of interest. The results reported in Column 1, however, show that the coefficient on *Conflict#2* is not statistically significant.

We use three alternative measures of information asymmetry between the firm and debt-holders. *Information Asymmetry #2* is the standard deviation of debt analysts' recommendations, calculated within the six-month period prior to the bond issuance under consideration, scaled by the mean recommendation level over the same period (see De Franco et al. 2009 for a related

discussion about debt analysts). *Information Asymmetry #3*, consistent with Duffie and Lando (2001), is constructed as the negative of the sum of the slopes of the yield curve between one year to five year and five year to ten year maturities. Specifically, Duffie and Lando (2001) show that firms with greater information asymmetry exhibit a flatter yield term structure, as information asymmetry has a higher economic significance for shorter-maturity bonds than it does for longer-maturity bonds. Our measure is constructed so that higher values reflect higher information asymmetry. *Information Asymmetry #4* is the dollar volume of bond principal traded during the quarter prior to the issuance date of the bond under consideration, averaged over all the firm's bonds outstanding during the period. Bonds that trade more often are likely to be characterized by less information asymmetry (Admati and Pfleiderer, 1988; Foster and Viswanathan, 1990; Barclay and Hendershott, 2003). Columns 2 to 4 provide the respective tests for each of these measures. The coefficient on *Information Asymmetry #2* is positive and significant, providing corroborative evidence for the effect of information asymmetry and covenant restrictiveness. The coefficients on *Information Asymmetry #3* and *Information Asymmetry #4* are not statistically significant.¹²

Lender Power #2 is an alternative measure of the tightening of credit in the economy. It indicates whether a bond has been issued during the recent financial crisis from 2007 to 2009. The credit crisis has been perceived as strengthening creditor's bargaining power, given the lack of liquidity in the credit markets and investors' increased risk aversion (e.g., Ivashina and

¹² Untabulated tests show that our inferences of a positive relation between information asymmetry and covenant restrictiveness are robust to the use of two other measures of information asymmetry based on SEC rules. Shelf registration under Rule 415 (SEC 1982) permits firms to file a single all-encompassing registration statement once every two years, rather than filing individual registration statements for every security offering. Prior research demonstrates that only informationally transparent firms issue securities under this rule (Heron and Lie 2004; Autore, Kumar, and Shome 2008; Bethel and Krigman 2008; Karpavicius and Suchard 2010). Debt securities issued under Rule 144A are exempt from SEC registration and financial reporting requirements. The trading of these securities in the secondary market is restricted, thus limiting the release of information through price discovery, which leads to less transparency relative to public debt issues (Chaplinsky and Ramchand 2004).

Scharfstein 2010). In Column 5, we see that the coefficient on *Lender Power #2* is positive and statistically significant. These results provide further support for our finding that increases in bargaining power by debt holders lead to increases in the level of covenant protection.¹³

As the bond characteristics are potentially endogenous with the strength of covenant protection, we also estimate our tests using the original agency factor measures but excluding the bond characteristics. The Column 6 results show that the inferences remain the same. An important caveat to our analyses is the existence of measurement error in our proxies for debt-equity conflicts of interest, information asymmetry, and bargaining power. While we employ various measures of agency factors, we acknowledge that measurement error limits our ability to make inferences about the effect of agency factors on covenant restrictiveness.

4.3. Tests: Contract Rigidity

In Panel A of Table 4, we examine the persistence of the level of covenant protection. We estimate specifications similar to Panel A of Table 3 augmented with various lag covenant restrictiveness variables. In Column 1, we expand the model to include *Lag Firm Covenant Restrictiveness*. This test is limited to observations in which the firm has issued a previous bond during our sample period but not in the six months preceding the current bond issue. This latter restriction is necessary to allow the agency factors to change, hence giving firms and debt investors an opportunity to adjust the restrictiveness of the covenants. An untabulated test indicates that results are similar if we relax this restriction.

The Column 1 test shows that covenant restrictiveness is remarkably persistent over time.

¹³ While not the main objective of our analysis, our results on bondholders' bargaining power also contribute to the literature that investigates the impact of the supply of credit on the economy. A large number of studies suggest that credit supply is important in explaining the evolution of business cycles and lending volume (e.g., Holmström and Tirole 1997; Diamond and Rajan 2005; Kashyap and Stein 2000; Ivashina and Scharfstein 2010). Another set of recent papers investigate the effects of disruptions in credit supply on firm financing and investment activities (e.g., Peek and Rosengren 2000; Chava and Purnanandam 2011; Becker and Ivashina 2011). We document that a significant tightening in the supply of credit affects not only the firm's access to debt capital, but also the contractual arrangements between the firm and its providers of debt capital.

The coefficient on *Lag Firm Covenant Restrictiveness* is 0.83, with the t -statistic vastly greater than the statistical significance obtained on any other explanatory variable. Moreover, the adjusted R^2 is now 0.90 (contrasted with an adjusted R^2 of 0.55 to 0.56 in Panel A of Table 3, in which we do not include *Lag Firm Covenant Restrictiveness*).¹⁴ In Column 2, we provide a test of another contract rigidity prediction: that the covenant restrictiveness of bonds previously issued by peers predicts the covenant restrictiveness of the current bond. We estimate Equation 1 augmented with *Lag Peer Covenant Restrictiveness*. The coefficient on this variable is 0.78 and highly significant. In Column 3, we estimate Equation 1 augmented with *Lag Underwriter Covenant Restrictiveness* to examine the effect of bond underwriter on the persistence of covenant restrictiveness. The coefficient on this variable is 0.63 and is statistically significant. Last, in Columns 4 and 5, we test whether the legal counsels involved in the deal, representing the firm and the underwriter, respectively, also show persistence in covenant restrictiveness relative to the covenant restrictiveness of the previous bonds they have been involved with. The Columns 4 and 5 coefficients on lagged firm and underwriter legal counsels are 0.85 and 0.74, respectively, both of which are statistically significant. Note that when we include the lagged measures of the covenants' restrictiveness, the magnitude and statistical significance of the coefficients on *Information Asymmetry* weakens (it is significant at 10%, one sided in three out of five specifications). The coefficients on *Lender Power* remain statistically significant but decrease in magnitude.

In Panel B of Table 4, we investigate how the underwriters and the two legal counsels interact with the firm to affect contract rigidity. Our analysis of underwriters starts by including

¹⁴ Kahan and Klausner (1997) provide small sample evidence supporting our findings of the importance of lag firm covenant restrictiveness. They perform a close examination of the specification of the change of control covenant, which was first introduced in bond indentures in late 1980 in response to the increased risk of leverage buyouts. They document that in 98% of the bonds the change of control covenant was identical to the covenant's specification in the issuer's preceding bond for each of the 27 provisions typically present in the covenant.

lagged firm, peer, and underwriter covenant restrictiveness in the specification. The coefficients in Column 1 on the covenant persistence factors continue to load when more than one factor is included in the specification, albeit with lower coefficient magnitudes. The results suggest that *Lag Firm Covenant Restrictiveness* empirically dominates the underwriter-based lag.

A potential explanation for the explanatory strength of the covenant restrictiveness of a borrower's previous bonds is that the borrower uses the same underwriter for the current bond as it did for its previous bond. We examine this possibility in Column 2. We augment the Column 1 specification with a measure of lag underwriter covenant restrictiveness estimated exclusively based on the borrower's previously issued bonds. *Lag Underwriter – Same Firm Covenant Restrictiveness* is the average covenant restrictiveness of the borrower's previous bonds underwritten by the same lead underwriter up to the current bond issuance. In this specification, this variable captures the stickiness of covenant restrictiveness with respect to the borrowers' previous bonds arranged by the same underwriter, while *Lag Underwriter Covenant Restrictiveness* captures the persistence with respect to the bonds of other firms arranged by that underwriter. Note that in order to define our variables appropriately, this analysis is restricted to borrowers that have at least one previous bond underwritten by the same underwriter. We find that indeed the high persistence in covenant restrictiveness with respect to the lagged firm's bonds is partially attributed to the same underwriter being involved in the firm's previous bond issues. The coefficient on *Lag Underwriter – Same Firm Covenant Restrictiveness* is 0.51 and is statistically significant. The covenant restrictiveness of the bonds of the underwriter's other clients also affects the restrictiveness of the current issue, but to a lesser degree (the coefficient on *Lag Underwriter Covenant Restrictiveness* is 0.16). In this specification, the coefficient on *Lag Firm Covenant Restrictiveness* reflects a firm's covenant persistence unrelated to the

underwriter effect – it also has a statistically significant coefficient but is less important than the part of a firm’s covenant persistence that is explained by the use of the same underwriter.

In Columns 3 to 6, we perform a similar analysis to better understand the persistence in covenant restrictiveness driven by the legal counsels. *Lag Legal Counsel (Firm) – Same Firm Covenant Restrictiveness* (in Column 4) and *Lag Legal Counsel (Underwriter) – Same Firm Covenant Restrictiveness* (in Column 6) are defined analogously to the firm-specific underwriter lag. We find a pattern similar to that of the underwriter. The firm’s lagged covenant restrictiveness empirically dominates the legal-based lags (see Columns 3 and 5) and using the same respective legal counsels for the firm's previous bonds helps to explain the high persistence of covenant restrictiveness with respect to the lagged firm’s covenants (see Columns 4 and 6).

An important caveat to our analyses is that we cannot rule out the possibility that the agency factors are also persistent over time, which could partially explain why the covenant restrictiveness of the borrowers’ previous bonds explains the restrictiveness of the current bond. This caveat, however, more likely applies when interpreting our result of persistence with respect to the lagged firm’s covenants, and potentially the persistence with respect to the lagged peers’ covenants. Persistence in agency factors across the bonds arranged by the same underwriter or the two legal counsels is less likely.

If bond covenants are indeed rigid over time, we should observe significant persistence in each individual covenant. We test this notion in Panel C of Table 4. We re-estimate the Table 4, Panel A, Column 1 *Lag Firm Covenant Restrictiveness* regression for each individual covenant. That is, we replace the dependent variable with a particular individual covenant score and also include the lagged score of that individual covenant in the regression. Panel B provides the results from each regression by covenant. For parsimony, while all control variables are included

in these tests, we only tabulate the coefficient on the lagged covenant score, the t -statistic, and the adjusted R^2 from each regression. We find that the restrictiveness of each covenant is highly persistent. For example, in the first row, we see that the lagged restricted payment covenant (*CR Pay*) has a coefficient of 0.78 and an adjusted R^2 of 88.2%. The coefficients on other lagged covenants range from 0.62 to 0.94, which indicates that each of these covenants is also highly persistent across bond issues for a given firm.¹⁵

In Panel D of Table 4, we explore how the persistence of covenants' restrictiveness depends on the length of the lag between the current bond issue and the firm's previous bond issue. The sample is partitioned into five mutually exclusive lag lengths. The results show that persistence in covenant restrictiveness decreases as the time lag increases. For example, if the previous bond issue occurred from six months to one year ago, the coefficient on *Lag Firm Covenant Restrictiveness* is 0.94. When the previous issue was four to five years ago, the coefficient on *Lag Firm Covenant Restrictiveness* is 0.85, and when the lag increases to eight to ten years ago, the coefficient on *Lag Firm Covenant Restrictiveness* is 0.64. This latter result also suggests that the high persistence level in the strength of the covenant package remains high even for bonds issued up to ten years prior to the current bond issue.

Our results of a very high persistence in covenant restrictiveness with respect to a firm's previous bonds begs the questions of what can explain the changes in covenant restrictiveness and what explains how a firm's first bond is set (when it has no previous bond to model its covenant structure on). We conduct two additional analyses to address these questions.

First, Table 5 shows the results of a changes analysis. We start by estimating our original

¹⁵ In untabulated analyses, we performed similar tests for each of our other lags based on sector, underwriter, and the firm's and the underwriter's respective legal counsels. We also find significant persistence in each individual covenant. Across these other lag restrictiveness measures, almost all the (i.e., 31 out of 32) coefficients on the lagged covenants are statistically significant and range primarily from 0.7 to 0.9, with the smallest being 0.58.

Table 3 agency factor specification in which all variables are measured in changes. (We excluded *Private Loan* as it rarely changed over time.) These results, presented in Columns 1 to 3, are broadly similar to those documented above and produce similar inferences in that we only find modest support for agency-based explanations of covenant restrictiveness. The coefficient on $\Delta Conflict$ is significant at the 10%, one-sided level, providing weak evidence that borrowers engaging in shareholder-friendly activities receive more restrictive covenants. The coefficient on $\Delta Information Asymmetry$ is not significant. We continue to find support for our prediction that bondholders' bargaining power significantly affects the restrictiveness of the covenant package, as evidenced by the positive and statistically significant coefficient on $\Delta Lender Power$, but the economic effect of this variable is again relatively small.

While our interests are in changes in agency factors, given that these have a limited ability to explain covenant restrictiveness, we investigate what could lead to a change in covenant restrictiveness. The remaining four columns of Table 5 provide various specifications in which we explore the relation between changes in ratings and changes in covenant restrictiveness. Rating changes are well-studied, economically important debt-market events and so represent a natural benchmark for gauging the degree of rigidity of covenant restrictiveness. These regressions show that covenant restrictiveness increases following a rating downgrade (see Column 4), and that the magnitude of the downgrade has to be substantial, either a four notch rating decrease (see Column 6) or a drop from investment grade to high yield (see Column 7). These results help illustrate the high rigidity of covenant restrictiveness over time.

In Table 6, we present the second set of our analyses, in which we estimate our original Table 3 agency factor specification for a firm's first bond. We examine all the bonds of the borrowers in our sample in the Mergent database and then retain the first bond issued by each

borrower. Unfortunately, the sample is small and limited to only 73 observations. Nonetheless, these results provide some support for our agency-based explanations of covenant restrictiveness. The coefficients on *Information Asymmetry* and *Lender Power* are positive and statistically significant. Interestingly, the magnitudes of these two coefficients (1.62 and 0.96, respectively) are greater than the coefficients on the same two variables in the original specifications estimated using the full sample in Table 3 (0.37 and 0.82, respectively). The coefficient on *Information Asymmetry* is, in particular, substantially greater.

To summarize, while our findings support the idea of rigid bond contracts, we highlight that they do not imply that debt contracting practices are inefficient. There are a number of practical matters in designing bond contracts that imply that bond covenant packages may not fully adjust, or may adjust slowly, to changes in the agency factors expected to explain covenant restrictiveness. In other words, the benefits of not changing the covenant restrictions may outweigh the benefits of a more tailored covenant package.

4.4. *Additional Analysis: Investment Grade versus High Yield Bonds*

We next examine whether our inferences about the rigidity of covenant restrictiveness hold for both investment grade and high yield bonds. Because investment grade companies have a relatively lower probability of default, these bond investors are less likely to worry about the level of covenant protection when they invest in investment grade relative to high yield bonds. As a result, given the costs and risks of changing covenant terms, the benefits of adapting to changes in agency factors may be relatively small for investment grade investors. In contrast, due to the higher credit riskiness of high yield bonds, investors in these bonds should demand and negotiate covenants that more closely correspond to changes in agency factors. We therefore expect high yield covenant structures to be less rigid than those of investment grade bonds.

In Panels A and B of Table 7, we replicate our Table 4, Panel A analyses for investment grade and high yield bonds, respectively. While all our control variables are included in these tests, for parsimony we only tabulate the coefficient on the lagged covenant scores and agency factors. We find that covenant restrictiveness is very rigid for both investment grade and high yield samples. We continue to find that the lagged firm, underwriter, sector and two legal counsels covenant restrictiveness scores are the primary determinants of the covenant restrictiveness in the current bond issue for both samples. Consistent with our prediction, we find that covenant restrictiveness with respect to the firm's previous bonds is more persistent for investment grade than it is for high yield bonds (the difference in coefficients of 0.895 in Panel A and 0.705 in Panel B is significant at the 1% level). The differences in the coefficients for the other lagged restrictiveness factors between investment grade and high yield bonds are not statistically significant.

5. Conclusion

This study represents one of the first attempts to investigate the determinants of the overall restrictiveness of bond covenant packages, in contrast to prior literature, which focuses on the presence of individual covenants or a count index of the number of covenants included in a bond contract. Due to the presence of extensive terms tied to each covenant, the assessment of the covenant restrictiveness in public debt contracts is challenging to measure and has consequently received limited attention in the literature. We fill this gap by employing a novel covenant assessment database compiled by Moody's, which provides quantitative scores on the overall restrictiveness of bond covenants.

We find that bond covenants are more restrictive when the information asymmetry between the borrower and the bond investors, as captured by the absolute value of the difference

between the ratings assigned by Moody's and Standard and Poor's, is higher and when bond investors have greater bargaining power, as measured by changes in bank lending standards reported by Federal Reserve Board's quarterly surveys. However, we document that these two agency factors have only a modest economic impact. In support of the debt contracting rigidity proposition, we find that the restrictiveness of the bond covenant package is primarily determined by the covenant restrictiveness of the borrower's previous bond issues. The strength of the covenant package protection is also affected by the restrictiveness of the covenant packages in prior bonds issued by industry peers, bonds arranged previously by the bond underwriter, and bonds advised by the firm's and underwriter's legal counsels in the past. Our evidence also suggests that using the same underwriter and legal counsels in its previous bond issues helps to explain the high persistence in a firm's covenant restrictiveness.

Our findings improve the understanding of the determinants of covenant restrictiveness in public debt contracts. In particular, we document that novel factors, beyond those suggested by agency theory, help explain covenant restrictiveness. Our findings also highlight the importance of the economic trade-off between the benefits of a more tailored covenant package versus the costs of changing the covenant structure due to contracting frictions.

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APPENDIX A

Discussion of Primary Covenants

Moody's evaluates how bond covenants mitigate risk in several areas. They focus on the following covenants, which are the most common in bond indentures. We define these covenants below and provide a discussion of how Moody's assesses the quality of each.

Restricted Payments. The restricted payment covenant group is focused on limiting what the issuer is allowed to do with cash or other assets. Bondholders want the firm to retain the cash and other assets of the issuer and its restricted subsidiaries and allow them to exit the company only under limited circumstances. Bondholders are concerned if cash transfers go to equity and subordinated creditors, especially at a time when such distributions decrease the issuer's ability to service its debt, increasing the default risk and reducing the recovery prospects in liquidation. However, Moody's view is that a value transfer from bondholders can also occur more indirectly, through management's valuation of non-cash assets, transactions with its affiliates or the designation of non-restricted subsidiaries.¹⁶

The restricted payments covenant has the most complex structure. In the prohibitory paragraph, the covenant may prohibit dividends on capital stock, stock repurchases, the early purchase or redemption of debt that is subordinated to the bonds and the making of some investments.¹⁷ The covenant allows some restricted payments in the proviso and the carve-outs; the amount that can be paid out by the issuer as a restricted payment at any time is often referred to as the "restricted payment basket." The covenant's proviso often specifies that a restricted payment can be made conditional on a debt incurrence ratio test (e.g., an interest coverage threshold is met). The restricted payment basket may be increased by a certain percentage of the consolidated positive net income of the issuer and restricted subsidiaries (e.g., 50%), by the issuance of equity or by the conversion of debt into equity; it will be reduced by the amount of restricted payments actually made over time or by the consolidated negative net income of the issuer and the restricted subsidiaries.

A strong restricted payment covenant allows the issuer to only begin making restricted payments simultaneous with the income basket beginning to build up. In contrast, a weak structure would have a start date for making restricted payments (which is typically the bond issue date) that follows the buildup date. This weak structure will allow the income basket to accumulate income before the bond issuance date, facilitating larger restricted payments. The covenant also provides limited protection if it includes numerous and sizable carve-outs, facilitates the opportunistic valuation of the noncash assets in the income basket by the managers or fails to limit transactions with affiliate entities that are not restricted. Transactions with some affiliates may circumvent the restricted payment covenant by disguising a dividend-like transaction with the form of a business transaction (e.g., royalty payments).¹⁸ A protective

¹⁶ Bond covenants limit the activities of the bond issuer, but only certain of its subsidiaries. Subsidiaries subject to covenants are called "restricted subsidiaries" since their cash flows are contractually required to service the bond debt. "Unrestricted subsidiaries" are subsidiaries that are not limited by bond covenants and their cash flows are not contractually available to service the bond debt. They are excluded from covenant financial ratio definitions and calculations.

¹⁷ These investment restrictions typically refer to investments in the debt or equity of other companies, even providing guarantees for another company's debt. Capital expenditures or acquisitions of productive assets are not restricted by this covenant.

¹⁸ Restrictions on transactions with affiliates are particularly important when the issuer is a private company controlled by a small group of shareholders. A private company issuer is likely to request carve-outs for fees paid to financial sponsors.

APPENDIX A (Continued)

structure would permit only transactions done on an arm's length basis and, if above a reasonably low threshold, would require a third-party fairness opinion. A Restricted Payment covenant will also provide a weak protection if the designation of unrestricted subsidiaries does not need to comply with the covenant.

Debt Incurrence. Increased leverage can negatively impact bondholders by reducing the cushion of cash flow, increasing default risk as well as increasing management's incentives to engage in shareholder-friendly actions. Restrictions on the incurrence of indebtedness are designed to protect bondholders from these incremental risks by limiting the issuance of additional debt unless the issuer has the demonstrated capacity to service all its debt, including the proposed new debt. Indebtedness is defined more generally and includes debt, lease obligations, reimbursement obligations with respect to letters of credit, obligations to redeem stock and guarantees provided by the issuer with respect to the indebtedness of other entities.

The capacity to service the debt (including the new debt) specified in the proviso is usually tested based on a comparison of cash flows to interest expense; this test is known as the "coverage" or "debt incurrence" test. The basic incurrence test allows the issuer to incur additional debt if the issuer has a ratio of EBITDA to cash and noncash interest expense that is at least 2 to 1. An alternative is a leverage test, which evaluates the relationship of the issuer's consolidated debt to its trailing 12-month EBITDA on a pro forma basis.

Debt incurrence covenants may contain several carve-outs. First, most debt covenants allow an exception for the issuer to incur bank debt (constructed around the issuer's borrowing base using the level of inventories and accounts receivables or limited to a specified dollar amount) and intercompany debt with its restricted subsidiaries. Second, the covenant might permit the issuer to refinance debt outstanding at the time of the indenture or issued after the indenture in order to limit the possibility of a default when this debt matures. When refinancing debt, the issuer is typically not allowed to increase the principal amount (except to the extent needed to pay related costs, e.g., accrued interest, premium and other retirement costs), shorten the average life of the debt refinanced or to refinance subordinated debt with senior debt. Third, the covenant might specify a so-called "debt basket", which is the dollar amount of indebtedness that can be issued without regard as to whether the issuer has the necessary interest coverage ratio.¹⁹ This basket is intended to protect the issuer in case of an "emergency", in which it might need to incur additional debt. Fourth, indentures include other exceptions that apply to a specific issuer. For instance, an issuer that historically has acquired capital assets through capital leases might negotiate for an additional exception that would permit such transactions in the future.

Moody's classifies debt incurrence covenants as being more protective if the covenant has caps on bank credit facilities, debt issued by restricted subsidiaries that guarantee the issuer's debt or on operating leases. Moody's negatively views covenants whose EBITDA ratio in the debt incurrence test allows add-backs of "non-cash charges" and other items that give management the discretion to adjust the ratio in order to issue more debt or covenants that allow debt reclassifications (e.g., that reclassify debt that falls under the debt basket carve-out into debt that falls under the debt incurrence ratio).

¹⁹ As these baskets are based on a percentage of consolidated total (or tangible) assets, they thus fluctuate with the balance sheet.

APPENDIX A (Continued)

Subsidiary Debt Incurrence. The discussion of the debt incurrence above is applicable here as well, but instead of from the parent firm, the perspective is that of any subsidiary of the parent company.

Liens. The limitation on liens covenant has primary importance when it comes to limiting the dilution of bondholders' claims. Bondholders do not want other creditors to have senior claims on assets should the issuer become insolvent. In a subordinated note offering, the holders typically insist that the issuer does not grant any liens to secure other subordinated debt. Conversely, the holders of senior notes, in an effort to remain as senior as possible with respect to the issuer's assets, restrict the issuer from incurring liens (which include security interests, mortgages and similar contractual or legal encumbrances) on its assets except for limited permitted exceptions, or unless it has a proviso stating that the issuer should simultaneously grant an equal lien for the benefit of the bondholders.

Carve-outs with these exceptions usually appear in the definition of permitted liens. The bank credit facility carve-out is the principal and usually the largest carve-out. Other typical carve-outs are capital expenditures ("capex") and a liens catch-all basket. In addition to these, carve-outs can deal with financings under one or more of the categories of permitted debt, pre-existing or acquired liens, and refinancings of debt that is already secured. An important point is to determine whether the assets that are permitted to be subject to the liens should be limited (e.g., for asset finance, only the asset acquired should be permitted to secure this debt, but for permitted bank debt, any assets of the issuer or its restricted subsidiaries are typically permitted collateral).

The broader the scope of the prohibitory paragraph, the stronger the limitation of liens covenant is, conditional that the carve-outs not being excessive. Protective covenants limit the secured credit facility debt and specify that bank credit facilities cannot be refinanced with bonds of longer duration. These secured bonds may subordinate the original bondholders.

Asset Sales. The limitation on asset divestitures covenant restricts non-ordinary sales of assets in the prohibitory paragraph unless, as stated in the proviso, certain use-of-proceeds criteria are met, such as sales proceeds being used either to pay down debt or to reinvest in assets that service the debt and that are related to the issuer's core business. Asset divestitures are a major concern because they could remove core revenue-generating assets that support the debt service. Although the covenant requires sales of assets to be made at fair value and a large percentage of the consideration be received in cash, the main purpose of the covenant is to limit the uses of proceeds in the event that the issuer does sell assets.

A high quality asset sales covenant stipulates that about 70% of the income received from the sale is in cash or "cash equivalents" and that this cash is retained in the company for a period of one year or is used to pay down senior debt / pari passu debt and sets a reasonably low threshold for the carve-outs. A weak asset sales covenant includes a substantial carve-out from the "cash equivalent" consideration or no annual caps on asset sales.

Sale/Leaseback. This covenant limits the issuer's ability to enter into sale-leaseback transactions. A sale-leaseback transaction, in which the issuer sells an asset and immediately leases it back, is economically very similar to a secured financing, since the issuer will receive sale proceeds (similar to loan proceeds) and will make rental payments over the life of the lease (similar to loan repayments). The proviso of this covenant generally permits an issuer to enter into sale-leaseback transactions only if the

APPENDIX A (Continued)

issuer has the ability to incur the related indebtedness represented by the lease obligation and is able to incur the lien on the property securing the lease.

Since the asset has been sold and is therefore not part of the issuer's consolidated assets subsequent to the sale (unlike a secured financing), this covenant contains the added requirement that the issuer treat the sale proceeds as it would in connection with any other asset sale in which use-of-proceeds criteria may apply. Therefore, the assessment of the level of protection provided by this covenant is similar to that of the asset sales covenant.

Mergers. The merger / asset conveyance covenant provides important event-risk protection against increased leveraging. It is designed to ensure that the successor company in any major M&A transaction involving the issuer assumes the obligations with respect to the bonds (i.e., that the bond obligations follow the assets). The covenant's proviso allows mergers if the issuer is able to incur indebtedness under a financial ratio test on a pro forma basis. This test may allow the issuer to engage in a merger only if the debt incurrence ratio in the Debt Incurrence covenant is improving after the transaction. Moody's views the protection provided by this covenant as strong if the financial ratio test is based on multiple financial ratios (e.g., a debt incurrence ratio test and an earnings based test, computed both before and after the transaction). Also, the protection is better if the debt incurrence test allows an additional dollar of debt for each additional dollar of equity proceeds. More aggressive structures have ratios of 2 to 1.

Change of Control. The change of the indenture's control provisions are designed to allow the bondholder, upon a change in the ownership of the issuer, to reevaluate the investment in the issuer represented by the bonds. The change of control covenant protects investors against a fundamental corporate change as well as the risk of a highly leveraged transaction. If the bondholders for any reason prefer to exit the investment when a change in control occurs, then the issuer is required to redeem the bonds at a purchase price, which is typically slightly above the principal amount of the bond. As a result, this covenant is also called the change of control "put." The change in ownership is deemed to occur if a designated group of controlling shareholders fails to continue to own at any time a majority of the outstanding voting stock of the issuer, if the issuer is liquidated or the issuer engages in a merger or acquisition that substantially changes the ownership structure. In the case of public issuers, the permitted holders' ownership may fall below 50% and in fact could fall all the way to zero in terms of voting percentage ownership, without triggering a change of control. In this situation, a change of control would occur only if persons other than the permitted holders acquire (typically) 35% or more of the voting power of the issuer.

The covenant may include a proviso stating that a change of control occurs if a merger takes place and the company is downgraded (the negative rating condition). The covenant might also specify a carve-out that specifies a set of permitted holders. If a majority permitted holder sells to a minority permitted holder, the bondholder cannot exercise its put option even though a change in control has occurred.

A change of control covenant with strong protection is one that is triggered when "all or substantially all" of the assets of the issuer are sold, a majority of the board is replaced or a liquidation / merger occurs. The protection is enhanced when the covenant also includes "stock for stock" mergers.

APPENDIX B
Examples of headroom and carve-out estimations

Covenant Quality Assessment
Meritage Homes Corporation

October 2, 2008

Limitation on Debt Incurrence

Headroom

The issuer shall not, and shall not permit any restricted subsidiary to, directly or indirectly, incur any “indebtedness”, provided that the issuer or any restricted subsidiary may incur additional indebtedness (including “acquired indebtedness”) if no default shall have occurred and be continuing at the time of or as a consequence of the incurrence of the indebtedness and if, after giving effect thereto, either:

- (a) the “consolidated fixed charge coverage ratio” would be at least 2.00 to 1.00; or
- (b) the ratio of “consolidated indebtedness” to “consolidated tangible net worth” would be less than 3.00 to 1.00 (either (a) or (b), the “ratio exception”).

**Amounts in thousands*

1. Consolidated fixed charge coverage ratio

“Consolidated fixed charge coverage ratio” means the ratio of

- “consolidated cash flow available for fixed charges” during the most recent four consecutive full fiscal quarters for which financial statements are available (the “four-quarter period”) ending on or prior to the date of the transaction giving rise to the need to calculate the consolidated fixed charge coverage ratio (the “transaction date”) to
- “consolidated interest” incurred for the four-quarter period.

Estimation

*The indenture provides extensive definitions of “consolidated cash flow available for fixed charges” and “consolidated interest,” which determine the estimation of these terms.

CONSOLIDATED CASH FLOW AVAILABLE FOR FIXED CHARGES	Last Twelve Months
Net Income	(316,164)
Provision for income taxes	(178,676)
Amortization + Depreciation	15,338
<i>Consolidated interest expense</i>	
Interest expense	17,625
Interest incurred	56,005
<i>Other non-cash items reducing net income</i>	
Real-estate related impairments	323,950
Goodwill-related impairments	102,538
Stock-based comp.	6,801
Tender-offer stock comp. exp.	10,866
Total	38,283

Consolidated fixed charge coverage ratio (CFCCR) = 38,283 / (17,625 + 56,005) = 38,283 / 73,630 = 0.52x
 Thus, estimated headroom is 0.52x - 2.00x = (1.5)x, or null under the CFCCR Incurrence test.

2. Consolidated net worth ratio

“Consolidated net worth ratio” means the ratio of

- “consolidated indebtedness (long-term debt)” to
- “consolidated tangible net worth”

Estimation

*The indenture provides extensive definitions of “consolidated indebtedness (long-term debt)” and “consolidated tangible net worth,” which determine the estimation of these terms.

Consolidated indebtedness = loans payable and other borrowings + senior and senior subordinated notes = 6,091 + 628,885 = 634,976

Consolidated tangible net worth = consolidated stockholders’ equity – consolidated intangible assets = 746,794 – 7,137 = 739,657

Consolidated indebtedness/ consolidated tangible net worth = 634,976/ 739,657 = 0.86x

Thus, estimated headroom is 3.00-0.9 = 2.1x under the consolidated net worth test.

Carve-outs [quantitative]

Notwithstanding the above, so long as no default shall have occurred and be continuing at the time of or as a consequence of the incurrence of the following indebtedness, each of the following shall be permitted (the “permitted indebtedness”):

- Indebtedness of the issuer and any restricted subsidiary under the “credit facilities” in an aggregate amount at any time outstanding (whether incurred under the ratio exception or as permitted indebtedness) not exceeding the greater of:
 - \$600.0 million; and
 - the amount of the “borrowing base” as of the date of such incurrence;

- Indebtedness of the issuer or any restricted subsidiary in an aggregate amount not to exceed \$25.0 million at any time outstanding.

“Borrowing base” means, at any time of determination, the sum of the following without duplication:

- (1) 100% of all cash and cash equivalents held by the issuer or any restricted subsidiary;
- (2) 75% of the book value of “developed land” for which no construction has occurred;
- (3) 95% of the cost of the land and construction costs including capitalized interest (as reasonably allocated by the issuer) for all “units” for which there is an executed purchase contract with a buyer not affiliated with the issuer, less any deposits, down payments or earnest money;
- (4) 80% of the cost of the land and construction costs including capitalized interest (as reasonably allocated by the issuer) for all units for which construction has begun and for which there is not an executed purchase agreement with a buyer not affiliated with the issuer; and
- (5) 50% of the costs of “entitled land” (other than developed land) on which improvements have not commenced, less mortgage indebtedness (other than under a “credit facility”) applicable to such land.

Estimation

Borrowing base	Corresponding item in financial statement	Gross Amount	x factor
100% of cash and cash equivalents	Same	115,153	115,153
75% of book value of “developed land” (no construction)	Finished lots and land under dev.	544,191	408,143
95% of costs related to “units” (executed contracts)	Homes under contract	357,304	339,439
80% of costs related to “units” (construction begun)	Unsold homes	137,785	110,228
50% of costs of “entitled land” (improvements not begun)	Land held for dev.	15,389	7,694.5
Total			980,658

Debt capacity under credit facility carve-out	Amount
Total carve-out = greater of 600,000 and 980,658	980,658
Less	
Credit facility (committed) (amended July 18, 2008)	500,000
Total debt capacity	480,658

Covenant Carve-out	Amount
Indebtedness under the credit facilities in an aggregate amount at any time outstanding (whether incurred under the ratio exception or as permitted indebtedness) not exceeding greater of \$600.0 million and the amount of the borrowing base (see borrowing base calculation below)	480,658
Indebtedness of the issuer or any restricted subsidiary	25,000
Total debt capacity	505,658

Total consolidated assets = 1,619,810

Total debt capacity = 505,658

Indenture carve-out as a percentage of total consolidated assets = 505,658/1,619,810 = 31.2%

Covenant Quality Assessment K. Hovnanian Enterprises, Inc.

October 12, 2007

Limitation on Debt Incurrence

Headroom

The issuer will not and will not permit any restricted subsidiary, directly or indirectly, to create, incur or assume liability for or guarantee the payment of any indebtedness unless the FCCR (defined above) would be at least 2.0 to 1.0.

**Amounts in thousands*

Consolidated fixed charge coverage ratio

“Consolidated fixed charge coverage ratio” means with respect to any determination date, the ratio of:

- “consolidated cash flow available for fixed charges” for the prior four full fiscal quarters (the four quarter period) for which financial results have been reported immediately preceding the determination date (the “transaction date”), to
- the aggregate “consolidated interest incurred” for the four quarter period.

Estimation

*The indenture provides extensive definitions of “consolidated cash flow available for fixed charges” and “consolidated interest,” which determine the estimation of these terms.

CONSOLIDATED CASH FLOW AVAILABLE FOR FIXED CHARGES	Last twelve months
Consolidated Net Income	(275,785)
Income Taxes	(143,955)
Cost of sales interest	131,361
Depreciation	17,826
Intangible Amortization	94,854
Amortization of Bond Discounts	1,118
Other Interest	10,492
Compensation from Stock Options and Awards	21,135
Loss on Sale and Retirement of Property and Assets	307
Loss (Income) from Unconsolidated Joint Ventures	32,202
Impairment and Land Option Deposit Write-Offs	499,646
Total	389,201

CONSOLIDATED INTEREST INCURRED	Last twelve months
Cost of Sales Interest	131,361
Other Interest	10,492
Amortization of Bond Discounts	1,118
Total	142,971

Consolidated Cash Flow Available for Fixed Charges / Consolidated Interest Incurred = 389,201 / 142,971 = 2.7

Thus, headroom is 2.7x – 2.0x = .7x under the Consolidated Fixed Charge Coverage Ratio.

Carve-outs [quantitative]

Notwithstanding the above, so long as no default shall have occurred and be continuing at the time of or as a consequence of the incurrence of the following indebtedness, each of the following shall be permitted (the “permitted indebtedness”):

- Indebtedness under credit facilities in an aggregate amount not exceeding \$1.5 billion;
- Indebtedness secured only by office buildings owned or occupied by Hovnanian or any restricted subsidiary in an aggregate amount not exceeding \$10 million; and
- All other indebtedness of Hovnanian or any restricted subsidiary in an aggregate amount not exceeding \$50 million

Estimation

Debt capacity under credit facility carve-out	Amount
Total carve-out	1,500,000
Less:	
\$1.5 billion (unsecured revolving credit agreement through May 11)	1,500,000
Total debt capacity	0

Covenant Carve-out	Amount
Indebtedness under credit facilities not exceeding \$1.5 billion	0
Indebtedness secured only by office buildings owned or occupied by Hovnanian or any restricted subsidiary in an aggregate amount not exceeding	10,000
All other indebtedness of Hovnanian or any restricted subsidiary in an aggregate amount not exceeding	50,000
Total debt capacity	60,000

Total consolidated assets = 5,362,762

Total debt capacity = 60,000

Indenture carve-out as a percentage of total consolidated assets = 60,000/5,362,762 = 1.12%

APPENDIX C Variable Definitions

Variable	Definition
<i>Conflict</i>	= Indicator variable that takes a value of one if the firm issuing the bond engaged in a potential bondholder-shareholder conflict activity (i.e., stock repurchase or acquisition) in the quarter preceding the issuance, zero otherwise.
<i>Conflict #2</i>	= Average of an indicator variable that takes a value of one if a sell-side debt analyst issued a sell recommendation when the average sell-side equity analyst recommendation was a buy, calculated within the six-month period prior to the bond issuance under consideration.
<i>Covenant Restrictiveness</i>	= Sum of the bond-level covenant restrictiveness scores provided by Moody's (i.e., the sum of the scores of covenant restrictiveness pertaining to payment restrictions, merger restrictions, change of control, asset sales, sale leaseback, debt, subsidiary debt and liens). Each individual covenant score ranges from 0 to 3, with higher values indicating better covenant protection.
<i>Info Asymmetry</i>	= Absolute value of the difference between the ratings assigned to an issue by Moody's and S&P. When either of the two ratings is unavailable, Fitch ratings are used for comparison. Absolute difference values of less than two (i.e., adjacent ratings) are assigned a value of zero.
<i>Info Asymmetry #2</i>	= Standard deviation of bond analysts' recommendations, calculated within the six-month period prior to the bond issuance under consideration, scaled by the mean recommendation level over the same period.
<i>Info Asymmetry #3</i>	= Measure of information asymmetry based on Duffie and Lando (2001). It is operationalized as the negative of the sum of the slopes of the yield curve between one-year to five-year and five-year to ten-year maturities.
<i>Info Asymmetry #4</i>	= Logarithm of the average dollar volume of bond principal traded (deflated by par value) during the quarter prior to the issuance date of the bond under consideration, averaged over all the firm's bonds outstanding during the period.
<i>Interest Coverage</i>	= Interest coverage ratio from the quarter preceding the bond issuance, calculated as EBITDA over interest expense.
<i>Investment Grade</i>	= Indicator variable that takes a value of one if the issue is rated investment grade by at least one of the three major credit rating agencies, zero otherwise.
<i>Lag Firm Covenant Restrictiveness</i>	= <i>Covenant Restrictiveness</i> pertaining to a firm's most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration. (Lags for individual covenants defined analogously.)
<i>Lag Legal Counsel (Firm) Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of bonds within the same rating category (investment grade or high yield) and advised by the same external legal counsel of the firm as the bond under consideration, up to the bond issue.
<i>Lag Legal Counsel (Firm) Same Firm Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of the firm's previous bonds advised by the same external legal counsel of the bond under consideration, up to the bond issue.
<i>Lag Legal Counsel (Underwriter) Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of bonds within the same rating category (investment grade or high yield) advised by the same external legal counsel of the lead underwriter of the bond under consideration, up to the bond issue.

(Continued)

APPENDIX C (Continued)
Variable Definitions

Variable	Definition
<i>Lag Legal Counsel (Underwriter) – Same Firm Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of the firm’s previous bonds advised by the same external legal counsel of the lead underwriter of the bond under consideration, up to the bond issue.
<i>Lag Peer Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of bonds within the same rating category (investment grade or high yield) and in the same industry sector as the bond under consideration, up to the bond issue.
<i>Lag Underwriter Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of bonds within the same rating category (investment grade or high yield) underwritten by the same lead underwriter of the bond under consideration, up to the bond issue.
<i>Lag Underwriter – Same Firm Covenant Restrictiveness</i>	= Average <i>Covenant Restrictiveness</i> of the firm’s previous bonds underwritten by the same lead underwriter of the bond under consideration, up to the bond issue.
<i>Lender Power</i>	= Indicator variable that takes a value of one if the bond is issued during a period of consistently tight credit supply, defined as a period of four or more consecutive quarters of tightening in lending standards for mid-sized and large commercial loans in the Federal Reserve Bank’s survey of bank loan officers.
<i>Lender Power #2</i>	= Indicator variable that takes a value of one if the bond issue is during the recent financial crisis from 2007 to 2009.
<i>Leverage</i>	= Long term debt to total assets ratio, from the quarter preceding the bond issuance.
<i>Maturity</i>	= Time to maturity, in number of years.
<i>Number Covenants</i>	= Total number of bond covenants, as identified in the Mergent FISD database.
<i>Offering Amount</i>	= Principal amount of the bond offering.
<i>Offering Yield</i>	= Initial yield to maturity at the time of bond issuance.
<i>Private Loan</i>	= Indicator variable that takes a value of one if the bond issuer has private debt outstanding in the syndicated loan market, zero otherwise.
<i>Rating Downgrade</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is lower than the credit rating of a firm’s most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Downgrade ≤ 3 notches</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is lower, but not more than by three notches, compared to the credit rating of a firm’s most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Downgrade ≥ 4 notches</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is at least four notches lower than the credit rating of a firm’s most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.

(Continued)

APPENDIX C (Continued)
Variable Definitions

Variable	Definition
<i>Rating Downgrade from IG to HY</i>	= Indicator variable that takes a value of one if the bond under consideration is rated as high yield, while a firm's most recently issued bond was rated as investment grade, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Upgrade</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is higher than the credit rating of a firm's most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Upgrade ≤ 3 notches</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is higher, but not more than by three notches, compared to the credit rating of a firm's most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Upgrade ≥ 4 notches</i>	= Indicator variable that takes a value of one if the credit rating of the bond under consideration is at least four notches higher the credit rating of a firm's most recently issued bond, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Rating Upgrade from HY to IG</i>	= Indicator variable that takes a value of one if the bond under consideration is rated as investment grade, while a firm's most recently issued bond was rated as high yield, conditional on the previous bond being issued at least 180 days prior to the bond under consideration, zero otherwise.
<i>Secured</i>	= Indicator variable that takes a value of one if the issue is classified as secured debt by Moody's, zero otherwise.
<i>Senior</i>	= Indicator variable that takes a value of one if the issue is classified as senior by Moody's, zero otherwise.
<i>Size</i>	= Logarithm of total assets, from the quarter preceding the bond issuance.
<i>Tangibility</i>	= Ratio of fixed assets plus inventory to total assets, from the quarter preceding the bond issuance.

TABLE 1
Sample Selection

Total number of issues in Moody's CQA database	3,075
Sample after deleting international and financial sector bonds	2,427
Sample after availability of bond-level variables from Mergent FISD	2,190
Sample after conditioning on availability of firm-level controls from Compustat	1,825

TABLE 2
Descriptive Statistics

Panel A of this table provides descriptive statistics. Panel B shows the changes in the restrictiveness of individual covenants conditional on the change in the aggregate *Covenant Restrictiveness* score. Variables are defined in Appendix C.

Panel A: Descriptive Statistics for Main Test Variables				
	N	Mean	Median	Std. Dev.
<i>Covenant Restrictiveness</i>	1,825	11.84	12.00	3.45
<i>Conflict</i>	1,825	0.21	0.00	0.41
<i>Conflict #2</i>	507	0.04	0.00	0.17
<i>Information Asymmetry</i>	1,825	0.09	0.00	0.42
<i>Information Asymmetry #2</i>	392	0.16	0.00	0.19
<i>Information Asymmetry #3</i>	1,091	-2.11	-1.69	1.70
<i>Information Asymmetry #4</i>	1,792	11.11	11.10	1.73
<i>Lender Power</i>	1,825	0.29	0.00	0.45
<i>Lender Power #2</i>	1,825	0.38	0.00	0.49
<i>Number Covenants</i>	1,825	5.45	5.00	3.47
<i>Investment Grade</i>	1,825	0.82	1.00	0.38
<i>Size</i>	1,825	9.41	9.48	1.22
<i>Leverage</i>	1,825	0.28	0.26	0.15
<i>Tangibility</i>	1,825	0.40	0.37	0.25
<i>Interest Coverage</i>	1,825	4.84	2.62	45.63
<i>Private Loan</i>	1,825	0.68	1.00	0.47
<i>Offering Yield</i>	1,825	6.42	6.29	1.42
<i>Maturity</i>	1,825	14.24	10.00	11.09
<i>Offering Amount</i>	1,825	0.58	0.40	0.68
<i>Secured</i>	1,825	0.02	0.00	0.10
<i>Senior</i>	1,825	0.97	1.00	0.16

TABLE 2 (Continued)
Descriptive Statistics

Panel B: Changes in the Restrictiveness of Individual Covenants Conditional on the Change in Aggregate *Covenant Restrictiveness* score

	Change in <i>Covenant Restrictiveness</i> score													
	-3 or more (1.0%)		-2 (0.1%)		-1 (1.2%)		No change (83.4%)		+1 (1.8%)		+2 (9.1%)		+3 or more (3.4%)	
	%Neg	%Pos	%Neg	%Pos	%Neg	%Pos	%Neg	%Pos	%Neg	%Pos	%Neg	%Pos	%Neg	%Pos
<i>CR Pay</i>	18.2	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	15.0	0.0	1.0	0.0	34.2
<i>CR Change of Control</i>	18.2	0.0	0.0	0.0	46.2	15.4	0.2	0.0	0.0	55.0	0.0	93.1	10.5	52.6
<i>CR Merger</i>	0.0	18.2	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	26.3	18.4
<i>CR Liens</i>	54.5	18.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	1.0	0.0	10.5	23.7
<i>CR Asset Sale</i>	9.1	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	15.8
<i>CR Leaseback</i>	45.5	18.2	100.0	0.0	30.8	0.0	0.0	0.2	0.0	20.0	0.0	1.0	5.3	47.4
<i>CR Debt</i>	27.3	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	5.0	0.0	4.9	0.0	34.2
<i>CR Subsidiary Debt</i>	54.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	2.6	39.5

TABLE 3
Agency Factors Expected to Explain Covenant Restrictiveness

This table presents a multivariate analysis of the effects of bondholder-shareholder conflicts, information asymmetry, and bondholders' bargaining power on bond covenant restrictiveness (our dependent variable), controlling for the number of covenants and other firm- and bond-level characteristics. Panel A reports the results of estimating Equation 1. Panel B reports our robustness tests. The sample includes observations for which we have available data. We estimate panel OLS regressions, and cluster the standard errors at the firm level. Robust *t*-statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Variables are defined in Appendix C.

Panel A: Main Tests	(1)	(2)	(3)	(4)
<i>Conflict</i>	0.299 [1.38]			0.329 [1.54]
<i>Information Asymmetry</i>		0.370** [2.06]		0.332* [1.93]
<i>Lender Power</i>			0.821*** [4.66]	0.811*** [4.58]
<i>Number Covenants</i>	0.477*** [9.44]	0.479*** [9.50]	0.483*** [9.82]	0.477*** [9.73]
<i>Investment Grade</i>	-1.357*** [-2.81]	-1.411*** [-2.93]	-1.519*** [-3.19]	-1.472*** [-3.10]
<i>Size</i>	-0.349*** [-3.11]	-0.342*** [-3.06]	-0.379*** [-3.33]	-0.395*** [-3.52]
<i>Leverage</i>	0.798 [0.97]	0.671 [0.80]	0.975 [1.20]	1.025 [1.28]
<i>Tangibility</i>	-1.847*** [-3.31]	-1.818*** [-3.25]	-1.849*** [-3.33]	-1.785*** [-3.25]
<i>Interest Coverage</i>	0.002 [1.53]	0.002* [1.65]	0.002* [1.80]	0.002 [1.63]
<i>Private Loan</i>	-0.151 [-0.51]	-0.114 [-0.39]	-0.139 [-0.47]	-0.137 [-0.46]
<i>Offering Yield</i>	0.222*** [2.63]	0.195** [2.32]	0.151* [1.81]	0.173** [2.12]
<i>Maturity</i>	-0.013** [-2.58]	-0.014*** [-2.67]	-0.007 [-1.28]	-0.008 [-1.35]
<i>Offering Amount</i>	0.058 [0.47]	0.044 [0.36]	0.018 [0.14]	0.018 [0.14]
<i>Secured</i>	1.169*** [2.63]	1.113** [2.58]	1.150*** [2.64]	1.093** [2.58]
<i>Senior</i>	-0.844 [-1.12]	-0.877 [-1.17]	-0.877 [-1.22]	-0.883 [-1.23]
Constant	12.547*** [7.32]	12.833*** [7.59]	13.141*** [7.83]	13.069*** [7.75]
Observations	1,825	1,825	1,825	1,825
Adj. R^2 (%)	55.1	55.2	56.1	56.3

(Continued)

TABLE 3 (Continued)
Agency Factors Expected to Explain Covenant Restrictiveness

Panel B: Robustness Tests						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Conflict</i>						0.216 [1.02]
<i>Information Asymmetry</i>						0.378** [1.97]
<i>Lender Power</i>						0.899*** [5.11]
<i>Conflict #2</i>	0.584 [0.85]					
<i>Information Asymmetry #2</i>		2.204** [2.31]				
<i>Information Asymmetry #3</i>			0.062 [1.07]			
<i>Information Asymmetry #4</i>				-0.104 [-1.10]		
<i>Lender Power #2</i>					0.756*** [4.22]	
<i>Number Covenants</i>	0.415*** [4.52]	0.427*** [4.55]	0.512*** [7.39]	0.473*** [9.33]	0.477*** [9.65]	0.485*** [9.71]
<i>Investment Grade</i>	-1.179 [-1.21]	-1.124 [-1.17]	-1.375** [-2.07]	-1.397*** [-2.79]	-1.430*** [-3.01]	-1.970*** [-4.27]
<i>Size</i>	-0.459* [-1.89]	-0.342 [-1.27]	-0.563*** [-3.42]	-0.305*** [-2.72]	-0.377*** [-3.30]	-0.424*** [-3.81]
<i>Leverage</i>	-0.932 [-0.56]	-0.369 [-0.23]	-0.237 [-0.19]	0.816 [0.96]	1.126 [1.39]	1.139 [1.37]
<i>Tangibility</i>	-0.759 [-0.96]	-0.710 [-0.85]	-1.492** [-2.28]	-1.868*** [-3.39]	-1.893*** [-3.43]	-1.821*** [-3.23]
<i>Interest Coverage</i>	0.003* [1.79]	0.003* [1.90]	-0.000 [-0.29]	0.002 [1.59]	0.002* [1.91]	0.002* [1.72]
<i>Private Loan</i>	0.294 [0.60]	0.319 [0.61]	-0.157 [-0.40]	-0.067 [-0.23]	-0.149 [-0.50]	-0.093 [-0.31]
<i>Offering Yield</i>	0.024 [0.12]	0.017 [0.08]	0.077 [0.59]	0.174** [2.00]	0.169** [2.04]	
<i>Maturity</i>	-0.018 [-1.51]	-0.020 [-1.38]	-0.014 [-1.61]	-0.013** [-2.42]	-0.008 [-1.52]	
<i>Offering Amount</i>	-0.343 [-0.65]	-0.495 [-0.85]	0.096 [0.35]	0.058 [0.44]	0.018 [0.14]	
<i>Secured</i>	2.282*** [3.50]	2.063*** [3.12]	1.979*** [2.79]	1.087** [2.38]	1.104** [2.50]	
<i>Senior</i>	-2.394*** [-2.65]	-2.694*** [-2.84]	-2.263 [-1.43]	-0.836 [-1.10]	-0.896 [-1.21]	
<i>Constant</i>	15.633*** [4.93]	14.540*** [4.49]	16.314*** [5.97]	13.741*** [7.17]	12.982*** [7.73]	14.931*** [10.88]
<i>Observations</i>	507	392	1,091	1,792	1,825	1,825
<i>Adj. R² (%)</i>	54.7	56.4	52.3	55.1	56.1	55.5

TABLE 4
Covenant Restrictiveness Persistence

This table investigates whether contract rigidity is an additional factor that explains bond covenant restrictiveness (our dependent variable). Panel A shows the effect of various types of lag covenant restrictiveness, one lag at a time. Panel B provides additional analysis when various types of lag covenant restrictiveness are combined. Control variables are included in the regression specification but these coefficients are not tabulated. Panel C provides the coefficients on lagged firm covenant restrictiveness by covenant type, where regressions similar to Column 1 of Panel A are estimated for each individual covenant type separately. Panel D presents a regression specification similar to Column 1 of Panel A but for various lag lengths of time. We estimate OLS regressions as a panel and cluster the standard errors at the firm level. Robust *t*-statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Variables are defined in Appendix C.

(Continued)

TABLE 4 (Continued)
Covenant Restrictiveness Persistence

	(1)	(2)	(3)	(4)	(5)
<i>Lag Firm Covenant Restrictiveness</i>	0.831*** [19.03]				
<i>Lag Peer Covenant Restrictiveness</i>		0.783*** [13.97]			
<i>Lag Underwriter Covenant Restrictiveness</i>			0.627*** [6.99]		
<i>Lag Legal Counsel (Firm) Covenant Restrictiveness</i>				0.853*** [17.43]	
<i>Lag Legal Counsel (Underwriter) Covenant Restrictiveness</i>					0.736*** [9.43]
<i>Conflict</i>	0.315** [2.53]	0.289** [2.02]	0.269 [1.40]	0.138 [0.99]	0.041 [0.24]
<i>Information Asymmetry</i>	0.129 [0.75]	0.182 [1.30]	0.174 [1.08]	0.228 [1.37]	0.212 [1.25]
<i>Lender Power</i>	0.431*** [4.33]	0.626*** [4.61]	0.467*** [2.73]	0.431*** [3.13]	0.595*** [3.56]
<i>Number Covenants</i>	0.098*** [2.86]	0.310*** [7.35]	0.494*** [8.89]	0.270*** [5.80]	0.376*** [7.46]
<i>Investment Grade</i>	-0.388 [-1.48]	0.707* [1.82]	1.047* [1.85]	1.003*** [3.50]	0.563 [1.39]
<i>Size</i>	-0.154*** [-3.13]	-0.252*** [-2.70]	-0.295*** [-2.61]	-0.219** [-2.50]	-0.340*** [-2.93]
<i>Leverage</i>	-0.380 [-0.87]	0.918 [1.46]	1.025 [1.35]	0.442 [0.69]	1.194* [1.72]
<i>Tangibility</i>	-0.669*** [-3.22]	-0.710* [-1.79]	-1.503*** [-3.19]	-0.753** [-2.31]	-1.468*** [-3.02]
<i>Interest Coverage</i>	0.001** [2.53]	0.000 [0.81]	0.002* [1.95]	0.001** [2.27]	0.000 [0.28]
<i>Private Loan</i>	0.091 [0.80]	-0.097 [-0.49]	-0.117 [-0.43]	0.343 [1.55]	-0.248 [-0.93]
<i>Offering Yield</i>	0.146*** [2.90]	0.149** [2.56]	0.105 [1.33]	0.046 [0.92]	0.107 [1.39]
<i>Maturity</i>	-0.006** [-2.16]	-0.001 [-0.33]	-0.008 [-1.64]	-0.000 [-0.01]	-0.007* [-1.72]
<i>Offering Amount</i>	0.121* [1.69]	0.061 [0.74]	0.023 [0.17]	0.259 [1.36]	-0.356* [-1.95]
<i>Secured</i>	-0.433 [-0.70]	0.722* [1.90]	0.672 [1.53]	0.608** [2.02]	1.150*** [2.74]
<i>Senior</i>	-0.009 [-0.02]	-0.416 [-0.83]	-0.274 [-0.43]	-1.125** [-2.08]	-0.782 [-0.75]
Constant	3.148*** [2.72]	1.311 [0.86]	2.849 [1.43]	1.282 [1.02]	3.442 [1.61]
Observations	1,117	1,825	1,680	1,275	1,295
Adj. R ² (%)	89.5	73.3	62.1	77.5	65.0

(Continued)

TABLE 4 (Continued)
Covenant Restrictiveness Persistence

Panel B: Additional Analysis of Lag Covenant Restrictiveness						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lag Firm</i>	0.716***	0.244***	0.571***	0.190**	0.757***	0.129
<i>Covenant Restrictiveness</i>	[11.66]	[3.30]	[8.14]	[2.52]	[16.43]	[1.31]
<i>Lag Peer</i>	0.220***	0.242***	0.177***	0.165***	0.206***	0.053
<i>Covenant Restrictiveness</i>	[4.23]	[3.69]	[4.30]	[4.69]	[4.11]	[1.38]
<i>Lag Underwriter</i>	0.092*	0.161*				
<i>Covenant Restrictiveness</i>	[1.79]	[1.95]				
<i>Lag Underwriter – Same Firm</i>		0.506***				
<i>Covenant Restrictiveness</i>		[7.59]				
<i>Lag Legal Counsel (Firm)</i>			0.314***	0.172***		
<i>Covenant Restrictiveness</i>			[4.72]	[4.01]		
<i>Lag Legal Counsel (Firm) – Same Firm</i>				0.569***		
<i>Covenant Restrictiveness</i>				[7.50]		
<i>Lag Legal Counsel (Underwriter)</i>					0.049	0.023
<i>Covenant Restrictiveness</i>					[1.14]	[1.00]
<i>Lag Legal Counsel (Underwriter) – Same Firm</i>						0.826***
<i>Covenant Restrictiveness</i>						[8.53]
<i>Conflict</i>	0.296**	0.208**	0.316**	0.184**	0.350***	-0.017
	[2.53]	[2.22]	[2.35]	[2.00]	[2.78]	[-0.21]
<i>Information Asymmetry</i>	0.132	0.047	-0.031	0.041	0.225	0.142*
	[0.84]	[0.67]	[-0.33]	[0.53]	[1.26]	[1.81]
<i>Lender Power</i>	0.443***	0.399***	0.304***	0.319***	0.413***	0.270***
	[4.19]	[3.77]	[2.73]	[3.11]	[4.51]	[3.11]
<i>Control Variables</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Observations</i>	1,031	512	786	561	859	476
<i>Adj. R² (%)</i>	90.3	91.4	91.1	93.9	90.8	96.8

TABLE 4 (Continued)
Covenant Restrictiveness Persistence

Panel C: Regression of Individual Covenant Restrictiveness on Lag Firm Individual Covenant Restrictiveness			
Covenant	<i>Lag Firm Covenant Restrictiveness</i>		
	Coefficient	<i>t</i> -statistic	Adj. R^2 (%) from regression
<i>CR Pay</i>	0.784***	[12.64]	88.2
<i>CR Change of Control</i>	0.784***	[21.15]	60.2
<i>CR Merger</i>	0.617***	[4.03]	80.7
<i>CR Liens</i>	0.937***	[30.14]	90.8
<i>CR Asset Sale</i>	0.837***	[8.05]	78.7
<i>CR Leaseback</i>	0.932***	[43.46]	90.4
<i>CR Debt</i>	0.813***	[15.07]	87.7
<i>CR Subsidiary Debt</i>	0.911***	[24.25]	89.5

Panel D: Regression of Covenant Restrictiveness on Various Lags of Firm Covenant Restrictiveness			
Lag Length	<i>Lag Firm Covenant Restrictiveness</i>		
	Coefficient	<i>t</i> -statistic	Adj. R^2 (%) from regression
<i>Six Months to One-Year</i>	0.941***	[27.53]	92.6
<i>Two- to Three-Years</i>	0.888***	[20.99]	91.1
<i>Four- to Five-Years</i>	0.852***	[17.01]	88.4
<i>Six- to Seven-Years</i>	0.745***	[11.49]	81.7
<i>Eight- to Ten-Years</i>	0.637***	[7.01]	76.8

TABLE 5
Changes in Covenant Restrictiveness

This table presents a multivariate analysis of the effects of changes in bondholder-shareholder conflicts, information asymmetry, and bondholders' bargaining power on changes in bond covenant restrictiveness, controlling for changes in the number of covenants and changes in other firm- and bond-level characteristics. Variables are defined as in Appendix C, and first differenced at the firm-bond level. The prefix Δ in front of each variable indicates a change in that variable from the issuance date of a firm's most recently issued bond to the issuance date of the bond under consideration. As in Table 4 in which we compute lags, to compute changes we impose a condition that the previous bond is issued at least 180 days prior to the bond under consideration. The sample includes observations for which we have available data. We estimate panel OLS regressions, and cluster the standard errors at the firm level. Robust t -statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests.

(Continued)

TABLE 5 (Continued)
Changes in Covenant Restrictiveness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>ΔConflict</i>	0.132 [1.39]			0.132 [1.53]	0.138 [1.57]	0.140 [1.59]	0.155* [1.76]
<i>ΔInformation Asymmetry</i>		0.125 [0.71]		0.041 [0.25]	0.048 [0.29]	0.066 [0.38]	0.124 [0.73]
<i>ΔLender Power</i>			0.546*** [4.15]	0.531*** [3.96]	0.540*** [4.06]	0.560*** [4.42]	0.559*** [4.51]
<i>Rating Downgrade</i>				0.308** [2.37]			
<i>Rating Upgrade</i>				-0.099 [-0.59]			
<i>Rating Downgrade ≤ 3 notches</i>					-0.013 [-0.08]		
<i>Rating Upgrade ≤ 3 notches</i>					-0.152 [-0.90]		
<i>Rating Downgrade ≥ 4 notches</i>						1.337** [2.31]	
<i>Rating Upgrade ≥ 4 notches</i>						0.012 [0.02]	
<i>Rating Downgrade from IG to HY</i>							1.755** [2.51]
<i>Rating Upgrade from HY to IG</i>							0.069 [0.54]
<i>ΔNumber Covenants</i>	0.103*** [2.89]	0.102*** [2.88]	0.101*** [2.88]	0.106*** [2.79]	0.112*** [2.89]	0.093*** [2.75]	0.092*** [2.78]
<i>ΔInvestment Grade</i>	-0.955** [-2.34]	-0.976** [-2.37]	-0.984** [-2.40]				
<i>ΔSize</i>	0.036 [0.18]	0.027 [0.13]	-0.104 [-0.53]	-0.122 [-0.61]	-0.132 [-0.65]	-0.080 [-0.40]	-0.118 [-0.59]
<i>ΔLeverage</i>	0.454 [0.84]	0.410 [0.74]	0.442 [0.83]	0.589 [1.19]	0.818 [1.60]	0.361 [0.70]	0.274 [0.51]
<i>ΔTangibility</i>	-3.905*** [-3.05]	-4.037*** [-3.27]	-3.814*** [-3.11]	-3.441*** [-2.61]	-3.688*** [-2.64]	-3.580*** [-2.98]	-3.582*** [-3.06]
<i>ΔInterest Coverage</i>	-0.000 [-0.17]	-0.000 [-0.15]	-0.000 [-0.46]	-0.000 [-0.51]	-0.000 [-0.51]	-0.000 [-0.60]	-0.000 [-0.44]
<i>ΔOffering Yield</i>	0.188*** [3.86]	0.177*** [3.66]	0.130** [2.58]	0.143*** [2.77]	0.151*** [2.81]	0.137*** [2.96]	0.134*** [2.70]
<i>ΔMaturity</i>	-0.003 [-1.44]	-0.003 [-1.25]	-0.001 [-0.41]	-0.002 [-0.73]	-0.002 [-0.88]	-0.001 [-0.27]	-0.001 [-0.57]
<i>ΔOffering Amount</i>	0.131 [1.56]	0.122 [1.59]	0.120 [1.42]	0.123 [1.63]	0.128 [1.56]	0.124 [1.51]	0.123 [1.51]
<i>ΔSecured</i>	-0.424 [-1.26]	-0.442 [-1.31]	-0.405 [-1.18]	-0.283 [-0.78]	-0.319 [-0.87]	-0.438 [-1.34]	-0.521 [-1.49]
<i>ΔSenior</i>	-0.120 [-0.23]	-0.142 [-0.27]	-0.292 [-0.54]	-0.248 [-0.41]	-0.361 [-0.58]	-0.321 [-0.63]	-0.164 [-0.31]
Constant	0.251*** [5.20]	0.251*** [5.10]	0.151*** [2.77]	0.119** [2.04]	0.176** [2.45]	0.107** [2.25]	0.109** [2.27]
Observations	1,117	1,117	1,117	1,117	1,117	1,117	1,117
Adj. R ² (%)	18.4	18.3	21.4	19.6	18.7	22.5	23.9

TABLE 6
Covenant Restrictiveness – First Bond Issuance

This table presents a multivariate analysis of the effects of bondholder-shareholder conflicts, information asymmetry, and bondholders' bargaining power on bond covenant restrictiveness (our dependent variable), controlling for the number of covenants and other firm- and bond-level characteristics. The sample is restricted to the first bond issued by the firm. We estimate panel OLS regressions. Robust *t*-statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Variables are defined in Appendix C.

	(1)	(2)	(3)
<i>Conflict</i>	-0.515 [-0.63]		
<i>Information Asymmetry</i>		1.624*** [3.20]	
<i>Lender Power</i>			0.957* [1.75]
<i>Number Covenants</i>	0.321** [2.07]	0.293* [1.91]	0.346** [2.31]
<i>Investment Grade</i>	-2.269* [-1.78]	-2.148** [-2.02]	-2.065* [-1.99]
<i>Size</i>	-0.470 [-1.49]	-0.790*** [-3.32]	-0.496 [-1.44]
<i>Leverage</i>	3.776*** [3.54]	3.114*** [2.67]	3.802*** [3.68]
<i>Tangibility</i>	-3.097*** [-2.90]	-3.281*** [-3.06]	-3.011*** [-3.06]
<i>Interest Coverage</i>	0.007 [1.28]	0.004 [0.70]	0.003 [0.49]
<i>Private Loan</i>	-0.804 [-1.04]	-0.373 [-0.49]	-0.984 [-1.31]
<i>Offering Yield</i>	0.045 [0.16]	0.049 [0.17]	0.029 [0.10]
<i>Maturity</i>	0.035 [1.14]	0.016 [0.52]	0.040 [1.19]
<i>Offering Amount</i>	0.159 [0.23]	0.566 [0.88]	-0.072 [-0.10]
<i>Secured</i>	1.543 [1.13]	1.245 [1.02]	1.559 [1.30]
Constant	14.669*** [3.62]	17.606*** [5.12]	14.501*** [3.64]
Observations	73	73	73
Adj. <i>R</i> ² (%)	51.7	56.2	53.5

TABLE 7
Covenant Restrictiveness – Investment Grade versus High Yield Bonds

This table estimates regressions similar to those in Tables 3 and 4 partitioned by rating category – Investment Grade in Panel A and High Yield in Panel B. We estimate OLS regressions as a panel and cluster the standard errors at the firm level. Control variables are included in the regression specification but are not tabulated. Robust *t*-statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests. Variables are defined in Appendix C.

Panel A: Investment Grade Bonds

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lag Firm Covenant Restrictiveness</i>		0.895*** [28.54]				
<i>Lag Peer Covenant Restrictiveness</i>			0.797*** [10.97]			
<i>Lag Underwriter Covenant Restrictiveness</i>				0.609*** [8.90]		
<i>Lag Legal Counsel (Firm) Covenant Restrictiveness</i>					0.827*** [11.70]	
<i>Lag Legal Counsel (Underwriter) Covenant Restrictiveness</i>						0.615*** [7.95]
<i>Conflict</i>	0.141 [0.67]	0.327*** [2.75]	0.107 [0.79]	0.201 [0.99]	0.039 [0.26]	-0.064 [-0.39]
<i>Information Asymmetry</i>	0.185 [1.06]	0.186 [0.93]	0.172 [1.24]	0.181 [1.08]	0.203 [1.12]	0.108 [0.66]
<i>Lender Power</i>	0.592*** [3.34]	0.455*** [5.25]	0.573*** [4.08]	0.475*** [2.71]	0.336** [2.33]	0.480*** [2.90]
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,500	951	1,500	1,394	1,011	1,136
Adj. <i>R</i> ² (%)	43.9	90.1	65.4	48.5	69.1	60.9

Panel B: High Yield Bonds

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lag Firm Covenant Restrictiveness</i>		0.705*** [7.77]				
<i>Lag Peer Covenant Restrictiveness</i>			0.711*** [8.65]			
<i>Lag Underwriter Covenant Restrictiveness</i>				0.586*** [3.80]		
<i>Lag Legal Counsel (Firm) Covenant Restrictiveness</i>					0.822*** [12.07]	
<i>Lag Legal Counsel (Underwriter) Covenant Restrictiveness</i>						0.766*** [5.91]
<i>Conflict</i>	0.654 [1.21]	0.231 [0.64]	0.849** [2.04]	0.308 [0.62]	0.224 [0.65]	-0.255 [-0.55]
<i>Information Asymmetry</i>	0.281 [0.63]	-0.327 [-1.31]	-0.027 [-0.07]	-0.375 [-0.66]	-0.054 [-0.17]	-0.210 [-0.38]
<i>Lender Power</i>	1.468*** [2.87]	0.349 [1.04]	0.573 [1.19]	0.091 [0.14]	0.848* [1.88]	0.488 [0.80]
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	325	166	325	286	264	159
Adj. <i>R</i> ² (%)	35.2	77.8	57.1	45.2	69.8	56.8