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**The Role of Debt Covenants in the Investment
Grade Bond Market
– The REIT Experiment**

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Abstract

In general, investment grade bonds do not offer covenant protection. However, in the case of Real Estate Investment Trusts (REITs), investment grade REITs tend to include a covenant package that outlines limits on leverage and requires maintaining certain fixed charges and interest coverage ratios. This unique debt financing structure of REITs offers a natural environment to examine the importance and the need of debt covenants in the investment grade bond market. Our research aims to answer the following questions: 1. How common are debt covenants in the investment grade REIT bond market? 2. Are debt covenants binding in this market? 3. Do debt covenants affect the cost of debt? Our findings indicate that, in the REIT market, debt covenants are indeed common practice among investment grade REITs and, surprisingly, we find higher use of covenants by investment grade REITs compared to non-investment grade REITs. We show that debt covenants are seldom binding in this market, as investment grade REITs choose covenant provisions based on accounting ratios for which they seem to have enough slack. Finally, the cost of debt is lower when these investment grade REIT bonds are issued with covenants.

I. Introduction

The financial contracting literature (e.g., Jensen and Meckling, 1976; Myers, 1977; Smith and Warner, 1979) has long established the prominent role of debt covenants as a means to address agency problems between debt-holders and managers/shareholders. When managers undertake value-reducing or excessively risky projects, which may have a negative impact on firm value at the expense of debt-holders, debt covenants serve as a solution. Covenants may mitigate some of these problems because, while managers and shareholders control the firm, when managers undertake opportunistic actions that trigger covenant violations, control rights are provisionally transferred to debt-holders. Prior research has shown that debt covenants are features that are integral parts of most debt contracts (e.g., Bradley and Roberts, 2004). More importantly, they serve as an effective control and governance mechanism to mitigate agency problems between managers and debt-holders and help protect debt-holders against wealth transferring activities (e.g., Billett, King, and Mauer, 2007; Graham, Li, and Qiu, 2008).

While covenants have been shown to serve as an effective governance mechanism, covenant protection is usually not offered to investors in the investment grade bond market. The rationale is that investment grade firms tend to be financially stable, hence there is less need for debt covenants to attract credit investors. Bratton (2006) examines the evolution of debt contracting practices and debt-holders protection in the U.S. credit market, and notes that investment grade bonds are typically covenant-less or offer very minimal covenant protection. A report by Moody's Investor's Service (2006) shows that especially at that time of credit craze, covenants are almost non-existent at the investment grade level, and most of the key covenants are removed when a

company moves from non-investment grade to investment grade. Yet, the aforementioned debt-holders and managers' conflicts may continue to exist in the investment grade bond market. Consequently, especially after the recent downturn in the credit market, many investors and regulators are of the opinion that the current covenant protection in the investment grade bond market is inadequate, and have been lobbying for improvement in covenant protection, by arguing that the changing environment has allowed managers of even investment grade firms to introduce new exogenous risks and to pursue more aggressive corporate strategies adversely impacting debt-holders' stake interests.¹ The Credit Roundtable, an association including prominent institutional fixed-income investors,² has proposed a set of new covenant rules to strengthen the protection of investment grade investors.³ Nonetheless, this proposal, while enhancing governance in the investment grade bond market, is not without controversy. Many investment grade firms are worried that introducing stricter covenants reduces the allure and competitiveness of the investment grade bond market. As a result, investment grade issuers may end up with less flexibility to issue new debt and may face a greater burden to maintain covenant thresholds on an ongoing basis. In addition, these firms are worried that covenants may give debt-holders too much power over their companies by concession, despite the fact that these companies are financially strong and managers generally act in the best interests of the shareholders.⁴

¹ For example, the increasing roles of shareholder activists and private equity firms are affecting the stability of the investment grade investment landscape, by triggering leveraged buy-outs, mergers, and share repurchases which favorably reward shareholders at the expense of debt-holders (Moody's, 2006).

² This group of investors includes organizations such as AIG Investments, Black Rock Financial Management, CALPERS, Fidelity Investments, Franklin Templeton Fixed Income Group, ING Investment Management, PIMCO, TIAA-CREF, and the Vanguard Group.

³ See Sakowitz and Junewicz (2008) for details.

⁴ Interestingly, at good economic times, the argument for imposing less covenants extends to the non-investment grade bond market as investors are not worried when companies are healthy and the risk is low.

In this study, we examine the role of debt covenants in the investment grade bond market. In particular, we are interested in whether the imposition of debt covenants bears any consequences for investment grade firms. It is important to investigate covenants and their potential costs and benefits as the investment grade market accounts for 67% of the \$6.59 trillion U.S. corporate debt market (as of March 2013).⁵ While covenants are still not yet commonplace in the general investment grade bond market, in the Real Estate Investment Trusts (REITs) industry, investment grade REITs tend to include a covenant package that generally outlines certain limits on further debt issuance, unencumbered assets, and interest coverage ratios (e.g., Daly and Amaral, 2012; Terry, 2012; Thomas, 2012). This unique debt financing structure in REITs originates from the property-level covenants typically associated with commercial mortgages. When these individual properties are pooled and managed in the organizational form known as REITs, investors have by tradition also required REITs to provide a similar covenant package, despite the fact that many REIT bonds are considered investment grade.⁶ We utilize this unique REIT setting to examine the impact of covenants in the investment grade bond market. Our research aims to answer the following three questions: First, how common are debt covenants in the investment grade REIT bond market? Second, are these debt covenants binding? And, third, do debt covenants have any impact on the cost of debt?

Nonetheless, the sale of these so-called ‘covenant-lite’ loans sparks big debate among regulators and investors as the lack of lender protection poses even greater concern in the non-investment grade bond market (Alloway, 2014).

⁵ “Analyzing The Size And Structure Of The U.S. Investment-Grade And Speculative-Grade Corporate Debt Market In 2013.” *Standard & Poor’s Global Fixed Income Research* (July 2013).

⁶ This interesting phenomenon originated when insurance companies started to invest into the REIT market. When insurance companies invest into the property market, they typically impose the property-level covenants associated with commercial mortgages. Accordingly, when a handful of insurance companies started to look at REIT as an investment vehicle, they also asked for same type of covenants that were associated with commercial mortgages on REIT loans (Olazabal and Arora, 2012).

We first confirm that debt covenants are indeed common occurrence in the investment grade REIT bond market. Anecdotal evidence (e.g., Moody's, 2006) shows that covenant provisions are in place to protect lenders in the non-investment grade bond market but they are less prevalent in the investment grade bond market. However, it is possible that, in the REIT industry, given the tradition of providing property-level covenants, *all* REITs extend covenant protection to debt-holders. Our findings not only confirm this expectation, but they are also somewhat surprising: we show that investment grade REITs are *more* likely to provide covenant protection to debt-holders when compared to non-investment grade REITs.

A natural question that arises is why investment grade REITs would be more likely to issue debt with covenants than non-investment grade REITs. For investment grade REITs to offer covenant protection, there must be either lower costs and/or greater benefits in order to incorporate these features into their loan contracts. Prior research has shown that covenant provisions are important to protect lenders, and covenant violation can lead to severe negative consequences.⁷ In some instances, covenant provisions are set up as “trip wires” and they are often violated, such that they also affect debt refinancing and price terms of the loan contracts (Dichev and Skinner, 2002). Nonetheless, in the investment grade bond market, firms typically exhibit much less risk and much better financial health. Hence, it is possible that these covenants are not binding, and they merely serve as a formality resulting from the traditional mortgage market. We document that the most commonly used debt covenants for investment grade REIT bonds are constraints on fixed charge coverage, interest coverage, and leverage ratios. We then

⁷ For example, Chava and Roberts (2008) and Nini, Smith, and Sufi (2009) show that a firm's investment declines sharply following covenant breaches. Roberts and Sufi (2009) find that technical default leads to a reduction of future debt issuance.

calculate the *actual* financial ratios related to these covenants, and conjecture that investment grade REITs choose these covenants because they exhibit financial strength above that needed, in terms of the ratios related to the covenants. Our results show that, on average, investment grade REITs have significantly higher fixed charge coverage, higher interest coverage, and lower leverage ratios. We also show REITs specifically choose to include fixed charge coverage and interest coverage covenants in their loan contracts when these particular ratios are higher. These findings offer evidence that investment grade REITs include covenant provisions when they are less binding. As the likelihood of covenant violations on these provisions is low, these covenants probably entail little to no potential costs to investment grade REITs.

An investment grade REIT is unlikely to offer covenant protection just because the costs of doing so are low. Given that we find the covenants for investment grade REIT debt issues are seldom binding, one wonders why these REITs offer covenants at all. In our last research question, we look into the benefits of debt covenants for investment grade REITs. Prior research shows that covenant provisions may signal firm and loan quality (Rajan and Winton, 1995; Chava and Roberts, 2008; Benmelech and Bergman, 2008). Following this reasoning, we conjecture that, in the investment grade REIT bond market, investors and REITs provide covenant provisions with their debt issues to signal loan quality. The use of covenants can alleviate some concerns of the debt-holders and thereby lower the cost of debt. Alternatively, it is also possible that an investment grade REIT not offering covenants on its debt creates a negative signal to debt-holders when most other investment grade REITs are issuing debt with covenants. We empirically test this conjecture by examining the price terms (as measured by the all-

in-drawn spread) of the loan contracts, and we hypothesize that the existence of covenant provisions lowers the cost of debt. Consistent with our hypothesis, we find that investment grade REITs have a lower cost of debt. More importantly, we find that covenants lower the cost of debt for both investment grade and non-investment grade firms. As agency problems represent the conflict of interest between debt-holders and shareholders, debt-holders may demand covenant protection when there is more potential for agency problems. Our further tests show that covenants lower the cost of debt exclusively for investment grade REITs with more agency conflict potential and more liquidity risk. These findings imply that investment grade REITs can also benefit by providing covenant provisions with their loans as a signal of debt quality, even if the covenant terms are likely to be non-binding. These findings also show the potential for agency conflicts between debt-holders and shareholders continues to exist among investment grade REITs and that covenant provisions may mitigate this conflict resulting in a lower cost of debt.

By utilizing the REIT setting, our study offers novel evidence that establishes the role of debt covenants for the investment grade bond market. It echoes the call from institutional investors and the public for better covenant protection for *all* debt offerings, including investment grade debt. While the benefits of covenant protection for investors have been documented in prior literature, we show that there are also distinctive advantages for investment grade firms to offer covenant provisions with their loans. First, the potential costs to include covenant protection are relatively low for investment grade firms, as the chosen covenants are seldom binding. Second, investment grade firms can use debt covenants to signal their loan quality and lower their cost of debt.

The remainder of the paper is organized as follows. We outline the research design and methodology in the next section. In the third section, we describe our sample selection process and present descriptive statistics. The fourth section presents the empirical results. We provide concluding remarks in the last section.

II. Research Design & Methodology

To address our first research question, we document whether debt covenants are common occurrence in the investment grade bond market, for our REIT sample. While covenant provisions are important to protect lenders in the non-investment grade bond market, it is possible that property-level covenants have driven both investment grade and non-investment grade REITs to maintain the tradition of providing covenant protection to debt-holders. Moreover, covenant protection could offer investment grade REITs benefits via increased credibility and lower risk (i.e., cost of debt). On the other hand, there could be little incremental benefit for investment grade REITs to offer covenant protection as their loans are of higher quality. The probability of covenant violations, though presumably lower for investment grade REITs than non-investment grade REITs, still exists. Our first hypothesis, in the null form, is as follows:

H₁: Investment grade REITs are less likely to issue bonds with covenants.

We use the following logit model to examine the likelihood of investment grade REITs issuing debt with covenant protection:

$$Covenant_{it} = \alpha + \beta_1 Inv_Grade_{it-1} + Controls_{it-1} + \varepsilon_{it} \quad (1)$$

The dependent variable is a dummy equal to one (zero otherwise) when a bond issued by our sample REITs (Bond/REIT i in year t) has any type of covenant provision. Our key variable of interest is *Inv_Grade*, a dummy equal to one (zero otherwise) when the REIT belongs to the investment grade category. We follow the common convention in the business and academic literature and define investment grade as a rating of BBB- or higher. Alternatively, we also use S&P rated bonds as a proxy for *Inv_Grade*.⁸ Because covenants are factors considered in the determination of credit ratings, we measure *Inv_Grade* in the year prior to loan initiation to minimize the possibility of reverse causality. If covenants are used less in investment grade bonds, we should observe a negative coefficient on the *Inv_Grade* variable.

Following Demiroglu and James (2010), we include controls for both firm fundamentals and loan characteristics in equation (1) in order to proxy for uncertainty about the prospects of the REIT and potential conflicts between borrowers and the REIT shareholders. Firm-level controls include REIT size (measured as the natural logarithm of total assets), leverage (measured as the ratio of total debt to total assets), and market-to-book ratio (measured as the ratio of market value to book value of assets). The interpretation of these variables is similar to those in the prior literature. For example, REIT (or firm) size is used as a proxy for the degree of asymmetric information. Large REITs are likely to exhibit lower information asymmetry. Hence, we expect smaller REITs to have a greater need for covenants to protect debt-holders. REITs with higher leverage levels exhibit more risk, and debt-holders are more likely to require covenants to protect their interests. Covenant structure is also related to investment opportunities.

⁸ Our (unreported) results when using this definition are very similar and are available from the authors upon request.

However, the empirical evidence on the relation between covenants and the market-to-book ratio is mixed. While Bradley and Roberts (2004) show that growth firms include more restrictive covenants in their debt issues, Nash, Netter, and Poulsen (2003) find that public debt contracts of high growth firms are less likely to include restrictive covenants. The controls related to loan characteristics include the number of lenders (measured by a dummy variable that equals one if the number of lenders is greater than one and zero otherwise),⁹ size of the loan (measured by the facility amount reported on Dealscan, scaled by total assets), and loan maturity (measured as the natural logarithm of loan maturity, in months, from Dealscan). Bolton and Scharfstein (1996) suggest that larger syndicates and more lenders alleviate moral hazard problems in loan contracts. However, we do not offer a directional prediction on the impact of this variable on covenant, as the benefit of alleviation of moral hazards can be offset by conflicts created in a multi-lender situation. Demiroglu and James (2010) find the size of the deal to be positively related to the degree of covenant intensity, and we expect larger loan deals to require the protection of debt covenants. Lastly, the relation between loan maturity and borrower's risk is inconclusive. Flannery (1986) suggests that loan maturity should decrease for risky borrowers, while Diamond (1991) argues that low risk borrowers should have shorter loan maturity and medium risky borrowers should have long loan maturity.

In the non-investment grade market, covenant provisions are set up as “trip wires” and they are often violated (Dichev and Skinner, 2001). However, in the investment grade bond market, firms typically exhibit much lower risk and are of much stronger

⁹ We do not use the number of lenders because the distribution of this variable is highly skewed. Instead, we construct a dummy variable to measure the effect of multiple lenders when the number of lenders of a loan is greater than one. Nevertheless, measuring the variable with the number of lenders instead of a dummy variable does not alter our main findings.

financial strength. Suppose that we show investment grade REITs to be more likely than (or at least to be as likely as) non-investment grade firms to issue debt with covenants, it is unclear whether these covenants are binding mechanisms that have to be in place to protect bondholders. Alternatively, if these covenants are seldom binding in the investment grade REIT market, REITs may still be tempted to provide covenant protection. This is because these covenants serve as a formality that resulted from the traditional mortgage market, and, more importantly, relative to non-investment grade REITs, they face much lower risk (and potential costs) of violating these covenants. This leads to our second hypothesis, in null form:

H₂: When investment grade REITs issue bonds with covenants, these covenants are less likely to be binding.

The Dealscan database shows the types of covenants that are stated in the loan contracts but few REITs show the thresholds of covenants. To examine our second hypothesis, we first examine the types of covenants that are most likely to be issued with investment grade REIT bonds. We then calculate the *actual* financial ratios related to these covenants, and conjecture that investment grade REITs choose these covenants because they have better financial strength in terms of the ratios related to the covenants chosen. We use the following models to examine the relationship between the covenant ratios and investment grade REITs:

$$CovenantRatios_{it} = \alpha + \beta_1 Inv_Grade_{it} + Controls_{it} + \varepsilon_{it} \quad (2.1)$$

$$CovenantRatios_{it} = \alpha + \beta_1 Inv_Grade_{it} + \beta_2 Covenant_Used_{it} + \beta_3 Covenant_Used_{it} \times Inv_Grade_{it} + Controls_{it} + \varepsilon_{it} \quad (2.2)$$

The dependent variables are the *actual* covenant ratios for the covenants that are most commonly adopted in the debt covenant provisions by our sample investment grade REITs. Again, the key variable of interest in (2.1) is *Inv_Grade*. We expect a significant coefficient on *Inv_Grade* as investment grade REITs choose these covenant provisions because they generally report stronger financial ratios related to these covenants. The key variable in (2.2) is the interaction term of *Covenant_Used* and *Inv_Grade*, where *Covenant_Used* is defined as a dummy that equals one (zero otherwise) if the loan contract includes that particular ratio in its covenant provisions. We expect a significant coefficient on the interaction term, implying that REITs who report stronger ratios are more likely to have included those specific ratios in the debt covenant package. Control variables are defined as in (1), except that we exclude total debt/assets since it is endogenously related to our dependent variables.

To address our last research question, we look into the benefits of having debt covenants. We conjecture that, when covenants do not present binding constraints to REITs in the investment grade bond market, REITs still provide covenant provisions in order to signal the quality of their debt. Hence, we hypothesize the existence of covenant provisions should lower the cost of debt for investment grade REITs.

H₃: Investment grade REITs issue bonds with covenant provisions to lower the cost of debt.

We measure cost of debt with all-in-drawn spread (from Dealscan) and examine the following model:

$$Cost_of_Debt_{it} = \alpha + \beta_1 Covenant_{it} + Controls_{it-1} + \varepsilon_{it} \quad (3.1)$$

$$Cost_of_Debt_{it} = \alpha + \beta_1 Covenant_{it} + \beta_2 Inv_Grade_{it-1} + \beta_3 Covenant_{it} \times Inv_Grade_{it-1} + Controls_{it-1} + \varepsilon_{it} \quad (3.2)$$

We run regression (3.1) separately for investment grade bonds and non-investment grade bonds and regression (3.2) for the full sample. The key variable of interest in (3.1) is *Covenant*, we expect covenant provisions to reduce the cost of debt (e.g., Cremers, Nair, and Wei, 2007; Bradley and Roberts, 2004; Smith and Warner, 1979). If covenant provisions are merely a formality with no real benefits for investment grade REITs (or non-investment grade bonds), we would expect a non-negative coefficient on the covenant variable. The key variable in (3.2) is the interaction term of *Covenant* and *Inv_Grade*, and we expect that if covenant provisions are redundant for investment grade REITs, the coefficient of this interaction term to be positive and significant, offsetting the impact of covenant on the cost of debt. Lastly, the control variables are as defined as in (1).

III. Sample Selection & Descriptive Statistics

Our sample covers loans of REITs over the period of 1987 to 2009. Using four different databases (e.g., CRSP, Compustat, SNL financial, and Dealscan), we construct our final sample of REIT loans in several steps. First, we obtain a list of all U.S. REITs from CRSP. Second, we cross-check the name of each REIT with that of SNL database to make sure the sample REITs are categorized as REITs in SNL and we drop those that don't. Third, we manually match each of the REITs with Dealscan by using Dealscan-

Compustat Link file.¹⁰ Once the link is established, we obtain loan specific information including covenants from Dealscan. Finally, we collect accounting information for sample REITs in the year prior to loan initiation from Compustat.

The final sample consists of a total of 2,194 REIT loans by 275 distinct REITs.¹¹ Table 1 shows the distribution of loans by year. The yearly percentage of loans to total loans ranges from 0.41% in 1987 to 9.98% in 1997. Most of the REIT loans are made in the years between 1994 and 2006. The number of REIT loans drops sharply from 2007 to 2009 because of the decrease in credit syndication activities during the financial crisis.

Table 2 shows univariate statistics for variables used in the empirical analyses, and we further partition these variables into loans with and without covenants.¹² Borrower and loan characteristics are presented in Panel A and Panel B, respectively. Panel A shows that 28% of the borrowers are of investment grade. The mean (median) debt ratio of these borrowers is 50% (49%). The mean (median) market-to-book ratio is 1.25 (1.21). When we partition the sample on the basis of presence of covenants in the loans, we find that 33% of loans with covenants and 24% of loans without covenants are of investment grade. The differences between the means and medians of these two sub samples are statistically significant. In addition, loans with covenants are associated with borrowers of larger REIT size and lower leverage.

In Panel B, we report that 70% of all loans are made by more than one lender. The average (median) loan amount is 21% (13%) of total assets. The mean (median) maturity

¹⁰ The Dealscan-Compustat link file: http://finance.wharton.upenn.edu/~mrrobert/data_code.htm

¹¹ Our number of REITs is comparable with that of Deng, Hu, and Srinivasan (2011). They find 228 distinct REITs over the same period. The observed difference in sample size is mainly because of differences in the matching procedure.

¹² To control for the effect of outliers, we winzorize all continuous variables used in the empirical analysis at the 1st and 99th percentiles.

of these loans in months is 3.41 (3.58), in log. The mean (median) loan spread of the loans in the sample is 169 (150) basis points. Loans with covenants are positively associated with bigger deal size and a higher number of lenders. In addition, the mean (median) loan spreads for loans with covenants is 155 (145) in comparison to 182 (175) for loans without covenants. The differences in means and medians between the two sub samples are statistically significant. Consistent with prior literature (e. g., Cremers, Nair, and Wei, 2007; Bradley and Roberts, 2004; Smith and Warner, 1979), our findings in Table 2 suggest that loans issued with covenants have a lower cost of debt.

IV. Empirical Results

To address our first research question, on the incidence of debt covenants in the investment grade REIT market, we estimate the multivariate determinants of covenant use by employing a logistic regression framework. The dependent variable is an indicator variable, which equals one if the loan has covenants and zero otherwise. We present the empirical results of this analysis in Table 3. In column (1), we include borrower characteristics. The coefficient associated with the investment grade dummy is 0.27 and is significantly different from zero with a p -value of 0.02, suggesting that investment grade bonds do have a higher probability of providing covenants with their loan contracts. We also find leverage negatively related to the likelihood of covenant provision. We estimate column (2) controlling for loan characteristics. The coefficient on the investment grade dummy is 0.26, which is statistically significantly different from zero with a p -value of 0.02. Among the loan characteristics control variables, the dummy for number of lenders and deal size are positively related to the likelihood of covenant

provision. In column (3), we include both borrower and loan characteristics as control variables. The coefficient of 0.22 on the investment grade dummy is again statistically significant from zero, with a p -value of 0.07. The number of lenders and the deal size remain important determinants of covenant inclusion. To show that the investment grade distinction matters for covenant provision, we estimate the regression using a subsample of REITs that are closer to the investment grade cutoff, by retaining only observations for REITs with a “BBB” and “BBB-” as our *Inv_Grade* REITs (i.e., we exclude observations with higher than “BBB” ratings). We present the results of this subsample regression in column (4) and we find the coefficient on the investment grade dummy remains statistically significant with an estimate of 0.30. Overall, our findings suggest that, surprisingly, investment grade bonds in the REIT market are more likely than non-investment grade bonds to contain covenants.

Given that investment grade bonds exhibit relatively lower risk and their issuers are of better financial health, an important question is how binding these covenants really are. In an attempt to answer this question, we first investigate the types of covenants investment grade bonds include in their loan contracts. Table 4 shows a univariate comparison of different types of covenants adopted by investment grade and non-investment grade REITs. Among the ten different financial covenants commonly included in the Dealscan database, we find that, among all REIT loans, 26.12% loans have minimum fixed charge coverage covenants, followed by minimum interest coverage (25.98%), maximum leverage ratio (19.87%), and minimum debt service coverage (18.09%) covenants. We partition the sample by the investment grade dummy. Out of 2,194 REIT loans, the number of investment grade loans is 604 and the number of non-

investment grade loans is 1,590. Notably, among the four most commonly-adopted covenant provisions (we do not empirically examine covenants beyond the top four covenant provisions because there is very limited data for these other covenants as shown in Table 4), a significantly higher proportion of investment grade REITs include three types of covenants: minimum fixed charge coverage, minimum interest coverage, and maximum leverage ratio.

In order to determine whether these three covenants are binding, we examine the actual ratios related to these covenants in two ways. As covenant threshold information is not widely available for our sample REITs, we hypothesize better actual ratios indicate that a REIT can choose covenant protection related to this ratio while it is a relatively less binding covenant. We regress, using equation (2.1), these three actual ratios commonly adopted by the investment grade REITs on the investment grade dummy, controlling for REIT and loan characteristics. Our objective is to show that investment grade REITs generally report strong ratios on fixed charge coverage, interest coverage, and leverage. We present the results in columns (1), (3) and (5) of Table 5. In column (1) where fixed charge coverage is the dependent variable, the coefficient of 0.29 on the investment grade dummy is statistically significant with a p -value of 0.03. Among the controls, REIT size and deal size both appear to be associated with the fixed charge coverage ratio. In column (3), we use the interest coverage ratio as a dependent variable and the investment grade dummy and control variables as independent variables. The coefficient of 0.98 on the investment grade dummy is significant with a p -value of 0.00. In column (5), we examine the leverage ratio. The coefficient of -0.06 is significant with a p -value of 0.00. These findings suggest that investment grade REITs, on average, have significantly higher fixed

charge coverage, higher interest coverage, and lower leverage ratios, which is consistent with the conjecture that investment grade REITs seem to provide covenant provisions on terms that are not particularly binding. However, one could argue that investment grade REITs report better financial ratios overall. To investigate this probability, we conjecture that a REIT would include covenant provisions related to a particular ratio especially when that specific ratio is better. We regress, using equation (2.2), the three actual ratios on the investment grade dummy, covenant used dummy, and their interaction term, controlling for REIT and loan characteristics. Our objective is to show that while investment grade REITs may have stronger financial ratios overall, REITs would include covenant ratios for which they have a lower likelihood of violating that specific covenant provision. We present the results in columns (2), (4) and (6) of Table 5. In column (2) with fixed charge coverage as the dependent variable, we show that the interaction term has a positive coefficient of 0.19 and is significant with a p -value of 0.03. We also find, in column (4), with interest coverage as the dependent variable, that the coefficient on the interaction term is significant (coefficient = 1.16) with a p -value of 0.10. Although we do not find significance for the interaction term in column (6) when we use the leverage ratio as the dependent variable, our findings suggest that investment grade REITs would include at least the fixed charge coverage and interest coverage ratios in their debt covenant provisions when these ratios are better.

Now that we have established that investment grade bonds provide covenants that are less binding, we ask why investment grade bonds would include covenants that are non-binding. A possible answer to this question leads us to investigate the potential benefits of using covenants as a signal of loan quality to obtain a lower cost of debt. We

estimate equation (3.1) for the samples of investment grade and non-investment grade loans and report the results in the first two columns of Table 6. We show that the coefficients for the covenant dummy is negative and significant for both types of loans, suggesting that loan covenants do indeed lower the cost of debt despite the investment grade status of the loans. To be specific, including covenants seem to lower the cost of debt by about 16 basis points for investment grade bonds. As expected, including covenants also lowers the cost of debt for the non-investment grade REITs. Of the control variables, we find that market-to-book ratios and the number of lenders have significant impact on the cost of debt for both investment grade and non-investment grade REITs.¹³ In addition, we estimate equation (3.2) with the variables *Inv_Grade* and the interaction of the covenant variable and *Inv_Grade* to examine their combined influence on the cost of debt. The results presented in the last column of Table 6 show that the provision of covenants continues to reduce the cost of debt and better credit ratings have a significant impact on lowering the cost of debt, as well. Interestingly, the interaction effect is insignificant, reinforcing the idea that both covenants and credit ratings lower the cost of debt and that when a REIT is of investment grade this does not undermine the importance of covenants in reducing loan spreads.

We conduct further analysis to explore when it is more advantageous for an investment grade REIT to issue loans with covenants. As the conflict of interest between debt-holders and shareholders increases, debt-holders may demand covenant protection for both investment-grade and non-investment-grade firms. Childs, Mauer, and Ott

¹³ We realize that market-to-book ratios are affected by the market capitalization of firms which in turn are related to the cost of debt. Hence, we drop the market-to-book variable and also take these ratios in log form in alternative analysis to ensure the cross-causality between the market-to-book ratios and the cost of debt does not bias our findings.

(2005) imply that growth opportunities could heighten the agency conflicts between debt-holders and shareholders. Esmer (2012) also shows that firms with severe agency conflicts have higher investment and tend to exhibit more liquidity risk. Hence, we use the level of investment and liquidity risk as proxies of the level of agency conflicts between debt-holders and shareholders. In particular, we use working capital as a measure of a firm's liquidity risk. We test the association of covenants and the cost of debt for the subgroups of firms with high/low agency conflicts. Our findings in Table 7 indicate that, for investment grade REITs, agency cost is the driving factor for the provision of covenant to signal loan quality and to lower cost of debt, as the coefficients for covenant are only significant for firms with high level of investment and high liquidity risk (indicated in the table by the column headers "H" for high and "L" for low, respectively). Next, we provide some additional analysis by taking loan types (e.g., secured or unsecured) into consideration. Our conjecture is that covenants should be more prevalent for unsecured loans. We augment equation (1) by including an unsecured dummy, which equals one if the loan is reported as unsecured in the Dealscan database and zero otherwise, and we include in equation (1) the interaction of this dummy with the investment grade dummy.¹⁴ Table 8 shows the results of this estimation. We find that the coefficients on the interaction between investment grade and unsecured dummies are positively associated with covenants in all three columns, suggesting that investment grade REITs are more likely to include covenants in their unsecured loans. This finding is consistent with Jensen and Meckling (1976) who argue that agency costs for unsecured debt are higher and firms use debt covenants to reduce these agency costs.

¹⁴ We do not include this unsecured dummy in our main analysis as it significantly reduces our sample size. Nonetheless, Table 8 shows our empirical results remain intact with the inclusion of this additional variable.

Overall, the findings of our analysis offer an explanation for why investment grade REITs provide covenant protection in their loan contracts. We present empirical evidence showing that the potential costs to providing covenants are relatively low for investment grade REITs since the covenants included in their loan contracts are loose (i.e., not binding). Consistent with prior literature, our results also show that investment grade REITs enjoy a lower cost of debt. By using covenants, we further find investment grade REITs can reduce their cost of debt via signaling of their loan quality, without having to worry that these covenants are “trip wires” that are easily violated and affect their future debt issuance. The benefits for offering covenant protection seem to be larger for investment grade REITs when the level of agency conflicts is higher between debtholders and shareholders. As expected, REITs are more likely to extend covenant protection to their unsecured loans.

We perform a series of sensitivity analyses to ensure the robustness of our findings. One main concern is the endogenous nature between the cost of debt and the covenant variables, as higher prior-year credit ratings could be due to the anticipated effect of REITs continuation of covenant inclusion in future loans. We test for endogeneity by first conducting the Durbin-Wu-Hausman test and then by running 2SLS regressions with an instrumental variable approach. One key challenge with this approach is to obtain a proper instrument. Although most factors are arguably related to both covenants and the cost of debt, Pae (2008) argues that individual financial ratios are more important determinants of covenant thresholds while less likely to have a significant impact on the cost of debt on a stand-alone basis, and uses the current ratio as an instrument for covenants. We follow the same logic but use ratios that are most

commonly used for covenants in loan contracts for our sample. Based on our findings in Table 4, we use the most commonly used covenant ratio: fixed charge coverage, as our instrument. We run the Durbin-Wu-Hausman test and find that covenant and cost of debt are indeed endogenously related in the investment grade sample.¹⁵ We run the 2SLS regression for the investment grade sample and present our results in Table 9. Column 2 of Table 9, which shows the second stage of the 2SLS estimation, shows that covenant lowers the cost of debt in investment grade REITs. These results corroborate our earlier results.

In unreported robustness analysis, we replicate our main tests by replacing the covenant dummy with a self-constructed covenant intensity index (i.e., formed by counting the number of covenants a loan has and scaling it by the highest number of covenants a loan can possibly get). The index value ranges between 1 (high intensity) and 0 (no covenants), and our findings on equation (1) continue to indicate investment grade REITs are more likely to provide covenant protection. The results on the covenant variables in the cost of debt regression (3) are even stronger, implying that more comprehensive covenant provisions reduce the cost of debt for both investment grade and non-investment grade REITs, despite investment grade REITs having covenants that are not necessary binding. We also ensure our findings in (1) using a discrete dependent variable in the model are not statistically model-driven, by adopting the linear probability model in lieu of the logit model, and we find the investment grade dummy remains significantly related to the covenant dummy. We estimate equations (2.1), (2.2), (3.1), and (3.2) while controlling with the unsecured dummy and obtain similar results. Concerning correlations among the error terms in the regressions, we replicate all our

¹⁵ The endogeneity test results are available upon request from the authors.

analysis by including time fixed effect with the clustering of standard errors by time and obtain similar results.¹⁶

V. Concluding Remarks

In this study, we investigate the role of debt covenants in the investment grade bond market by utilizing the unique debt financing structure of REITs. Our study addresses three questions: 1. How prevalent are debt covenants in the investment grade REIT bond market? 2. Are these covenants binding? 3. Do debt covenants affect the cost of debt if they are not binding?

We provide three major findings. First, we find that investment grade REITs are more likely to include covenants in their loan contracts as compared to non-investment grade REITs. Second, we show that debt covenants in the REIT loans are less binding, as they choose covenants for which they have more slack. Finally, investment grade REIT loans appear to have a lower cost of debt because of the existence of covenant protection, even if these covenants appear to be not very binding. The findings in our study seem to indicate that offering stronger covenant protection in the investment grade bond market could be beneficial to both firms and credit investors.

¹⁶ All these results are available upon request from the authors.

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Table 1

Distribution of Loans by Year

This table provides the distribution of REIT loans by Year. The sample period covers 1987 to 2009.

Year	No. of Loans	% of Total	No. of Loans with Covenants	% of Loans with Covenants
1987	9	0.41	0	0.00
1988	15	0.68	0	0.00
1989	11	0.50	0	0.00
1990	17	0.77	0	0.00
1991	21	0.96	0	0.00
1992	21	0.96	0	0.00
1993	67	3.05	0	0.00
1994	143	6.52	3	2.10
1995	125	5.70	47	37.60
1996	160	7.29	79	49.38
1997	219	9.98	122	55.71
1998	196	8.93	109	55.61
1999	118	5.38	62	52.54
2000	156	7.11	77	49.36
2001	108	4.92	47	43.52
2002	111	5.06	54	48.65
2003	110	5.01	59	53.64
2004	139	6.34	76	54.68
2005	143	6.52	72	50.35
2006	133	6.06	71	53.38
2007	93	4.24	40	43.01
2008	64	2.92	28	43.75
2009	15	0.68	4	26.67
Total	2,194	100.00	950	43.30

Table 2**Summary Statistics of Borrowers and Loans**

This table presents summary statistics of loans in the sample. In panel A, *Inv_Grade* is a dummy variable that equals one if the REIT has AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, CC, and D) in the year prior to the loan initiation and zero otherwise; *S&P rated* is a dummy variable that equals one if the borrower is rated (e.g., AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, CC, and D) in the year prior to the loan initiation and zero otherwise; *LN (assets)* is the natural logarithm of total assets (AT); *Total debt/assets* is the ratio of total debt (DLC+DLTT) to assets (AT); *Market-to-book* is measured as (AT-SEQ+(PRCC*CSHO))/AT. In panel B, *Covenant* is a dummy variable that equals to one if the loan has covenants or zero otherwise; *Dummy: number of lenders* is the dummy variable that equals to one if number of lenders in a loan is greater than one and zero otherwise; *Loan amount/assets* is the facility amount reported in Dealscan scaled by total assets (AT); *LN (maturity in months)* is the natural logarithm of loan maturity in months reported in Dealscan; *All-in-drawn spread* is defined as total (fees and interests) annual spread paid over LIBOR for each dollar drawn down from the loan; All non-dummy variables are winsorized at 1% tail.

Panel A: Borrower Characteristics

Variables	Overall sample			Loans without Covenants			Loans with Covenants			Difference	
	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean (t-stat)	Median (Z-stat)
<i>Inv_Grade</i>	0.28	0.00	2,194	0.24	0.00	1,244	0.33	0.00	950	-4.70***	-4.67***
<i>S&P rated</i>	0.34	0.00	2,194	0.29	0.00	1,244	0.39	0.00	950	-4.94***	-4.91***
<i>LN (assets)</i>	6.93	6.93	2,046	6.87	6.86	1,116	7.00	6.98	930	-2.14***	-1.72**
<i>Total debt/assets</i>	0.50	0.49	2,045	0.52	0.50	1,115	0.49	0.48	930	3.51***	2.11**
<i>Market-to-book</i>	1.25	1.21	1,862	1.24	1.21	1,010	1.26	1.22	852	-1.10	-0.93

Panel B: Loan Characteristics

Variables	Overall sample			Loans without Covenants			Loans with Covenants			Difference	
	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean (t-stat)	Median (Z-stat)
<i>Covenant</i>	0.43	0.00	2,194	0.00	0.00	1,244	1.00	1.00	950	--	46.83***
<i>Dummy: number of lenders</i>	0.70	1.00	2,194	0.63	1.00	1,244	0.79	1.00	950	-8.18***	-8.06***
<i>Loan amount/assets</i>	0.21	0.13	2,046	0.19	0.11	1,116	0.24	0.15	930	-4.09***	-5.95***
<i>LN (maturity in months)</i>	3.41	3.58	1,980	3.42	3.58	1,039	3.40	3.58	941	0.64	0.21
<i>All-in-drawn spread</i>	168.95	150.00	1,826	182.27	175.00	926	155.24	145.00	900	7.05***	6.52***

Table 3

Determinants of Covenant Use

This table presents the determinants of covenant. The dependent variable is *Covenant* dummy. In column (1), (2), and (3), *Inv_Grade* is a dummy variable that equals one if the REIT has AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, or BBB- rating in a particular year prior to the loan initiation and zero otherwise. The subsample test in column (4) compares REITs just above and below Investment Grade cutoff where *Inv_Grade* is a dummy variable that equals one if the REIT has "BBB" or "BBB-" and zero if the rating is below "BBB-". All other ratings above "BBB" are deleted. All models are based on logit regression. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Dependent Variable: Covenant							
	(1)		(2)		(3)		(4)	
	Est.	Odds.	Est.	Odds.	Est.	Odds.	Est.	Odds.
<i>Intercept</i>	-0.51 (0.14)		-0.55** (0.02)		-0.72 (0.13)		-1.06 (0.13)	
<i>Inv_Grade</i>	0.27** (0.02)	1.30	0.26** (0.02)	1.29	0.22* (0.07)	1.25	0.30** (0.03)	1.35
<i>LN (assets)</i>	0.05 (0.22)	1.06	---		0.08 (0.14)	1.09	0.16*** (0.01)	1.18
<i>Total debt/assets</i>	-0.59** (0.03)	0.55	---		-0.28 (0.33)	0.75	-0.46 (0.13)	0.63
<i>Market-to-book</i>	0.13 (0.44)	1.14	---		-0.16 (0.38)	0.85	-0.11 (0.58)	0.89
<i>Dummy: number of lenders</i>	---		0.75*** (0.00)	2.11	0.58*** (0.00)	1.78	0.59*** (0.00)	1.81
<i>Loan amount/assets</i>	---		0.92*** (0.00)	2.45	1.43*** (0.00)	4.18	1.30*** (0.00)	3.69
<i>LN (maturity in months)</i>	---		-0.08 (0.25)	0.926	-0.08 (0.26)	0.92	-0.12* (0.10)	0.89
Number of observations	1,862		1,846		1,676		1,479	
Likelihood ratio (Pr>ChiSq)	0.00		0.00		0.00		0.00	

Table 4**Covenants Used in Loan Contracts**

This table presents different types of covenants that REITs include in their loan contracts. It is common that one loan has more than one covenant so the sum of proportions does not add up to 100%.

Name of Covenant	Overall Sample (N=2,194)		Investment Grade (N=604)		Non-Investment Grade (N=1,590)		Diff. of Prop.
	#	%	#	%	#	%	<i>p-value</i>
Min. Fixed Charge Coverage	573	26.12	214	35.43	359	22.58	0.00
Min. Interest Coverage	570	25.98	208	34.44	362	22.77	0.00
Max. Leverage ratio	436	19.87	164	27.15	272	17.11	0.00
Min. Debt Service Coverage	397	18.09	93	15.40	304	19.12	0.03
Max. Debt to Tan. Net Worth	105	4.79	41	6.79	64	4.03	0.01
Max. Senior Leverage	97	4.42	57	9.44	40	2.52	0.00
Max. Debt to EBITDA	70	3.19	6	0.99	64	4.03	0.00
Max. Loan to Value	30	1.37	5	0.83	25	1.57	0.18
Max. Debt to Equity	17	0.77	11	1.82	6	0.38	0.00
Min. Cash Interest Coverage	16	0.73	4	0.66	12	0.75	0.82

Table 5

Determinants of Covenant Ratios

This table presents the determinants of covenant ratios. All the dependent variables are actual ratios in the year before the loan was initiated. In column (2), *Covenant_Used* is a dummy variable that equals one if the REIT uses “min fixed charge coverage covenant” in its loan contract. In other columns, the definition of *covenant_used* variable will change accordingly. All models are based on OLS regression. *P*-values in parenthesis are calculated using heteroscedasticity consistent standard errors. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Fixed Charge Coverage		Interest Coverage		Leverage Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Intercept</i>	4.00*** (0.00)	0.63*** (0.00)	7.24*** (0.00)	1.97*** (0.00)	0.14*** (0.00)	0.04*** (0.00)
<i>Inv_Grade</i> × <i>Covenant_Used</i>	---	0.19** (0.03)	---	1.16* (0.10)	---	0.02 (0.14)
<i>Covenant_Used</i>	---	0.14*** (0.00)	---	1.13 (0.23)	---	0.01** (0.04)
<i>Inv_Grade</i>	0.29*** (0.01)	0.15 (0.26)	0.98*** (0.00)	0.40*** (0.00)	-0.06*** (0.00)	0.01*** (0.00)
<i>LN (assets)</i>	-0.44*** (0.00)	0.07*** (0.00)	-0.97*** (0.00)	0.25*** (0.00)	0.05*** (0.00)	0.00*** (0.00)
<i>Market-to-book</i>	-0.21 (0.47)	0.28 (0.32)	2.06* (0.08)	1.12* (0.08)	0.07*** (0.00)	0.02*** (0.00)
<i>Dummy: number of lenders</i>	0.21 (0.17)	0.16** (0.04)	0.77 (0.14)	0.52 (0.15)	-0.05*** (0.00)	0.01*** (0.00)
<i>Loan amount/assets</i>	1.21*** (0.01)	0.49*** (0.01)	1.82 (0.24)	1.68 (0.37)	-0.17*** (0.00)	0.03*** (0.00)
<i>LN (maturity in months)</i>	-0.02 (0.75)	0.07 (0.60)	-0.37* (0.07)	0.20* (0.06)	0.01 (0.13)	0.01 (0.12)
Number of observations	997	997	338	338	1,676	1,676
Adjusted R ²	0.1227	0.1408	0.1341	0.1392	0.1477	0.1490

Table 6

Determinants of Cost of Debt

This table presents the determinants of cost of debt. The dependent variable is *Cost_of_Debt*. All models are based on OLS regression. *P*-values in parenthesis are calculated using heteroscedasticity consistent standard errors. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Cost of Debt (all-in-drawn spread)		
	Investment Grade	Non-Investment Grade	Full Sample
<i>Intercept</i>	235.06*** (0.00)	255.53*** (0.00)	265.53*** (0.00)
<i>Covenant</i>	-15.62*** (0.00)	-11.79** (0.02)	-11.45** (0.03)
<i>Inv_Grade</i>	---	---	-62.25*** (0.00)
<i>Inv_Grade</i> × <i>Covenant</i>	---	---	-3.55 (0.60)
<i>LN (assets)</i>	-7.82*** (0.00)	-2.48 (0.43)	-4.26* (0.06)
<i>Total debt/assets</i>	42.85 (0.13)	38.15*** (0.01)	40.78*** (0.00)
<i>Market-to-book</i>	-49.19*** (0.00)	-63.23*** (0.00)	-58.66*** (0.00)
<i>Dummy: number of lenders</i>	-13.97* (0.08)	-19.00*** (0.01)	-17.46*** (0.00)
<i>Loan amount/assets</i>	-0.34 (0.98)	-1.05 (0.94)	-2.85 (0.80)
<i>LN (maturity in months)</i>	0.49 (0.88)	9.22** (0.03)	6.54** (0.04)
Number of observations	483	959	1,442
Adjusted R ²	0.1097	0.0865	0.2878

Table 7**Effect of Agency Conflict and Liquidity Risk on the Association between Cost of Debt and Covenant**

This table presents the association between cost of debt and covenant in subsamples partitioned by level of agency conflicts. The dependent variable is *Cost_of_Debt*. We use *Investment* as the proxy for potential agency conflict. *Investment* in a given fiscal end-year is the sum of capital expenditures, research and development (R&D) expenditures, and acquisitions minus sales of plant, property and equipment (PPE), scaled by lagged total assets. We also use working capital as a proxy for the firm's liquidity. Working capital is calculated from Compustat as the current assets (data# 4) - current liabilities (data# 5) scaled by total assets (data# 6). When values for working capital are missing, we alternatively calculate working capital as data# 1 + data# 68 + data# 3 + data# 194 - data# 70 - data# 72 - data# 34 - data# 71. Values above (below) sample median is considered High (Low). All models are based on OLS regression. *P*-values in parenthesis are calculated using heteroscedasticity consistent standard errors. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Cost of Debt (all-in-drawn-spread)							
	Investment Grade				Non-Investment Grade			
	Agency Conflict (Investment)		Liquidity Risk (Working Capital)		Agency Conflict (Investment)		Liquidity Risk (Working Capital)	
	H	L	H	L	H	L	H	L
<i>Intercept</i>	400.84*** (0.00)	166.29*** (0.00)	344.87*** (0.00)	218.07*** (0.00)	247.10** (0.02)	160.49 (0.15)	269.17*** (0.00)	220.06*** (0.00)
<i>Covenant</i>	-21.76** (0.04)	-11.45 (0.41)	-17.01*** (0.00)	0.18 (0.95)	-53.65** (0.02)	-42.79** (0.02)	-17.05** (0.03)	-1.54 (0.84)
<i>LN (assets)</i>	-20.79*** (0.00)	4.81 (0.37)	-18.27*** (0.00)	-13.57*** (0.01)	28.58** (0.03)	-14.85 (0.27)	-6.07 (0.26)	-1.90 (0.71)
<i>Total debt/assets</i>	86.72* (0.09)	-70.71* (0.07)	26.93 (0.32)	148.23*** (0.00)	0.66 (0.99)	22.39 (0.69)	46.54** (0.03)	65.45*** (0.01)
<i>Market-to-book</i>	-99.80*** (0.00)	-14.71 (0.40)	-61.99*** (0.00)	-44.94*** (0.00)	-39.41*** (0.00)	89.83*** (0.01)	-58.15*** (0.01)	-55.59*** (0.01)
<i>Dummy: number of lenders</i>	-24.50 (0.33)	-21.01 (0.29)	-6.79 (0.49)	-17.43 (0.29)	-39.04 (0.20)	-57.87** (0.02)	-21.69** (0.04)	-15.31 (0.13)
<i>Loan amount/assets</i>	-78.57 (0.15)	-50.44 (0.44)	-5.50 (0.78)	-90.92 (0.23)	107.59** (0.05)	-16.07 (0.82)	-5.84 (0.69)	21.59 (0.40)
<i>LN (maturity in months)</i>	-0.69 (0.95)	-3.60 (0.74)	-4.56 (0.33)	2.01 (0.65)	20.38 (0.15)	25.08 (0.13)	8.70 (0.15)	6.79 (0.41)
Number of observations	61	59	223	218	66	88	396	391
Adjusted R ²	0.5167	0.1616	0.3109	0.1393	0.2919	0.2479	0.1057	0.0752

Table 8

Determinants of Covenant Use and the Effect of Secured and Unsecured Loans

This table presents the determinants of covenant. The dependent variable is *Covenant*. All models are based on logit regression. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Dependent Variable: <i>Covenant</i>		
	(1)	(2)	(3)
<i>Intercept</i>	-2.30*** (0.00)	0.14 (0.67)	-1.70*** (0.01)
<i>Inv_Grade</i>	-0.48* (0.07)	-0.13 (0.63)	-0.52* (0.07)
<i>Unsecured</i>	0.69*** (0.00)	0.62*** (0.00)	0.47*** (0.01)
<i>Inv_Grade × Unsecured</i>	0.87*** (0.01)	0.64* (0.07)	0.89*** (0.01)
<i>LN (assets)</i>	0.37*** (0.00)	---	0.33*** (0.00)
<i>Total debt/assets</i>	-0.71** (0.04)	---	-0.24 (0.55)
<i>Market-to-book</i>	0.34 (0.14)	---	-0.02 (0.92)
<i>Dummy: number of lenders</i>	---	1.28*** (0.00)	0.91*** (0.00)
<i>Loan amount/assets</i>	---	0.24 (0.29)	1.09*** (0.01)
<i>LN (maturity in months)</i>	---	-0.22** (0.02)	-0.23** (0.02)
Number of observations	1,129	1,220	1,097
Likelihood ratio (Pr>ChiSq)	0.00	0.00	0.00

Table 9

Estimating 2SLS Regression for Investment Grade REITs

This table presents the determinants of cost of debt. The dependent variable is *Covenant*. The model is based on 2sls regression. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Explanatory variables	Investment Grade	
	2SLS: First Stage for Covenant	2SLS: Second Stage for Cost of Debt
<i>Intercept</i>	0.46 (0.16)	208.84*** (0.00)
<i>Covenant</i>	---	-122.94** (0.04)
<i>Fixed charge coverage</i>	-0.06** (0.02)	---
<i>LN (assets)</i>	0.04 (0.28)	6.10 (0.28)
<i>Market-to-book</i>	-0.09 (0.42)	-35.25** (0.02)
<i>Dummy: number of lenders</i>	-0.06 (0.60)	-34.31** (0.04)
<i>Loan amount/assets</i>	0.58*** (0.00)	65.86* (0.10)
<i>LN (maturity in months)</i>	-0.01 (0.93)	-1.69 (0.80)
Number of observations	278	278
Adjusted R ²	0.0230	0.1023