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Abstract

This paper examines the impact of product market competition and corporate governance on the cost of debt financing and the use of bond covenants. We find that more anti-takeover provisions are associated with a lower cost of debt only in competitive industries. Because they are exposed to higher takeover risk in competitive industries, bondholders charge higher bond spreads to firms that have fewer anti-takeover provisions. Once firms' anti-takeover provisions are in place, we find that bondholders use fewer payment and debt priority covenants in competitive industries. Our results suggest that product market competition plays a crucial role in explaining the way a firm's anti-takeover protection affects the cost of debt and the use of bond covenants.

JEL classification: G12, G34
Bank classification: Financial markets

Résumé

Les auteurs examinent l'incidence de la concurrence sur le marché des produits, et de la gouvernance d'entreprise sur le coût du financement par emprunt d'une part, et sur l'inclusion de clauses restrictives dans les contrats obligataires d'autre part. Ils constatent que l'existence de défenses anti-offre publique d'achat (OPA) en nombre accru est associée à un coût d'emprunt inférieur, mais seulement dans les secteurs où la concurrence est vive. Étant donné que, dans ces secteurs, les porteurs d'obligations sont exposés à un plus grand risque d'OPA, ils imposent des taux de rendement obligataire supérieurs aux firmes moins bien protégées contre ce type d'offres. Lorsque des défenses anti-OPA sont en place, les auteurs observent que, dans les secteurs à forte concurrence, les porteurs d'obligations recourent moins aux clauses restrictives à l'égard des paiements et de la priorité des créances. Les résultats de l'étude donnent à penser que la concurrence sur le marché des produits joue un rôle essentiel pour expliquer l'effet des dispositifs anti-OPA sur le coût des capitaux empruntés et l'ajout de clauses restrictives aux contrats obligataires.

Classification JEL : G12, G34
Classification de la Banque : Marchés financiers

Non-Technical Summary

The main objective of corporate governance is to resolve collective action problems among dispersed investors and help to reassure the suppliers of finance to corporations that they will get a return on their investment. Although certain corporate governance mechanisms strengthen shareholders' rights and benefit them, they may not necessarily serve the interests of bondholders. The literature places a stronger emphasis on the impact of corporate governance on shareholders' wealth than on bondholders' wealth. It is important, however, to understand how bondholders are affected by corporate governance because debt financing represents a significant source of capital for corporations.

Bondholders can incur the agency cost of debt arising from risk shifting and/or under-investment. Risk shifting occurs when shareholders expropriate wealth from bondholders by investing in projects that are riskier than those currently held in the firm's portfolios, while under-investment occurs when shareholders forgo profitable projects because they perceive that the main benefit would go to bondholders. To the extent that bondholders consider corporate governance mechanisms as alleviating the agency cost of debt, they would demand lower rates of return, leading to lower costs of debt financing. In contrast, if bondholders viewed corporate governance as detrimental to their interests, they would expect higher rates of return, thereby raising the costs of borrowing.

Product market competition and takeover protection are considered to be influential mechanisms for achieving economic efficiency. Owing to agency conflicts between bondholders and shareholders, strong corporate governance and intense product market competition can be perceived differently by these two types of investors. In this paper, we explore how bondholders view corporate governance conditional on product market competition. We find that, when competition is strong, bondholders require lower rates of return as takeover protection becomes stronger (i.e., corporate governance is weaker). However, in non-competitive industries, in which the pressure to stay at the efficiency frontier is relaxed, bondholders demand higher premiums if firms' anti-takeover protection becomes stronger. Our explanation is that takeover protection exposes bondholders to different types of risks, depending on the level of competition. Our results highlight that product market competition is an important factor affecting bondholders' perception of takeover protection as a corporate governance mechanism.

1 Introduction

Bondholders value anti-takeover provisions, since they shield them from adding more debt to the company through mergers and acquisitions. Debt-financed takeovers not only increase a firm's probability of default but may also change the priority of claims in the event of bankruptcy.[1] Stronger anti-takeover protection, however, can reduce the disciplinary pressure of the market for corporate control, thus allowing for managerial entrenchment and eventually pushing the firm closer to default.[2] In this paper, we study the costs and benefits of anti-takeover protections for bondholders in market structures with different levels of competition.

It has been argued that product market competition is the most important factor for economic efficiency (e.g., Shleifer and Vishny (1997)). For example, Giroud and Mueller (2010a) and Giroud and Mueller (2010b) show that equity-holders in firms with strong shareholder rights do not earn high equity returns in competitive industries but do so in non-competitive industries, concluding that the key to firm efficiency is strong industry competition. By including bondholders in this setting, our goal is to answer the following question: Do strong shareholder rights affect bond spreads differently in competitive and non-competitive industries? To the extent that shareholders' and bondholders' interests do not overlap, governance mechanisms that are beneficial to shareholders may not necessary serve the interests of bondholders.

Our hypothesis is that the cost of debt financing is higher in competitive industries for firms with fewer anti-takeover provisions than for firms with more anti-takeover provisions. More anti-takeover provisions are indicative of weak corporate governance.[3] Creditors face two types of risks—takeover risk due to a leverage-increasing takeover, and the risk of default due to high agency costs associated with managerial entrenchment. Because industry competition disciplines managerial behaviour, we expect bondholders to be less concerned about default risk caused by higher agency costs. Therefore, more anti-takeover provisions or weaker discipline of the market for

[1] Several papers find that the leverage of target firms increases after takeovers (Kim and McConnell (1977); Warga and Welch (1993); Ghosh and Jain (2000)).

[2] Managers can entrench themselves in pursing self-interested policies that do not maximize shareholder value through various mechanisms. For example, they can misuse free cash flow for "empire building" activities; or they can enjoy their "quiet life." Being insulated from hostile takeovers and competitive pressure, they avoid cognitively difficult activities, such as haggling with input suppliers, labour unions, and organizational units within the company that are demanding bigger overhead budgets (Bertrand and Mullainathan (2003)).

[3] More anti-takeover provisions are associated with weaker shareholder rights/corporate governance, since managers are less exposed to the threat of the market for corporate control and hence more prone to various types of self-interested policies (see footnote 2).

corporate control are not expected to increase the cost of debt in competitive industries. On the other hand, bondholders may be particularly concerned about takeover risk, since product market competition reduces profit margins, increases the risk of default and thus makes firms attractive takeover targets. Being more exposed to takeovers, firms with fewer anti-takeover protections are therefore expected to bear a higher cost of debt than firms with more anti-takeover protection in competitive industries.

A non-competitive market structure imposes different risks to bondholders. The disciplinary pressure of the takeover market is weakened and, as a result, managerial entrenchment may increase the likelihood of default. Firms that are less exposed to the discipline of takeovers (i.e., have more anti-takeover protections) are expected to pay a higher cost of debt because of the increased risk of managerial entrenchment.

Using a large cross-section of U.S. firms over the period from 1994 to 2007, we show that firms with more charter-level anti-takeover provisions, as measured by the "governance index" (or GINDEX) in Gompers, Ishii, and Metrick (2003), have a significantly lower cost of debt in competitive industries. One standard deviation increase in the GINDEX leads to a 30-basis-point decrease in bond spreads, or a 17% fall in the mean bond spread. This relationship is reversed in non-competitive industries, where each additional anti-takeover provision leads to an increase in bond spreads by 2 to 8 basis points depending on the specification. This pattern is robust to firm and bond controls, and time and issue fixed effects. To ensure that our results are not driven by an omitted factor that is correlated with our measures of anti-takeover protection, we explore whether anti-takeover provisions at the state level exhibit similar effects on bond spreads as anti-takeover provisions at the firm level. We find that the results hold when state anti-takeover provisions are used.

Our results are not likely due to endogeneity. We investigate the cost of debt using newly issued bonds. Since a firm's governance structure is already in place before these bond issues, causality is more likely to go from corporate governance to the cost of debt than the other way around. To mitigate endogeneity concerns that financing choices impact industry structure, as in Valta (2012), we use exogenous reductions of industry import tariff rates to measure changes in the intensity of competition. Unexpected reductions in trade barriers facilitate the penetration of foreign rivals into local markets and trigger stronger competition. Using these tariff reductions as

a proxy for a sudden increase in the competitive pressure, our regression analysis reveals that, in industries with tariff reductions, the relationship between bond spreads and anti-takeover provisions is negative; in contrast, it is positive in industries without tariff reductions. We also verify that the distributions of our corporate governance measure GINDEX across different product market structures are very similar, ensuring that there is no endogenous sorting between GINDEX and product market competition, which is alluded in Gompers, Ishii, and Metrick (2003).

We also study whether bondholders use covenant protections to mitigate their exposure to takeover and entrenchment risks. Since the source of conflict comes from a firm's exposure to takeovers, we focus on debt priority, payment and investment covenants. These covenants try to reduce claim dilution, asset substitutions and under-investments (See Section 2). We find that, if firms in competitive industries already have strong anti-takeover protections, bondholders are less likely to use debt priority and payment restrictions. However, in non-competitive industries where agency costs are higher, bondholders are more likely to use all three types of covenants. These results suggest that bondholders use covenants as a mechanism to reduce their exposure to takeover and entrenchment risks. In a similar vein, our results for bond spreads show that bondholders require compensation for bearing those two types of risks.

Our paper makes two main contributions to the literature. First, we are the first to include bondholders in the debate on the importance of competition and corporate governance. We document that product market competition drastically affects the impact of firm governance on the pricing of debt. Our results complement Giroud and Mueller (2010b) and Giroud and Mueller (2010a) who conclude that corporate governance leads to higher firm values and equity returns but only in non-competitive industries. Both anti-takeover provisions and market competition are viewed as two alternative mechanisms that serve the purpose of optimizing a firm's value and shareholder returns; their effects on the cost of debt are much less clear ex ante. Our results suggest that corporate governance matters for bondholders in both competitive and non-competitive industries, although in different ways—stronger corporate governance leads to higher cost of debt in the former and to lower cost of debt in the latter.

Second, a number of papers show that strong shareholder rights are associated with higher cost of debt *on average*. Chava, Livdan, and Purnanandam (2009) examine at-issuance credit spreads on bank loans and find that firms with the lowest anti-takeover provisions pay a 25% higher spread

on their bank loans than firms with the highest anti-takeover provisions. Cremers, Nair, and Wei (2007) claim that the effect of shareholder control on credit risk depends on takeover vulnerability. Klock, Mansi, and Maxwell (2005) find that shareholder control is associated with higher yields if the firm is exposed to takeovers. Qiu and Yu (2009) and Francis, Hasan, John, and Waisman (2010) use the passage of state-level anti-takeover laws as exogenous shocks to corporate governance to examine the impact of corporate governance on the cost of debt financing. Our paper shows that the effect of shareholder rights on the cost of debt depends on the product market competition. Our paper adds to this strand of research by showing that the effect of shareholder rights on the cost of debt depends crucially on product market competition.

Our paper is also related to the literature on bond covenants. Chava, Kumar, and Warga (2010) show how managerial agency issues affect the use of covenants. In our paper, we focus on the use of covenants in the context of reducing bondholders' exposure to risks in different product market structures. We show that bond spreads and covenants are used as complementary mechanisms in curbing the agency costs of debt in competitive and non-competitive industries.

The rest of the paper is organized as follows. Section 2 deals with related literature. Section 3 describes the data. Section 4 presents the results, Section 5 reports results on the use of bond covenants and Section 6 concludes.

2 Literature Review and Hypothesis Development

Our paper is related to two strands of the literature: takeover vulnerability and the cost of debt, and product market competition and the cost of debt.

2.1 Corporate Governance and the Cost of Debt

A firm's exposure to takeover risk affects its bondholders. It is often the case that a target firm's leverage and cash-flow volatility increase after a takeover, which ultimately increases the default risk borne by bondholders. Rational creditors are therefore expected to demand a higher spread. For example, in their study of bondholder wealth changes following leveraged buyouts in the 1985–89 period, Warga and Welch (1993) find that nonconvertible bondholders experience a wealth loss in leveraged buyouts. In a similar spirit, Ghosh and Jain (2000) show that the mean financial

leverage following a merger is 17% higher than the pre-merger financial leverage.

There is growing research on firm takeover vulnerability and the cost of debt. A standard proxy for takeover vulnerability is the GINDEX in Gompers, Ishii, and Metrick (2003), which is also used in our study. Klock, Mansi, and Maxwell (2005) examine the relation between the cost of debt financing and the GINDEX. Greater exposure to the market for corporate control has disciplinary effects on managers, but adverse effects on bondholders. Consistent with this view, Klock, Mansi, and Maxwell (2005) find that anti-takeover governance provisions (i.e., a high GINDEX) lower the cost of debt financing. Using bank loan data, Chava, Livdan, and Purnanandam (2009) also find that firms with fewer anti-takeover defences are associated with a higher cost of bank loans. Further, Cremers, Nair, and Wei (2007) document that the impact of shareholder control, as proxied by large institutional shareholders, on bond spreads depends on a firm's takeover vulnerability. Shareholder control is associated with higher yields if the firm is exposed to takeovers.

On the other hand, takeovers may benefit debt-holders of target firms if their leverage decreases after the takeover (i.e., a coinsurance effect). Mergers between two or more firms with earnings that are less than perfectly correlated reduce the risk of default of the merged company. Billett, King, and Mauer (2004) find strong evidence of a coinsurance effect for the bondholders of the target firm. Only target bondholders in non-investment-grade firms earn a significantly positive mean excess return during the announcement period, while bondholders in investment-grade firms incur losses.

The second related strand of the literature focuses on product market competition. In a competitive industry, new firms can enter the product market and reduce the average price. More intense product market competition can therefore be associated with a lower profit margin, higher default probability and consequently a higher cost of debt. Valta (2012) shows that loan spreads are significantly wider in competitive industries.

The joint effect of firm corporate governance and product market competition has received limited attention in the literature. To the extent that product market competition and firm corporate governance are alternative mechanisms for enhancing firms' operational efficiency, both mechanisms can affect firm value. For example, Giroud and Mueller (2010b) show that the impact of corporate governance on shareholders' returns depends on the competitiveness of the product market. They claim that firms with strong shareholder rights do not earn abnormal equity returns in competi-

tive industries but do so in non-competitive industries. While takeover vulnerability and product market competition are viewed as alternative disciplinary mechanisms from the shareholders' perspective, their roles are not so clear from the bondholders' perspective, which is examined in this paper.

Zhdanov (2007) constructs a structural model without agency cost in a competitive industry, in which the equilibrium credit spreads are significantly higher than in an oligopoly. The model predicts that higher product market competition decreases profit margins and increases firms' probability of default and therefore the cost of debt. The free entry condition effectively imposes an upper ceiling on the product price process. The higher credit spreads in a competitive industry can be explained through two mechanisms. First, the probability of default increases, since it becomes more likely that the default boundary is reached. Second, the post-default value of the firm will be lower, since the upper price ceiling rules out many "good" states for the firm taken over by the creditors.

In our study, we reason that product market competition imposes two different types of risks on bondholders. On the one hand, bondholders may benefit from less competitive product markets resulting from higher profit margins and lower default risk (Zhdanov (2007)). Also, in non-competitive industries, the takeover risk is subdued. However, in these industries, bondholders may be exposed to greater default risk due to managerial slack. In competitive industries, the risk of managerial slack is subdued but the takeover risk is elevated because product market competition reduces profit margins, increases the risk of default and makes firms attractive takeover targets. Bondholders' exposure to takeover and entrenchment risks motivate us to formulate the following hypotheses:

HYPOTHESIS 1: Firms with a high GINDEX (lower takeover vulnerability) have a *lower* cost of debt than firms with a lower GINDEX in *competitive industries*.

HYPOTHESIS 2: Firms with a high GINDEX (lower takeover vulnerability) have a *higher* cost of debt than firms with a lower GINDEX in *non-competitive industries*.

2.2 Corporate Governance and Bond Covenants

Conflicts of interest between shareholders and debt-holders can be mitigated by including a package of covenants in the bond indenture contract. The broad objective of covenants is to prevent both opportunistic actions of borrowers that can destroy firm value at the expense of creditors (or divert the cash flows to third parties) and to preserve the relative priority of debt-holders' claims. The ultimate goal is to achieve the above-mentioned objectives and at the same time to give firms flexibility to execute their strategy. It is worth noting that the agency problems between shareholders and bondholders not only cause a redistribution of wealth from the lender to the borrower but also give rise to substantial efficiency losses. If wealth redistribution was the only effect, the lender could be protected by a higher interest rate as an *ex ante* compensation for the expected expropriation in the future. However, the opportunistic behaviour may destroy some of the surplus and thus incur costs for bondholders. For example, bankruptcy is inefficient and leads to deadweight loss. Therefore, any action that increases a firm's probability of default also increases the expected efficiency loss. The agency conflict between bondholders and shareholders will not be resolved by simply setting the right bond pricing, but will also require an appropriate set of covenants.

There are various forms of opportunistic behaviour that bondholders try to mitigate: claim dilution, asset withdrawal, under-investment and asset substitution. Claim dilution occurs if the firm receives additional credit; it makes default more likely and thus reduces the claims of the original lenders in case of default. Asset withdrawal is present if the firm sells some of its assets and transfers the proceeds to its shareholders; it also reduces the collateral of the lender. Under-investment happens because of the debt overhang problem in which the borrower has fewer incentives to invest in profitable projects because debt-holders have seniority over the expected payoff. Asset substitution is present if borrowers have an incentive to invest in very risky projects even if their expected return is negative. The borrowers benefit from the investment if it succeeds and are protected by limited liability if it fails.

There are three major groups of covenants that mitigate the above-mentioned agency problems.[4] The first group restricts distribution to shareholders through dividend payments or share

[4]Smith and Warner (1979) provide a detailed analysis of the different types of incurrence-based covenants and the agency conflicts they try to resolve.

repurchases. These covenants limit expropriation because they prevent cash disbursements that leave bondholders with fewer assets to protect their claims.[5] This covenant prevents asset withdrawals that ensure a lender's interest by locking in the firm assets at least equal in amount to those present at the time of bond issuance. This covenant also discourages under-investment resulting from low free cash flows that were paid out as dividends.

The second group of covenants places limits on additional borrowers and the issuance of certain types of debt (e.g., secured debt, more senior debt). These covenants prevent the firm from issuing bonds of equal or higher seniority. In such a way, they prevent an increase in default risk associated with higher leverage, ensuring that borrowers have the capacity to service their current debt and limit the dilution of bondholder claims generated by the issuance of debt that is equal or more senior to the outstanding bond. They also indirectly discourage risky investments—risky debt and risky investments tend to be concomitant.

The third group of covenants restricts borrowers' investment activities, ranging from prohibition on certain types of transactions such as mergers and acquisitions, or sale/leasebacks, to restrictions on the distribution of assets at prices lower than their equivalent value. These covenants are designed to protect bondholders from transactions that substitute less risky assets for riskier ones (i.e, asset substitution). These covenants also protect bondholders against the claim dilution that can follow if the merger partner is highly levered.

Keeping in mind this general framework about the use of covenants, we study whether the existing anti-takeover protections affect the use of bond covenants in competitive and non-competitive industries. Chava, Kumar, and Warga (2010) study how manager-shareholder agency issues affect the use of covenants and our analysis adds the role of product market competition. Cremers, Nair, and Wei (2007) also examine the role of covenants in reducing the conflict between shareholders and bondholders. They find that the spreads of issues that have leverage-restricting covenants, net worth requirements and poison pill covenants are least affected by the presence of blockholders.

We expect the existing shareholder control (through fewer anti-takeover provisions) to affect the bondholder's choice of certain types of covenants, depending on product market competition. In competitive industries, bondholders in these industries are concerned with takeover risk because

[5]The restriction typically operates by reference to the borrower's profitability: the covenant sets a base date, usually at the time of the bond issuance and permits dividends and redemptions only to the extent of cumulative earnings after that date.

inefficient firms are often forced out, thus becoming attractive targets for mergers and acquisitions, and barriers to exit and entry are weak. Debt-financed takeovers are often harmful to the interests of the current bondholders because they substantially increase leverage and default risk, and can subvert the existing seniority of claims. If bondholders consider existing corporate governance to be effective in reducing the likelihood of takeovers, or other events that are detrimental to bondholders, we would expect more anti-takeover provisions to be associated with fewer covenants in competitive industries. We focus on debt priority covenants, since they restrict claim dilution, which typically occurs in the event of a takeover. We also examine payment restrictions aiming to limit the withdrawal of funds that can eventually decrease asset/collateral values. When firms are more exposed to takeovers, they may have incentives to be more engaged in such type of activities. Therefore, our conjecture is that bondholders issue fewer covenants in competitive industries in which firms have already placed their own strong anti-takeover shields.

In non-competitive industries, however, we expect the major factor that affects the use of covenants to be managerial entrenchment that leads to higher agency costs and to higher default probability. In other words, having more anti-takeover protections and thus less exposure to the market for corporate control is not taken as a positive factor in non-competitive industries. With more anti-takeover protections, we expect bondholders to rely more on investment, debt priority and payment covenants to protect their own interests.

HYPOTHESIS 3: Firms with a high GINDEX (lower takeover vulnerability) have *lower* probability of using investment, payment and debt priority covenants than firms with a lower GINDEX in *competitive industries*.

HYPOTHESIS 4: Firms with high GINDEX (lower takeover vulnerability) have *higher* probability of using investment, payment and debt priority covenants than firms with a lower GINDEX in *non-competitive industries*.

3 Data and Variables

The data used in this study come from three different sources. First, we use corporate bond prices and bond characteristics from the Mergent Fixed Income Securities Database (FISD) from 1994

to 2007. The cost of debt is computed by taking the difference in yields to maturity between a corporate bond and a Treasury bond with the same coupon and maturity. We compute the yields to maturity of an equivalent Treasury bond based on zero-coupon yields, which are interpolated into a piecewise linear yield curve (Gurkaynak, Sack, and Wright (2006)). We also retrieve information about bond age (BOND AGE), defined as the number of years between the current year and the issuance year.

A unique feature of FISD is that it offers comprehensive information on 54 bond covenants that cover the whole range of restrictions used in bond indentures. To divide restrictions into groups, we rely on the classification used by Chava, Kumar, and Warga (2010). *Investment restrictions* include at least one of the following: restrictions on consolidation or mergers, direct and indirect investment restrictions, and stock issuance restrictions. *Payment restrictions* include restrictions either on dividends or other payments.[6] *Debt priority restrictions* include restrictions on funded debt, indebtedness, liens, and senior debt issuance of parent and/or subsidiary firms.[7]

Second, we obtain the following firm-level control variables from the Compustat annual file: (1) firm size, defined as the logarithm of sales (LOG(SALES)); (2) firm leverage, defined as the ratio of total debt (long-term debt plus short-term debt) to total assets (LEVERAGE); (3) firm profitability, computed as the ratio of earnings before interest, taxes, depreciation and amortization divided by total assets (ROA); (4) firm risk, measured by the standard deviation of firm profitability over the past five years (VOL ROA); and (5) a firm's rating, measured by an investment-grade dummy (INV GRADE).

Third, to measure a firm's takeover vulnerability, we use the GINDEX constructed by Gompers, Ishii, and Metrick (2003). This index relies on data from the Investor Research Responsibility Center (IRRC) and is based on counting provisions in a firm's charter deemed contrary to shareholder interests. The GINDEX ranges from 0 to 24. Each of the 24 provisions restricts shareholders' rights and makes hostile takeovers more costly; therefore, high values of the index are associated with

[6]Restrictions on consolidation or mergers indicate that consolidation or merger of the issuer with another entity is restricted; stock issuance restrictions restrict the issuer from issuing additional common stock; restrictions on dividends indicate that payments made to shareholders or other entities may be limited to a certain percentage of net income of other ratio

[7]Funded debt restricts the issuer from issuing additional funded debt. Funded debt is any debt with an initial maturity of one year or longer. Indebtedness restricts the user from incurring additional debt, with limits on the absolute dollar amount of debt outstanding or percentage of total capital. Liens restrictions imply that, in the case of default, the bondholders have the legal right to sell mortgaged property to satisfy their unpaid obligations. Senior debt issuance restricts the amount of senior debt the issuer may issue in the future.

weak shareholder rights, because managers are less exposed to the disciplining role of the market for corporate control. See Appendix 1 for a detailed description of each provision.

We construct an alternative measure of takeover vulnerability (ANTI) that uses information for only those provisions considered to be critical for takeovers. We use staggered boards, limits to shareholder amendments from bylaws, supermajority requirements for mergers, and charter amendments, poison pills and golden parachute provisions. Classified boards (not all directors are up for election simultaneously) create delays in takeover battles. In fact, some deem them to be the single most important factor in takeover defences. Another barrier to takeovers is supermajority requirements in which more than 65% of the vote is required. Existing poison pills and golden parachutes also guarantee delay in the takeover decisions. We expect ANTI to yield stronger impacts on bond spreads than more general measures such as the GINDEX, since our hypothesis relies on such governance structures that closely track anti-takeover provisions.

We also consider the presence of active shareholders by including the percentage of institutional blockholders for each issue year (OWNER). As in Cremers, Nair, and Wei (2007), we use institutional blockholders rather than institutional holdings to mitigate the problem that institutions with minor stakes have few incentives to be involved in firm-specific decisions. We view institutional blockholders as an alternative governance mechanism to the GINDEX. For example, Shleifer and Vishny (1997) argue that because blockholders often have substantial effective voting control, they play an important role in acquisitions. Related empirical work by Cremers, Nair, and Wei (2007) suggest that the effect of shareholder control on bond spreads depends on takeover vulnerability. Since both GINDEX/ANTI and blockholders measure takeover vulnerability, we include blockholders to avoid the issue of an omitted variable, and expect GINDEX/ANTI to affect bond spreads above and beyond the effect of large blockholders.

We use the Herfindahl-Hirschamnn index ("HHI") to measure product market competition. The HHI is defined as the sum of the squares of firms' market shares for each industry and year. The market shares are computed from Compustat using firm sales for all available firms. Higher HHI values imply weaker competition. At the extreme, the HHI equals zero in a perfectly competitive industry, while in a monopolistic industry the HHI equals one.

To identify competitive industries, we define a dummy variable COMP, which equals one if the HHI is in the lowest tercile of the sample distribution and zero otherwise. Splitting the sample into

competitive and non-competitive sub-samples allows for intuitive economic interpretation of the coefficient estimates. The advantage of the dummy variable definition as opposed to continuous HHI is that the former mitigates measurement problems often present with this variable. In the main results, we use 3-digit SIC codes and, as a (unreported) robustness check, we classify industries according to the Fama-French 48-industry classification and also use 2-digit SIC codes.

3.1 Empirical Method

The first part of our methodology consists of estimation bond spread regressions and a choice model for the use of covenants. To explore the relationship between corporate governance, product market competition and the cost of debt, we specify the following baseline regression model:

$$y_{ijt} = \delta_1 G_{it-1} + \theta' X_{it-1} + \alpha_j + \gamma_t + \varepsilon_{ijt}, \tag{1}$$

where the subscripts i, j and t represent firm, issue and year of trading, respectively. The dependent variable y denotes the corporate spread for issue j by firm i at time t; G is either the GINDEX or the ANTI. We estimate this regression separately for competitive and non-competitive industries. Our primary interest is in the estimates of the GINDEX and the ANTI across competitive and non-competitive industries. X stands for firm- and issue-specific control variables. Firm controls are leverage, blockholder ownership, firm size, firm risk, profitability (ROA) and credit rating. All firm controls take values from the year prior to bond yield quotes. Issue controls include bond age.

To account for unobserved heterogeneity within bond issues, we include issue fixed effects, α_j, while γ_t captures time fixed effects.[8] The standard errors are clustered at the firm level, since issues by the same firm may be dependent.

We expect firm size to be negatively related to corporate yield spreads because larger firms enjoy economies of scale and greater stability. Leverage should be positively related to corporate spreads, since higher leverage is associated with higher probability of default. Firm profitability should be negatively related to corporate yield spreads because high values indicate that a firm is less likely to default and more likely to repay its debt obligations. Firm risk should be positively

[8]Because the bond amount does not vary within the issue, we cannot estimate its impact on bond spreads using issue fixed effects. We employ firm fixed effects instead of issue fixed effects in an unreported analysis. Overall, the results are preserved though with weaker significance.

related to corporate yield spreads because the more volatile a firm's expected cash flows are, the more likely a firm can reach its default threshold. Firms with non-investment credit ratings are expected to be associated with higher spreads. We expect bond age to be negatively related to corporate spreads, because older bonds become less liquid and therefore incur a higher cost of debt financing. However, the opposite may occur, since older bonds proxy for a firm's survival, which is inversely correlated with default risk.

We examine the decision of whether or not an issue has a certain type of covenant. We estimate separate probit models for investment, payment and debt priority restrictions, which can be represented as follows:

$$Pr(Covenent_{it}) = \Phi(\delta_1 G_{it-1} + \theta' X_{it-1} + \gamma_t), \tag{2}$$

where Φ is the standard normal cumulative distribution function. All other controls are the same as in the bond-spread regression. All control variables are lagged in the year prior to bond issuance. The sample consists of one observation per issue.

3.2 Summary Statistics

Our sample includes 690 firms and transactions on 3,950 bond issues from 1994 to 2007. On average, there are 1,503 issues with bond transactions per year. Our bond spread is at the issue-year level. As in previous studies, we keep only senior, unsecured straight and callable corporate bonds. We exclude firms in the financial or utility industries and quasi-public firms from the sample (a one-digit SIC code is equal to four, six or nine).

Table 1 summarizes the key variables used in the regression analysis. All firm-specific control variables are winsorized at the 1% level. The median corporate spread is 118 basis points with a standard deviation of 174 basis points. The size of the average bond issue is $315 million. The average time to maturity is 10 years. The average bond age, the number of years from the issuance year to the current year, is almost 4 years.

The median firm in our sample has $3.612 billion in sales and its standard deviation is $16.64 billion. The median leverage is 29.8%, the profitability ratio is 14.3%, and the median firm risk measured by the 5-year standard deviation of ROA is 2.5%. The average value of the GINDEX in

our sample is 10.026 and the average value of the ANTI is 2.761. It appears that 48% of the firms are investment-grade rated. The median value of the asset-based HHI is 0.104 and the median value of the sales-based index is 0.15. Overall, our sample is very similar to samples used in previous studies on bond spreads (e.g., Chava, Livdan, and Purnanandam (2009); Qiu and Yu (2009)).

Panel A of Table 2 reports mean corporate spreads sorted by the GINDEX for competitive and non-competitive industries. The difference in loan spreads for low- and high-GINDEX firms is 30.6 basis posits in competitive industries, while the difference in non-competitive industries is -18.5 basis points. The same pattern is observed when using ANTI as the corporate governance measure. These results suggest that bondholders value high and low GINDEX firms very differently, depending on the level of product market competition. This evidence is consistent with our hypothesis that high GINDEX firms are associated with a lower cost of debt only in competitive industries. In the next section, we conduct a multivariate regression analysis that includes a set of control variables known to affect credit spreads.

In Panel B of Table 2, we provide a comparison of firm characteristics in competitive and in non-competitive industries. Bond spreads are higher in competitive industries than non-competitive industries. This result is similar to Valta (2012) who studies bank loan spreads. As explained in the previous section, bondholders require compensation for the higher probability of default and takeover risk in competitive industries. Firms in competitive industries are smaller, as expected, and are also more levered, a pattern consistent with Bolton and Sharfstein (1990).

3.3 Empirical Distributions of GINDEX and Covenants

Deriving conclusions about the impact of GINDEX on bond spreads across different product markets relies on the assumption that GINDEX is not strongly correlated with product market competition. Figure 1 plots the distribution of GINDEX for competitive and non-competitive industries. We see that 20% of all firms have a GINDEX lower than 8, both in competitive and non-competitive industries. The GINDEX is between 8 and 12 in 48% of the firms in non-competitive industries and 52% of the firms in competitive industries. Finally, 32% of the firms in non-competitive industries and 28% of the firms in competitive industries have a GINDEX measure larger than 12. This analysis suggests that the GINDEX is distributed almost identically across product market

structures.[9]

We conduct a similar analysis for covenants and product market competition. Figure 2 shows that 10% of the issues in non-competitive industries and 28% of the issues in competitive industries have payment restrictions. Debt priority restrictions are almost evenly spread across competitive and non-competitive industries, and investment restrictions are more prevalent in non-competitive industries. It appears that the distribution of covenants across product market structures to some extent depends on their type.

4 Empirical Results

This section presents the results of empirical tests on the relations between a firm's anti-takeover laws, product market competition and the cost of bond debt financing. As a robustness exercise, we examine the effect of state anti-takeover laws. To deal with the endogeneity between product market competition and debt financing choices and costs, we consider an exogenous shock to product market competition.

4.1 Baseline regression: corporate bond spread regressions

The aim of this section is to establish the relation between product market competition, GINDEX and bond spreads using multivariate regressions. In column (1) of Table 3, we start with a specification that includes GINDEX, firm and issue controls for the entire sample. All control variables are lagged one year prior to the bond spread year. When we do not account for product market competition, the estimate on GINDEX is negative and insignificant, preventing us from drawing any meaningful interpretation of the relationship between GINDEX and bond spreads.[10]

In column (2), we focus on the sample of competitive industries. The estimate on GINDEX is -0.114, suggesting that each additional anti-takeover provision leads to an 11.4-basis-point decrease in bond spreads in competitive industries.[11] Our explanation is that stronger anti-takeover protection decreases the likelihood of actual takeovers and thus insulates the bondholders from takeover

[9]The empirical distribution of ANTI across market structures is similar.

[10]The significance of the GINDEX depends on its specification. For example, when we use a dummy variable definition for high and low GINDEX, we uncover that high-GINDEX firms pay a significantly lower cost of debt than low-GINDEX firms. This result is similar to Chava, Livdan, and Purnanandam (2009).

[11]In unreported regressions, we consider Fama-French industry classification and 2-digit SIC codes. The results continue to hold.

risk. As discussed in Section 2, acquired firms usually experience higher debt levels and volatility of cash flows after a takeover, which increases a firm's default risk. The negative relationship between the cost of debt financing and higher anti-takeover provisions is consistent with Bhojraj and Sengupta (2003), Klock, Mansi, and Maxwell (2005), and Chava, Livdan, and Purnanandam (2009). Unlike previous studies, we find that this result is present only for firms operating in competitive environments, where the threat of takeover is stronger.

In column (3), we explore only non-competitive industries. The estimate on GINDEX is 0.024, implying no relationship between GINDEX and spreads.[12] The estimates on GINDEX from columns (2) and (3) highlight that, from a bondholder's perspective, the costs and benefits of corporate governance depend on the product market competition. On the benefit side, firms with weak corporate governance, i.e., high-GINDEX firms, are shielded from the market for corporate control through anti-takeover provisions and are considered less risky by bondholders, since takeover risk is reduced. On the costs side, these high-GINDEX firms may suffer from managerial slack and thus higher default risk. Under these circumstances, bondholders would require a higher return on their investment.

Our explanation is that product market competition is an external mechanism that affects the realization of takeover and default risks, which in turn affect the cost of debt. In non-competitive industries, the risk of managerial slack is more pronounced across all firms, but more so for firms with a higher GINDEX measure. As takeover risk is subdued in non-competitive industries, the higher corporate spreads for high GINDEX firms possibly reflect bondholder concerns about high agency costs arising from weak corporate governance. On the other hand, in competitive industries, firms have to be efficient in order to preserve their market share, and managerial slack is likely less prevalent. Hence, bondholders are exposed mainly to takeover risk. Consistent with our hypothesis, firms with high GINDEX are found to have a relatively lower cost of debt than firms with low GINDEX in competitive industries.

The list of our controls includes the log of the percentage of institutional blockholders (OWNER). The effect of this variable on bond spreads is ambiguous, since it proxies for both strong shareholder rights and takeover vulnerability. Shleifer and Vishny (1997) argue that shareholder control

[12]When using a dummy variable definition for high and low GINDEX, we uncover a positive and significant coefficient on the GINDEX dummy variable.

represented by blockholdings may facilitate takeovers. If this is the case, we would expect that, in competitive industries, bondholders would require a premium for the presence of blockholders. Meanwhile, in non-competitive industries, the presence of blockholders may be considered a sign of strong monitoring and thus limiting the effects of managerial slack/empire building. Our results corroborate this story. In column (2) of Table 3, the positive estimate on OWNER suggests that bondholders require higher spreads for having blockholders in competitive industries. In column (3), the effect of blockholders on spreads is negative in non-competitive industries.

Across all specifications in Table 3, the estimates of firm and issue controls assume the expected signs. Possibly owing to liquidity considerations, older bonds are more costly. Not surprisingly, investment-grade firms have lower cost of debt than non-investment-grade bonds. Firms with greater profitability (ROA) have a lower cost of debt. Firm risk, measured by volatility of profitability, and leverage are positively correlated with corporate spreads.

In column (4), we use the entire sample and test whether the effect of GINDEX and OWNER on bond spreads differs across market structures by including the interaction terms $COMP \times GINDEX$ and $COMP \times OWNER$. The estimate on $COMP \times GINDEX$ is -0.077, suggesting that bond spreads decrease by 7.7 basis points as GINDEX increases with one unit in competitive industries. In non-competitive industries, the effect of GINDEX on bond spreads is almost zero. As for the effect of ownership across different market structures, $COMP \times OWNER$ is positive and significant, confirming that ownership is positively related to bond spreads in competitive industries. It is worth noting that GINDEX and OWNER affect bond spreads separately but in a similar way. In this paper, we are mainly interested in the effect of GINDEX on bond spreads, thus, we view ownership only as a control variable whose inclusion is important, since it may affect the estimate on GINDEX.

In unreported specifications, we split the sample into investment- and non-investment-grade rated firms. This exercise reveals whether masked heterogeneity at the firm level drives the effect of GINDEX on bond spreads. If GINDEX is a proxy for default risk, as claimed by previous papers (e.g., Chava, Livdan, and Purnanandam (2009)), we would expect to find no significant impact of GINDEX on bond spreads in the sub-sample of investment-grade firms. Our results reveal that the estimate on the interaction term between GINDEX and COMP is present for both investment- and non-investment-grade firms. Though, we note that the magnitude of the estimate on the interaction

term in the investment-grade sample is almost twice as small as that in the non-investment-grade sample, suggesting that a part of the effect of GINDEX on bond spreads is possibly the result of default risk.

In columns (5) to (8), we rely on ANTI as a proxy for firm-level anti-takeover provisions. This measure uses information on those takeover provisions considered to have the strongest impact in deterring takeovers. In column (5), using the entire sample, the effect of ANTI on bond spreads is not significant, similar to the overall effect of GINDEX in column (1). In column (6), we note that the estimate on ANTI is -0.048, and in column (7), it is 0.081. In terms of magnitudes, one more provision decreases bond spreads by 4.8 basis points in competitive industries, while in non-competitive industries, each additional provision leads to an 8.1-basis-point increase in bond spreads. In column (8), when we consider the interaction terms for COMP and ANTI, the results yield similar conclusions.

Overall, the results in this section are consistent with our hypothesis. In competitive industries, bond spreads and anti-takeover provisions are negatively associated, while in non-competitive industries, depending on the anti-takeover measure there is either no relationship or a positive relationship between anti-takeover provisions and bond spreads.

4.2 Exogenous Shift in Product Market Competition

The results so far show that firms operating in competitive industries pay lower bond spreads with higher GINDEX. In contrast, in non-competitive industries, higher GINDEX is associated with higher bond spreads. This result may be driven by endogeneity between bond spreads and market competition. It is known that firms can use their financing policy to affect the structure of product markets (Bolton and Sharfstein (1990)). To address this issue, a source of unexpected change in market competition would be ideal. Frequently used exogenous shocks to competitive environments are reductions in import tariff rates (e.g., Valta (2012); Freserd (2010); and Trefler (2004)). Trade openness exposes firms to foreign rivals and hence more intense competition. Previous literature shows that a reduction in import tariff rates significantly decreases the cost of entering the U.S. product markets and increases competitive pressure on domestic firms. In our paper, we also rely on an import tariff reduction as an exogenous event that affects bond spreads.

We identify 28 large tariff reductions in 4-digit SIC manufacturing industries for the period 1994

to 2008. Following Freserd (2010), we use only "large" reductions of import tariff rates, defined as those in a given industry-year that are at least three times larger than the average annual change in tariff rate in that industry across all years.[13] To ascertain proper identification of the causal impact of a tariff reduction on bond spreads, it is important that the competitive shocks bring real changes to the competitive environment and that these changes are not related to industry financing and are unanticipated by firms. Valta (2012) provides detailed supportive evidence of these two requirements. First, tariffs drop from 4.6% before the event to 2.34% after the event, while similar changes are not observed in "control" industries. In addition, import penetration rises by 2.84 percentage points in the tariff-reduction industries and by 1.14 percentage points in matched industries. Second, several arguments are provided in support of the exogeneity of the event. For example, most of the changes are implemented through agreements with international institutions, such as GATT by the WTO, which makes protectionist pressure by firms in a particular country less likely. There is no evidence that average and median industry financial policies can predict the occurrence of tariff reductions (Valta (2012)). Therefore we can view the shocks as truly exogeneous.

Our results are reported in Table 4. In column (1) TARIFF, we use only the industries that have undergone import tariff reduction. If an industry is defined as a large tariff-reduction industry ("treated group"), it remains one for the entire period. The industries that have never experienced a large tariff rate reduction are used as a "control" group. In column (2), our control group includes all industries except for manufacturing, in which tariff reductions occur. We omit the manufacturing group from our control sample to avoid any contaminating effect from expecting the introduction of tariff reductions.[14] In column (1), the coefficient on GINDEX is -0.119, which is virtually the same as the one in Table 3. In column (2) NO TARIFF, only the control group or non-competitive industries are included. We do not find any relationship between GINDEX and bond spreads.[15]

In column (3), as a robustness check, we interact TARIFF×GINDEX to test whether the impact of GINDEX on bond spreads differs across the control and treated industry groups. The

[13]See Appendix 2 for a list of industries with large tariff reductions. Import tariff rates are available for the manufacturing industries.

[14]For robustness purposes, we experiment with other control groups: we include all manufacturing firms that have not undergone a tariff reduction and the results are unchanged.

[15]Most of the TARIFF-reduction industries are also in the sample of COMP; however, COMP includes a much broader group of industries. We view TARIFF as a cleaner and more restrictive group of competitive industries.

negative significant estimate on TARIFF×GINDEX clearly shows that in competitive industries for a firm with average GINDEX, the bond spread is 28 basis points lower than in non-competitive industries. We also include the term TARIFF×OWNER in the regression to check whether the interactive effect of GINDEX and TARIFF is significant. To the extent that firms' ownership is correlated with GINDEX, the effect of GINDEX may be driven by an omitted variable bias if OWNERSHIP and its interaction with TARIFF is not included.

In columns (4) to (6), we use our alternative measure of governance ANTI. In column (4), the estimate on ANTI is -0.095, and in column (5), it is 0.093, both similar to the estimates in Table 3 columns (6) and (7), respectively. In column (6), the significant estimate on TARIFF×ANTI implies that for a given ANTI, the difference in the bonds spreads for industries with tariff reductions and those without tariff reductions is 23 basis points. This result is not due to the omission of OWNERSHIP and its interaction with ANTI.

To sum up, when we rely on an exogenous change in product market competition such as large tariff reductions, our results are similar to the ones in Table 3 that show that, in competitive industries, the relationship between bond spreads and anti-takeover defences is negative.

4.3 Do state anti-takeover laws affect bond spreads?

The results so far show that anti-takeover protection, as measured by GINDEX, affects bond spreads differently, depending on product market competition. There is a concern however that the effect of GINDEX on bond spreads may be the result of an omitted variable that is correlated with GINDEX. To further strengthen the role of the anti-takeover channel on bond spreads, in this section we examine the effects of anti-takeover laws at the state level as well as the effect of firm-level anti-takeover protection. Our conjecture is that the anti-takeover state laws affect bond spreads in a similar way as firm-level corporate governance would. Our approach to focus on state-level anti-takeover laws is governed by the fact that these laws apply to firms incorporated in that state regardless of the location where they conduct business. Following Francis, Hasan, John, and Waisman (2010), we classify the states into more restrictive and less restrictive. States with at least two of the following laws – control share, fair price, business combination, poison pill endorsement and constituencies – are classified as restrictive states and the rest are classified as less restrictive. As these laws are also part of GINDEX, in our regression analysis we basically split the GINDEX

into two parts. The first one consists of anti-takeover state laws (STATER) and the second one consists of firm-level anti-takeover provisions ($GINDEX_f$). We examine the effects of these two separate variables on bond spreads.

In column (1) of Table 5, we report the results from a specification similar to that in Table 3, except that $GINDEX_f$ is adjusted for firm anti-takeover status and STATER is a dummy variable that indicates if a state has restrictive or unrestrictive anti-takeover provisions. For competitive industries, we expect both variables to be negatively associated with bond spreads. The estimate on $GINDEX_f$ suggests that each additional provision leads to a 14-basis-point decrease in spreads. Based on the estimate of STATER, on average, spreads are 23 basis points lower in restrictive states than in less restrictive states. In column (2), for non-competitive industries, the estimate on $GINDEX_f$ is 0.048 and on STATER is 0.078, both consistent with our previous result that the effect of anti-takeover laws on bond spreads is the opposite in non-competitive industries.

In columns (3) and (4), anti-takeover provisions are measured by ANTI. The negative sign on STATER is not significant, possibly because STATER and ANTI are highly correlated, i.e, firms with more anti-takeover provisions (ANTI) are located mostly in states with anti-takeover laws. We test the difference in ANTI for restrictive and unrestrictive states and find that, in restrictive states, ANTI is 3.05, which is statistically different from 2.43 in non-restrictive states. It appears that non-random sorting between STATER and ANTI does not allow an estimation of their separate effects.

We explore next the question of whether firm- and state-level anti-takeover laws affect bond spreads simultaneously. In competitive industries, reported in column (5), the estimate on the interaction term $GINDEX_f \times STATER$ suggests that the effect of $GINDEX_f$ on bond spreads is slightly smaller (5.6 basis points) in restrictive than in non-restrictive states. This result suggests that firm-level and state-level laws possibly affect bond spread as substitutes. In column (7), the interaction between ANTI and STATER is not significant. For non-competitive industries, in columns (6) and (8), the interaction terms between STATER and $GINDEX_f$, and ANTI, respectively, are not significant.

Overall, we document that state- and firm-level sources of anti-takeover provisions affect bond spreads in a similar way, which further reinforces the view that takeover vulnerability affects bond spreads both at the firm and the state levels and gives us reassurance that the results are not driven

by the effects of omitted variables.

5 The Use of Covenants, Product Market Competition and Firm Anti-Takeover Protection

We further study whether the existing firm anti-takeover protection affects the use of bond covenants in competitive or non-competitive industries. Chava, Kumar, and Warga (2010) study how the presence of manager-shareholder agency issues affect the use of covenants, and our analysis adds the role of product market competition. Cremers, Nair, and Wei (2007) also examine the role of covenants in reducing the conflict between shareholders and bondholders. They find that the corporate spreads of issues that have leverage-restricting covenants, net worth requirements and poison pill covenants are least affected by the presence of blockholders.

We expect the existing shareholder control (through fewer anti-takeover provisions) to affect the likelihood of using certain types of covenants, depending on product market competition. In competitive industries, the conflict of interest between shareholders and managers is expected to be less prevalent. However, bondholders in these industries are concerned with takeover risk, because inefficient firms are often forced out, becoming attractive targets for mergers and acquisitions, and because barriers to exit and entry are weak. Debt-financed takeovers are often harmful to the interests of the current bondholders, because they substantially increase leverage and default risk, and can subvert the existing seniority of claims. If bondholders consider existing corporate governance to be effective in reducing the likelihood of takeovers, or other events that are detrimental to bondholders, we would expect more anti-takeover provisions to be associated with fewer convents in competitive industries. Our presumption is that bondholders issue fewer covenants in competitive industries, in which firms have placed their own strong anti-takeover shields.

In non-competitive industries, however, we expect the major factor that affects the use of covenants to be managerial entrenchment associated with weak shareholder control, and thus higher agency costs leading to higher default probability. In other words, having more anti-takeover protections and thus less exposure to the market for corporate control is not considered a positive factor in non-competitive industries. We would expect bondholders to rely on investment, debt priority and payment covenants to protect their own interests.

Table 6 presents the marginal effects, which are computed as the change in predicted probabilities at the mean values of all covariates. Our coefficients of interest are GINDEX and ANTI, which proxy for takeover vulnerability. Starting with columns (1) to (4), in which the dependent variable is investment restrictions, we note that the relationship between GINDEX/ANTI and the use of investment restrictions is negative and insignificant in competitive industries and positive in non-competitive industries. Focusing on non-competitive industries in column (2), if GINDEX increases from 9 to 12, the predicted probability of investment restrictions increases by 2%. A change in ANTI in column (4) from 2 to 4 is associated with a 4% increase in the predicted probability of investment restriction. As reported in columns (1) and (3), the corresponding impacts of GINDEX and ANTI for competitive industries point to a decrease in the predicted probabilities of investment restrictions; however, the estimates are not statistically significant.

In columns (5) to (8), the dependent variable is payment restrictions. We observe similar patterns in the relationship between corporate governance and this particular type of covenant—in competitive industries, the more protected from takeovers the firms are, the lower the likelihood of payment restriction. Bondholders may not be interested in placing payment restrictions in competitive industries with the increase in anti-takeover provisions, because they do not expect managers to be subject to agency issues such as the free cash flow problem. In the free cash flow hypothesis, managers spend retained profits according to their own interests, and by paying dividends, managers signal that they act in the shareholders' interest. The opposite holds in non-competitive industries, in which stronger protection from the market for corporate control is possibly associated with more opportunistic behaviour, and thus there is a greater likelihood to use payment restrictions.

Similar conclusions emerge when focusing on debt priority restrictions reported in columns (9) to (12). Based on the results in competitive industries in column (9), the predicted probability of using debt priority covenants decreases by 2% if the GINDEX changes from 9 to 12, and in column (11), by 2% if the ANTI changes from 2 to 4. In columns (10) and (12) for non-competitive industries, the opposite result holds. If the value of ANTI increases from 2 to 4, debt priority restrictions increase by 2% in non-competitive industries.

Overall, the results provide supporting evidence that existing anti-takeover provisions influence the use of covenants depending on product market competition. In competitive industries, more

protection from takeovers is viewed positively, since it shields bondholders from debt-increasing risk and makes them rely less on covenants. The opposite result holds in non-competitive industries, where more protection from takeovers is considered detrimental to bondholders by making them rely more on covenants. Combining our results with bond spreads, we conclude that bondholders in competitive industries do not require compensation for anti-takeover provisions and they do not use covenants either. However, in non-competitive industries, bondholders require a premium when shareholders' rights are weak (i.e., high GINDEX) and, in addition, they use investment, payment and debt priority restrictions to secure their own interests.

6 Conclusion

We investigate the effect of anti-takeover laws on corporate spreads in competitive and non-competitive industries. We find that firms with higher anti-takeover provisions pay a lower cost of debt only in competitive industries. In contrast, in non-competitive industries, firms with fewer anti-takeover provisions pay less to bondholders than firms with strong anti-takeover protection. These results are robust to firm and issue controls, and various robustness checks. Our explanation is that, while intense product market competition forces managers to exert greater effort and thus repay their debt obligations, it also increases the risk of takeovers. Firms with fewer anti-takeover provisions are more likely to become takeover targets and thus face a higher cost of debt. In non-competitive industries, on the other hand, takeovers occur less frequently and managers are more prone to entrenchment through empire building or enjoying quiet life, because the disciplining role of product market competition is weakened. Facing a higher cost of default caused by managerial slack, bondholders charge more to firms with poor corporate governance than firms with strong corporate governance.

We also shed light on the use of covenants in different market environments. While, in competitive industries, more protection from takeovers is viewed positively, since it shields bondholders from debt-increasing risk and makes them rely less on covenants. The opposite result holds in non-competitive industries, where more protection from takeovers is considered detrimental to bondholders, making them rely more on covenants.

Our results highlight that intense competition reinforces the negative relationship between GIN-

DEX and the cost of bond financing documented in previous studies. While, from shareholders' perspective, strong corporate governance is of lesser importance when competition is strong, from a bondholder's point of view, strong corporate governance matters both in competitive and non-competitive industries, although in two different ways. Our study has implications for understanding how the interaction of market competition and firms' corporate governance affects bond spreads.

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Appendix 1

This appendix provides a description of the components of the GINDEX based on Gompers, Ishii, and Metrick (2003).

Greenmail refers to a transaction in which the shareholder agrees to sell his stock back to the company, usually at a premium, in exchange for the promise not to seek control of the company for a specified period of time. Anti-greenmail provisions prevent such arrangements unless the same repurchase offer is made to all shareholders or approved by a shareholder vote.

Blank check preferred stock is stock over which the board of directors has broad authority to determine voting, dividend, conversion and other rights. While it can be used to enable a company to meet changing financial needs, its most important use is to implement poison pills or to prevent a takeover by placing this stock with friendly investors.

Business combination laws impose a moratorium on certain kinds of transactions (e.g., asset sales, mergers) between a large shareholder and the firm, unless the transaction is approved by the board of directors. Depending on the state, this moratorium ranges between two and five years after the shareholder's stake passes a pre-specified (minority) threshold.

Bylaw and charter amendment limitations limit shareholders' ability to amend the governing documents of the corporation. This might take the form of a supermajority vote requirement for charter or bylaw amendments, total elimination of the ability of shareholders to amend the bylaws, or the ability of directors (beyond the provisions of state law) to amend the bylaws without shareholders' approval.

Control-share cash-out laws enable shareholders to sell their stakes to a "controlling" shareholder at a price based on the highest price of recently acquired shares.

A classified board (or "staggered" board) is one in which the directors are placed into different classes and serve overlapping terms. Since only part of the board can be replaced each year, an outsider who gains control of a corporation may have to wait a few years before being able to gain control of the board.

Compensation plans with changes-in-control provisions allow participants in incentive bonus plans to cash out options or accelerate the payout of bonuses should there be a change in control.

Director indemnification contracts are contracts between the company and particular of-

ficers and directors indemnifying them from certain legal expenses and judgments resulting from lawsuits pertaining to their conduct.

Cumulative voting allows shareholders to allocate their total votes in any manner desired, where the total number of votes is the product of the number of shares owned and the number of directors to be elected. By allowing shareholders to concentrate their votes, this practice helps minority shareholders to elect directors.

Directors' duties provisions allow directors to consider constituencies other than shareholders when considering a merger. These constituencies may include, for example, employees, host communities or suppliers. This provision provides boards of directors with a legal basis for rejecting a takeover that would have been beneficial to shareholders.

Fair-price provisions limit the range of prices a bidder can pay in two-tier offers. They typically require a bidder to pay to all shareholders the highest price paid during a specified period of time before the commencement of a tender offer, and do not apply if the deal is approved by the board of directors or a supermajority of the target shareholders. The goal of these provisions is to prevent pressure on the target shareholders to tender their shares in the front end of a two-tiered tender offer, and they have the result of making such an acquisition more expensive.

Golden parachutes are severance agreements that provide cash and non-cash compensation to senior executives upon an event such as termination, demotion or resignation following a change in control. While such payments would appear to deter takeovers by increasing their costs, one could argue that these parachutes also ease the passage of mergers through contractual compensation to the managers of the target company. While the net impact on managerial entrenchment and shareholder wealth is ambiguous, the more important effect is the clear decrease in shareholder rights. In this case, the "right" is the ability of a controlling shareholder to fire management without incurring an additional cost.

Director indemnification uses the bylaws, charter or both to indemnify officers and directors from certain legal expenses and judgments resulting from lawsuits pertaining to their conduct.

Limitations on director liability are charter amendments that limit directors personal liability to the extent allowed by state law. They often eliminate personal liability for breaches of the duty of care, but not for breaches of the duty of loyalty or for acts of intentional misconduct or knowing violation of the law.

Pension parachutes prevent an acquirer from using surplus cash in the pension fund of the target firm to finance an acquisition. Surplus funds are required to remain the property of the pension fund and to be used for the benefit of plan participants.

Poison pills provide their holders with special rights in the case of a triggering event such as a hostile takeover bid. If a deal is approved by the board of directors, the poison pill can be revoked, but if the deal is not approved and the bidder proceeds, the pill is triggered. Poison pills are a crucial component of the "delay" strategy at the core of modern defensive tactics.

Under a **secret ballot** (also called confidential voting), either an independent third party or employees sworn to secrecy are used to count proxy votes, and the management usually agrees not to look at individual proxy cards. This can help eliminate potential conflicts of interest for fiduciaries voting on behalf of others, and can reduce pressure by management on shareholder-employees or shareholder-partners. Cumulative voting and secret ballots are the only two provisions whose presence is coded as an increase in shareholder rights.

Executive severance agreements assure high-level executives to keep their current position compensation and are not contingent upon a change in control.

Special meeting limitations either increase the level of shareholder support required to call a special meeting beyond that specified by state law or eliminate the ability to call one entirely. Such provisions add extra time to proxy fights, since bidders must wait until the regularly scheduled annual meeting to replace board members or dismantle takeover defences.

Supermajority requirements for approval of mergers are charter provisions that establish voting requirements for mergers or other business combinations that are higher than the threshold requirements of state law. They are typically 66.7, 75, or 85%, and often exceed attendance at the annual meeting. In practice, these provisions are similar to control-share acquisition laws, which require a majority of disinterested shareholders to vote on whether a newly qualifying large shareholder has voting rights.

Unequal voting limit the voting rights of some shareholders and expand those of others. Under the time-phased voting, shareholders who have held the stock for a certain period have more votes than recent purchasers.

Limitations on action by written consent can take the form of the establishment of majority thresholds beyond the level of state law, the requirement of unanimous consent or the elimi-

nation of the right to take action by written consent. Such requirements add extra time to many proxy fights, since bidders must wait until the regularly scheduled annual meeting to replace board members or dismantle takeover defences.

Appendix 2

Table A2: Industries with Large Import Tariff Reductions (based on Valta (2012))

Year	SIC	Tariffs (percentage points)	Description
1994	3651	-0.65	Household Audio and Video Equipment
1994	3577	-1.09	Computer Peripheral Equipment
1994	3341	-10.31	Secondary Nonferrous Metals
1995	3555	-0.94	Printing Trades Machinery
1995	2834	-5.02	Pharmaceutical Preparations
1995	2835	-5.92	Diagnostic Substances
1995	3822	-1.33	Environmental Controls
1995	3944	-4.46	Games, Toys, and Children's Vehicles
1995	3011	-0.43	Tires and Inner Tubes
1995	3842	-1.44	Surgical Appliances and Supplies
1995	2842	-1.29	Polishes and Sanitation Goods
1995	3579	-0.96	Office Machines
1995	2844	-0.87	Toilet Preparations
1995	3942	-7.45	Dolls and Stuffed Toys
1995	2833	-4.16	Medicinal and Botanical
1995	3559	-0.95	Special Industry Machinery
1995	3612	-1.37	Power, Distribution and Specialty Transformers
1995	3843	-1.4	Dental Equipment and Supplies
1995	3561	-0.61	Pumps and Pumping Equipment
1997	3695	-1.2	Magnetic and Optical Recording Media
1997	3812	-0.31	Search and Navigation Equipment
1997	3578	-0.89	Calculating and Accounting Equipment
1997	3826	-1.33	Analytical Instruments
1997	3844	-0.42	X-ray Apparatus and Tubes
1998	3829	-1.27	Measuring and Controlling Devices
1998	3845	-1.04	Electromedical Equipment
1998	3089	-0.36	Plastics Products
1998	3663	-0.78	Radio and T.V. Communications Equipment

Figure 1: Product Market Competition and GINDEX

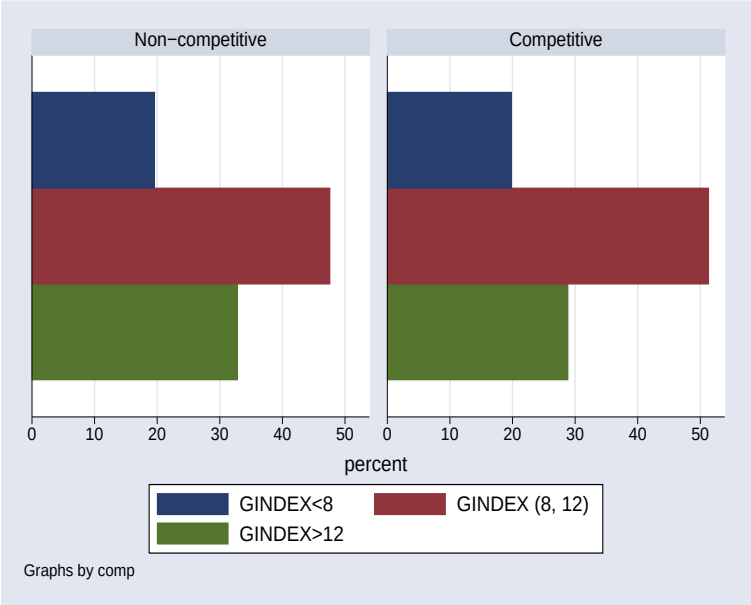

Figure 2: Product Market Competition and Bond Covenants

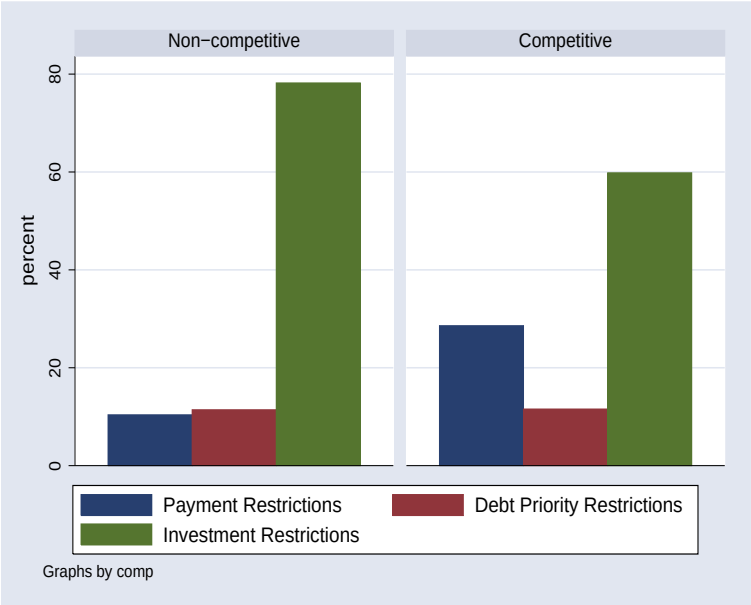

Figure 1 shows the distribution of GINDEX across different product markets. Figure 2 shows the distribution of payment, investment and debt priority restrictions across different product markets. Competitive (COMP) industries are those with HHI in the lowest quartile of the sample distribution and non-competitive (NON-COMP) are those in the upper two terciles of HHI distribution. All variables are defined in Table 1.

Table 1: Summary Statistics

This table reports summary statistics. BOND SPREAD is the difference in yields to maturity between a corporate bond and a treasury bond with the same coupon and maturity. ISSUE AMOUNT is the dollar value of bond issues in millions. BOND AGE is the number of years between the current and the issuance year. SALES is annual net sales in millions. LEVERAGE is equal to the sum of long-term debt and short-term debt over total assets. ROA is operating income before depreciation and amortization normalized by total assets. VOL ROA is the standard deviation of the past 5-year ROA. INV GRADE is a dummy variable that takes one if a firms has an investment-grade rating and zero otherwise. OWNER is the log of the percentage of blockholder ownership. GINDEX is defined by Gompers, Ishii, and Metrick (2003) and ANTI is a subset of GINDEX that includes the provisions that matter the most in a takeover defence. HHI, the Herfindahl-Hirschamnn index, is the sum of squared market shares of all firms in an industry where the market share of each firm is the ratio of a firm's sales to total sales in the industry. COMP is a dummy variable defined as one if the industry is in the first tercile of HHI and NON-COMP is the remaining two terciles.

	Mean	St Dev	25th	Median	75th
			Bond Characteristics		
BOND SPREAD	1.805	1.745	0.731	1.184	2.131
ISSUE AMOUNT	315.133	296.349	150.000	250.000	350.000
BOND AGE	3.707	3.438	0.874	2.956	5.624
			Firm Characteristics		
SALES	8829.095	16649.454	1484.414	3612.269	9333.185
LOG(SALES)	8.174	1.384	7.303	8.192	9.141
LEVERAGE	0.326	0.165	0.211	0.298	0.401
ROA	0.147	0.066	0.103	0.143	0.187
VOL ROA	0.033	0.027	0.015	0.025	0.041
INV GRADE	0.569	0.495	0.000	1.000	1.000
OWNER	0.483	0.158	0.438	0.528	0.592
GINDEX	10.026	2.687	8.000	10.000	12.000
ANTI	2.761	1.516	2.000	3.000	4.000
			Product Market Competition		
HHI	0.213	0.275	0.035	0.104	0.247
COMP	0.483	0.500	0.000	0.000	1.000

Table 2: Corporate Spreads by GINDEX and Product Market Competition

This table reports means and t-tests for differences in bond and firm controls for competitive and non-competitive industries. Panel A reports differences in BOND SPREAD means for each specific subgroup. Panel B reports means. All variables are defined in Table 1. Standard errors are in parentheses. *** indicates significance at the 1% level.

	COMP	NON-COMP	
	Panel A		
GINDEX (< 8)	1.679	1.904	
GINDEX(> 12)	1.373	2.089	
Δ	0.306***	-0.185**	
	(0.006)	(0.080)	
ANTI ($= 0$)	1.644	1.794	
ANTI (> 0)	1.415	1.872	
Δ	0.229***	-0.078	
	(0.058)	(0.065)	
	Panel B		Δ
BOND SPREAD	1.954	1.662	0.292***
LOG(SALES)	8.409	9.131	-0.722***
LEVERAGE	0.334	0.320	0.028***

Table 3: Bond Spreads, Governance and Product Market Competition: Main Results

The dependent variable is corporate spread, defined as the difference in yields to maturity between a corporate bond and a treasury bond with the same coupon and maturity. COMP is defined as the first tercile of HHI, and NON-COMP includes the upper two terciles. All other variables are defined in Table 1. Each specification includes issue and year fixed effects. Standard errors are adjusted for clustering at the firm level. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ALL	COMP	NON-COMP	ALL	ALL	COMP	NON-COMP	ALL
GINDEX	-0.023	-0.114***	0.024	0.007				
	(0.017)	(0.029)	(0.021)	(0.018)				
COMP×$GINDEX$				-0.077***				
				(0.018)				
ANTI					0.026	-0.048*	0.081**	0.071**
					(0.021)	(0.027)	(0.032)	(0.028)
COMP×$ANTI$								-0.091***
								(0.032)
COMP×$OWNER$				0.893*				0.788
				(0.523)				(0.557)
OWNER	-0.036	0.605*	-1.048**	-0.637	-0.020	0.677**	-1.215**	-0.567
	(0.298)	(0.323)	(0.471)	(0.427)	(0.317)	(0.338)	(0.548)	(0.483)
INV GRADE	-0.832***	-0.754***	-1.000***	-0.830***	-0.826***	-0.725***	-0.982***	-0.813***
	(0.064)	(0.085)	(0.094)	(0.063)	(0.063)	(0.086)	(0.094)	(0.063)
BOND AGE	0.403***	0.394***	0.373***	0.401***	0.406***	0.400***	0.380***	0.406***
	(0.045)	(0.066)	(0.060)	(0.045)	(0.045)	(0.066)	(0.060)	(0.045)
LOG(SALES)	0.124**	0.104	0.206**	0.134**	0.115*	0.065	0.206**	0.118**
	(0.059)	(0.085)	(0.086)	(0.059)	(0.059)	(0.085)	(0.087)	(0.059)
ROA	-4.235***	-4.113***	-4.423***	-4.259***	-4.262***	-4.118***	-4.451***	-4.278***
	(0.342)	(0.467)	(0.555)	(0.345)	(0.342)	(0.466)	(0.558)	(0.346)
VOL ROA	3.601***	2.721***	4.772***	3.658***	3.609***	2.707***	4.877***	3.621***
	(0.740)	(0.847)	(1.440)	(0.764)	(0.742)	(0.858)	(1.447)	(0.767)
LEVERAGE	0.556***	0.693***	0.494**	0.555***	0.533***	0.642***	0.479**	0.544***
	(0.174)	(0.241)	(0.238)	(0.177)	(0.174)	(0.242)	(0.238)	(0.177)
Observations	11,204	5,325	5,879	11,204	11,183	5,317	5,866	11,183
R^2	0.417	0.405	0.440	0.423	0.417	0.401	0.442	0.442

Table 4: Import Tariff Reductions as a Shock to Competition

The dependent variable is corporate spread, defined as the difference in yields to maturity between a corporate bond and a treasury bond with the same coupon and maturity. TARIFF is a dummy variable that takes one for industries that have gone through an import tariff reduction. The list of industries included in the dummy variable TARIFF are listed in Appendix 2. All other variables are defined in Table 1. Each specification includes issue and year fixed effects. Standard errors are adjusted for clustering at the firm level. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	TARIFF	NO TARIFF	ALL	TARIFF	NO TARIFF	ALL
GINDEX	-0.119**	-0.007	0.078***			
	(0.058)	(0.022)	(0.022)			
TARIFF×$GINDEX$			-0.288***			
			(0.063)			
ANTI				-0.095*	0.093***	0.098***
				(0.056)	(0.035)	(0.035)
TARIFF×$ANTI$						-0.232***
						(0.056)
TARIFF×$OWNER$			-4.976***			-1.024
			(0.878)			(0.964)
OWNER	-0.984	-0.899***	-0.756***	-0.670	-1.014***	-0.933***
	(1.326)	(0.339)	(0.243)	(1.294)	(0.369)	(0.361)
INV GRADE	-1.126***	-0.674***	-0.799***	-1.112***	-0.662***	-0.722***
	(0.234)	(0.081)	(0.047)	(0.235)	(0.079)	(0.074)
BOND AGE	0.388*	0.439***	0.639***	0.396*	0.438***	0.424***
	(0.210)	(0.071)	(0.067)	(0.208)	(0.071)	(0.067)
LOG(SALES)	0.325**	0.181**	0.426***	0.333**	0.170*	0.170**
	(0.163)	(0.089)	(0.056)	(0.159)	(0.088)	(0.081)
ROA	-6.527***	-6.634***	-6.080***	-6.682***	-6.687***	-6.408***
	(1.251)	(0.639)	(0.403)	(1.270)	(0.650)	(0.589)
VOL ROA	-3.063	3.252***	6.362***	-3.797	3.386***	2.469**
	(2.814)	(1.235)	(0.966)	(2.934)	(1.239)	(1.141)
LEVERAGE	0.798**	0.376	2.024***	0.820**	0.387	0.551**
	(0.401)	(0.305)	(0.198)	(0.408)	(0.302)	(0.250)
Observations	834	4,700	5,534	833	4,689	5,522
R^2	0.462	0.453	0.267	0.460	0.456	0.450

Table 5: State Anti-Takeover Laws

The dependent variable is corporate spread, defined as the difference in yields to maturity between a corporate bond and a Treasury bond with the same coupon and maturity. $GINDEX_f$ is GINDEX adjusted for the opt-ins and opt-outs of state anti-takeover laws by a particular firm. STATER is a dummy variable that takes one if the state is defined as restrictive and zero otherwise. All other variables are defined in Table 1. Each specification includes issue and year fixed effects. Standard errors adjusted for clustering at the firm level are in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP
GINDEX$_f$	-0.141***	0.048**			-0.153***	0.052*		
	(0.042)	(0.024)			(0.043)	(0.028)		
STATER	-0.236**	0.078	-0.047	0.004	-0.734***	0.252	-0.118	0.049
	(0.094)	(0.101)	(0.056)	(0.062)	(0.284)	(0.583)	(0.133)	(0.103)
ANTI			-0.046*	0.081**			-0.054*	0.087**
			(0.027)	(0.032)			(0.028)	(0.034)
GINDEX$_f$ × $STATER$					0.056*	-0.018		
					(0.032)	(0.058)		
ANTI×$STATER$							0.024	-0.017
							(0.039)	(0.030)
OWNER	0.563*	-1.060**	0.682**	-1.197**	0.559*	-1.053**	0.687**	-1.199**
	(0.326)	(0.471)	(0.339)	(0.550)	(0.325)	(0.468)	(0.340)	(0.549)
INV GRADE	-0.755***	-1.007***	-0.723***	-0.981***	-0.757***	-1.008***	-0.723***	-0.981***
	(0.087)	(0.094)	(0.086)	(0.094)	(0.087)	(0.094)	(0.086)	(0.093)
BOND AGE	0.393***	0.406***	0.401***	0.379***	0.392***	0.407***	0.401***	0.377***
	(0.073)	(0.062)	(0.066)	(0.060)	(0.073)	(0.062)	(0.066)	(0.060)
LOG(SALES)	0.104	0.234***	0.069	0.202**	0.113	0.234***	0.070	0.204**
	(0.086)	(0.088)	(0.084)	(0.087)	(0.087)	(0.088)	(0.084)	(0.088)
ROA	-4.135***	-4.505***	-4.166***	-4.486***	-4.147***	-4.499***	-4.170***	-4.492***
	(0.499)	(0.572)	(0.468)	(0.563)	(0.499)	(0.571)	(0.467)	(0.563)
VOL ROA	2.846***	4.416***	2.784***	4.984***	2.855***	4.423***	2.785***	4.994***
	(0.932)	(1.373)	(0.911)	(1.463)	(0.932)	(1.373)	(0.912)	(1.461)
LEVERAGE	0.837***	0.518**	0.634***	0.479**	0.870***	0.519**	0.630**	0.480**
	(0.280)	(0.258)	(0.246)	(0.243)	(0.285)	(0.258)	(0.245)	(0.243)
Observations	4,978	5,573	5,296	5,846	4,978	5,573	5,296	5,846
R^2	0.396	0.434	0.401	0.442	0.396	0.434	0.401	0.442

Table 6: The Impact of Governance and Product Market Competition on the Use of Bond Covenants

This table reports marginal effects from probit regressions holding all covariates at the mean values. The dependent variable in columns (1) to (4) is a dummy variable that takes one if the bond has investment restrictions; in columns (5) to (8); the dependent variable is payment restrictions, and in columns (9) to (12), it is debt priority restrictions. *Investment restrictions* include at least one of the following: restrictions on consolidations or mergers, indirect and direct investment restrictions, and stock sale restrictions. *Payment restrictions* include restrictions either on dividends or on other payments. *Debt priority restrictions* include restrictions on funded debt, indebtedness, liens, and senior debt issuance of parent and subsidiary firms. All other unreported controls are defined in Table 1. Year fixed effects are included in all specifications. The sample includes one observation per issue. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP	COMP	NON-COMP
	INVESTMENT RESTRICTIONS				PAYMENT RESTRICTIONS				DEBT PRIORITY RESTRICTIONS			
GINDEX	-0.002	0.005**			-0.006***	0.001			-0.004***	0.004***		
	(0.002)	(0.002)			(0.001)	(0.001)			(0.001)	(0.001)		
ANTI			-0.004	0.020***			-0.004**	0.003*			-0.012***	0.009***
			(0.004)	(0.003)			(0.002)	(0.002)			(0.002)	(0.002)
OWNER	-0.076**	0.148***	-0.073**	0.088**	0.042***	0.028	0.027*	0.026	0.051**	0.044	0.066***	0.043
	(0.035)	(0.043)	(0.035)	(0.041)	(0.014)	(0.022)	(0.016)	(0.021)	(0.024)	(0.031)	(0.025)	(0.032)
REDEEM	0.079***	0.055***	0.080***	0.056***	-0.054***	-0.030***	-0.056***	-0.029***	-0.042***	-0.040***	-0.041***	-0.036***
	(0.011)	(0.011)	(0.011)	(0.010)	(0.007)	(0.006)	(0.008)	(0.007)	(0.009)	(0.008)	(0.009)	(0.008)
BOND AGE	-0.019***	-0.012***	-0.019***	-0.012***	-0.003***	-0.005***	-0.003***	-0.005***	-0.006***	-0.004***	-0.007***	-0.004***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SPREAD	-0.013***	-0.005	-0.013***	-0.007*	0.027***	0.015***	0.028***	0.014***	0.029***	0.030***	0.030***	0.030***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
AMOUNT	-0.087***	-0.024**	-0.087***	-0.024**	0.017***	-0.023***	0.018***	-0.023***	0.000	-0.007	-0.001	-0.009
	(0.010)	(0.009)	(0.010)	(0.010)	(0.005)	(0.006)	(0.005)	(0.005)	(0.008)	(0.007)	(0.008)	(0.006)
LOG(SALE)	0.014***	-0.020***	0.014***	-0.015***	-0.032***	-0.023***	-0.034***	-0.022***	-0.028***	0.005	-0.030***	0.007**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
ROA	-0.480***	0.018	-0.479***	-0.029	0.083**	-0.183***	0.091**	-0.189***	0.096	0.131**	0.108*	0.112*
	(0.074)	(0.084)	(0.074)	(0.094)	(0.040)	(0.047)	(0.040)	(0.045)	(0.062)	(0.061)	(0.061)	(0.061)
VOL ROA	-0.494***	-0.075	-0.486***	-0.076	0.165**	0.399***	0.183**	0.369***	0.096	0.087	-0.694***	-0.051
	(0.170)	(0.254)	(0.170)	(0.272)	(0.080)	(0.118)	(0.081)	(0.109)	(0.062)	(0.168)	(0.139)	(0.167)
LEVERAGE	-0.009	0.093**	-0.010	0.088**	0.135***	0.114***	0.133***	0.110***	0.096	0.105***	0.210***	0.086***
	(0.034)	(0.038)	(0.035)	(0.041)	(0.015)	(0.019)	(0.016)	(0.019)	(0.062)	(0.026)	(0.026)	(0.024)
OBSERVATIONS	904	913	904	913	735	760	735	760	903	873	903	873
GINDEX=9	0.871	0.861			0.019	0.0127			0.083	0.048		
GINDEX=12	0.861	0.882			0.002	0.015			0.063	0.067		
ANTI=2			0.871	0.862			0.007	0.013			0.084	0.051
ANTI=4			0.863	0.899			0.005	0.016			0.063	0.069