

# On Bond Provisions and M&A Activity

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Master Thesis in Finance

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December 5, 2022



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## **Abstract**

The share of bonds issued with a call provision has increased during the last 20 years. We find that companies with callable bond debt are more likely to become takeover targets. Furthermore, we examine the isolated effect of restrictive covenants and the joint effect of restrictive covenants and call provisions on the likelihood of becoming acquired. We find a significant positive correlation between callable bond debt combined with restrictive covenants and the probability of becoming acquired. Lastly, our results indicate bond provisions have no effect on bargaining power between acquiring and target shareholders.

## **Keywords:**

Callable Bonds, Bond Covenants, M&A, Acquisition Premium, Debt Overhang

## **Tutors:**

Dong Yan, Assistant Professor of Finance

## **Acknowledgements:**

We want to extend our genuine gratitude to Dong Yan for her supervision and insightful help.

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# 1 Introduction

There is a body of literature examining the effect of bonds on acquisitions (Bill and Yang, 2016; Becker et al, 2022). Two central themes for previous works are the wealth distribution between share- and bondholders, and how different debt provisions affect acquisition probability. Debt terms could significantly alter the wealth distribution after acquisitions and consequently hinder the completion of deals. There is a continuous conflict between share- and bondholders which is governed through debt provisions. Generally, bondholders try to protect the downside of their investment as much as possible by imposing requirements the borrower needs to meet. These requirements aim to make shareholders and management avoid opportunistic behavior. Interest alignment is important to counterbalance the information asymmetry between share- and bondholders, and the risk of moral hazard. However, there is a balance to consider; too strict requirements can lead to debt overhang. Previous literature (Becker et al, 2022) has examined the effect of including a call provision in bonds and the probability of becoming a takeover target. Furthermore, Green (2018) and King and Mauer (2000) investigate how covenants affect refinancing decisions. Nevertheless, there is a clear gap on how covenants affect the M&A activity. In this paper, we aim to bridge the gap between previous studies and examine the effect of restrictive covenants on M&A activity.

The first point we address is how call provisions in bond debt affect the probability of becoming a takeover target. Our results confirm Becker et al's (2022) results. Firms that have included a call option when issuing bond debt are more likely to be acquired by another company. This could

be explained as a result of target bondholders receiving less of the wealth transfer. Without a call provision, there is an upside for target bondholders who benefit from a coinsurance effect associated with the merger of two firms.

Moreover, we go beyond the call option and examine the impact of covenants that restrict capital expenditures and M&A activity. Our definition of restrictive covenants is somewhat different from the previous use of the same term. In this paper, we only consider covenants to be restrictive if they limit investments in capital expenditure and M&A activity, while previous papers use a wider definition of restrictive covenants, including covenants affecting for example subsequent debt issuance (King and Mauer, 2000, Green, 2018). We have chosen to use a more narrow definition since we investigate the acquisition propensity which is hypothesized to be tied to possible value creation after the acquisition. Furthermore, we look at the respective effect of restrictive covenants and callability in isolation on the probability of becoming a takeover target. Then we consider the event where they coincide. Our results suggest that when companies have debt restricting value creating activities such as investments in capital expenditures and M&A activity, there is a higher probability of being subject to an acquisition. Hence, the results should be viewed in the light of a debt overhang problem which is further confirmed when looking at the firm characteristics of the targets in our data set.

Lastly, we look into the effect on acquisition premiums with respect to both restrictive covenants and call options. Billet and Yang (2016) found a decrease in acquisition premiums subsequent to a previous bond tender offer. Our result, however, suggests that neither call provisions nor covenants

impact acquisition premiums. Hence, these results indicate that even though there is an existence of impeding covenants, it does not materialize in a difference in bargaining power between target and acquirer shareholders.

Our data set relies on 440,727 bonds issued by public US and Canadian firms between 1985 and 2020. These bonds are matched to their respective issuer to obtain firm-level data to the extent possible, resulting in a set of 1,499 unique firms of which 110 have been acquired. In addition to collecting data from several databases and matching the data together, we have also collected covenant data on 17,095 bonds by programming a scraper to collect data from Mergent Bond Viewer online website which provides information on specific covenant data. The bond data from Mergent Bond Viewer has allowed us to extend previous research on M&A activity and bond provisions and has been a fundamental building block for this paper.

The remainder of this paper is structured as follows. In section 2 we discuss related literature, in section 3 we present our data set more closely, and in section 4 we elaborate on our hypotheses and motivate them. Section 5 presents how our tests have been performed and in section 6 we present our results. Finally, in section 7 we draw some conclusions from the results and discuss insights.

## **2 Previous Literature**

### **2.1 Bond Covenants**

There is a vast literature explaining the reasoning behind including covenants in debt contracts. Most of it emphasizes covenants' role in decreasing fric-

tions between share- and bondholders. Smith and Warner (1979) raise two opposing theories on the effect of covenants. On the one hand, (1) the irrelevance theory simply states that the manner in which the conflict between share- and bondholders is governed does not affect firm value. This theory suggests that other forces than covenants can make shareholders act in line with what is most value-increasing for the firm as a whole. Examples of these forces are the possibility of recapitalization and being a target of acquisition. On the other hand, (2) the costly contracting theory also recognizes mechanisms apart from covenants to govern shareholders' actions. In contrast to the former theory, the costly contracting theory does not anticipate these forces to be strong enough to minimize the conflict between share- and bondholders. Even though covenants are considered costly, they can be value-increasing since they mitigate opportunistic behavior from shareholders. Besides reducing equity holders' and management's opportunistic behavior, other positive effects of covenants include increased incentives to monitor the borrower (Rajan and Winton, 1995).

Begley and Feltham (1999) continue the discussion on the effects of opportunistic behavior by management. There are two main phenomena discussed that could give rise to agency problems, namely under-investment and over-investment. Under-investment refers to when management passes on positive NPV projects since it could reduce the equity value. Conversely, over-investment arises when management takes on "high risk negative NPV projects" that would increase the value of equity but be detrimental to debt value. Begley and Feltham propose that covenants could alleviate the risk of such opportunistic behavior and thus reduce the cost of debt.

Prior literature has also pointed out the balance between including covenants in debt contracts to decrease agency costs between share- and bondholders and maintaining financial flexibility. Decreasing frictions between share- and bondholders result in a lower cost of debt (Reisel, 2014). However, the costs of restrictive covenants may outweigh the benefits for some types of firms. Reisel suggests that firms with considerable agency problems are more likely to accept restrictive covenants compared to “low-leverage investment grade firms”. Nash et al (2003) also highlight instances where the costs associated with covenants exceed the benefits such as high-growth firms who prioritize flexibility and thus avoid entering into debt contracts limiting dividends and future debt. Conversely, Billet et al (2007) find covenants as an efficient means to govern the share- and bondholder conflict even when the borrowing firm exhibits high growth opportunities. Nonetheless, Bill et al also find an inverse relationship between leverage and growth opportunities. However, Nash et al’s findings do not support that other sorts of limiting covenants such as negative pledges are more prevalent among high-growth firms. Instead, other limiting covenants tend to correlate with financial distress of the borrowing firm.

A strand of literature argues that imposing restrictive covenants with respect to capital expenditure subsequently increases both firm value and operating performance (Nini et al, 2009; Demiroglu and James, 2010). However, Demiroglu and James further suggest that firms who agree to more restrictive covenants typically have fewer investment opportunities. Moreover, Chava et al (2008) provide evidence that covenants restricting investments are positively correlated with managerial entrenchment. Although restricting

covenants entail positive effects on both firm value and operational performance, Denis and Wang (2014) show that bank debt with covenants restricting capital expenditure tends to be relaxed as the quality of the borrower's investment opportunities increases.

Moreover, covenants do not only limit financial flexibility but also corporate risk-taking. The purpose of imposing covenants on borrowers is to make management more prone to make decisions that increase total firm value and not focus predominantly on equity value. However, Acharya et al (2011) propose evidence that stronger creditor rights make management risk-averse and prompt investments with the purpose of reducing cash-flow risk. Their study examines M&A activity in countries with strong creditor rights and finds that firms tend to invest in diversifying acquisitions to a larger extent in these countries compared to countries with weaker creditor rights. Favara et al (2017) show similar findings where the investment level in distressed firms is negatively correlated with the strictness of debt enforcement in a certain country.

Although there are some previous papers examining the relationship between covenants and call rights, it is rather scarce. King and Mauer (2000) investigate firms' policies with regard to calling bonds once the bond price reaches the call price. Surprisingly, they find that there is a considerable delay, on average firms call bonds more than two years after the bond price has reached the call price. Furthermore, firms that are "larger, less liquidity constrained, and that face larger opportunity cost of delaying a call have significantly shorter call delays". Restrictive covenants do not seem to affect the delay of exercising call rights, instead King and Mauer's findings support



that restrictive covenants constitute a strong motive for calling bonds.

Green (2018) provides some more nuance and examines companies that have either gained investment-grade ratings (rising stars) or lost investment-grade ratings (falling angels). His findings suggest that companies are willing to forego savings in interest costs to remove or avoid restricting covenants.

## 2.2 Callable Bonds

The academic community has explored the reasons and consequences of using call options and its accompanying effect on mergers and acquisitions. An early work by Bodie and Taggart (1978) investigates the bond issuers' motive for including a call provision. The authors propose that the call option makes shareholders better off. Considering the event of default, when the bond is non-callable, bondholders have a claim to the residual assets and shareholders are only partially entitled to future net benefits. If there is a call right included in the bond, the bond can be called at a fixed price and new debt can be issued with a negotiated interest rate that reflects the value of the investment opportunity, which incentivizes the shareholders to invest further as they can extract additional value from the investments.

Bodie and Taggart find that non-callable debt reduces the incentives to invest in future profitable opportunities and thus consequently minimizes the value of the shareholders' wealth. As the firm finds attractive investment opportunities, callable debt allows the shareholders to maximize the value reaped by the investment. However, without future investment opportunities available, there is no tendency to choose a particular financing option.

Furthermore, Levy and Sarnat (1970), Lewellen (1971), and Higgins

and Schall (1975) suggest that Merger and Acquisitions benefit bondholders through coinsurance. When two firms merge, the risk of default is reduced assuming their respective cash flows are not perfectly correlated. Galai and Masulis (1990) find that the gain accrued to bondholders from the coinsurance effect results from a decrease in the shareholders' wealth. Previous studies show limited evidence of the coinsurance effect on target bond returns; Billet, King & Mauer (2004) dissect this and find evidence of target bonds earning positive excess returns at the deal announcement, with returns being greatly correlated to the bond risk.

Elaborating on debt's effect on investment decisions, Fu and Tang (2016) clarify corporate debt maturity's effect on acquisition decisions and present evidence supporting the liquidity risk hypothesis. They suggest that short-term debt reduces the firm's probability of acquiring another company, supporting that the debt overhang problem is not solved by short-term debt and that the liquidity risk generated through short-term debt attenuates the investment appetite. Firms with short-term debt that choose to undertake an acquisition do so in smaller and lengthier transactions with minimal cash used as payment means. Acquirers with short-term debt also allocate their capital more efficiently in the transactions which is indicated by superior long term stock performance.

Continuing on mergers and acquisitions, Billet and Yang (2016) investigate the motives of bond tenders in mergers and acquisitions and the accompanying effects on transaction probability and wealth distribution between share- and bondholders. The results suggest that bond tenders are more prevalent in transactions where the bond has restrictive covenants and high

probability of coinsurance. To wit, where the debt would otherwise impede a possible transaction. Thus, a bond tender offer corresponds to an improved likelihood of finalizing the transaction. Moreover, Billet and Yang find that the acquisition premiums are reduced with a bond tender offer, and that the tendered bondholder’s wealth effects are dependent on the non-tendered bond’s features as well.

Moreover, Becker et al (2022) examine the correlation between callable debt and the probability of being acquired. They suggest that there is a positive correlation between debt callability and the likelihood of becoming a target for an acquisition. This result could be explained by the “credit view” and the effect of decreased credit spreads. In short, the credit view states that credit spreads and idiosyncratic credit risk determine the funding cost of a corporation. Reduced credit risk and subsequent reduction in credit spreads will incentivize the firm to exercise the call right. This view is supported by findings which indicate that issuers are more likely to call their bonds as a consequence of credit-improving events. Additionally, testing the Credit View in a merger and acquisition setting, the results suggest that target debt callability serves to ease the debt overhang as firms with callable debt have a higher probability of being acquired with less wealth transferred to target bondholders.

### **3 Data**

In our sample, we have collected and merged data from multiple databases. First, we gather data on bonds issued by private firms in the US and Canada,

which are then matched with company level data as well as covenants. Furthermore, we obtain data on Mergers and Acquisitions, which we match to the bond issuers.

### **3.1 Bonds**

We have collected data on corporate bonds from Refinitiv Eikon. Our dataset consists of 440,727 corporate bonds issued between January 1985 and December 2020 in Canada and the US. All of these are non-convertible bonds. To conduct our empirical tests, we have obtained data on coupons, maturity, the amount issued, bond grade, yield to maturity, industry classification, and call rights. Refinitiv Eikon only provides data on whether bonds are investment-grade or high-yield bonds. However, for our purposes, we do not need further specifications.

Compustat is then used to match bonds to companies and obtain the relevant information on company level. Company information includes book value of debt, assets, common equity, market capitalization, capital expenditures, and EBITDA. This data is available for 1,543 different companies out of 11,624 public companies who issued bonds between 1985 and 2020 in our data set from Eikon. Then the sample is further decreased to 1,499 companies due to missing data points of total assets in the Compustat data set. Based on the data extracted from Compustat combined with bond data from Eikon we have calculated Tobin's Q as book value of assets minus book value of equity plus the market value of equity, divided by book value of assets in accordance with Becker et al (2022).

In table 1, we present summary statistics of our complete bond sample

from Refinitiv Eikon. Echoing the observations from Becker et al (2022), there is an increasing fraction of callable bonds. For non-corporate bonds between 1985 and 1999, the fraction of callable bonds were 44% whereas the corresponding figure for the period 2000 - 2020 was 81%. High yield bonds tend to a larger degree include a call provision compared to investment grade bonds (74% versus 36%).

**Table 1**

Panel A presents data on our full bond data sample, consisting of bonds issued in the US and Canada between 1985 and 2020. The data sample is divided into subcategories based on years when the bonds were issued, credit rating (Investment Grade or High Yield), and type of coupon. In addition, the sample has been divided into financial or non-financial based on the SIC code of the issuer. Due to lack of precision in the industry of each SIC code, we have assumed that “Financial, Real Estate, and Insurance” are financial firms, while the remainder of the firms are considered non-financial firms. For each subcategory we present the fraction of bonds which were classified as callable according to Eikon Refinitiv.

Panel A. Full Bond Sample

	Number of Bonds	Fraction Callable
Non-financial Corporate Bonds	74 176	45.7%
Financial Bonds	366 513	10.7%
Non-financial corp. bonds, 1985-1999	71 211	44.2%
Non-financial corp. bonds, 2000-2020	2 965	80.6%
Non-financial corp. bonds, fixed coupon	65 573	48.7%
Non-financial corp. bonds, floating coupon	2 875	32.8%
Non-financial corp. bonds, IG	26 444	35.6%
Non-financial corp. bonds, HY	10 444	74.2%

**Table 2**

This table is divided into five panels where panel A presents the full sample retrieved from Compustat, panel B only shows data where callable bond debt is positive, and panel C shows data where there is no callable debt. Panel D focus on firms with callable debt and restrictive covenants, and panel E deep-dives into firms with restrictive debt covenants. The number of observations is based on number of firm years. Callable bond over total debt is derived by computing the amount of callable debt outstanding for a specific firm at a specific year by the total debt that year. The amount of callable bond debt comes from the Eikon Refinitiv data set presented in table 1. Non-callable debt over total debt is derived similarly. The rest is computed based on data from the Compustat data set.

Panel A: Full Compustat Sample

	Obs	Mean	Std. dev	25th perc.	75th perc.
Callable bond debt/Total debt	38 040	0.13	0.27	0.00	0.06
Non-callable bond debt/Total debt	38 040	0.13	0.27	0.00	0.03
Leverage (Book)	38 040	0.28	0.21	0.12	0.41
Tobin's q	38 040	1.32	3.94	0.72	1.48
Total assets (log)	38 040	3.31	0.94	2.75	3.90
Capex/Assets (book)	33 426	0.06	0.18	0.01	0.07
Target	38 040	0.07	0.26	0.00	0.00

Panel B. Firms with positive callable bond debt

	Obs	Mean	Std. dev	25th perc.	75th perc.
Callable bond debt/Total debt	11 119	0.43	0.35	0.12	0.74
Non-callable bond debt/Total debt	11 119	0.19	0.27	0.00	0.33
Leverage (Book)	11 119	0.35	0.20	0.20	0.47
Tobin's q	11 119	1.36	0.95	0.92	1.56
Total assets (log)	11 119	3.77	0.86	3.21	4.32
Capex/Assets (book)	9 805	0.05	0.06	0.01	0.06
Target	11 119	0.06	0.23	0.00	0.00

Panel C. Firms with zero callable bond debt

	Obs	Mean	Std. dev	25th perc.	75th perc.
Non-callable bond debt/Total debt	26 921	0.10	0.27	0.00	0.00
Leverage (Book)	26 921	0.26	0.21	0.09	0.38
Tobin's q	26 921	1.18	4.64	0.66	1.44
Total assets (log)	26 921	3.12	0.91	2.59	3.71
Capex/Assets (book)	23 621	0.06	0.21	0.01	0.08
Target	26 921	0.07	0.26	0.00	0.00

Panel D. Firms with callable and restrictive bond debt

	Obs	Mean	Std. dev	25th perc.	75th perc.
Callable bond debt/Total debt	1 242	0.63	0.36	0.25	1.00
Non-callable bond debt/Total debt	1 242	0.11	0.23	0.00	0.05
Leverage (Book)	1 242	0.40	0.21	0.25	0.52
Tobin's q	1 242	1.48	0.75	1.05	1.70
Total assets (log)	1 242	3.50	0.69	3.09	3.74
Capex/Assets (book)	1 192	0.05	0.06	0.01	0.06
Target	1 242	0.03	0.16	0.00	0.00

Panel E. Firms with restrictive debt

	Obs	Mean	Std. dev	25th perc.	75th perc.
Callable bond debt/Total debt	2 874	0.58	0.39	0.18	1.00
Non-callable bond debt/Total debt	2 874	0.22	0.34	0.00	0.36
Leverage (Book)	2 874	0.41	0.20	0.27	0.53
Tobin's q	2 874	1.45	0.72	1.05	1.66
Total assets (log)	2 874	3.71	0.64	3.29	4.07
Capex/Assets (book)	2 641	0.05	0.07	0.01	0.06
Target	2 874	0.02	0.13	0	0

## 3.2 Covenants

Refinitiv Eikon does not provide any data on covenants associated with the bonds, therefore, we have used Mergent Bond Viewer by FTSE Russell to collect data on covenants. Mergent Bond Viewer provides information on 44 different covenant features and indicates through a “yes” or “no” if this particular covenant is present. Thus, we have treated this data as dummy

variables in our following regressions. Mergent Bond Viewer requires individual requests on bond data which have prompted us to create a sophisticated data scraper. Although it would be preferable to have data which provides more detailed information on covenants to test the impact of the level of severity entailed by different covenants. However, for the scope of this paper we use a binary classification if the firm has covenants or not. More precisely, the inhibiting effects of restrictive covenants on corporate investments and the propensity to lift restrictive covenants. To perform our tests, we have matched the corporate bond issue data from Refinitiv Eikon to the respective covenants from Mergent Bond Viewer. Then we have matched this with the company level data obtained through Compustat. The number of matching bonds amounts to 17,095 of which 17,070 bonds have at least one covenant feature.

### Table 3

This table presents the data obtained by our scraper which downloaded data from Mergent Bond Viewer. In all panels below the covenant data is matched with the bond and company data from Eikon Refinitiv. Panel A shows the full sample and divided into subcategories similar to table 1. However, due Mergent Bond Viewer’s lack of covenant data on bonds issued prior to 2000, there is no split based on issue date. Panel B shows the industry of respective issuer and panel C is divided based on call provisions and credit rating. All panels show percentage of bonds that include a covenant and the fraction which have restrictive covenants.

Panel A: Full sample of bonds with covenants

	Obs	% with covenants	% with restrictive covenants
Financial corporate bonds	4 577	93.4	24.5
Non-Financial corporate bonds	12 490	99.7	28.0
Non-financial corporate bonds. IG	4 376	99.7	7.9
Non-financial corporate bonds. HY	1 011	99.7	51.2



Panel B: Industry categorization of issuers with bond covenants

	Obs	% with covenants	% with restrictive covenants
Agriculture, Forestry and Fishing	4	100.0	50.0
Mining	1 092	100.0	41.2
Construction	188	100.0	45.7
Manufacturing	4 446	99.9	27.3
Transportation, Communications, Electric, Gas, Sanitary service	3 725	99.8	16.3
Wholesale Trade	294	100.0	48.3
Retail Trade	699	99.7	32.0
Finance, Insurance and Real Estate	4 577	93.4	24.5
Services	1 756	99.3	36.8
Public Administration	10	80.0	30.0

Panel C: Callability and covenants

	Obs	% with covenants	% with restrictive covenants
Callable bonds	10 173	99.6	38.2
Non-callable bonds	6 905	95.8	10.7
Callable bonds, IG	4 166	99.7	12.3
Non-callable bonds, IG	1 766	99.4	7.8
Callable bonds, HY	1 049	99.6	57.6
Non-callable bonds, HY	223	100.0	17.9

Due to lack of matching observations during the first period (1985 - 1999), we cannot comment on the development of the covenants. However, the split between financial corporate and non-financial corporate bonds seem to be rather similar whereas high yield bonds to a significantly larger extent include restrictive covenants compared to investment graded bonds. These findings are not surprising, and are also congruent with Green's (2018) findings. In panel C we can see that callable bonds to a significantly larger degree also include covenants restricting investments, regardless if it is an investment grade bond or high yield bond. Thus, the data would indicate that companies issuing bonds with restrictive covenants are inclined to include a call option to have the option of removing the associated constraints.

### 3.3 Financial Constraints

To test our hypothesis that firms subject to restrictive covenants which simultaneously have the possibility to call the same debt causing the restrictions, we have chosen to gather data company level data on EBITDA and total debt from Compustat. The EBITDA/total debt ratio is assumed to give an indication of how easily a firm could repay outstanding debt. Free cash flow could have been used instead or as complement to EBITDA but despite our best efforts we could not obtain a comprehensive data on cash flows. Thus, we use EBITDA as a proxy for cash flows.

**Table 4**

This table shows EBITDA/Total Debt measures from compustat. Firm years are the unit of observation. EBITDA/total debt measures are matched to firm year observations along with covenant structure of debt.

**Panel A: EBITDA/Debt Measurements**

	Obs	Mean	Median	Std. Dev	25th Perc.	75th Perc
Full sample	33687	55.2%	37.0%	55.1%	20.5%	67.8%
All targets	1445	5.6%	3.6%	6.6%	1.4%	7.6%
All callable debt	10285	42.6%	31.3%	39.3%	18.1%	52.6%
All callable and restrictive debt	1192	4.6%	2.8%	6.0%	1.4%	5.4%
Targets callable and restrictive debt	20	2.0%	1.1%	2.3%	0.4%	2.6%

### 3.4 Merger and Acquisition Data

The United States and Canada are among the countries in the world with the highest activity in terms of Mergers and Acquisitions. Thus, these markets were apparent choices as we aspired to have a data set with as many transactions as possible, however, restricting it to geographies with a rather homogeneous transaction nature. Previous research has focused predominantly on US data; we have chosen to include Canadian data to further test the robustness of the results in previous research. We have collected M&A data from Refinitiv Eikon as well. Our transaction data set comprises acquisitions of public target firms (acquirers are either private or public) in Canada and the United States that were completed between January 1, 1985, and December 31, 2020. We only include transactions where 100% of the target's shares were acquired. We retain deals of transaction value larger than one million USD, thus also excluding acquisitions lacking transaction size. This yielded 9,592 transactions. Furthermore, we have obtained data on acquisition premiums based on the trading price of the target one month, one week, and one day prior to the acquisition. To make a fair assessment of the acquisition premium, we have chosen to include trading price up to one month before the announcement date as the share price could be affected by rumors of acquisition which would potentially underestimate the acquisition premium (Magnanelli et al, 2022).

#### **Table 5**

This table presents M&A data from Eikon Refinitiv. Acquisition premium refers to premium calculated as acquisition price divided by trading price four weeks prior to the announcement date of the acquisition. In addition

to acquisition premium, the table also shows values of Tobin's Q, leverage (book), Asset (log), and Capital expenditures over total assets which are later used as control variables.

Panel A: Full M&A Sample

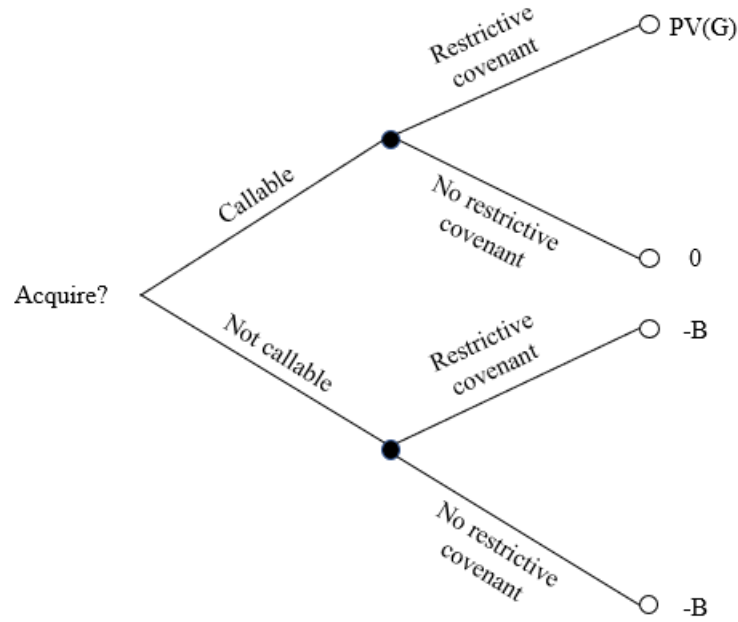
	Obs	Mean	Std.Dev	25th perc.	75th perc.
Acquisition Premium	9592	44.2%	50.7%	17.7%	59.4%
Tobin's Q	9138	2.0	1.5	1.1	2.3
Leverage (book)	9138	0.4	7.7	0.0	0.4
Asset (log)	9138	2.4	0.9	1.8	2.9
Capex/Assets	8633	0.1	1.5	0.0	0.1

## 4 Hypothesis Development

Becker et al (2022) provide convincing evidence that firms that include a call provision when issuing bonds have a higher probability of becoming a takeover target. The intuition behind this could be traced back to earlier works such as Levy and Sarnat (1975), Lewellen (1971), and Higgins and Schall (1975), who propose that an acquisition implies a coinsurance effect where the risk of the target's bondholders decrease as a consequence of diversified cash flows. Naturally, this results in a wealth transfer from the acquirer's shareholders to the target's bondholders. Call provisions effectively thwart this effect and thus make acquisitions more appealing to the acquirer's shareholders.

**H1: Companies with a larger share of callable bonds to total debt have a higher probability of becoming acquired by another company.**

Moreover, we expand previous literature by also testing how restrictive covenants affect the probability of acquisition. Restrictive covenants with respect to capital expenditures and acquisitions could result in debt overhang. Equivalently, as a consequence of restrictive bond covenants, companies refrain from investing in NPV positive projects(under-investment). Hence, there is an opportunity for an acquiring firm to create value by removing prohibitive covenants, conditioned that bonds are callable. However, Nini et al (2009) and Demiroglu and James (2010) find a positive relationship between restrictive covenants, firm value and operating performance. Nonetheless, King and Mauer (2000) claim that restrictive covenants constitute a strong motive for calling bonds and Green (2018) provides evidence that firms are willing to accept a higher interest cost to avoid restrictive covenants.



**Figure 1.**

In figure 1 we aim to formalize the intuition behind our hypothesis. The tree represents the different alternatives of bond structures a target can have, with a limit to call provisions and covenants (decision making for an acquiring firm and the decision is dependent on different bond provisions for the target's debt). Depending on the mix between restrictive covenants and call provisions, the acquiring firm can obtain different outcomes post acquisition.

The first nod at the end of the tree where the target's debt is both callable and has restrictive covenants, the acquiring firm could obtain  $PV(G)$  post acquisition.  $PV(G)$  represents the present value of future cash flows from making investments not obtainable to the target company pre acquisition due to covenants. This assumes that the target firm cannot lift the covenants without an injection from the acquiring firm. The second end from the top re-

sults in a value of zero since the acquirer cannot achieve any value-enhancing result from a covenant perspective. Both of the lower ends of the tree end up in  $-B$ , where  $B$  represents the cost of a value transfer to target bondholders from the perspective of the acquiring shareholders. This value transfer is explained by the absence of a call provision which relates to H1. The two upper ends of the tree do not include  $B$  as in these outcomes the acquirer can avoid the wealth transfer to target bondholders through calling the debt.

**H2: Companies with callable bonds outstanding with covenants which restrict investments in capital expenditure and acquisitions are more likely to become takeover targets.**

Firms with restrictive bond covenants are often inhibited in their capital expenditures, borrowing, and investment activity. These restrictions cause a debt overhang problem in the firm, with attractive investment opportunities lost due to the constraints of the debt contract. With target management as well as shareholders in such a disadvantageous and distressing situation, their bargaining power is weakened. Following a potential takeover, an acquirer would exploit this situation and reduce the acquisition premium.

**H3: Acquired target firms with callable and restrictive debt are paid a lower acquisition premium.**

## 5 Methodology

This section presents the regressions needed to test our hypotheses. We define the variables included in the regressions, as well as the intuition behind the chosen statistical tests.

### 5.1 Probability of Being Acquired

Similar to Becker et al (2022), we examine the probability of becoming an acquisition target based on whether a firm’s outstanding debt is callable or non-callable. In addition, we expand on previous research through testing how restrictive covenants are reflected in the probability of becoming a takeover target. To control for the unilateral effect of bond call provisions, we run a regression where the probability of acquisition solely depends on the call option. Then, we also examine the unilateral effect of restrictive covenants. Lastly, we test the joint probability of callable debt and restrictive covenants on becoming a takeover target.

#### 5.1.1 Takeover probability regression

To understand the aforementioned relationships, we conduct tests through three separate regression models. Considering the fact that we have capital structure measurements which are observed over time per every single firm, our dataset constitute a panel data set. Thus, we appropriately apply a pooled OLS regression to estimate the takeover probability of a target. Furthermore, since our dependent variable is categorical, with a firm being either acquired or not, we also apply logistic regression to predict the probability of



becoming a takeover target. Lastly, we also apply a Cox proportional hazard model regression. Section "5.3" provides a more in depth explanation for the three different regression types and why we use these regression models. In all three regressions, we take into account year and industry fixed effects and adjust for this, thus removing omitted variable bias. The data set which the regressions on takeover incidence are performed on span over a long time horizon and include companies in various industries (1980 - 2020). Hence, we need to control for the possibility that our data exhibits unobservable bias across time and industry.

Additionally, to avoid distortion effects in the data, we refine our dataset and exclude firms which miss at least one year's observation in any of the control variables. We then apply above mentioned regression models to test our dependent variable.

*Our regressions are the following:*

$$(1) \text{ Target}_{i,t} = \alpha + \beta_1 \times \text{Callable Bond Debt}_{i,t-1} + \beta_2 \times \text{Non-Callable Bond Debt}_{i,t-1} + \gamma \times \text{Controls}_{i,t-1} + \Theta_{j,t} + \varepsilon_{i,t}$$

$$(2) \text{ Target}_{i,t} = \alpha + \beta_1 \times \text{Non-Callable Bond debt}_{i,t-1} + \beta_2 \times \text{Callable and Restrictive}_{i,t-1} + \beta_3 \times \text{Callable and Not Restrictive}_{i,t-1} + \beta_4 \times \text{Restrictive Bond Debt}_{i,t-1} + \gamma \times \text{Controls}_{i,t-1} + \Theta_{j,t} + \varepsilon_{i,t}$$

where:

1. *Target* is our dependent variable and is a dummy variable. It is assigned a value of 1 if there is an acquisition and 0 if there is no acquisition.

2. *Callable Bond Debt* is the fraction of total debt which has a call provision included.
3. *Non-Callable Bond Debt* is the fraction of total debt which is in the form of a bond without a call provision.
4. *Restrictive Bond Debt* is debt with restrictive covenants. Restrictive covenants are defined as those restricting firms explicitly to make larger investments in either capital expenditure investments or acquisitions. Out of the 44 covenants which Mergent Bond Viewer provides data on, we have identified three covenants as restrictive on corporate investments. More precisely, those covenants are “consolidation/merger”, “investments”, and “restricted payments”. Any bond with any of these bond covenants included is defined as a restrictive bond. This variable is a dummy variable since it is irrelevant how large the debt amount with a restrictive covenant is to total debt. To wit, the fraction of debt which includes restrictive covenants does not have an impact on the prohibitive effects on the firm’s investment opportunities, it is merely prohibitive or not.
5. *Callable and Restrictive Bond Debt* is the intersection between callable bonds and restrictive covenants. In other words, these observed firms need to have a bond outstanding that has both of these bond provisions. This variable is treated as a dummy variable since the prohibitive effect of the covenants does not depend on the share of total debt. The same reasoning as for the “Restrictive Bond Debt” variable. Thus, an acquiring firm has the opportunity to add value regardless of the

fraction.

6. *Callable and Not Restrictive* is a dummy variable defined as debt that has a call provision but does not include the restrictive covenant defined above.
7. *Controls* are the variables we control for, same as Becker et al (2022), including Book value of assets, Tobin’s Q, leverage, and capital expenditures as a fraction of assets.
8. *Linear trend,  $t$* , is the observed year.

## 5.2 Target Bid Premium

In the second part of our study, we explore how callable bonds at the target level affect the acquisition premium of said target. We first isolate the effect of callability on acquisition premium by applying a regression where the existence of a call provision is the exclusive independent variable. We then try to predict the acquisition premium using the collective effect of bond callability and restrictive covenants.

### 5.2.1 Acquisition premium regression

In this second part, our dataset no longer consists of panel data. All 9,592 observations are acquired firms along with their capital structure as well as other features surrounding the transaction. Furthermore, our new dependent variable, Acquisition Premium, which is further detailed below, is no longer categorical. Thus, we find it adequate to run a regular OLS regression.

*Our regressions are the following:*

$$(3) \text{ AcquisitionPremium}_{i,t} = \alpha + \beta_1 \times \text{DUMMY Callable Bond Debt}_{i,t-1} + \beta_2 \times \text{DUMMY Non-Callable Bond Debt}_{i,t-1} + \gamma \times \text{Controls}_{i,t-1} + \Theta_{j,t} + \varepsilon_{i,t}$$

$$(4) \text{ AcquisitionPremium}_{i,t} = \alpha + \beta_1 \times \text{DUMMY Non-Callable Bond debt}_{i,t-1} + \beta_2 \times \text{DUMMY Callable and Restrictive}_{i,t-1} + \beta_3 \times \text{DUMMY Restrictive Bond Debt}_{i,t-1} + \gamma \times \text{Controls}_{i,t-1} + \Theta_{j,t} + \varepsilon_{i,t}$$

In these regressions, all independent variables are dummy variables. This is due to the insufficient data set on debt amount for the acquired firms. In turn, this could be explained by the somewhat lacking data in Compustat. A ratio was therefore not possible to achieve for a sufficient amount of firms.

We introduce one new variable, Acquisition Premium.

1. *Acquisition premium*: for each successful acquisition we use the the closing market cap on the day of the acquisition announcement divided by the market cap 1 month prior in line with Magnanelli et al (2022).

### 5.3 Statistical tests

To test our two first hypotheses related to takeover incidence, we perform three different statistical regressions OLS, logistic, and Cox proportional hazard model. At first, it may seem redundant to perform three different sta-

tistical regressions for the same test; however, due to the peculiarity of our data, we believe it is necessary. Our dependent variable is binary, which poses some challenges when testing the explanatory effect of our independent variables. The OLS test provides the benefit of results that are easy to interpret but is less reliable when we have a dependent variable that is binary. The OLS regression could generate probabilities that are greater than 1 or smaller than 0. Thus, we have chosen to complement the OLS with a logistic regression which, in difference to the OLS, does not rely on as many assumptions (Gauss-Markov assumptions) and provides a more stable model. In addition, it has been found to be better at estimating probabilities with binary dependent variables (Pohlmann and Leitner, 2003). Additionally, we perform a Cox test which is motivated by the truncation in our data, i.e. a firm could be acquired either before or after the time horizon we have chosen. The Cox test is well suited for dealing with right and left truncated data. However, it is less equipped to deal with double truncation and may lead to biases in the estimates. In the absence of a better method, we still apply the Cox model but we are aware of its limitations and the possibility of biased results.

Moreover, when testing the acquisition premium the dependent variable is continuous and there is no truncated data which makes it less complicated. Hence, we deem that there is no need for different regression models in this part.

## 5.4 Limitations

We treat the call provision in a rather simplified manner. However, many factors are playing in that are neglected due to a lack of information in Refinitiv Eikon such as when the bond first becomes callable. In other words, a bond could have a call option but not be callable until years later after issuance which we do not account for since we cannot obtain this data through Eikon Refinitiv or any other database accessible to us. Moreover, we cannot observe when a bond has been called either. To adjust for this, we have assumed that if the same issuer has issued a new bond after half of the tenor of the previous bond and it is callable, we have assumed that the previous bond has been called at the time of the new issuance.

Nevertheless, the absence of follow-up data on the decision to call a bond implies some further consequences for our paper. We hypothesized that firms with restrictive and callable debt are more likely to become takeover targets due to the possibility of lifting these impediments to engage in value-enhancing activities. To prove this theory, data on subsequent bond calls would be necessary. However, to mitigate this flaw, we look into company specific data to at least give an indication of the motives.

## 6 Results

In this section, we test our initial hypotheses on the probability of becoming a takeover target based on different bond characteristics such as a call provision and covenants. Then we also test the bond characteristics and its impact on acquisition premium. The first part is to a large extent an echo

of previous literature (Becker et al, 2022) while we expand the literature in the second and third parts of this section.

## **6.1 Takeover incidence and bond callability**

To begin with, we test how a call provision associated with outstanding bonds affects the probability of becoming a takeover target. We test this by using OLS, logistic, and Cox regressions.

The results in table 6 indicate that companies that have outstanding bonds with call provisions are more likely to become a takeover target. The predictive result from the OLS is small yet significant at the 1 and 0.1 percent level. The predictive value from our regression is lower compared to Becker et al’s results which partially might be explained by different aspects such as our treatment of details in bond provisions. We provide a more detailed explanation to the deviance when interpreting the economic importance. Bond debt without the call provision does not provide a predictive value according to the results in table 6, which is in line with previous literature. The results are robust even when controlling for different cut-offs in the share of callable debt to total debt (see Appendix B1).

The results from our OLS regressions suggest that an increase in one standard deviation of callable debt (35 percent), for those companies which have callable debt, results in a 0.1 - 0.2 percentage points increase in the probability of becoming acquired. This is considerably lower than the corresponding figure Becker et al (2022) present, their corresponding figure is 0.5 - 0.6 percentage points. The deviance could be explained by several factors, for example our differences in choice of geography of interest and the time

**Table 6**

This table shows the estimates of the OLS, logistic, and Cox regressions. Firm years are the observed units. The dependent variable is whether the firm is acquired or not. Independent variables are the fraction of callable bond debt and non-callable bond debt, respectively. Regression (1), (3), and (5) do not include control variables, whereas (2), (4), and (6) do so. All regressions control for year and industry fixed effects except for column (6).

	<i>Dependent variable:</i>					
	<i>OLS</i>			<i>Logistic</i>		<i>Cox</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Callable Bond Debt	0.004** (0.001)	0.005*** (0.001)	1.214*** (0.305)	1.482*** (0.369)	0.933*** (0.283)	0.915** (0.320)
Non-callable Bond Debt	0.003 (0.001)	0.003 (0.002)	-0.610 (0.474)	0.699 (0.550)	-0.849 (0.472)	0.592 (0.482)
Other Characteristics	No	Yes	No	Yes	No	Yes
Year X Industry F.E	Yes	Yes	Yes	Yes	Yes	No
Observations	33 426	26 419	33 426	26 419	33 426	26 419
Unique firms	1 499	1 032	1 499	1 032	1 499	1 032

*Note:* \*p<0.05; \*\*p<0.01; \*\*\*p<0.001



period. Moreover, the difference could also be attributed to our negligence of other bond properties such as the possibility of a bond being “not yet callable” which the previous paper takes into account. To clarify, there is no difference between callable bonds and bonds that are not callable yet in our sample. Hence, there is an overestimation of the share of callable bond debt which may in turn understate the effect of the call provision on the likelihood of becoming acquired.

## **6.2 Takeover incidence and covenants**

In this part, we analyze the likelihood of being subject to a takeover as a result of the target having covenants that limit M&A activity and capital expenditures. Our hypothesis stated that firms with bonds that included both a call provision and covenants that restricted larger investments would become more likely takeover targets since there would be a possibility to create value. To test this hypothesis, it was necessary to separate the tests as the “callable bond” variable and “callable and restrictive bond debt” exhibit multicollinearity. Furthermore, to exclude the possibility that the effect from the “callable and restrictive bond debt” variable could solely be explained by the covenants or the call provision, we also tested the predictive value of only restrictive covenants and bonds with a call provision but no restrictive covenant.

The results in table 7 confirm our hypothesis that firms with bonds that are both callable and include covenants that prohibit firms from investments are more probable to become takeover targets. All three regressions, OLS, logistic, and Cox, show conclusive results at 5 and 0.1 percent significance

**Table 7**

Bond covenant effect on takeover incidence. This table shows OLS, Logistic, and Cox regressions. Target is the dependent variable and the independent variables are restrictive bond covenants, non-callable bond debt, bonds that are both callable and restrictive, and callable bonds but no restrictive covenants. Columns (1), (3), and (5) do not include control variables whereas columns (2), (4), and (6) include total assets, leverage, Tobin's Q, and capital expenditures divided by total assets. Moreover, the first five columns are adjusted for year and industry fixed effects.

	<i>Dependent variable:</i>				
	<i>OLS</i>	<i>OLS</i>	<i>Logistic</i>	<i>Logistic</i>	<i>Cox</i>
	(1)	(2)	(3)	(4)	(5)
Restrictive Bond Debt	-0.001 (0.002)	-0.001 (0.002)	-4.118*** (1.006)	-3.993*** (0.923)	-3.526*** (0.819)
Non-callable Bond Debt	0.002 (0.001)	0.002 (0.002)	-0.698 (0.490)	0.217 (0.502)	-0.800 (0.488)
Callable and Restrictive Bond Debt	0.005* (0.002)	0.006* (0.003)	4.658*** (0.910)	5.010*** (0.876)	4.062*** (0.710)
Callable and Not Restrictive	-0.000 (0.001)	-0.000 (0.001)	0.136 (0.257)	0.508 (0.305)	0.064 (0.250)
Other Characteristics	No	Yes	No	Yes	No
Year X Industry F.E	Yes	Yes	Yes	Yes	Yes
Observations	33 426	26 419	33 426	26 419	33 426
Unique firms	1 499	1 032	1 499	1 032	1 499

*Note:* \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

level. Moreover, we find no statistically significant indication that callable debt without restrictive covenants increases the propensity of being acquired. This result is in line with what we expected. In section 4, figure 1 shows that target firms that have bonds outstanding with a call provision but no restrictive covenants do not present any value creation for the acquirer. It merely allows the acquirer to avoid value transfer to target bondholders.

The fact that callable debt without restrictive covenants does not provide any predictive value highlights something interesting; the correlation between takeover probability and call provisions seems to be more pronounced for companies with restrictive covenants. A possible interpretation of this result is that debt overhang is more acute for firms with restrictive covenants. This interpretation aligns well with the data in table 3 panel C, which demonstrates that firms with high yield debt, to a larger extent have a call provision and restrictive covenants. However, the absence of predictive value from callable and not restrictive covenants is also in line with figure 1 in the hypothesis development. According to figure 1, there is no value to extract from the acquirer's perspective; instead, it only allows the acquirer to avoid an unfavorable value transfer to target bondholders.

It is difficult to certainly confirm the reason behind the acquirer's motivation to acquire another firm. However, the results in table 7 in conjunction with the characteristics in table 4 indicate that acquirers seek value creation by buying firms that are limited through their restrictive covenants. In table 4, we can see that target firms with callable and restrictive debt, on average, have a significantly lower EBITDA to debt than the full sample mean. This would suggest that the acquirers of these firms have an opportunity to lift the

covenants and potentially invest in projects that could improve firm value. Furthermore, the low EBITDA to debt in the acquired firms implies that the target firms would probably not be able to call their debt in absence of the acquisition.

Interestingly, we also find that restrictive bonds (including both callable and not callable) in isolation have a negative predictive value at the 0.1 percent level for the logistic and Cox regressions. The OLS regression does not confirm this result, however, since our dependent variable is binary, we consider the logistic and Cox results more reliable. A more detailed explanation behind this reasoning could be found in the section "statistical tests" (5.3). This result further verifies our hypothesis; firms that have outstanding bonds which prohibit investments but are not callable do not provide an opportunity for an acquirer to add value. As explained in figure 1 in section 4, these acquisitions only incur a costly wealth distribution to target bondholders and are consequently avoided by the acquirers.

To the best of our knowledge, our findings are new to the literature with regard to how covenants affect the probability of a company being subject to a takeover. However, Green (2018) examined the role of covenants and their impact on refinancing choices. He suggests that "fallen angels" (companies who have been downgraded from investment grade to high yield) delay refinancing not only due to increased interest costs but also due to an increase in covenants. The delay in refinancing could be attributed to debt overhang. Our findings could also be explained by the debt overhang problem causing firms with restrictive covenants to miss out on NPV-positive projects. Debt overhang seems to present an opportunity for acquirers to exploit financial

constraints in other companies.

Moreover, our findings are somewhat difficult to reconcile with the increased firm value found by Nini et al (2009) as a consequence of restrictive covenants. However, there is not necessarily a contrast between our results. The difference could stem from irrational behavior from acquiring firms. To wit, acquirers overestimate the potential value of acquiring firms with restrictive covenants and callable bonds.

### **6.3 Bond provision’s effect on acquisition premium**

Besides the effect of bond provisions on the probability of becoming a takeover target, we further examine the impact on acquisition premiums. Our results in Panel A and B demonstrate that neither call provisions nor covenants have any statistically significant effect on the acquisition premium. This means that even though firms with callable debt are more likely to be an acquisition target, the acquirer does not pay a higher or lower acquisition price for said target, independent of whether the target has restrictive covenants or not. This may be an effect of our rather small Venn-diagram-like match between acquisition targets from Eikon, the bond dataset from Eikon, and the covenant data from Mergent. Nevertheless, there is a myriad of parameters that affect the premium paid in an acquisition.

We hypothesized that a target firm with a debt structure tinted by call provisions and restrictive covenants would be acquired at a lower acquisition premium. The restrictive covenants would cause a debt overhang problem in the firm, foregoing attractive investment opportunities. With target shareholders in such an unfavorable situation, their bargaining power would be

limited. This low bargaining power would be exploited by the acquirer, causing the acquisition premium to be reduced. However, the results from our regressions seen in table 8 indicate that there is no unbalance in the bargaining power between the target and acquirer, as suggested by the absence of any statistically significant higher or lower acquisition premiums.

It could also be the case that the targets with restrictive covenants are already trading at a discount compared to their peers without these bond provisions. With firm value being the sum of the enterprise's future cashflows, it is reasonable that a company with limited growth opportunities is trading below par in relation to peers. A firm with investment restrictions induced by its bond provisions would therefore be priced at discount. Hence, an acquirer would not pay a lower acquisition premium for firms with callable and restrictive debt since this is already reflected in the valuation.

On the contrary, one might reason that firms with restrictive covenants are hindered in their value creation. A call option on this debt would enable a financially strong acquirer to capture new investment opportunities previously unavailable to the target (assuming the target cannot tender its debt by itself). As a result of this, the acquirer would pay a premium for targets with this particular cocktail of debt provisions. However, the results prove different. It is reasonable that callable debt, and the option for the acquirer to alter the capital structure according to its preferences, merely enables the acquirer to materialize value creation of any kind post-acquisition. However, the present value of the possible value creation granted by the ability to control the capital structure is not determined by the inherit call option. Consequently, with no additional present value generated from the

provisions, a rational acquirer pays neither more nor less for targets with call options and restrictive debt.

**Table 8**

This table shows the results of two separate OLS regressions. Acquired firms from the M&A dataset are the observed units in both panels. The dependent variable is the acquisition premium. Independent variables in panel A are dummy variables if the acquired firm has callable debt and non-callable debt, respectively. Panel B's explanatory variables are also dummy variables. These three variables show if the acquired firm has restrictive bond covenants, non-callable debt, and both callable and restrictive debt.

<b>Panel A</b>	
	<i>Dependent variable:</i>
	premium
Callable Bond Debt	−1.019 (2.691)
Non-callable Bond Debt	3.151 (3.529)
Observations	8 633
<i>Note:</i>	*p<0.05; **p<0.01; ***p<0.001

<b>Panel B</b>	
	<i>Dependent variable:</i>
	premium
Restrictive Bond Debt	8.342 (37.814)
Non-callable Bond Debt	2.649 (3.281)
Callable and Restrictive Bond Debt	−17.643 (28.592)
Observations	8 633
<i>Note:</i>	*p<0.05; **p<0.01; ***p<0.001

## 7 Conclusion

Before this paper, the finance literature has examined how various bond features affect the value of the bond, the impact on firm value, and the likelihood of a firm becoming acquired by another firm. However, a neglected issue has been the debt overhang resulting from covenants restricting investments and its associated relationship with becoming a takeover target. In this paper, we have outlined how restrictive covenants concerning more significant investments and call provisions jointly increase the probability of a given firm becoming a takeover target. Moreover, we also point to a potential underlying motivation of the acquiring firm. To wit, companies that are financially constrained and cannot remove impeding covenants exhibit an increased probability of becoming acquired. The acquiring firm could increase the value of the firm by simply providing a financial injection. However, at this stage, this theory merely represents an indication, as it would be premature to suggest a definite conclusion from our data.

Previous literature has highlighted the beneficial effects of covenants when issuing new debt (Nini et al., 2009). However, Green (2018) shows how firms avoid refinancing due to restricting covenants. This paper provides some nuance to this where we can show that other companies identify debt overhang associated with financial constraints as an opportunity to create value.

The purpose of imposing covenants on the borrower is to align interests between share- and bondholders and consequently reduce the principal-agent problem. Nonetheless, the obstacles associated with covenants may outweigh the benefits; this trade-off highly depends on individual firm char-



acteristics. Acquisitions could be interpreted as events correcting for too strict constraints in relation to the target firm. An alternative interpretation is irrational expectations from the acquiring firms where there could be an overestimation of the potential to create value. The call provision allows for correction, which leads us to the subsequent result in this paper. In line with Becker et al (2022), we report that firms with call provisions in their outstanding bonds are more likely to be acquired. This effect could be attributed to the value transfer between target bondholders and acquiring shareholders. Callable debt allows for a smaller portion of the transaction amount paid to accrue to target debtholders.

Finally, we find no relationship between bond provisions and bargaining power between target and acquiring shareholders. Our hypothesis was that target shareholders would lose leverage in price negotiation. However, the suppressed growth prospects associated with the restricting covenants may already be reflected in the trading price of the target. If this is true, the acquisition premium should not be affected.

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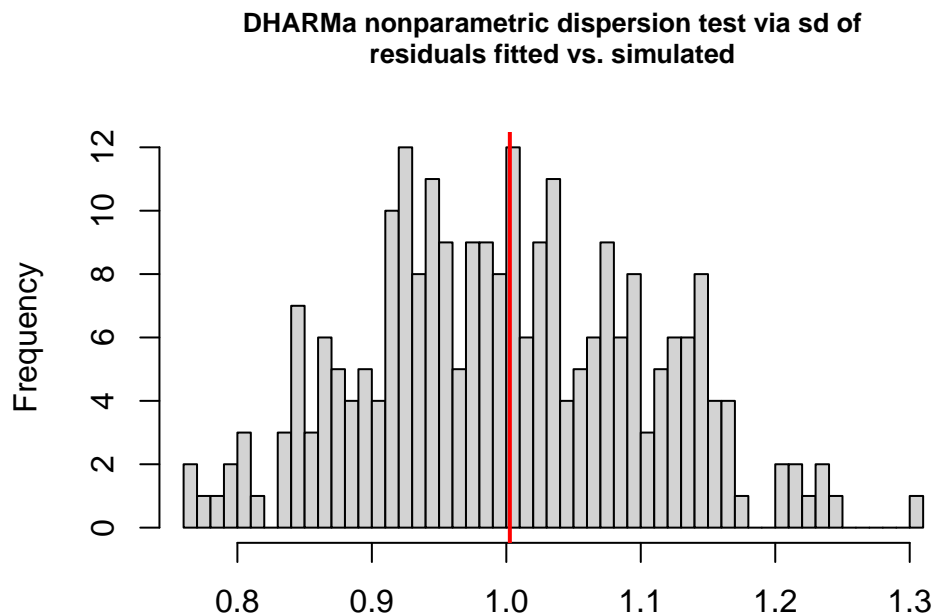
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## Appendix A

In the graphs presented below, the DHARMA package in R is used to transform our residuals into visually interpretable plots, which differ from the standard ordinary linear models. This is necessary due to our binomial distribution assumed when performing logistic regressions.

### Plot A.1. Nonparametric dispersion test

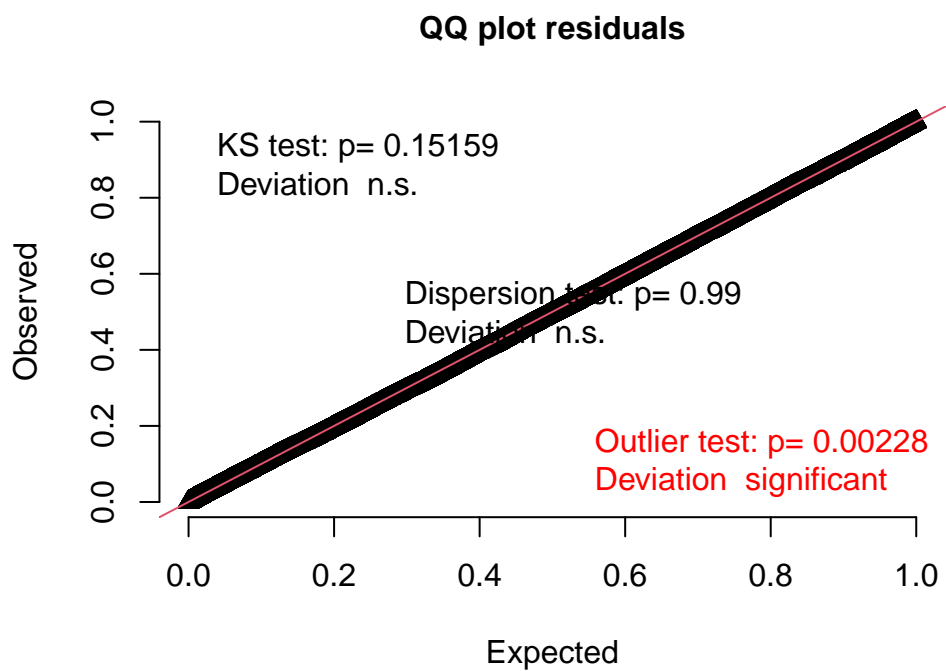
This graph shows a test that compares the dispersion of the fitted residuals to simulated residuals. As we can observe from the graph, the simulated values are balanced around 1. Also, the fitted model assumes a value close to 1, thus indicating we have no problem with over or under dispersion.



Simulated values, red line = fitted model. p-value (two.sided) = 0.94

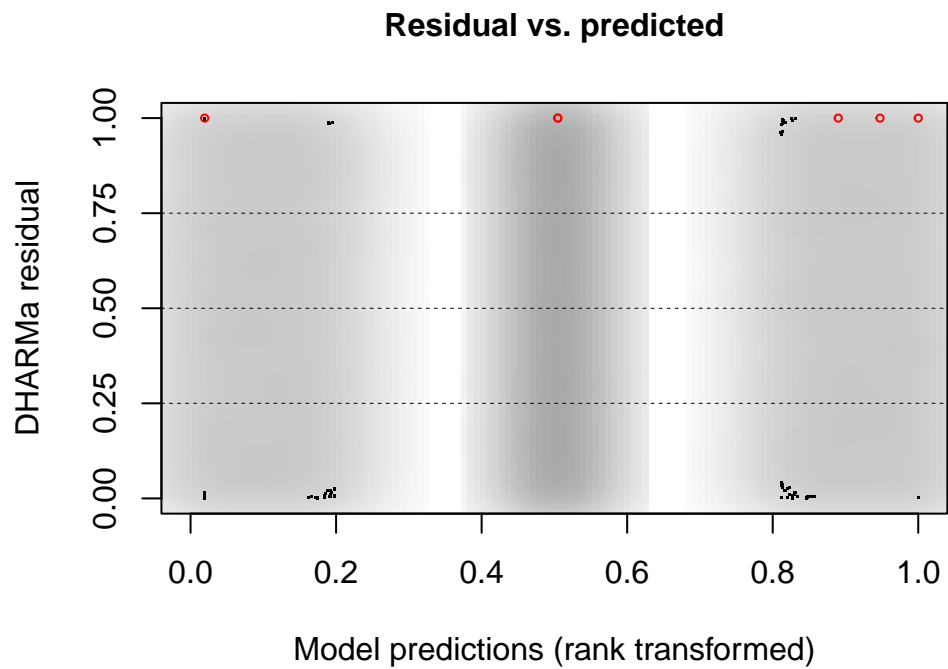
### Plot A.2. QQ plot

The graph shows a QQ plot. There does not seem to be a problem with the uniformity as the Kolmogorov-Smirnov (KS) test is insignificant and the pattern in the graph shows that the residuals are in line with what to be expected. However, there seems to be some outliers that could contribute to some noise in our tests.



### Plot A.3. Residuals vs. predicted

This graph shows residuals compared to the predicted residuals. Based on the graph, we cannot discern any path in the residuals and there does not seem to be any indication of heteroscedasticity.



#### **Table A.4. Multicollinearity**

This table presents a VIF test for the independent variables tested in table 7. All variables exhibit a value under 2 which implies there is no reason for concern of multicollinearity in our regressions.

Full sample	
Variables	VIF
Restrictive bond debt	1.81
Callable and restrictive bond debt	1.71
Callable and not restrictive bond debt	1.21
non callable debt	1.09

## **Appendix B**

Appendix B presents our placebo tests.



**Table B1: Placebo test with different callable debt fractions**

This table shows OLS, logistic and Cox regressions for acquisition probability using different cut-offs for the fraction of callable debt. The explanatory variable Callable is a dummy variable, which for columns (1), (2), (3) equals 1 if the share of callable debt is larger than 40 percent. For column (4), (5), (6), the variable is equal to 1 if the fraction is greater than 60 percent. For the last three columns, the variable equals 1 if the fraction is larger than 80%.

	Dependent variable:											
	target											
	OLS	Logistic	COX	OLS	Logistic	Cox	OLS	Logistic	Cox	OLS	Logistic	Cox
Callable	(1) 0.003* (0.001)	(2) 1.312*** (0.321)	(3) 0.813** (0.280)	(4) 0.005*** (0.001)	(5) 1.222*** (0.339)	(6) 0.766** (0.291)	(7) 0.007*** (0.002)	(8) 1.009** (0.371)	(9) 0.657* (0.316)			
Matching treatment	Call fraction >40% Yes	Call fraction >40% Yes	Call fraction >40% Yes	Call fraction >60% Yes	Call fraction >60% Yes	Call fraction >60% No	Call fraction >80% Yes	Call fraction >80% Yes	Call fraction >80% Yes	Call fraction >80% Yes	Call fraction >80% Yes	Call fraction >80% Yes
Other Characteristics	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Year X Industry F.E	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26 419	26 419	26 419	26 419	26 419	26 419	26 419	26 419	26 419	26 419	26 419	26 419
Unique firms	1 032	1 032	1 032	1 032	1 032	1 032	1 032	1 032	1 032	1 032	1 032	1 032

Note: \*p<0.05; \*\*p<0.01; \*\*\*p<0.001