DISCUSSION PAPER SERIES

DP11992

CORPORATE BOND GUARANTEES AND THE VALUE OF FINANCIAL FLEXIBILITY

Michela Altieri, Alberto Manconi and Massimo Massa

FINANCIAL ECONOMICS

ISSN 0265-8003

CORPORATE BOND GUARANTEES AND THE VALUE OF FINANCIAL FLEXIBILITY

Michela Altieri, Alberto Manconi and Massimo Massa

Discussion Paper DP11992
Published 24 April 2017
Submitted 24 April 2017

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

CORPORATE BOND GUARANTEES AND THE VALUE OF FINANCIAL FLEXIBILITY

Abstract

We examine the effects of the decision of parent companies to guarantee bonds issued by their subsidiaries. The market value of the parent firm's outstanding bonds drops two times more when it issues a guarantee for subsidiary debt than when it issues a new bond in its own name. This effect is exacerbated when the parent is financially constrained, or when its bonds are less liquid. Subsidiary guaranteed debt has less stringent covenant protection, and a longer maturity, consistent with subsidiary guaranteed debt providing greater flexibility to the parent. Our estimates imply a value of financial flexibility, measured as the difference in the impact on bond yield spreads between parent and subsidiary guaranteed bonds, of about 30 bps.

JEL Classification: G11, G14, G23

Keywords: bond returns; bond guarantees; subsidiary firms; financial flexibility.

Michela Altieri - altieri@safe.uni-frankfurt.de
SAFE Frankfurt

Alberto Manconi - alberto.manconi@unibocconi.it
bocconi university

Massimo Massa - massimo.massa@insead.edu
INSEAD and CEPR

Acknowledgements

Corporate Bond Guarantees and The Value of Financial Flexibility

Michela Altieri* Alberto Manconi* Massimo Massa*

Abstract

We examine the effects of the decision of parent companies to guarantee bonds issued by their subsidiaries. The market value of the parent firm's outstanding bonds drops two times more when it issues a guarantee for subsidiary debt than when it issues a new bond in its own name. This effect is exacerbated when the parent is financially constrained, or when its bonds are less liquid. Subsidiary guaranteed debt has less stringent covenant protection, and a longer maturity, consistent with subsidiary guaranteed debt providing greater flexibility to the parent. Our estimates imply a value of financial flexibility, measured as the difference in the impact on bond yield spreads between parent and subsidiary guaranteed bonds, of about 30 bps.

JEL code: G11, G14, G23.

Keywords: bond returns; bond guarantees; subsidiary firms; financial flexibility.

---

*Altieri: Goethe University of Frankfurt, House of Finance, Email: altieri@safe.uni-frankfurt.de; Manconi: Bocconi University, email: alberto.manconi@unibocconi.it. Email: alberto.manconi@unibocconi.it; Massa: INSEAD, Email: massimo.massa@insead.edu. We thank Bernd Bohr, Marco Da Rin, Marc Deloof, Giovanna Nicodano, and seminar participants at Goethe University of Frankfurt, Frankfurt School of Management, and Luxembourg University, for useful comments and suggestions.

1. Introduction

Much of U.S. securities issuance is generated within business groups, comprising separate legal entities that can issue debt in their name. On average, 15% of outstanding U.S. corporate bonds are issued by business groups, either by parents or subsidiaries. In many cases, the parent company forfeits the benefit of the separate legal liability of the subsidiary, providing guarantees to its issuances. For example, in 2002, AT&T Broadband, a fully-owned subsidiary of AT&T, placed on the market a $4 billion bond issue, guaranteed by its parent. Given that AT&T and AT&T Broadband are separate legal entities, it is not surprising that AT&T Broadband issues debt in its own name. What is surprising is the fact that AT&T acts as a guarantor for AT&T Broadband's bond issue. The guarantee breaks down the legal separation between parent and subsidiary, effectively exposing AT&T to its subsidiary's default risk.

While an extensive literature has looked at project finance or spin-offs (John (1993); Chemmanur and John (1996); Leland (2007)) – i.e., cases in which AT&T does *not* guarantee AT&T Broadband's bonds – we know relatively little on why the mother company extends the guarantees. Yet, a staggering $700 bn outstanding value of corporate bonds has been issued, as of 2000, by subsidiaries with a guarantee provided by the parent firm. That opens the question of what are the costs and benefits of the provision of the guarantee for the parent. In other terms, what is the value to AT&T of the provision of the guarantee, and how does the guarantee affect the financial choices of AT&T?

This paper addresses these questions. One possible motive for a parent guarantee is that it can attenuate asymmetric information and moral hazard costs. Indeed, the guaranteed bond is directly linked to the assets of the subsidiary – therefore increasing transparency – while at the same time maintaining the overall protection provided by the parent's guarantee. This is consistent with the findings of Kolasinski (2009), who argues that guaranteed subsidiary debt increases the efficiency of internal capital markets, as it reduces "poaching" across different divisions. Thus, providing a

guarantee allows the parent firm to improve information efficiency. We label this the *information hypothesis*: the parent's guarantee has the benefit to reduce the cost of debt for the parent company as it improves the information available to outside investors. This benefit should offset the cost of giving to the separate legal liability from the mother company.

We find, however, little support for this hypothesis. When the parent issues a bond in its own name, its outstanding bonds experience a –20 bps net-of-benchmark monthly return; when it issues a guarantee to a subsidiary, a –50 bps return. Therefore, the issue of the guarantee implies a cost of roughly 30 bps – i.e. the difference between new parent debt and subsidiary guaranteed the debt. The effect is economically substantial, representing a $9.7m loss, [1] and highly statistically significant. The presence of such cost for the parent firm calls for the presence of an offsetting benefit.

We conjecture that the source of such benefit is greater financial flexibility for the parent firm. Suppose that the parent has undertaken investments that involve a significant use of its resources. In this case, not only does financing a new project reduce the firm's future flexibility, but also lenders often apply restrictions on debt, such as covenants. Covenants can have a severe impact on the ability to take advantage of new investment opportunities (Kahan and Yermack (1998)).

The firm can circumvent these restrictions by issuing debt at the subsidiary level and providing a guarantee for it. Because lenders to the subsidiary enjoy priority over the lenders of the mother company, the need to provide covenants on subsidiary debt is reduced. In other words, the guaranteed subsidiary debt provides additional funds, without direct restrictions on the parent's operations.

If the subsidiary guaranteed debt is free from covenants, flexibility is preserved via two channels: first, the firm avoids issuing debt with restrictive covenants; second, it isolates the cash flows of the new project from the claims of senior bondholders. This, of course, will translate into a

[1] The average bond issue in our sample has a par value of $648m and a maturity of 5 years. This implies a dollar value of $[648 × (30) bps × 5] = $9.7m.

higher cost of debt at the parent firm level. Thus, issuing a guarantee will be preferred to issuing debt in parent's own name, if the value of future flexibility outweighs the increased cost of the debt (Goyal (2005); Nash, Netter, and Poulsen (2003)).

The evidence we find is consistent with this argument. Subsidiary issues with a guarantee have fewer restrictive covenants, compared to bonds issued in the parent's name. On the other hand, parents issuing guarantees have covenants on their outstanding bonds that are more stringent compared to their own subsidiaries, as well as the average corporate bond issuer. The negative effect on the outstanding bonds of the parent company we uncover is exacerbated when the parent has ex-ante more stringent covenants, more long-term debt, tighter financial constraints, or less liquid bonds or stocks. We also find that the issue of the guarantee allows the parent company to make larger investments. Capex ratios (the ratio of capital expenditures to total assets) increases in the year following the guaranteed-subsidiary issue. Furthermore, 37% of guaranteed subsidiary issues are associated with a subsequent acquisition announcement by the parent firm, in spite of the latter having more stringent covenants on its own debt.

These results are consistent with the existence of a trade-off: greater flexibility against a higher cost of borrowing. We are therefore able to assign a value to flexibility. This must be equal to at least the 30 bps increase in borrowing costs borne by the parent on the senior bond market, plus any costs on the primary market for subsidiary debt. The average yield on subsidiary-issues-cum-guarantee at issuance is 175 bps, while issues by the parent in its own name have yields of 169 bps. Similar values obtain from a Lee (1978) model, which explicitly accounts for the endogenous selection of subsidiary vs. parent issue. They imply an estimate of the value of financial flexibility of \$11.6m, which suggests that flexibility is indeed very valuable.[2]

[2] This value arises from the following summation: (30 + 175 – 169), multiplyed by the average bond issue of a maturity of 5 years, that is equal to [\$[648 ×(30 + 175 – 169) bps × 5].

Finally, we also examine the impact of guaranteed-subsidiary issuance on the value of the parent firm's stocks. We find that net-of-benchmark stock returns rise significantly in the six months after the guaranteed-subsidiary issuance (200 bps) when the firm has a high level of information asymmetry, which we measure by the Acharya and Pedersen (2006) illiquidity index. Opaque firms, with illiquid stocks, are the ones with more onerous borrowing conditions, and therefore the ones more constrained by their financing. Given that the shareholders are the residual beneficiaries of the ability to act in a "flexible" way, guaranteed-subsidiary issuance creates value for them. This happens even if the cost of borrowing in the parent's name is nominally higher.

Our work contributes to several streams of literature. To our knowledge, we are the first to document and study the economics of providing a guarantee to a subsidiary on parent bond returns. The literature on the link between corporate structures and the value of debt (Merton (1974)) mostly concentrates on the effects on senior bondholders when issuing new debt (Akhigbe, Easterwood, and Pettit (1997)). None have documented the effects of issuing subsidiary guaranteed bonds on the outstanding debt of parent firms.

This paper also relates to the literature on the efficiency of internal capital markets within U.S. groups (Rajan, Servaes, and Zingales (2000); Scharfstein and Stein (2000)). Kolasinski (2009) argues that providing a guarantee can limit managers' wealth transfers among group affiliates having different growth opportunities. We contribute by analyzing the consequences of this decision on the debt value of the firms providing the guarantee itself.

Our work also contributes to the literature on the agency costs of debt (Myers (1977); Jensen and Meckling (1976); and many others), and to the literature on the use of covenants to mitigate such problems (Billett, King, and Mauer (2007); Nash, Netter, and Poulsen (2003); Chava, Kumar, and Warga (2004)). This literature analyzes the different types of covenants that can prevent internal investors to undertake actions to expropriate bondholders (Imbierowicz and Wahrenburg (2013); Billet, Mauer, and Zhang (2004); Maxwell and Stephens (2003); Shastri (1990)). However, to the best

of our knowledge, no one has documented the alternative channel of issuing a guarantee to preserve future flexibility (Goyal (2005); Roberts (2004)). We fill this gap by showing that parent firms can avoid covenant limitations on financing new riskier projects, by issuing subsidiary guaranteed debt.

We also contribute to the corporate governance literature, by emphasizing the additional channel of issuing subsidiary guaranteed debt for the expropriation of bondholders by inside managers (Imbierowicz and Wahrenburg (2013)). Finally, we contribute to the literature on corporate bonds (Bessembinder, Kahle, Maxwell, and Xu (2009)), by showing that providing a guarantee matters in the dynamic of firm returns patterns.

The rest of the study proceeds as follows. Section 2 presents the hypotheses development and the related literature. Section 3 reports the hypothesis development. Section 4 provides a description of the sample and the variables, and in Section 5 we report the empirical strategy, the results, and the robustness check. Conclusions follow.

2. Hypothesis Development

In this section, we present two alternative hypotheses on the subsidiary guaranteed debt effects on the parent firm's capital structure. To fix ideas, suppose that the firm needs to issue a bond, to finance an investment project. A first possibility is to issue a bond in the firm's own name. In this case, due to the scope for moral hazard, the creditors demand covenants on the bond, which restrict the firm's ability to maneuver. A second possibility is to issue parent guaranteed debt (henceforth, PGD) at the subsidiary level.

While the exposure of the parent company to default risk is the same, the *creditors* of the subsidiary that enjoys a guarantee are in a different position. Namely, they have priority vis-a-vis the creditors of the parent, over the assets of the subsidiary. This would not be the case in the parent level issue, in which case all of the firm's lenders are treated pari passu. This advantage induces subsidiary creditors to demand fewer, or less restrictive, covenants. At the same time, because the position of the

incumbent lenders of the parent company is worsened, the price of parent-issued bonds goes down. The shareholders ultimately bear this cost. What do the shareholders gain? Flexibility – i.e., the lack of covenants at the parent level. What do they lose? A higher cost of financing at the parent level.

In a frictionless world, what the shareholders lose in terms of more expensive debt should be identical to what they gain in terms of flexibility – i.e., they should be indifferent between issuing at the parent level, or at a subsidiary level providing guarantees. However, in the presence of frictions, the value of flexibility may be higher than the additional cost of financing. In this case, the guarantee helps the parent to avoid limitations on the choices on new investment opportunities. This defines the *flexibility hypothesis.*

The alternative hypothesis is the *information hypothesis*. This posits that PGB helps reduce asymmetric information and moral hazard issues. Suppose that the parent firm has high variability across the growth opportunities of its subsidiaries. Then, if the parent firm provides a guarantee to the subsidiaries with better growth opportunities (Kolasinski (2009)), the guarantee may constitute a positive signal to the market. This effect will be strengthened when the benefits from coinsurance are higher (Lewellen (1971)), that is, when the cash flows of parent and subsidiary firms are negatively correlated. If the subsidiary debt is issued at the safer divisions, the risk of such debt could eventually be lower with respect to the parent debt. This implies that PGB reduces the cost of debt for the subsidiary without affecting the one for the parent company – if compared to the case of issuance at the parent company level.

The two hypotheses lead to different empirical predictions. According to the *information hypothesis*, the issuance of PGD is associated with a drop in the cost of debt, because it reduces information asymmetry on the subsidiary, by signaling to the market better investment choices. Furthermore, to the extent that the signal improves internal capital markets, it also increases the benefits of coinsurance when the cash flows of the new projects are negatively correlated with the cash flow of the parent firm. We, therefore, expect that the effect will be strengthened when there is a

higher degree of diversification, and that the subsidiary is more often guaranteed with higher information asymmetry. Moreover, since issuing subsidiary guaranteed debt in this context is similar to issuing new debt in the parent's name, we expect a similar impact on the prices of the outstanding debt of the parent firm.

In contrast, according to the *flexibility hypothesis*, the guarantee represents an alternative for firms to issue new debt while maintaining managerial and financial flexibility. Therefore, the wealth of senior bondholders can be affected, if flexibility implies that the firm will undertake riskier projects, and we expect PGB to have a negative and significant impact on the returns of the outstanding debt of the parent firm. The effect will be exacerbated when parents have a higher amount of outstanding debt with covenant protection, or when a parent is having a higher degree of information asymmetry. However, given that flexibility is required to invest, we also expect that the provision of a guarantee is followed by larger investments' ratio in the year following the subsidiary guaranteed issue.

PGB also has different implications for the *stock* prices of the parent firm under the two hypotheses. Under the *information hypothesis*, PGB, by reducing the cost of borrowing, creates value for the shareholders. This will have a positive impact on the stock prices. Under the *flexibility hypothesis*, there is also a positive impact for the shareholders given that higher flexibility allows the firm to achieve its optimal investment policy and the shareholders are the residual claimants of its benefits. So while the effect is in the same direction as for the information hypothesis, the channel is very different.

3. Data and univariate sorts

We combine data from a number of sources. We obtain secondary market bond prices and returns from TRACE (Trade Reporting and Compliance Engine), over the period 2002-2014. The data set contains the monthly prices of 33,668 bonds (565,355 bond-date observations), from July 2002 until

December 2014. We retrieve bond characteristics at the time of issuance from the Mergent Fixed Income Securities Database (FISD), providing detailed information on approximately 283,778 corporate bond issues.

Throughout the analysis, we exclude bonds denominated in currencies other than U.S. dollars, convertible bonds, asset-backed bonds, preferred bonds, or government bonds. We require the availability of information on credit rating, issuance yield spreads, maturity, seniority, issue size, and covenants. We then merge the bond data with the CRSP/Compustat merged database, resulting in a sample 35,441 monthly parent bonds on the secondary market.

We then identify new bond issues by parents and subsidiaries, and if there are any guarantees, from the FISD database. For each subsidiary bond, the issuer's parent is identified by its FISD agent ID; the database also reports whether there are any guarantees and the agent ID of the guarantor. If the ultimate parent's agent ID coincides with the guarantor's agent ID, we conclude that there is a parent guarantee on a given issue.

From 2002 to 2014, parent and subsidiary firms issue 38,128 bonds for $9.4 trn, and 2,647 guaranteed subsidiary bonds for a value of $735 bn. We exclude issues by private firms, subsidiary bonds for which we do not have information about the parent firm, and issues for which the parent firm's bonds are not traded. Applying these filters results in 1,219 guarantee issues and 1,418 issues by parents in their own name.

Table 1 reports the summary statistics for all the variables used in our analysis on the secondary bond market, while Table 2 reports tests on the differences in the bond and firm characteristics between parents providing and not providing guarantees. The table 1 shows that 13% of the parent firms have a contemporary guaranteed issue in the same month. Moreover, 66% of bonds of parents issuing guarantees have covenants, with an average covenant protection index (Billet et al. (2007)) of 33% (median: 14%). Compared to the value of 5%, found by Billet et al. (2007) for the overall corporate bond market, this is significantly higher, suggesting that parent firms issuing

guarantees are typically subject to more restrictive covenants on their own debt. The average time-to-maturity is five years, but the debt of parents issuing a guarantee has shorter maturity (11 months) with respect the other companies in the sample. At the same time, parents providing the guarantees have a high market-to-book ratio with respect to the parents that do not guarantee their subsidiaries but lower capital expenditures.

Table 3 reports analogous tests, comparing subsidiary bond issues with a parent guarantee and new issues by the parent in its own name on the primary bond market. It shows that subsidiary guaranteed bonds have weaker covenant protection (23%), but a similar yield spread with respect the new bond issues of parents providing the guarantees.

Taken together, these statistics suggest that parents issuing guarantees tend to have more restrictive covenants on their own debt, in comparison to both the average bond issuer in FISD and other parents. They also tend to issue debt with a shorter maturity. On the other hand, there are fewer restrictions on the debt of their subsidiaries, but subsidiary bond issues also have a longer maturity.

4. Empirical Findings on the Subsidiary Guaranteed Debt

Our empirical strategy consists of two main steps. In the first step, we study the effect of a PGD issue on the parent's outstanding bonds returns. In the second step, we investigate the difference between the cost of PGD and parent-level issues in the primary market, and use it to make inference about the value of financial flexibility.

4.The Effect of PGD issues on parent bonds

The variable of interest in the first step is the excess bond return of parent companies providing a guarantee to their subsidiaries. We construct excess returns as follows. Following Ederington et al. (2012), we partition the universe of U.S. corporate bonds into 24 benchmark portfolios by six rating classification and five maturity classes. For each benchmark portfolio and each month, we calculate the excess returns as the difference between bond returns and the benchmark portfolio return.

We flag PGD issue events with the $Subs.\,guaranteed\ issue$ indicator. This variable equals 1 on a given month t, for a given bond of a parent company, if one of its subsidiaries has received a guarantee in month t. To compare with a straight parent bond issue, we also define a $New\ issue$ indicator, equal to one for all parent bonds having a contemporary PGD issue. We then estimate:

$$y_{it} = \alpha + \beta_1 Sub.\,guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' X_{it} + \varepsilon_{it} \qquad (1)$$

The dependent variable y indicates the parent monthly bond returns and excess returns; X includes bond controls, firm controls (all defined in detail in the appendix), as well as credit rating, issuer, calendar time, and industry fixed effects. The sample includes all the parent firms, from 2002m1 to 2014m12, having at least one subsidiary guaranteed issue in the overall sample. The difference $\beta_1 - \beta_2$ is the estimated cost of issuing subsidiary guaranteed debt, in terms of pricing of the outstanding parent debt.

The estimates are reported in Table 4. In columns (1) - (2), we report estimation of the model (2) without controlling for bond and firm characteristics, whereas columns (3) - (4) report augmented models that control for parent bond and firm characteristics. In all specifications, the standard errors are clustered at the bond level.

Across all specifications, we find a negative and significant effect of a new subsidiary guaranteed issue (PGB) on parent bond returns and excess returns. When a parent company provides a guarantee one a PGD issue, the parent's outstanding bonds' prices drop by 50 bps on average. Providing a guarantee thus implies a drop two times larger than issuing a new bond in the parent's own name (20 bps), that is, it implies an extra cost for the parent firm of 30 bps. The effect is not only statistically significant but also economically important, as it represents 16% of the monthly excess bond return volatility in our sample.

We also compute the impact of PGD issues on the parent's outstanding bonds over a longer, six-month window, estimating a similar model to (1), where we switch the $Subs.\,guaranteed\ issue$

indicator to 1 over the six months following the PGD issue. Figure 1 illustrates the results. Issuing subsidiary guaranteed debt is associated with a 2.5% negative abnormal bond returns over the six months period, whereas a new parent issue has an insignificant impact (0.1-0.2%) on the parent firm's bond returns. Thus, the results confirm that providing a guarantee to new subsidiary debt having a significant cost for parent firms.

Taken together, these results reject the *information hypothesis*, which would suggest a positive impact of PGD on the parent's outstanding bonds. They appear more consistent with the *flexibility hypothesis*. To put this hypothesis directly to the test, and investigate the sources of flexibility, in the next section we look at the primary bond market.

4.B Comparing the expected costs of PGD and parent issues

In the second step of our empirical strategy, we investigate the difference in the cost of PGD and parent bond issues on the primary market. The evidence from the previous section shows that parent-level issues have a smaller impact on the cost of financing; on the other hand, PGD issues can provide an advantage in terms of flexibility.

The estimation of the cost and benefits of PGB, therefore, presents two important challenges. First, for any given PGD issue, we cannot directly observe at what terms the firm could have issued a parent-level bond in its own name. We must, therefore, estimate a counterfactual. Second, yields and covenant protection are jointly determined. In order to compare new issued from subsidiary and parent firms, we need to correct for the potential endogeneity of the covenants protection of parent firms on the PGD.

To address these challenges, we apply Lee's (1978) switching regression methodology. This approach allows to control for the endogenous selection of a PGD vs. a parent-level issue in an estimation framework in the spirit of Heckman (1979). In a first-stage (reduced form) probit regression, we estimate the likelihood that a given bond be a PGD or a parent-level issue. From these estimates, we obtain inverse Mills ratios estimates, which we plug into two second-stage regressions,

where the dependent variables are bond yield spreads and covenants. In addition to these two stages, the Lee (1978) model involves a third stage (structural) probit model, which uses the second-stage estimates to provide counterfactuals for yields and covenants. We provide a more detailed description of the model below.

First, we estimate the likelihood that a given issue occurs at the parent or PGD level, conditional on a vector of control variables. The dependent variable PGD indicator, which we regress on a number of instruments for the choice to issue at the parent vs. subsidiary level. Following Kolasinski (2009), we use within-firm cash volatility and market-to-book dispersion, as well as the standard deviation of the cash flow across affiliates. We also include an indicator variable for whether the parent already had PGD issues in the past, as well as the number of subsidiaries issuing on the primary market belonging to the same parent. We estimate the following equation:

$$Pr(D_1 = 1) =$$

$$\text{Probit}\{\alpha + \beta_1 sd(Cash\ flow)_{it} + \beta_2 sd\left(Market\text{-}to\text{-}book\right)_{it} +$$

$$+\beta_3 Nr.subsidiaries_{it} + \beta_4 Past\ guarantees_{it} + \gamma' X_{it} + \lambda_i + \varepsilon_{it}\} \qquad (2)$$

From these estimates, we obtain inverse Mills ratios associated with the choice to issue PGD and parent-level debt. In the second stage, we estimate the following equation:

$$y_{it} = \alpha + \beta_1 I_{it} + \gamma' X_{it} + \lambda_i + \varepsilon_{it} \qquad (3)$$

where X is a vector of control variables, all described in detail in the appendix, λ denotes the inverse Mills ratio, and I is a vector of instruments that identify the equations. We estimate four different versions of equation (3): in two of them, the dependent variable is the covenants protection (Y/N) on PGD and parent-level issues; in the other two, it is the yield spread (again, on PGD and parent-level issues). Each equation includes an instrument that identify the equation: we use the ratio of capital expenditure and the ratio of the recourse debt (over the total debt) to identify the equations of covenants protection (Y/N) the on PGD and parent-level issues; the asset tangibility, and the presence

of a bank relationship, identify the equations of yield spreads on PGD and parent-level issues, respectively. We then obtain predicted values from each equation, and estimate $Covenants\ difference$ and $Spreads\ difference$ as the difference in predicted covenants index between PGD and parent-level issues, and the corresponding difference in yield spreads.

The $Covenants\ difference$ and $Spreads\ difference$ variables effectively estimate a *counterfactual*: had the firm opted to issue in its own name, instead of a PGD, what covenant and yield terms would it expect to obtain? We finally plug these variables into a third-stage (structural) probit regression:

$$\Pr(D_1 = 1) = \text{Probit}\{\alpha + \beta_1 Covenants\ difference_{it} + \beta_2 Spreads\ difference_{it} + \gamma' X_{it}\} \qquad (4)$$

The marginal coefficients β_1 and β_2 measure how the differences in these characteristics do affect the decision to issue PGB.

Table 5 reports the estimates. In column (1), we report the first-stage probit estimation. Columns (2)-(5) report the estimates of equation (4) for PGD/parent-level issue yield spreads and covenants. In columns (2) – (3), the dependent variable is an indicator variable equal to one when the bond has covenant protection (Y/N), computed for subsidiary guaranteed bonds (column 2) and parent bonds (column 3). In columns (4) – (5), the dependent variable is the bond's yield spread. Finally, column (6) reports the structural probit estimates. The structural probit estimates show that the difference in the expected covenant protection between parent and PGD bonds is statistically and economically significant for the decision to issue new subsidiary debt. An expected covenant presence change from 0 to 1 on the parent bonds is associated with a 200% higher likelihood of a PGD issue. In contrast, the expected difference in the yield spreads is a statistically significant factor, but its economic impact is small: a 1% increase in the expected spread difference (from 10% to 10.1%) reduces the likelihood of a PGD issue by only 2%. Laxer covenant protection, therefore, appears the primary benefit of issuing PGD bonds.

Taken together, the results of Tables 5 provide support for the *flexibility hypothesis*. They suggest that managers are willing to accept a lower price for the parent's debt in order to preserve financial flexibility, and in particular, covenant-free debt.

The relative size of the impact of PGD issues across the prices of different sets of bonds further raises the bar for alternative explanations for our findings. We report in Table 6 the effect of a PGD on parent bond returns across parent bond and firm characteristics. First, we find a stronger negative bond return when parent debt *ex-ante* has more stringent covenants (columns (3) and (4) - Panel A) – implicitly, suggesting that PDG debt is helping elude those covenants. Second, the negative parent outstanding bond returns are concentrated on financially constrained parents, based on the Kaplan-Zingales and Hadlock-Pierce indexes (Table 6 –Panel B). This is consistent with the effect being driven by the guarantee that benefits the subsidiary bondholders, to the detriment of the parent ones. Third, we also find larger negative bond returns following PGD issues for firms characterized by greater information asymmetry, based on the Acharya-Pedersen illiquidity ratio, stock bid-ask spreads, and analyst coverage. This finding runs counter to the information hypothesis, which suggests that these issuers should gain from a PGD issue, and further corroborates the *flexibility hypothesis*.

4.C Effect on New Investments; Wealth Transfer to the Shareholders

Our results so far suggest that subsidiary guaranteed debt creates flexibility, which in turn should allow for larger investments by the firm. In this section, we test whether investment rates do increase in the year following the PGD issue, by looking at capital expenditures and acquisitions. We estimate:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' X_{it} + \varepsilon_{it} \qquad (5)$$

where the dependent variable y indicates an indicator variable equal to one if the parent firm announces an acquisition within one year of the PGD issue, or whether the capex-to-total-assets ratio increases over that period.

The estimates are reported in Table 7. In columns (3) - (4), we replace the mergers with the capital investments rate increase. The results confirm that a PGD issue is associated with a 30% higher probability of an increase in capital expenditures, or a 40% higher probability of an acquisition. This is consistent with the guarantee providing more flexibility to the investments decisions of the parent company.

While the parent's outstanding bondholders experience a drop in the value of their claims, the parent's shareholders stand to benefit from the increased flexibility; in other words, the *flexibility hypothesis* implies that there can be a wealth transfer between the two classes of securities holders around the PGD issue.

To take this idea to the data, we look at parent firm stock returns. We estimate a specification analogous to model (1), replacing the dependent variable by the Daniel, Grinblatt, Titman, and Wermers (1997) characteristic-adjusted stock returns (DGTW). The results are reported in Table 8. While on average, we find a small stock price drop around the PGD issue, we observe a stock price net-of-benchmark increase when the firm has higher information asymmetry (Acharya-Pedersen index). Table 8 – Panel B – reports the same estimation on the subsample of parent firms that engage in a merger after the subsidiary issue.

The results show that a bond issue in the parent name is associated with significantly negative excess stock returns. Again, we observe a stock price net-of-benchmark increase when the firm has a subsidiary guaranteed issue. In other words, when the existing bondholders experience the largest loss from the PGD issue, the shareholders experience the largest gain, consistent with the *flexibility hypothesis*.

4.D Robustness checks

We perform a number of robustness checks. In Tables 9, we confirm our baseline findings by restricting the attention to pure bond price appreciation (Panel A), i.e. excluding accrued interest from

bond returns, and based on bond yields (Panel B), with similar results. In Table 10, we reproduce our baseline test on a reduced sample. Following Bessembinder et al. (2009), we exclude puttable, zero coupon bonds, bonds with a maturity greater than 600 months, tender offer bonds, and bonds with an amount less than $100,000. In Table 11 we employ some alternative measures of information asymmetry, i.e. the dispersion of analyst's recommendations' on the parent stocks, to split the sample of parent firms. Results confirm that a higher illiquidity ratio of the stock market of parent firms, or greater dispersion of analyst recommendations, implying a wealth transfer from bondholders to shareholders of the parent firms.

Finally, we investigate the cases in which PGD issues also have covenant protection. In these cases, the effects in terms of flexibility are attenuated, and we should expect a smaller reaction by the parent's outstanding bonds. Following Billet et al. (2007), we split the subsidiary guaranteed bonds with covenants into four types according to the covenant protections: limitations to the new borrowing of the firm, restriction on the pay-out of shareholders, investment policy limitations, and trigger events covenants. We find (Table 12) that the effect on the outstanding parent bonds disappear when the PGD issue has covenant protection, consistent with the *flexibility hypothesis*.

Conclusions

We investigate the cost and benefits for the parent firms to provide a guarantee on the debt of their subsidiaries. Although from a liability point of view, a guarantee on subsidiary debt should have a similar impact on the guarantors' bond prices as issuing new debt, we find very different economic effects. First, a guarantee is associated with an excess 30 bps drop in the guarantors' bond prices. Second, parent firms tend to guarantee their subsidiaries when having higher covenant protection on their own outstanding debt. These results point to the *flexibility hypothesis*: resorting to subsidiary debt and providing a guarantee allows parent firms to avoid restrictions on their own debt. Overall,

this paper provides new insights on the debt policies of parent firms, and a novel explanation for the decision to break limited liability and provide a guarantee on the debt of its subsidiaries.

References

Akhigbe, A., J. C. Easterwood, and R. R. Pettit, 1997, Wealth effects of corporate debt issues: The impact of issuer motivations, *Financial Management* 26, 32-47.

Acharya, V. V., and L. H. Pedersen, 2005, Asset Pricing with Liquidity risk, *Journal of Financial Economics* 77, 375-410.

Bessembinder, H., M. K. Kahle, W. F. Maxwell, and D. Xu, 2009, Measuring Abnormal Bond Performance, *Review of Financial Studies* 44, 4219-4258.

Billet, M. T., T. H. King, and D. Mauer, 2007, Growth Opportunities and the Choice of Leverage, Debt Maturity, and Covenants, *Journal of Finance* 62, 697-730.

Billet, M. T., D. K. Tao-Hsien, and D. C. Mauer, 2004, Bondholder Wealth Effects in Mergers and Acquisitions: New Evidence from the 1980 and 1990, *Journal of Finance* 59, 107–135.

Chava, S. and M. Roberts, 2008, How does financing impact investment? The role of debt covenants, *Journal of Finance* 63, 2085-2121.

Chava, S., P. Kumar, and A. Warga, 2010, Managerial agency and bond covenant, *Review of Financial Studies* 23(3),1120–1148.

Chemmanur, T., and K. John, 1996, Optimal incorporation, structure of debt contracts, and limited-recourse project financing, *Journal of Financial Intermediation* 5, 372–408.

Collin-Dufresne, P., R. Goldstein, and J. S. Martin, 2001, The Determinants of Credit Spread Changes, *Journal of Finance* 56, 2177–2207.

Corwin, S. A., and P. Schultz, 2012, A Simple Way to Estimate Bid-Ask Spreads from Daily High and Low Prices, *Journal of Finance* 67, 719-758.

Daniel, K., Grinblatt, M., Titman, S., Wermers, R., 1997, Measuring mutual fund performance with characteristic-based benchmarks, *Journal of Finance* 52, 1035–1058.

Diether, K. B., C. J. Malloy, and A. Scherbina, 2002, Differences of Opinion and the Cross Section of Stock Returns, *Journal of Finance* 57, 2113–2141.

Fama, E. and K. French, 1993, Common Risk Factors in the Returns on Stock and Bonds, *Journal of Financial Economics* 33, 3-56.

Fama, E. and M. H. Miller, 1972, The Theory of Finance. Holt: Rinehart and Winston.

Goyal, V. K., 2005, Market discipline of bank risk: Evidence from subordinated debt contracts, *Journal of Financial Intermediation* 14, 318–350.

Glosten, L. R., 1987, Components of bid-ask spread and the statistics properties of transaction prices, *Journal of Finance* 42, 1293-1307.

Graham, J. and H. Campbell, 2001, The Theory and Practice of Corporate Finance: Evidence from the Field, *Journal of Financial Economics*. 60, 187–243.

Hadlock, C., and J. Pierce, 2010, New evidence on measuring financial constraints: moving beyond the KZ index, *Review of Financial Studies* 23, 1909–1940.

Heckman, J.J., 1979, Sample Selection as a Specification Error, *Econometrica* 153-61.

Imbierowicz, B., and M. Wahrenburg, 2013, Wealth transfer effects between stockholders and bondholders, *Quarterly Review of Economics and Finance* 53, 23-43.

Jensen, M. C. and W. H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3, 305-360.

John, T., 1993, Optimality of spinoffs and allocation of debt, *Journal of Financial and Quantitative Analysis* 28, 139–160.

Kahan, M., and D. Yermack, 1998, Investment Opportunities and the Design of Debt Securities, *Journal of Law, Economics, and Organization* 14, 136-151.

Kaplan, S., and L. Zingales. 1997, Do Financing Constraints Explain Why Investment is Correlated with Cash Flow?, *Quarterly Journal of Economics* 112, 169–215.

Kent, D., M. Grinblatt, S. Titman, and R. Wermers, 1997, Measuring Mutual Funds Performance with Characteristic-Based benchmarks, *Journal of Finance* 52, 1035- 1058.

Kolasinski, A. C., 2009, Subsidiary Debt, Capital Structure and Internal Capital Markets, *Journal of Financial Economics* 94, 327-343.

Lee, L.F., 1978, Unionism and Wage Rates: A Simultaneous Equations Model with Qualitative and Limited Dependent Variables, *International Economic Review*, 415 – 33.

Leland, H. E., 2007, Financial Synergies and the Optimal Scope of the Firm: Implications for Mergers, Spinoffs, and Structured Finance, *Journal of Finance* 62, 765-807.

Lewellen, W. G., 1971, A Pure Financial Rationale for the Conglomerate Merger, *Journal of Finance* 26, 521-537.

Maxwell, W. F. and C. P. Stephens, 2003, The Wealth Effects of Repurchases on Bondholders, *Journal of Finance* 58, 895–919.

Myers, S., 1977, Determinants of Corporate Borrowing, *Journal of Financial Economics* 5, 147 –175.

Nash, R. C., J. M. Netter, and A. B. Poulsen, 2003, Determinants of Contractual Relations between Shareholders and Bondholders: Investment opportunities and restrictive covenants, *Journal of Corporate Finance* 9, 201–232.

Rajan, R. G., and L. Zingales, 1995, What Do I Know about Capital Structure? Some Evidence from International Data, *Journal of Finance* 50, 1421-1460.

Shah, S., and A. Thakor, 1987, Optimal Capital Structure and Project Financing, *Journal of Economic Theory* 42, 209–243.

Shastri, K., 1990, The differential effects of mergers on corporate security values, *Research in Finance* 8, 179–201.

Wermers, R., 2004, Is Money Really 'Smart'? New Evidence on the Relation Between Mutual Fund Flows, Manager Behaviour, and Performance Persistence, Working paper, University of Maryland.

Whited, T. M., and G. Wu, 2006, Financial constraints risk, *Review of Financial Studies* 19(2), 531-559.

Appendix A. Variables Definitions

Variable	Definition
Debt characteristics (FISD-Mergent and TRACE)	
Amount	Natural logarithm of the amount of the bond issue.
Bond Excess returns	Value weighted differences between the monthly bond returns and the mean of the returns of a corresponding group of bonds having same rating and maturity.
Bond Returns	Secondary Bond Market returns (without the dividend), obtained from the TRACE dataset. 100 multiply the variable "returns," i.e. a 10% is expressed as 10.
Call	An indicator variable if the bond is callable.
Covenant Index	Index for bond covenants as computed in Billet et al. (2007), where covenants information are retrieved from the Mergent Fixed Income Securities Database.
Covenants	An indicator variable if the bond has covenant protection.
Guarantee	An indicator variable equal to one if the bond issue is guaranteed
Maturity	Natural logarithm of the number of months from the bond offering date to the maturity date.
Parent Bond	An indicator variable equal to one when is issued by a firm classified as Ultimate Parent.
Subsidiary Guaranteed Bond	An indicator variable equal to one when the bond is issued by a subsidiary firm, and it is guaranteed by its parent.
Rating	Numerical value starting from 1 for the lower rating category (D) until 22 for the higher rating category (AAA).
Senior	An indicator variable equal to one if the bond issue is senior.
Yield spreads	Primary Bond Market yield spreads, in basis points (Mergent-FISD "Treasury spread" item). Missing values are computed as the difference between yields ("Yield" item, reported from the Mergent dataset) and the corresponding Treasury yield having the same maturity.
Firm Characteristics (Compustat and CRSP)	
Asset Tangibility	Net Property, Plant, and Equipment (ppent) / Total Assets (at).
Capital Expenditure	Capital Expenditures (capx)/Total Assets (at).
Cash Flow	(Income Before Extraordinary Items (ib) + Depreciation (dp))/ Last Year Total Assets (at).
Leverage	Short debt (dltt) + Long-term debt (dlc))/ Book value of assets (*at*).
Market/Book value	(Total Assets (*at*) - Book Equity (*seq*) + Market Equity (*prcc_f*csho*)/Total Assets (*at*).
ROA	Income Before Extraordinary Items (ib) / Last Year Total Assets (at).
Size	Natural Logarithm of Total Assets (*at).*
Cash Flow Volatility	Standard deviation of the firm cash flow of last 20 quarters, retrieved from Compustat- quarterly data.
Illiquidity ratio	Illiquidity ratio as computed in Acharya and Pedersen (2005).
Bond bid-ask spread	Bid-ask spreads as reported in TRACE.
Analysts' recommendations	Standard deviation of the number of analysts' recommendations for firm stock.
Size-age index	Financial constraints index as computed in Hadlock and Pierce (2010).
Stock Excess Returns	Monthly computed value weighted differences between the stock returns and the mean of the returns of a corresponding group of stock belonging to the same DGTW portfolio. The stock assignment to the DGTW portfolios is retrieved from Wermers (2003), and Kent et al. (1997).
Stock Returns	Stock returns (without the dividend), obtained from the CRSP dataset. 100 multiply the variable "returns," i.e. a 10% is expressed as 10.
Bid-ask spread (stocks)	The bid-ask spread of parent firm stocks as computed in Corwin and Schultz (2005).

*All variables are Winsorized at 1-99%.

Table 1. Descriptive statistics

The table reports the summary statistics for all the variables used in the analysis. The sample consists of the intersection of the TRACE (bond trades) database, the Mergent Fixed Income Securities Database, and the Compustat database, over the period July 2002-December 2014. For each variable, column (1) reports the number of observations, columns (2)-(3) the mean and standard deviation, columns (4)-(6) the percentiles of the distribution. The table reports bond and firms characteristics of parent firms that provide a guarantee to the subsidiary and having debt on the secondary market. Variables are Winsorized at 1-99 percentiles.

				Quintiles			
Variable	N	Mean	Std. dev.	0.25	0.5	0.75	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variables							
Bond Returns (%)	35,441	0.07	2.32	-42.83	-0.43	0.00	0.65
Bond Excess returns (%)	35,441	0.01	1.96	-40.97	-0.47	-0.01	0.49
Key independent variable							
Subsidiary guaranteed issue	35,441	0.13	0.33	0.00	0.00	0.00	0.00
New parent issue	35,441	0.32	0.47	0.00	0.00	0.00	1.00
Controls							
Time to maturity (ln months)	35,441	4.18	1.25	0.00	3.40	4.25	5.19
Ratings	35,441	A	2.98	BBB+	A+	AA-	AA-
Covenants(Y/N)	35,441	0.66	0.47	0.00	0.00	1.00	1.00
Amount (mil)	35,441	722	759	0	200	500	1000
Market-to-book ratio	35,441	1.47	0.65	0.10	1.02	1.11	1.87
Size (ln total assets)	35,441	12.06	1.79	7.58	10.37	11.81	13.74
Leverage	35,441	0.39	0.16	0.01	0.24	0.35	0.57
ROA	35,441	0.04	0.05	-0.44	0.01	0.02	0.08
Hadlock and Pierce (2010)	35,441	-4.15	0.49	-4.64	-4.64	-4.17	-3.60
Acharya and Pedersen (2005)	30,110	0.52	0.37	0.25	0.25	0.48	0.72

Table 2. Differences between parents with and without PGD issues

The table reports the univariate statistics, retrieved from TRACE, over the period July 2002-December 2014, for the different bond and firm characteristics of parent firms that provide guarantees for their subsidiaries issues (with PGD issues) and parent firms that do not. For each variable, columns (1) and (2) report the mean of parent characteristics (with and without subsidiary guaranteed debt), columns (3) the difference mean test. Panel A reports differences across bond characteristics (bond-date level), while Panel B reports differences across firm characteristics (firm-year level). The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Panel A	Mean *(Parent firms with guaranteed subsidiary debt)* (1)	Mean *(Parent firms without guaranteed subsidiary debt)* (2)	Mean difference (3)
Covenants (Y/N)	0.66	0.52	-0.14*** (-66.84)
Time-to-maturity	4.06	4.18	0.11*** (22.37)
Yield Spread (%)	1.95	2.46	0.51*** (22.93)
Illiquidity Index	0.03	0.02	0.01*** (4.86)
N	*35,441*	*147,323*	

Panel B	Mean *(Parent firms with guaranteed subsidiary debt)* (1)	Mean *(Parent firms without guaranteed subsidiary debt)* (2)	Mean difference (3)
Size	10.51	9.86	-0.64*** (-7.27)
Market-to-Book ratio	1.56	1.38	-0.18*** (4.70)
Capital Expenditure	0.03	0.04	0.001* (1.98)
Financial constraints Index	0.59	0.64	0.05 (0.95)
N	*289*	*1,874*	

Table 3. Univariate tests: Subsidiary guaranteed vs. new parent bonds

The table reports the summary statistics for bond issues, retrieved from the Mergent Fixed Income Securities Database, over the period July 2002-December 2014, across firm type (new parent bonds vs. subsidiary guaranteed bonds). For each variable, columns (1) and (2) report the mean of subsidiary guaranteed bonds and parent new bonds, respectively, and column (3) the difference mean test. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	Mean *(Subsidiary guaranteed bonds)* (1)	Mean *(New parent bonds)* (2)	Mean difference (3)
Covenants (Y/N)	0.13	0.36	-0.23*** (-14.23)
Yield spread	1.69	1.75	-0.06 (-0.52)
Time-to-maturity	4.27	4.23	-0.04*** (-6.74)
Market-to-book (sd)	0.48	0.20	0.28*** (22.63)
Cash flow volatility	0.00	0.01	-0.01*** (-5.85)
Competition (HH Index)	0.03	0.04	-0.01*** (-5.14)
N	*1,219*	*1,418*	

Table 4. Effect of guaranteed subsidiary issues on parent bond returns and excess bond returns
The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the dependent variables are secondary market bond excess returns of parent firms in the TRACE database, over the period July 2002-December 2014. Data on bond characteristics are retrieved from Mergent FISD Database. The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable $Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The model controls for a vector of bond and issuer characteristics (listed in the table), including bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	Dep. var. = excess bond returns (%)			
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	-0.34***	-0.50***	-0.51***	-0.44***
	(-5.74)	(-7.21)	(-7.16)	(-6.03)
New parent issue	-0.07*	-0.15***	-0.17***	-0.18***
	(-1.82)	(-3.94)	(-4.36)	(-4.38)
Senior issue			0.050	0.020
			(1.340)	(0.540)
Callable			-0.04*	-0.020
			(-1.72)	(-0.90)
Time to maturity			0.000	0.000
			(0.19)	(-0.03)
Amount			-0.01*	-0.010
			(-1.85)	(-1.60)
Size				-0.63***
				(-7.86)
ROA				0.320
				(0.54)
Market-to-book value				-0.19***
				(-4.32)
Leverage				-1.01***
				(-3.26)
Date FE	No	Yes	Yes	Yes
Industry FE	No	Yes	Yes	Yes
Ratings FE	No	No	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.005*	*0.022*	*0.023*	*0.026*
N	*46,887*	*37,363*	*37,163*	*35,441*

Table 5. Impact of covenant protection on the subsidiary guaranteed debt

The table reports the estimates of the Lee model (Equations (2) – (4) of Section 4.B) over the period July 2002-December 2014. Column (1) report the probit estimation of Equation (2). In columns (2)-(3) we report the correction of OLS estimation with the inverse Mills ratio, which measures the effect of the probability of new guaranteed subsidiary issues on the expected covenant protection of subsidiary guaranteed (column 2) and parent firms (column 3). Columns (4) and (5) report a similar correction for the yield spreads of subsidiary guaranteed and parent firms, respectively. In column (6)-(7) we estimated a structural probit (Equation (4)) of the effect of expected covenants protection (column 6) and expected yield spreads difference (column 7), between parent and subsidiary guaranteed. The estimates are computed with robust standard errors. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Panel A	*Probit*	*Subs. guar Covenants*	*Parent Covenants*	*Subs. guar Spreads*	*Parent Spreads*	*Final Probit1*	*Final Probit2*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Covenants difference						3.58***	2.54***
						(16.62)	(10.03)
Spreads difference							-0.20***
							(-6.13)
Market-to-book (volatility)	0.42***						
	(4.98)						
Cash flow (volatility)	29.30***						
	(3.24)						
Past guarantees	1.23***						
	(9.21)						
N. Subsidiaries	0.77***						
	(13.36)						
Mills ratio		0.10*	-0.21***	-1.89***	015		
		(1.71)	(-4.22)	(-3.78)	(0.57)		
Capital Exp.		2.92***					
		(3.78)					
Recourse debt			-0.41*				
			(-2.00)				
Asset tangibility				-3.94***			
				(-2.77)			
Bank Relationship (Y)					1.50***		
					(2.98)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared		*0.699*	*0.681*	*0.705*	*0.368*		
N	*3,651*	*1,699*	*1,280*	*1,055*	*889*	*3,651*	*3,651*

Table 6. Effects on the returns of the parent bonds across bonds and firm characteristics
The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} \times z_{it} + \beta_2\ New\ parent\ issue_{it} \times z_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where y are the excess bond returns of parent firms, over the period July 2002-December 2014. The breakpoints for the sample splits are determined, for each date, by splitting the sample into firms with a high (above the median, i.e. $z_{it}=1$) and low (below the median, i.e. $z_{it} = 0$) level of the characteristics we split for. The characteristics we split for are: the issue's time to maturity (logarithm of months), the presence covenants protection (Y/N) for bond characteristics. Firm characteristics are the Kaplan and Zingales (1997), or Hadlock and Pierce (2010), indexes of financial constraints. The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variab$Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The vector x includes the set of control variables used throughout, including bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Panel A	*Dep. var. = Excess bond Returns (%)*			
	Time-to-maturity		*Covenant Index (Y/N)*	
	Long	Short	High	Low
	(1)	(2)	(3)	(4)
Subsidiary guaranteed issue	-0.84***	-0.19***	-0.54***	-0.28
	(-6.10)	(-2.61)	(-6.35)	(-1.36)
New parent issue	-0.10*	-0.17***	-0.08**	-0.14*
	(-1.81)	(-3.22)	(-2.12)	(-1.79)
Controls	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	12.27		12.44	
Prob. > F	(0.001)		(0.001)	
F-test (new issue)	7.89		0.19	
Prob. > F	(0.005)		(0.665)	
N	*35,441*		*35,441*	
R-squared	*0.038*		*0.060*	
Panel B	*Financial constraints index (Kaplan and Zingales)*		*Financial constraints index (Hadlock and Pierce)*	
Split by	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)
Subsidiary guaranteed issue	-0.89***	0.00	-0.67***	0.18
	(-4.31)	(0.03)	(-6.26)	(1.10)
New parent issue	-0.60***	-0.04	-0.20***	-0.01
	(-3.60)	(-1.09)	(-3.46)	(-0.08)
Controls	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	16.08		20.41	
Prob > F	(0.000)		(0.000)	
F-test (new issue)	14.48		9.80	
Prob > F	(0.000)		(0.002)	
N	*35,441*		*35,441*	
R-squared	*0.097*		*0.060*	

Table 7. Effect of guaranteed subsidiary issues on mergers and capital investments
The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the dependent variables are, respectively, an indicator variable equal to one if the firm announced a merger in the year following the subsidiary guaranteed issues (columns (1) and (2)), and an indicator variable equal to one when the firm has a higher capital investments rate in the year following the subsidiary guaranteed issues (columns (3) -(4)), over the period July 2002-December 2014. Data on bond characteristics are retrieved from Mergent FISD Database. The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable$Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. Data are collapsed at firm-year level. The model controls for a vector of firm characteristics (listed in the table), including firm, industry (2-digits NAICS code), and year fixed effects. In all specifications, the standard errors are clustered around individual firm. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	Merger announcement in the year after the issue (Y/N)		*Higher capital Investments in the year after the issue (Y/N)*	
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	0.40***	0.30*	0.46***	0.41***
	(3.49)	(2.00)	(5.63)	(3.45)
New parent issue	0.000	-0.06*	0.00	0.00
	(-0.03)	(-1.78)	(0.07)	(0.08)
Controls	No	Yes	No	Yes
Date FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.482*	*0.504*	*0.434*	*0.430*
N	*228*	*228*	*228*	*228*

Table 8. Effect of guaranteed subsidiary issues vs. new parent issues on parent stock returns
The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the dependent variables are secondary market stock returns and excess stock returns, over the period July 2002-December 2014. Excess stock returns are computed as the difference between the stock return and the average return on the corresponding stock market portfolio (benchmark portfolio assignment taken by Wermers, 2004). The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable $Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The model controls for a vector of issuer characteristics (listed in the table), including firm, portfolio, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around industry (2-digits NAICS code). The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Panel A: Overall Sample	*Stock returns (%)*		*Excess stock returns (%)*	
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	0.46	0.26	0.39	0.23
	(0.54)	(0.30)	(0.50)	(0.28)
New parent issue	0.480	0.69	0.01	0.22
	(0.56)	(0.78)	(0.01)	(0.24)
Size		-1.18**		-1.11***
		(-2.59)		(-2.88)
ROA		-1.58		-1.73
		(-1.69)		(-1.70)
Market-to-book value		13.65***		10.29***
		(4.03)		(3.35)
Leverage		-1.47		-1.64
		(-0.36)		(-0.44)
Date FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Dtgw Portfolio FE	No	No	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.272*	*0.276*	*0.060*	*0.064*
N	*2,311*	*2,311*	*2,311*	*2,311*
Panel B: Firms with M&A	*Stock returns (%)*		*Excess stock returns (%)*	
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	1.97	3.61	1.51	4.54
	(0.73)	(1.58)	(0.41)	(1.39)
New parent issue	-2.08	-1.44	-3.30**	-2.20**
	(-1.36)	(-1.44)	(-2.31)	(-2.53)
Controls	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.534*	*0.404*	*0.536*	*0.396*
N	*224*	*224*	*224*	*224*

Table 9. Effect of guaranteed subsidiary issues with different dependent variables - Robustness check
The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.\,guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the dependent variables are, in Panel A, secondary market bond returns with accrued interests (columns (1) and (3)), and excess returns, computed with respect the average return of all bonds in the same rating/time-to-maturity category (columns 2 and 4) of parent firms in the TRACE database, over the period July 2002-December 2014. In panel B we report the same estimation where the dependent variables are secondary market yields of parent firms in the TRACE database. Data on bond characteristics are retrieved from the Mergent FISD Database. The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable $Subs.\,guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The model controls for a vector of bond and issuer, including bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, the **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

Panel A	*Dep. var. = bond Returns (%)*		*Dep. var. = excess bond Returns (%)*	
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	-0.49***	-0.47***	-0.54***	-0.47***
	(-5.00)	(-4.63)	(-7.15)	(-6.06)
New parent issue	-0.08*	-0.09**	-0.16***	-0.18***
	(-1.79)	(-2.21)	(-3.88)	(-4.26)
Date FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Ratings FE	No	No	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.203*	*0.205*	*0.024*	*0.026*
N	*35,336*	*35,336*	*35,336*	*35,336*

Panel B	*Dep. var. = Yields (%)*		
	(1)	*(2)*	*(3)*
Subsidiary guaranteed issue	0.40**	0.25*	0.60***
	(2.39)	(1.67)	(4.07)
New parent issue	-0.05	0.07*	0.08**
	(-0.91)	(1.89)	(1.97)
Date - Industry- Ratings FE	Yes	Yes	Yes
Bond Controls	No	Yes	Yes
Firm Controls	No	No	Yes
Issuer FE	Yes	Yes	Yes
R-squared	*0.367*	*0.418*	*0.433*
N	*34,290*	*34,290*	*34,290*

Table10. Effect of guaranteed subsidiary issues on parent bond returns reduced sample -Robustness check

The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} + \beta_2 New\ parent\ issue_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the dependent variables are, respectively, secondary market bond returns (columns (1) and (3)), and excess returns, of parent firms in the TRACE database, over the period July 2002-December 2014. Data on bond characteristics from the Mergent FISD Database. We exclude putable, zero coupons, bonds with an amount less than 100.000. The variable$New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable $Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The model controls for a vector of bond and issuer, including bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, the **, and *** denote statistical significance at the 10%, 5%, and 1%.

	Bond returns (%)		*Excess bond returns (%)*	
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	-0.63***	-0.61***	-0.66***	-0.62***
	(-5.70)	(-5.27)	(-8.19)	(-7.45)
New parent issue	-0.02	-0.04	-0.07**	-0.08**
	(-0.44)	(-1.03)	(-2.23)	(-2.45)
Date FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Ratings FE	No	No	Yes	Yes
Issuer FE	Yes	Yes	Yes	Yes
R-squared	*0.264*	*0.263*	*0.036*	*0.037*
N	*29,506*	*29,506*	*29,506*	*29,506*

Table 11. Effects on the returns of the parent bonds across asymmetric information indexes- Robustness check

The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} \times z_{it} + \beta_2\ New\ parent\ issue_{it} \times z_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where y are the excess bond returns of parent firms, estimated on two different subsamples for each characteristic, over the period July 2002-December 2014. The variable $New\ parent\ issue$ is an indicator variable equal to one in the same month of a new contemporary issue of a bond of the parent firm, whereas the variable $Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The breakpoints for the sample splits are determined, for each date, by splitting the sample into firms with a high (above the median, i.e. $z_{it}=1$) and low (below the median, i.e. $z_{it} = 0$) level of the characteristics we split for. The vector X includes the set of control variables used throughout, other than bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	Dep. var. = excess bond returns (%)			
split by	*Illiquidity ratio (Acharya and Petersen)*		*Analyst recommendations dispersion (%)*	
	High	Low	High	Low
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	-0.84***	0.04	-0.89***	0.04
	(-7.09)	(0.40)	(-4.29)	(0.46)
New parent issue	-0.22**	-0.04	-0.51***	-0.08
	(-2.14)	(-0.81)	(-5.07)	(-1.51)
Controls	Yes	Yes	Yes	Yes
Date, industry, issuer FE	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	56.06		9.11	
Prob > F	(0.000)		(0.003)	
F-test (new issue)	0.02		0.62	
Prob > F	(0.877)		(0.432)	
N	*30,110*		*28,022*	
R-squared	*0.063*		*0.077*	
	Bid-ask spread (stock prices)		*Bid-ask spread (bonds) (bond prices)*	
	High	Low	High	Low
	(1)	*(2)*	*(3)*	*(4)*
Subsidiary guaranteed issue	-0.74***	0.15	-0.72***	0.20
	(-3.52)	(1.30)	(-5.16)	(1.37)
New parent issue	-0.04	-0.20***	-0.15**	-0.10
	(-0.47)	(-3.05)	(-2.01)	(-1.53)
Controls	Yes	Yes	Yes	Yes
Date, industry, issuer FE	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	12.00		9.11	
Prob > F	(0.001)		0.003	
F-test (new issue)	2.43		0.62	
Prob > F	(0.120)		(0.432)	
N	*30,077*		*30,077*	
R-squared	*0.080*		*0.069*	

Table 12. Effects on the returns of the parent bonds across covenant protection type of subsidiary guaranteed issues - Robustness check

The table reports the estimates of:

$$y_{it} = \alpha + \beta_1 Subs.guaranteed\ issue_{it} \times z_{it} + \gamma' x_{it} + \varepsilon_{it}$$

where the vector z_{it} is the vector of characteristics of covenant type (Billet et al., 2007), when present, on the subsidiary guaranteed bond. The variable $Parent \times Subs.guaranteed\ issue$ is an indicator variable equal to one for parents bonds having a contemporary subsidiary bond guaranteed by the parent. The vector X includes the set of control variables used throughout, other than bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around individual issue. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.

	Dep. var. = excess bond returns (%)			
split by	*Event-driven Covenants*		*Equity holders payout Covenants*	
	High	Low	High	Low
	(1)	(2)	(3)	(4)
Subsidiary guaranteed issue	0.09	-0.62***	-1.06	-0.48***
	(0.90)	(-7.52)	(-1.58)	(-6.22)
Controls	Yes	Yes	Yes	Yes
Date, industry, issuer FE	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	43.33***		0.73	
Prob > F	(0.000)		(0.972)	
split by	*New Investments Covenants*		*New Debt Covenants*	
	High	Low	High	Low
	(1)	(2)	(3)	(4)
Subsidiary guaranteed issue	0.11	-0.63***	0.08	-0.61***
	(0.96)	(-7.48)	(0.77)	(-7.47)
Controls	Yes	Yes	Yes	Yes
Date, industry, issuer FE	Yes	Yes	Yes	Yes
F-test (subsidiary guaranteed)	43.33***		30.48***	
Prob > F	(0.000)		(0.000)	
R-squared	0.03			
N	*35,551*			

Figure 1. Abnormal bond returns of the parent firms with subsidiary guaranteed debt

This figure reports the abnormal cumulative bond returns of the parent firms as computed from equation (1),), where we switch the *Subsidiary Guaranteed Issue* indicator to 1 over the six months following the PGD issue. (dashed line), and the $New\ parent\ issue$ indicator to 1 over the six months following the PGD issue. (solid line). The dependent variables are secondary market excess bond returns of the parent firms, over the period July 2002-December 2014. The data on bond characteristics are retrieved from the Mergent FISD Database. The model controls for a vector of bond and issuer characteristics, including the bond issuer, bond rating, industry (2-digits NAICS code), and calendar month fixed effects. In all specifications, the standard errors are clustered around the individual bond issue.