Flavio Bazzana, Eleonora Broccardo

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The Role of Bondholder Coordination in Freeze-out Exchange Offers

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Flavio Bazzana
Department of Economics and Management, University of Trento

Eleonora Broccardo
Department of Economics and Management, University of Trento, Italy
CEFIN (Centro Studi Banca e Finanza), Modena

Abstract

This paper develops a model to assess the potential for unfairness in freeze-out bond covenant exchange offers by highlighting the role played by coordination among bondholders. We show that (*i*) shareholders have an incentive to always structure an exchange offer unfairly and (*ii*) the coordination costs are positively related to the unfairness of the exchange offer. By improving coordination, bondholders can obtain better contractual conditions, not only with regard to exchange offers, but also in bond issues.

Keywords: Freeze-out; Covenant; Bond; Coordination Costs.
JEL Codes: G12; G32.

1 Introduction

In an exchange offer, new debt or equity with different amendments is exchanged for existing debt or equity. If minority shareholders or bondholders are widely dispersed or lack efficient representation, then controlling shareholders may attempt to take advantage by structuring a freeze-out exchange offer, *i.e.*, minority shareholders or bondholders are forced to sell their securities at an offer price that is lower than fair value.

The literature has devoted great attention to the analysis of under what conditions majority shareholders can systematically gain at the expense of the minority shareholders (Bebchuk and Kahan, 2000; Harford, 2003; Yermack, 2004; Bates, Lemmon and Linck, 2006; Maug, 2006). Several studies suggest that legal protection and negotiation can effectively limit majority shareholders from structuring opportunistic exchange offers (Holderness and Sheehan, 1988; DeAngelo *et al.*, 1984).

Focusing on bond exchange offers, there are a number of possible reasons why shareholders might want to exchange existing debt with new debt. As argued by Fuller (2007), in addition to the desire to reduce the outstanding debt and the associated cost of that debt, a common reason cited is the restructuring of bonds with inconvenient

Corresponding author: Flavio Bazzana, flavio.bazzana@unitn.it, Department of Economics and Management, University of Trento, Via Inama, 5, 38122 Trento, Italy, +390461283107,
Eleonora Broccardo, eleonora.broccardo@unitn.it.

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or problematic covenants. A covenant is a clause in a firm's debt contract that restricts the firm's options and provides creditors with the right to enforce certain actions (*e.g.*, early repayment) if the covenant is violated. Smith and Warner (1979) argue that because shareholders and bondholders have different rights with cash flows, they often experience conflicts of interest. Covenants can help to reduce these conflicts. However, covenants may produce undesirable effects because as the firm's opportunities change over time, the costs of restrictive covenants might outweigh their benefit. As stated by Kahan and Tuckman (1993, p. 499), «as a firm's economic environment changes, and as its investment opportunities vary, the renegotiation of covenants may be desirable». The exchange offer is used to avoid covenant violation (technical default[1]) and to pursue thereafter higher investment ability and financial flexibility. Moreover, various covenants may become particularly restrictive following a major restructuring (Asquith and Wizman, 1990). Several papers document the diffusion of bond exchange (or tender) offers with the purpose of avoiding a covenant violation (Kahan and Tuckman, 1993; Daniel and Ramirez, 2007; Mann and Powers, 2007; de Jong *et al.*, 2009).

Through a bond covenant exchange offer, shareholders replace an existing bond that was issued with a covenant with a new bond without such restrictions. Shareholders can freeze out the restrictive covenant by exploiting the low degree of coordination among the bondholders. More precisely, shareholders can impose a «prisoner's dilemma» type situation on its bondholders. The exchange offer can be structured such that the individual choice to refuse the offer will lead to a decrease in the value of the existing bond if a qualified majority of the bondholders decides to accept the exchange offer. As a result, the decision to accept the exchange offer is the optimum choice for bondholders, even if the new bond has a coupon rate that is lower than the equilibrium rate.

In the literature, the first paper to address how different redemption alternatives inevitably generate the potential for trading games between shareholders and bondholders is Oldfield (2004). In his paper, Oldfield shows how «normal conflicts between issuers and investors can generate strategic trading games in which debt prices deviate substantially from their apparent option-based values even though a default is not part of the game». Oldfield uses a real-world example to indicate how shareholders can engineer voluntary exchanges that nullify (freeze-out) restrictive covenants. If the exchange offer is combined with a consent solicitation, a vote to remove the covenant is required before the exchange offer can be agreed upon. Since the results of the solicitation are binding for all bondholders, non-tendering bondholders will always suffer from a loss of wealth. To avoid this scenario, non-coordinated bondholders should accept exchange offers, even if the new bonds have coupon rates that are lower than the equilibrium rate. This is possible because non-coordinated bondholders act individually and accept any offer with a higher coupon rate than the initial one. Further examining this freeze-out scenario, our paper contributes to the existing literature by developing a theoretical model that supports the insights of Oldfield (2004) and, moreover, that formalises and quantifies the role played by the level of coordination among bondholders in the potential unfairness of exchange offers. Similar to Oldfield's, our model addresses exchange offers that are not affected by

[1] Another way to avoid a technical default is to choose accounting methods that maximise the slack in the debt covenant constraints (see, amongst others, Guay, 2008; Beatty, Weber and Yu, 2008).

restructuring needs. Financially distressed exchange offers are driven by peculiar economic motivations and bondholders' willingness to accept the offer. Moreover, we argue that the primary purpose of distressed exchange offers is not to modify covenants but mostly to obtain immediate relief (in terms of interest and principal deferral). It should be noted, however, that some empirical researches on exchange (tender) offers have focused only on healthy firms (Kahan and Tuckman, 2003; Mann, 2007). Daniel and Ramirez (2007) document that exchange offers, combined with exit consent, are frequently employed by non-financially distressed firms also.

Our major contribution to the literature consists in (*i*) defining how coordination among bondholders affects the optimal covenant threshold and the optimal reduction in the bond spread due to the covenant at the time of the bond issue, and (*ii*) analysing how the coordination among bondholders affects the structure of the exchange offer when shareholders decide to cancel a restrictive covenant. We develop a model that can be used to assess the maximum transfer of wealth from uncoordinated bondholders to shareholders by highlighting the role of (*i*) the degree of coordination among the bondholders, and (*ii*) the deviation from the equilibrium risk premium of the newly issued bond without a covenant in the exchange offer. To our knowledge, there has been no research on this subject to date.

The remainder of this paper proceeds as follows. Section 2 reviews the literature. Section 3 analyses the role played by coordination among the bondholders, both at the issue of the bond with a covenant, and at the exchange offer. Section 4 discusses the maximum transfer of wealth to shareholders in the case of an exchange offer. The paper ends with concluding remarks and certain recommendations.

2 Literature

In the literature, major attention has been devoted to the analysis of under what conditions majority shareholders can systematically gain in an exchange offer at the expense of the minority shareholders (minority freeze-outs). On the one hand, according to the bid capture hypothesis, both the information asymmetry and the potentially limited role of minority's information agents suggests that controlling shareholders can capture a disproportionate surplus relative to their ownership in the target (Bebchuk and Kahan, 2000; Maug, 2006). On the other hand, the minority bargaining hypothesis suggests that legal recourse and pro-active bargaining by the representatives of minority shareholders – possibly independent directors – can introduce competitive bidding behaviour and impose an element of fairness in freeze-out offers (Harford, 2003; Yermack, 2004; Bates, 2006). The empirical analysis of changes in target shareholder wealth around the exchange offer shows that the target cumulative abnormal returns are positive on average, indicating that minority shareholders gain in freeze-out exchange offers (Dodd and Ruback, 1977; Holderness and Sheehan, 1988; Bates *et al.*, 2006). Moreover, freeze-out exchange offers are very often legally and organisationally structured to limit the potential opportunism of controlling shareholders (DeAngelo *et al.*, 1984; Holderness and Sheehan, 1988; Harford, 2003; Yermack, 2004; Bates *et al.*, 2006).

A stream of literature indicates that exchange offers are in effect out-of-court restructuring instruments that are used to help firms avoid bankruptcy (Weiss, 1990; Gilson *et al.*, 1990; Asquith *et al.*, 1994; Altman, 1993). The seminal work of Gertner and Scharfstein (1991) investigates the effectiveness of exchange offers in restructuring public debt, both with and without seniority covenants. According to Detragiache and Garella (1996) and Hege and Mella-Barral (2005), exchange offers are considered an optimal tool for use in renegotiating debt for firms facing multiple non-coordinated creditors. Our model addresses exchange offers that are not driven by restructuring needs. In the same framework, a number of empirical researches on exchange (tender) offers have tended to focus only on healthy firms (Kahan and Tuckman, 2003; Mann, 2007). In analysing both healthy and financially distressed firms, Daniel and Ramirez (2007) find that approximately 60% of the exchange offers (with exit consent) in their sample are by non-financially distressed firms, thus documenting that consent is used in exchange offers by non-financially distressed firms also.

Some authors have analysed how coordination among bondholders can affect the results of an exchange offer. Kahan and Tuckman (1993) develop a game-theoretic model to show that bondholders may consent to covenant changes even when it is not in their collective interest to do so. Using a similar game theory approach, Oldfield (2004) analyses different debt redemption alternatives in which conflicts between shareholders and bondholders can generate strategic trading games that distort the debt price even if no default occurs. If the bondholders are able to fully coordinate to resist the tender, they can avoid the prisoner's dilemma. Analysing the freeze-out game as presented by Oldfield (2004), Bazzana *et al.* (2013) use an experimental approach to investigate how available information and experience among bondholders affect the exchange offer. The results show that to reach the best social outcome – in which the exchange offer is rejected and the participants in the tender gain wealth that can be shared with others – information plays a key role. Conversely, the experience of the participants leads to the best solution for each individual, which is not necessarily the best solution for the group.

Empirical research on this argument often investigates the role played by the covenant in both the exchange and the tender offer. Mann and Power (2007) focus on the variables that affect the premiums of US corporate bond tender offers. They show that a higher premium is offered when a bond has a greater number of restrictive covenants, a longer time to maturity, and when the exchange offer requires a consent solicitation. Moreover, the most common reason for a tender offer is the removal of restrictive covenants. The paper by de Jong *et al.* (2009) is the first on bond tender offers in Europe, where restructuring issues are less likely to be an important factor in exchange offers. In their analysis, tender offers for bonds with covenants that require a consent solicitation include a 3% higher premium. Furthermore, European tender offers are found not to be detrimental to shareholders. Nohel (2009) focuses on the motivations for the repurchase of debt. Covenant relaxation is one of the main reasons for tender offers and can have a positive effect on announcement returns.

Another body of literature on exchange offers addresses the role played by consent solicitation, given that evidence shows that many tendering firms simultaneously seek

consent solicitations. Due to the difficulty of obtaining unanimous consent[2], holdouts can be a significant problem, mostly for firms experiencing financial distress that need to rapidly restructure[3]. To discourage holdouts, exchange offers can be conditioned upon the solicitation of exit consent[4]. Prior agreement to bond amendments (generally non-payment terms presented as covenants) by a majority or supermajority of bondholders is required before the old bond can be exchanged for the new one. Given that exchange offers are subject to the agreement of the consenting bondholders and that the debt modifications become binding for all bondholders, the «coercive» nature of exit consent has been widely discussed in the literature (see, among others, Buchheit and Gulati, 2000; Tamura, 2002). The empirical research provided by Chatterje *et al.* (1995) shows that consent solicitations are more popular in tender offers than in exchange offers. These authors argue that the holdout problem created by the existence of small bondholders[5] is a key variable in the choice between tender offers and exchange offers. They empirically show that firms that employ tender offers face a more severe holdout problem. In evaluating the role of exit consent for uncoordinated bondholders, Daniels and Ramirez (2007) aim to empirically investigate whether exit consent is explained by the holdout problem. The researchers show that exit solicitation is a rational response to holdouts during bond exchange offers, and they indicate that the likelihood of exit consent is related to variables that proxy for potential holdout problems. Of these variables, the decision to remove restrictive covenants of the targeted debt is particularly significant.

3 The role of bondholder coordination

3.1 The role of coordination at bond issue

Following the model by Bazzana and Broccardo (2013) we assume that a firm will issue a bond with a nominal value D and must choose between a standard contract with a spread s over the risk-free rate i and a contract with a financial covenant that includes a reduction b in the risk premium. We implicitly assume that firm risk will decrease if the firm includes a financial covenant in the bond contract[6]. We define d as the relative

[2] In US bond legislation, the US Trust Indenture Act of 1939, section 316 (b), indicates that the modification of terms is only possible by unanimous decision or based on a qualified majority vote.

[3] The bondholders, who hold out and refuse the exchange offer, rely upon the success of the restructuring process. If the exchange offer is approved, these bondholders maintain the right to the full repayment of their bonds, whereas other bondholders receive reduced payments according to the terms of the restructuring. If the restructuring process does not take place, then they gain nothing. For these reasons, many dispersed bondholders have little incentive to invest time in evaluating the terms of an exchange offer and thus prefer to deny their consent.

[4] Hereafter, by «exit consent», we mean the combination of a consent solicitation and an exchange offer.

[5] They assume the same perspective on the free-rider problem discussed by Grossman and Hart (1980) regarding hostile tender offers for common stock. Each shareholder is so small that his tender decision alone will not affect the outcome of the offer. By holding out, the bondholders can obtain a higher value; thereafter, the incentive to refuse makes the exchange offer unsuccessful.

[6] A large number of empirical studies justify such assumptions (Dichev and Skinner, 2002; Niskanen and Niskanen, 2004; Asquith, Beatty and Weber, 2005; Paglia and Mullineaux, 2006; Moir and Sudarsanam, 2007; Chava, Kumar and Warga, 2010).

distance between the current value of the firm's financial ratio and the «threshold» value of the ratio that is set by the covenant, $0 \leq d \leq 1$. In addition, we define the probability of a covenant violation estimated by the firm as $p_F(\beta, d)$. This probability depends on the value of d and on the firm risk β; when d is greater, the probability of a covenant violation is low, but this probability increases as firm risk increases. Let F be the costs that arise from the decrease in the flexibility of the firm's corporate policy due to the introduction of a covenant, which is a function of d. Let C_F be the total violation costs borne by the firm, which include both the restructuring and the refinancing costs (Beneish and Press, 1993). Both types of costs are expressed using monetary values. For the sake of simplicity, let us assume risk neutrality by the firm so that we only take into account the expected value of the problem. The firm will choose to employ a covenant only if:

$$b \geq f(d) + p_F(\beta, d)\, c_F \tag{1}$$

where $f(d) = F(d)/D$ and $c_F = C_F/D$. Both the costs associated with the loss in flexibility and the probability of a covenant violation decrease with respect to d, whereas the probability increases with respect to β.

In contrast, bondholders are subject to a reduction in the risk premium b and to renegotiation costs in the event of a violation of the covenant C_B, with the latter depending negatively upon the coordination level of the bondholders in the renegotiation process as a whole. The bondholders must continually perform monitoring activities to control for covenant violations. Monitoring costs can be efficiently minimised if monitoring is delegated to the individuals who possess a comparative advantage with regard to these activities. Therefore, the cost of monitoring firm M_B also depends on the bondholders' coordination level. We set the level of coordination as a function of parameter h, which ranges from 0 for the minimum coordination level among the bondholders to 1 for the maximum level[7]. Simultaneously, the bondholders benefit from revenues in the case of early repayment, r_B, that consist of the percentage difference between the nominal and market value of the bond. This benefit arises because if the firm has probability p_B of violating the covenant as estimated by the bondholders, then the market price of the bond will decrease to reflect the implicitly greater risk premium. As for the firm we define the estimated probability of a violation according to the bondholders as $p_B(d)$. We assume that the bondholders cannot estimate the level of firm risk and, therefore, that the probability does not depend on the firm risk level. However, we assume that the firm can deduce the bondholders' estimate based on information derived from the market (*e.g.*, the organisation's investor road shows or the decision to publish a solicited rating for specific investment projects or on the firm in general). Accordingly, the bondholders will underwrite the bond issue only if the following is true:

$$b \leq p_B(d)[r_B(d) - c_B(h)] - m_B(h) \tag{2}$$

[7] As a proxy for the coordination level, we can use the normalised Herfindahl index based on the nominal value of the bonds held by every bondholder relative to the nominal value of D.

where $c_B(h) = C_B(h)/D$ and $m_B(h) = M_B(h)/D$. The probability of a violation, as estimated by the bondholders, decreases with respect to d, whereas revenues from early repayment are expected to grow. Indeed, the greater the distance at the time of the issue, the greater the reduction in the market price in the event of a violation. Moreover, both the violation costs and the monitoring costs decrease with respect to h.

Given these dynamics, the firm must maximise its expected revenues subject to the bondholders' function constraints, whose total costs are dependent on the coordination level h. The first order condition (see Bazzana and Broccardo, 2013) implies that the expected marginal net revenues for the bondholders must be equal to the expected marginal costs for the firm. The necessary condition for the existence of a solution is that the revenues from early repayment are greater than the costs of renegotiation for the bondholders, which is expressed as follows:

$$r_B(d_F) \geq c_B(h) \tag{3}$$

where d_F represents the optimal choice of the firm. Given the benefits of prepayment in the case of covenant violation, which depends upon the parameter d_F, equation holds as long as the level of coordination among the bondholders guarantees that any eventual renegotiation costs will be lower than the expected benefits. Conversely, given a specific level of bondholder coordination, equation (3) holds if the covenant is set at a threshold that is sufficient to ensure that the consequent benefits will offset the corresponding costs. Since a lower level of coordination among bondholders leads to higher renegotiation costs, all else being equal, the bond will be issued with a higher value of d_F. If the coordination level is extremely low, then the firm may find it more convenient to issue a standard bond. The optimal reduction of the risk premium of the bond covenant issue is as follows:

$$b_F = p_B(d_F)[r_B(d_F) - c_B(h)] - m_B(h) \tag{4}$$

In this case, assuming a low level of coordination among the bondholders and using the same reasoning as above, the reduction in the risk premium will decrease. Therefore, only a high level of coordination – for example, if the bondholders decide to rely upon a trustee – would lead to a reduction in the expected renegotiation costs in the event of a covenant violation and, consequently, would make the choice of issuing bonds with a covenant an efficient one.

3.2 The role of coordination in exchange offers

When the covenant is restrictive, overly limiting a firm's policy, the firm can attempt to renegotiate with its creditors, or it can attempt to replace the bond with a new one without a covenant (*i.e.*, it can attempt a freeze-out exchange offer). Under a low level of bondholder coordination, *i.e.*, assuming high renegotiation costs, it will not be convenient for the firm to renegotiate the debt contract. The firm can only try to replace the existing

debt by offering a new bond that does not provide the protection of the covenant. For a single bondholder, the minimum requirement for the exchange will be that the loss of the protection that was previously guaranteed by the covenant be counterbalanced with a higher coupon rate for the new bond.

The analysis changes significantly if we move from the level of the individual investor to that of all of the bondholders. In fact, the firm could set the coupon rate for the new bond at a level other than the equilibrium rate in an attempt to exploit the limited level of bondholder coordination (Oldfield, 2004). Suppose that the firm sets the new bond without a covenant at a lower coupon rate than the equilibrium for the individual investor. The exchange offer is combined with a consent solicitation; thus, accepting the exchange is equivalent to voting to void the covenant present in the old bond. If the exchange is approved by a qualified majority of bondholders, then the cancellation of the covenant will affect both the bondholders who accepted it and those did not accept it. On one hand, the bondholders who accepted the exchange offer lose their protection but gain a higher coupon rate, although this coupon rate is lower than the equilibrium coupon rate. On the other hand, the bondholders who rejected the offer suffer a loss because they neither benefit from the higher coupon rate nor retain their protection. Conversely, if the exchange offer is rejected by a qualified majority of bondholders, then the minority bondholders who accepted the offer benefit from both the higher coupon rate and the covenant protection[8]. The four possible scenarios are summarised in Table 1.

Let us assume that the bond with a covenant which the company wishes to replace has a remaining time to maturity of n years; a fixed annual coupon rate $i + s - b_F$, with b_F defined as in expression (4); and a market price, p_{old}, of 100. The equilibrium coupon rate for the new bond without the covenant will be $i + s$ if it has the same market value as the bond to be exchanged. However, suppose that the company decides to exploit the limited level of coordination among the bondholders to issue the new bond with a coupon rate of $i + s - r$, which is slightly lower than the equilibrium coupon rate. The risk premium for the firm is equal to s if the qualified majority of bondholders accept the exchange offer (the covenant is cancelled), and it is equal to $s - b_F$ if the exchange offer fails (if the covenant is not removed). The coupon rate for the bond and the risk to the firm, depending upon the results of the exchange offer, are summarised in Table 2.

Using the standard bond pricing methods, we can compute (see the Appendix) the market prices of the bond for a single bondholder in four scenarios, as shown in Table 3, by imposing a given value on the variables.

The price of the new bond for a bondholder if the qualified majority of bondholders accept the exchange offer will be reduced because the coupon rate is reduced by r by the firm (case 1). Otherwise, the price of the old bond will lose value because the bond

[8] According US law, debt restructuring is governed by Section 216 of the Trust Indenture Act (TIA), which requires unanimity of bondholder's vote to change debt features. However, the TIA does not proscribe the removal of a financial covenant. Thus, the firm can strip the covenant upon a majority (or supermajority) vote of bondholders without violating the TIA. Consent solicitations are often combined with exchange (tender offers). In a consent solicitation, prior agreement regarding the bond amendments by a majority of the tendering bondholders is required to exchange the old bond for the new one. As a result, with regard to our context, if the exchange offer is accepted overall, dissenting bondholders suffer a loss of covenant protection without receiving any form of compensation. See Oldfield (2004) for a description of an exchange offer case.

Table 1: The possible scenarios in the exchange offer. For each potential outcome of the exchange offer, this table reports the results for a single investor in terms of the type of bond and the covenant protection as a consequence of accepting or rejecting the offer

The qualified majority of bondholders	The *i*-th bondholder	
	Accept	Reject
Accept the exchange offer	New bond covenant cancelled	Old bond covenant cancelled
Reject the exchange offer	New bond covenant remains in effect	Old bond covenant remains in effect

Table 2: Coupon and risk premium of the firm in the unfair exchange offer. For all potential outcomes of the exchange offer, this table reports the coupon rate of the bonds (above) and the risk premium for the firm (below)

The qualified majority of bondholders	The *i*-th bondholder	
	Accept	Reject
Accept the exchange offer	$i + s - r$ s	$i + s - b_F$ s
Reject the exchange offer	$i + s - r$ $s - b_F$	$i + s - b_F$ $s - b_F$

Table 3: Bond prices for a single investor in an unfair exchange offer. The bond prices for a single investor in all four possible scenarios are computed by assuming the following hypotheses: (*i*) the free risk rate, *i*, is equal to 2%; (*ii*) the risk premium of the firm, *s*, is equal to 3%; (*iii*) the decrease in coupon b_F for the equilibrium issue with a covenant is equal to 1%; (*iv*) the reduction in the equilibrium coupon rate *r* is 0.2%; and (*v*) the maturity, *n*, is four years

The qualified majority of bondholders	The i-th bondholder	
	Accept	Reject
Accept the exchange offer	99.29 (case 1)	96.45 (case 2)
Reject the exchange offer	102.90 (case 3)	100 (case 4)

will no longer provide the protection assured by the covenant but will maintain the old, lower spread (case 2). If the qualified majority of investors do not accept the exchange, then the market price of the old bond does not change (case 4). However, because the covenant is not cancelled, the minority of investors that have accepted the exchange will see an increase in the prices of the new bond (case 3). This increase occurs because the new bond has a higher coupon rate and the protection provided by the covenant associated with the old bond.

The best strategy for a single investor is always to accept the exchange offer rather than to keep the old bond. Whatever the final outcome of the exchange, the investor will receive the highest market price for the bond. If the exchange offer is accepted overall, a single investor will receive 99.29 by accepting the new bond and 96.45 by maintaining the old bond. The decrease in the price of the old bond reflects the loss of protection that will occur due to the removal of the covenant. In contrast, when a qualified majority of

bondholders reject the offer, the bondholders who have accepted the new bond will receive 102.90, whereas the bondholders who rejected it will receive the old bond price of 100, which reflects the old lower spread associated with the (now invalid) covenant protection.

We can compute the price variation for the bond, expressed as a percentage of the price of the old bond, for all three scenarios of the exchange offer:

$$
\begin{aligned}
w_{new,Su} &= \frac{p_{new,\,Su} - p_{old}}{p_{old}} \\
w_{new,Fa} &= \frac{p_{new,\,Fa} - p_{old}}{p_{old}} \\
w_{old,Su} &= \frac{p_{old,\,Su} - p_{old}}{p_{old}}
\end{aligned}
\tag{5}
$$

Note that the sign of the first and the third expressions must be negative, which reflects the reduction in the wealth of the single bondholders, whereas the second one is positive, highlighting the wealth increase for the single bondholders.

4 The transfer of wealth in the exchange offer

Let us suppose that the firm does not change either its capital investment decisions or its financial sources. Based on capital structure theory[9], if the market value of the total assets of the firm does not change, then a reduction in the wealth of the bondholders due to the success of the exchange offer implies a reduction in the market value of the debt, as expressed by $w_{new,Su}$ and $w_{old,Su}$, and a corresponding increase in the market value of the firm's equity, with a consequent transfer of wealth to the shareholders.

If we define the qualified majority as $\bar{m}$ and the effective acceptance of the exchange offer as m, then the transfer of wealth W_{Sh} to the shareholders, in percentage terms, will be:

$$
W_{Sh}(r, m) = -\begin{cases} m w_{new,\,Su} + (1-m) w_{old,\,Su} & \text{if} \quad m > \bar{m} \\ m w_{new,\,Fa} & \text{if} \quad m \leq \bar{m} \end{cases}
\tag{6}
$$

The function has a positive value only if the exchange offer is successful. If a qualified majority $\bar{m}$ of bondholders accept the offer, the covenant is stripped, and the new bond will have a market value that is lower than the nominal value. This results in a transfer of wealth from the accepting bondholders m to the shareholders. At the same time, non-tendering bondholders lose their protection but maintain the old lower coupon rate. Thus, the market value of the old bonds decreases even more, increasing the transfer of wealth from non-accepting bondholders $1 - m$ to the shareholders[10].

[9] We refer to the first proposition of Modigliani and Miller (1958), which suggests that the firm's value is independent of its capital structure.

[10] In our model, the best strategy for the single investor is to always accept the exchange offer because he/she will receive the highest market price for the bond regardless of the final outcome of the exchange. However, in defining the total transfer of wealth to the shareholders, we suppose that some investors may have a reason to reject the offer because they are concerned about covenant protection. Trusting that the other bondholders will do the same, they will decline the offer, hoping that the bondholders will achieve the majority needed to reject the offer overall.

If the exchange offer is rejected, the function W_{Sh} has a negative value. In fact, the minority of accepting bondholders m benefit from a higher bond market value because they maintain their covenant protection and obtain a higher coupon rate. Because the non-accepting bondholders 1-m maintain the nominal value of their bonds, they do not receive any transfer of wealth. The shareholders suffer from the overall transfer of wealth to bondholders.

It is easy to show that the function is decreasing in m and increasing in r such that the higher the rate of acceptance of the exchange offer (*i.e.*, as the parameter m increases), the lower the total transfer of wealth to shareholders, *i.e.*:

$$\frac{\partial W_{Sh}(r,m)}{\partial m} \leq 0, \frac{\partial W_{Sh}(r,m)}{\partial r} \geq 0 \tag{7}$$

On the one hand, if the exchange offer is successful, the shareholders will obtain the maximum possible wealth transfer if the percentage of accepting bondholders achieves the minimum required level m. On the other hand, if the exchange offer fails, the shareholders will minimise their losses (as expressed in terms of the wealth transfer to bondholders) if the percentage of accepting bondholders is as close to zero as possible (see Figure 1).

For a given value of offer acceptance m, the greater the distance from the equilibrium coupon rate (*i.e.*, as the parameter r increases), the greater the total transfer of wealth to shareholders. If a qualified majority of bondholders $\bar{m}$ accept the offer, the transfer of wealth from bondholders to shareholders is higher with a greater mispricing of the new bond. In contrast, if the exchange offer is rejected, the loss of shareholder wealth is minimised as the distance from the equilibrium coupon increases. Based on these considerations, it is clear that shareholders always have an incentive to offer an unfair exchange offer. Increasing the value of r will decrease the potential loss of wealth in the case of failure, and the potential gains in the case of success will increase (see Figure 1).

The level of coordination among bondholders can affect the unfairness of an exchange offer. If bondholders are sufficiently well coordinated that they can refuse to accept an offer that is overly unfair, the threat of losses as a result of the rejection of the offer can persuade the shareholders to issue a new fairer bond.

Given that the transfer of wealth is positive only when the exchange offer is accepted, the firm must structure the exchange offer by defining the optimal value of r so that this outcome will occur. To assure such an outcome, the loss of wealth for the bondholders as, expressed by the reduction in bond price, must be lower than the coordination costs C_E that will be associated with the bondholders' rejection of the offer. If we assume that these costs are strictly related to the bondholders' coordination level h, then shareholders can maximise their wealth transfer as follows:

$$\max_{r \leq b_F} W_{Sh}(r,m) \; s.t. \; c_E(h) + w_{new,\,Su} \geq 0 \tag{8}$$

with the following optimal solution:

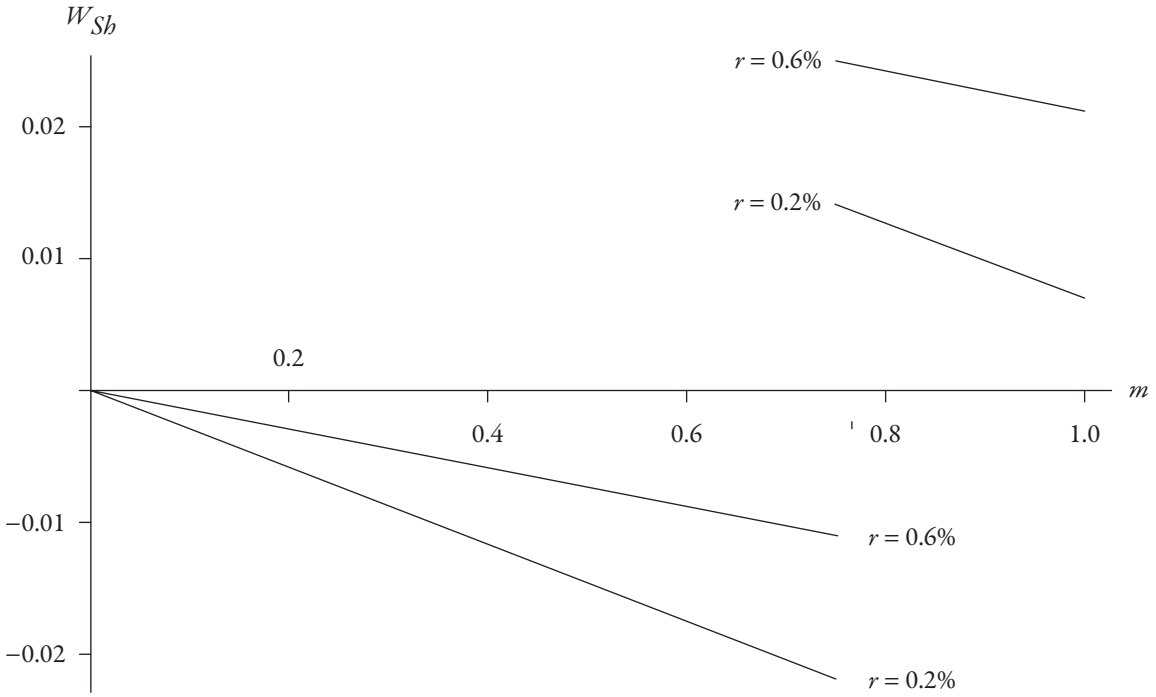

Figure 1: Wealth function for the shareholders. The graph represents the transfer of wealth to shareholders W_{Sh} as a function of the effective rate of acceptance of the exchange offer, expressed by m, and of different values of r. We assume the following hypothesis: (*i*) the free risk rate, i, is equal to 2%; (*ii*) the risk premium of the firm, s, is equal to 3%; (*iii*) the decrease in coupon rate b_F for the equilibrium issue with a covenant is equal to 1%; (*iv*) the maturity, n, is four years; and the qualified majority, $\bar{m}$, is 75%.

$$c_E(h) + w_{new,\,Su}(r_F) = 0 \tag{9}$$

where $c_E(h) = C_E(h)/D$ and r_F is the optimal reduction in the interest rate for the exchange offer in comparison to the fair value. Thus, the optimal value of an unfair exchange offer depends on the coordination costs for bondholders such that the higher the costs, the more unfair the exchange offer will be.

To minimise $c_E(h)$, bondholders can first try to increase the level of h, *i.e.*, their coordination level – for example, by relying on a trustee who acts on behalf of the bondholders to increase the efficacy of the bond covenants. Modifying the shape of the function involves more structural changes because the function reflects the legal framework of the particular country. For each level of bondholder coordination, scholars have found that if the bondholders' degree of legal protection is relatively low, then the coordination costs will be high. Several studies have indicated that creditor protection is limited both by the information asymmetry that exists between debtors and creditors and by the costly collective renegotiation processes that creditors must undergo in the case of a covenant violation. Therefore, any attempts to reduce the asymmetries by introducing more informative accounting rules or to mitigate the collective action problem by changing the formal procedures required to reach an agreement may enhance the creditors' protection. Schmidt (2006) suggests that creditorsshould reduce the quorum required by an assembly

to make decisions to reduce delays in the renegotiation process. Bratton (2006) proposes an amendment to the US legislation concerning bondholders' trustees that would serve to increase their power of action during the renegotiation process. Bazzana and Palmieri (2012) propose a similar solution for the Italian corporate market. The «super-trustee» solution proposed by Amihud, Garbade and Kahan (2000) extends the trustee's duties in the pre-default phase via an agreement that provides the trustee with the power to act independently of the bondholders and in accordance with a business judgment standard (Schmidt, 2006; Schwarcz and Sergi, 2008 also support the use of this solution).

5 Concluding remarks

This paper is intended to evaluate how the degree of coordination among bondholders can affect the structure of an exchange offer by a firm that aims to maximise shareholder wealth. We describe a model for assessing the potential unfairness of an exchange offer, which is a particular danger when bondholders are widely dispersed and uncoordinated. For a given level of coordination among bondholders, the model defines the maximum reduction in the equilibrium spread for the newly issued bond, guaranteeing both the success of the exchange offer and the maximisation of the transfer of wealth from bondholders to shareholders. The main results of this paper are twofold. First, the firm has an incentive to always structure exchange offers unfairly given the costs that bondholders accrue in coordinating to reject an exchange offer. In fact, by increasing the deviation of the new bond from the equilibrium spread, the shareholders can maximise their wealth transfer if the offer is accepted and minimise losses when the offer fails. Second, the level of coordination cost is positively related to the unfairness of the exchange offer: the higher the coordination cost, the greater the potential transfer of wealth to the shareholders.

The proposed model has relevant implications for bondholders. The model helps to explain and measure how bondholder coordination affects the bond's features at issue date, influencing the optimal covenant threshold and decrease in bond spread. Moreover, the model quantifies the unfairness of exchange offers, which may affect bondholders after the issue date. Bondholders can benefit from the model by using it to compute the maximum level of unfairness (in terms of the transfer of wealth to shareholders) that is acceptable or unavoidable given their actual level of coordination. As the model shows, uncoordinated and widely dispersed bondholders seeking to minimise their wealth expropriation must improve their coordination level to minimise the costs of rejecting an unfair exchange offer and the degree of unfairness of the exchange offer. As long as the rejection costs exceed the transfer of wealth, the bondholders are forced to accept the unfair offer. Therefore, the strong incentive for bondholders to minimise their coordination costs becomes evident.

In improving their level of coordination, the bondholders could benefit from better contractual features not only for exchange offers but also in the issue of bonds with covenants. In fact, if bondholders reach a higher level of coordination, then the costs of rejecting an offer decrease, and the maximum transfer of wealth to the shareholders also

decreases if the unfair exchange offer is approved. In addition, better coordination among bondholders plays a crucial role at the bond issue date. Compared to uncoordinated bondholders, well-coordinated bondholders with low renegotiation costs can obtain more restrictive covenants for a given spread.

From the above analysis at least two important implications for regulation can arise. Our model underlines the importance of the renegotiation costs in the case of covenant violation, showing that a reduction in such costs can increase the efficiency of the instrument, also reducing the possible transfer of wealth to shareholders. A first implication, primarily related to the US system, is connected with the usage of a trustee. The results of our model, especially relating to the transfer of wealth, give more importance to the creation of a super-trustee (Amihud *et al.*, 2000; Bratton, 2006). In this way, the greater efficiency of this proposal, reducing the expected costs of renegotiation, and consequently the possible transfer of wealth, could reduce the incentive for shareholders to set an unfair exchange offer. A second implication regards the Italian system and, specifically, the mechanism of the bondholders assembly. This scheme seems to lack efficacy, mainly because the assembly's vote requires a long time interval, and presents considerable problems in unifying the will of the bondholders, due to the lack of a delegate that could act as an active agent for them and, at the same time, as a unique contractual counterpart for the company's board of directors. A more efficient mechanism, such as delegating the mandatory representation for bondholders to a financial intermediary (Bazzana and Palmieri, 2012), would reduce the expected costs of rescheduling, making the bond covenant a valuable instrument for reducing the conflict of interest between shareholders and bondholders in the Italian corporate market.

6 Appendix

The price of the new bond for a bondholder if the qualified majority of the bondholders accept the exchange offer is as follows (case 1):

$$p_{new,\,Su} = \sum_{i=1}^{n} \frac{100(i+s-r)}{(1+i+s)^{t_i}} + \frac{100}{(1+i+s)^{t_n}}. \tag{10}$$

If the qualified majority of investors do not accept the exchange, the price of the new bond is as follows (case 3):

$$p_{new,\,Fa} = \sum_{i=1}^{n} \frac{100(i+s-r)}{(1+i+s-b_F)^{t_i}} + \frac{100}{(1+i+s-b_F)^{t_n}}. \tag{11}$$

If the exchange is successful, the price of the old bond materialises as follows (case 2):

$$p_{old,\,Su} = \sum_{i=1}^{n} \frac{100(i+s-b_F)}{(1+i+s)^{t_i}} + \frac{100}{(1+i+s)^{t_n}}. \tag{12}$$

If we suppose that $t_i = i$, then the percentage of variations can be developed and simplified in the following expressions:

$$
\begin{aligned}
w_{new,\,Su} &= -\frac{r}{i+s}\left[1-(1+i+s)^{-n}\right] \\
w_{new,\,Fa} &= \frac{b_F - r}{i+s-b_F}\left[1-(1+i+s-b_F)^{-n}\right] \\
w_{old,\,Su} &= -\frac{b_F}{i+s}\left[1-(1+i+s)^{-n}\right]
\end{aligned}
\tag{13}
$$

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