Distressed exchange, bargaining power, and prior capital structure ☆

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ABSTRACT

Financially troubled companies often make Distressed Exchange (DE) offers to its creditors, to postpone costly bankruptcy reorganization. We derive the optimal terms and timing of a DE offer consisting of debt reduction and an equity stake in the restructured firm. The DE terms and timing are affected by shareholder bargaining power, with greater shareholder bargaining power resulting in earlier DE offer, smaller debt reduction and smaller equity stake. The impact of shareholder bargaining power is greater when bankruptcy cost is larger and tax rate is higher. We also show that renegotiability of debt increases ex-ante firm value and results in a higher optimal leverage ratio. Both firm value and optimal leverage ratio are decreasing functions of shareholder bargaining power.

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1. Introduction

Financially troubled companies often renegotiate with their creditors the terms of the debt obligations, in order to keep the company alive, or to reduce the probability of bankruptcy. Sundaresan and Wang (2007) examine such renegotiation with creditors (or strategic debt service) and the effect of renegotiability and shareholder bargaining power on corporate financial decisions. However, they focus on a specific form of debt renegotiation, that is, temporary debt service reduction during the financial distress period, when the interest payments are reduced by an amount depending on the bargaining power of creditors vis-à-vis shareholders. In the typical distressed restructuring, on the other hand, creditors are offered a bundle of securities in exchange for the existing debt (Franks and Torous, 1994).

We extend the Sundaresan and Wang (2007) model to study a more general form of renegotiation called the *Distressed Exchange* (or DE),[1] which involves a combination of permanent debt reduction and an equity stake in the restructured firm.[2] The DE is a common form of restructuring for financially distressed firms, and is discussed by Altman and Karlin (2009),

Chatterjee et al. (1995), Franks and Torous (1994), James (1996), Lie et al. (2001), etc. However, there has been no work, to our knowledge, on identifying the optimal terms (debt reduction and equity stake) and optimal timing of a DE, and its effect on capital structure and firm value, when bargaining power is shared by equity holders and creditors. This paper examines a DE, where the firm strategically offers its creditors a combination of debt reduction and equity stake.[3] We identify the optimal time to make such an exchange offer, as well as the optimal terms of the offer (i.e., size of debt reduction and equity stake) and how they are affected by shareholders' bargaining power. We also examine the effect of debt renegotiability and shareholder bargaining power on the ex-ante firm value and optimal capital structure.

Although DEs have been around for a long time,[4] their popularity has increased in recent times (Altman and Karlin, 2009). Borrowers and lenders do not generally have the same bargaining power in a renegotiation. Thus, it is important that terms of the DE offer be set so as to maximize the joint objective function of shareholders and creditors, taking into account their respective bargaining powers. This is done in a Nash bargaining game, as in Pawlina (2010) and Sundaresan and Wang (2007). We show how to determine the optimal DE terms (debt reduction and equity stake in the restructured firm) and the optimal DE trigger. Both are found to be significantly impacted by shareholder bargaining power vis-à-vis creditors. Greater shareholder bargaining power results in earlier restructuring and a smaller debt reduction/equity stake in the DE offer. The other important determinants are bankruptcy cost and tax rate. Finally, we show that renegotiability results in higher ex-ante firm value and optimal leverage ratio. However, both optimal leverage and firm value are decreasing functions of shareholder bargaining power.

The rest of the paper is organized as follows. Section 2 briefly describes the existing literature on strategic debt reduction, and clarifies the contribution of our model to this literature. Section 3 describes the model and the DE offer details. Section 3 analyzes the model, shows how the bargaining equilibrium is established, and identifies the optimal leverage ratio prior to restructuring. Section 5 illustrates the results of the model, and Section 6 summarizes and concludes.

2. Literature review

Mella-Barral and Perraudin (1997), Sundaresan and Wang (2007) and Pawlina (2010) examine strategic debt service with temporary debt reduction; while the firm is in financial distress, creditors receive a reduced coupon payment, but the coupon rises to its contractual level when the firm is no longer in financial distress. Fan and Sundaresan (2000) examine debt-equity swaps, where existing debt is replaced entirely with an equity stake in the restructured company, the size of the equity stake depending on creditors' bargaining power relative to shareholders. Our model examines a more general exchange offer, with both permanent debt reduction and equity stake for creditors in the restructured firm.

Permanent debt reduction has been examined by Mella-Barral (1999), Hege and Mella-Barral (2005) and Lambrecht (2001). Mella-Barral (1999) considers dynamic debt restructuring where the coupon is reduced repeatedly as the firm's financial condition deteriorates, culminating in liquidation. He derives equity and debt values, the sequence of restructuring triggers, and the magnitude of coupon reduction at each trigger. However, restructuring only consists of debt reduction (firm cannot offer an equity stake to creditors), and all the bargaining power lies with one party, which extracts the entire surplus from each restructuring. His model therefore examines a Stackelberg equilibrium with no bargaining, although he does state that relative bargaining power of shareholders and creditors should be an important factor in the restructuring. Lambrecht (2001) studies a one-time debt reduction (no equity stake) using a simplified version of Mella-Barral's (1999) model, where shareholders have all the bargaining power. He finds that the optimal restructuring trigger is the same as the bankruptcy trigger, and numerically derives the optimal coupon reduction. Hege and Mella-Barral (2005) examines multi-step debt reduction with a number of dispersed creditors, taking into account the holdout problem resulting from free-riding atomistic creditors. In their model, shareholders have all the bargaining power and make sequential take-it-or-leave-it offers (reducing coupon but increasing liquidation value). They show that dispersed debt is more attractive than concentrated debt. Our model is more in line with the single (or concentrated)-creditor models of Mella-Barral (1999), Lambrecht (2001), Mella-Barral and Perraudin (1997), Sundaresan and Wang (2007), Pawlina (2010), etc.

Our model differs from Mella-Barral (1999) and Lambrecht (2001) in the following ways. First, we allow for relative bargaining power between shareholders and creditors, which determines how the restructuring surplus is split between the two parties; hence we consider a Nash bargaining equilibrium rather than a Stackelberg leader-follower equilibrium. Second, our model examines a distressed exchange that includes both debt reduction and equity stake. This is more general, since the typical DE includes both (Franks and Torous, 1994). A general DE dominates both debt-reduction-only restructuring and debt-equity swap (discussed in Section 5.2). Third, we examine the interaction of bankruptcy cost and bargaining power, which was mentioned (but not examined) as a potentially important factor by (Mella-Barral, 1999, p. 572, point 2). Finally, we also derive the optimal pre-restructuring capital structure, which is important because the DE trigger

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[3] Although cash is sometimes offered in a DE, we assume the package consists of debt reduction and equity stake, so that there is just a pure capital structure change and no change in the asset structure of the firm. As Lie et al. (2001, p. 179) state: "In such debt-reducing exchange offers (DREOs), little or no cash changes hands and the asset structure of the firm is essentially unchanged." Franks and Torous (1994) report that cash is extensively used to redeem creditors' claims in Chapter 11 (bankruptcy) rather than in distressed exchanges.

[4] There is a substantial empirical literature that examines various aspects of distressed exchanges, e.g., choosing between DE and formal bankruptcy (Asquith et al., 1994; Chatterjee et al., 1995; Franks and Torous, 1994; Gilson et al., 1990), characteristics of DEs (Brown et al., 1993; Franks and Torous, 1994), and reason for and information content of exchange offers (Lie et al., 2001). See Hotchkiss et al. (2008) for a recent summary of this literature.