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by a Mixed Creditor/Shareholder?**

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**EUROPEAN UNIVERSITY INSTITUTE, FLORENCE**

**ECONOMICS DEPARTMENT**

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**BADIA FIESOLANA, SAN DOMENICO (FI)**

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Should Bankruptcy Proceedings Be Initiated  
by a Mixed Creditor/Shareholder?

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**Abstract**

This paper investigates whether or not bankruptcy proceedings should be initiated by an investor (or a group of investors) owning positive proportions of each type of security issued by the firm. We show that under certainty such an investor, called here a mixed creditor/shareholder, always has a strong incentive for value-maximization, while other investors may only have a weak incentive. We also show that under uncertainty, a mixed creditor/shareholder has less incentive to make decisions that benefit one class of investors at the expense of another. And when he holds equal percentages of debt and equity he always has a strong incentive to make exactly the right decision.

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## 1. Introduction

While the impact of bankruptcy costs<sup>1</sup> on the value of the firm has been examined in several different ways,<sup>2</sup> no one has yet examined it from the standpoint of a mixed creditor/shareholder.<sup>3</sup> The reason may be institutional: legal restrictions in some countries do not allow the groups of debt holders and equity holders to overlap. For example, the Glass-Steagall Act in the United States prohibits any equity ownership by banks, while Japanese banks normally own stock in their client firms up to the ceiling limit of 5 percent imposed by the Anti-Monopoly Act.<sup>4</sup> Whatever the reason, when there are several parties affected by a decision like whether to liquidate, a question arises, who should make the decision?

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1. As White (1983) points out, bankruptcy costs can be divided into two categories. First, *ex post* or direct bankruptcy costs incurred after the firm's bankruptcy filing, such as the administrative expenses. Second, *ex ante* or indirect bankruptcy costs incurred before the actual filing, such as those resulting from investors' attempts to reduce their losses if bankruptcy occurs and/or of bankruptcy induced distortions in investment incentives. In this paper we focus on the second category.

2. See Bulow and Shoven (1978), Haugen and Senbet (1978), Hellwig (1981), Higgins and Schall (1975), Stiglitz (1972), Titman (1984), Van Horne (1976), Webb (1990), and White (1989), among others.

3. What we mean here by a mixed creditor/shareholder is an agent owning positive shares of the total amount of each security issued by the firm.

4. Note however the use by some U.S. firms of "strip financing" in which each participant in a reorganization purchases an identical set of (inseparable) claims against the firm, ranging from secured debt to senior unsecured debt to junior unsecured debt to equity (Friedman 1990, p. 19).

The purpose of this paper is to determine whether or not bankruptcy proceedings should be initiated by a mixed creditor/shareholder rather than by creditors on their own (as is the usual practice). For that purpose we compare, in a simple model, the private incentives of three parties, the bondholders, the equity holders, and a mixed creditor/shareholder, to liquidate or continue an already failing firm, using the firm's value maximization criteria. Both certainty and uncertainty situations are considered.

The paper is organized as follows. The model is laid out in section 2. Sections 3 and 4 determine how efficient the private incentives of the claimants of all three types are in certainty and uncertainty situations, respectively. Section 5 is the conclusion.

## 2. The basic model

We employ a three-date model in which the firm chooses its security structure and undertakes some investments at time 0. For simplicity, we assume that the firm issues only two types of securities, bonds and shares, and that the former are described by the obligation to pay  $D$  at time 1.

Let  $Y$  denote the liquid assets or cash available at time 1. We assume that  $Y < D$ , so the firm is insolvent in a cash flow sense and faces a nontrivial bankruptcy decision. Let  $d$  indicate the decision regarding bankruptcy. We assume that the firm can either



liquidate ( $d = l$ ) or continue ( $d = c$ ) its current operations. We assume also that security holders of all three types choose among the two alternatives according to which one maximizes the expected returns of their claims. Finally, we assume that all cash flows from both liquidation and continuation accrue at time 2, and that the firm makes no interim cash payments until time 2.

Let  $V(d)$  denote the total cash distribution to all security holders when decision  $d$  is taken. Ordinarily, debt has priority over equity. Then, in the absence of discounting, the returns on bonds and shares which are associated with decision  $d$  are  $B(d) = \min\{V(d), D\}$  and  $S(d) = \max\{V(d) - D, 0\}$ , respectively.

### 3. Strong vs. weak incentives

Definitions: An agent has a **strong** incentive for value maximization if and only if he is better off with the right decision.

An agent has a **weak** incentive for value maximization if and only if he is as well off with the right decision.

Assume here that  $V(d)$  is non-stochastic for all  $d$ . Then, we have the following propositions.

Proposition 1: Both bondholders and equity holders always have at least a weak incentive for value maximization; bondholders have a

strong incentive for value maximization if and only if  $V(d_1) > V(d_2)$  and  $D > V(d_2)$ ; and equity holders have a strong incentive for value maximization if and only if  $V(d_1) > V(d_2)$  and  $V(d_1) > D$ .

Proof: The forms of the functions  $B(d)$  and  $S(d)$  imply that

$$V(d_1) > V(d_2) \Rightarrow B(d_1) \geq B(d_2) \text{ and } S(d_1) \geq S(d_2),$$

so there is at least a weak incentive. On the other hand,

$$B(d_1) > B(d_2) \Leftrightarrow \min\{V(d_1), D\} > \min\{V(d_2), D\}$$

$$\Leftrightarrow V(d_1) > \min\{V(d_2), D\} \text{ and } D > \min\{V(d_2), D\}$$

$$\Leftrightarrow D > V(d_2) \text{ and } V(d_1) > V(d_2), \text{ and}$$

$$S(d_1) > S(d_2) \Leftrightarrow \max\{V(d_1) - D, 0\} > \max\{V(d_2) - D, 0\}$$

$$\Leftrightarrow \max\{V(d_1) - D, 0\} > V(d_2) - D \text{ and } \max\{V(d_1) - D, 0\} > 0$$

$$\Leftrightarrow V(d_1) - D > 0 \text{ and } V(d_1) - D > V(d_2) - D$$

$$\Leftrightarrow V(d_1) > D \text{ and } V(d_1) > V(d_2).$$

Proposition 2: A mixed creditor/shareholder always has a strong incentive for value maximization.

Proof: The mixed creditor/shareholder maximizes

$$R(d) = \alpha \min\{V(d), D\} + \beta \max\{V(d) - D, 0\}$$

with respect to decision  $d$ , where  $\alpha$  and  $\beta$  denote the positive proportions of debt and equity which the agent owns. It follows that

$$R(d) = \begin{cases} \alpha V(d) & (\text{if } V(d) \leq D) \\ \alpha V(d) + \beta[V(d) - D] = \beta V(d) + (\alpha - \beta)D & (\text{if } V(d) > D) \end{cases}$$

which is always increasing in  $V$ .

The situation is shown in Figure 1 for the case when  $V(1) = D$  and  $V(c)$  varies.

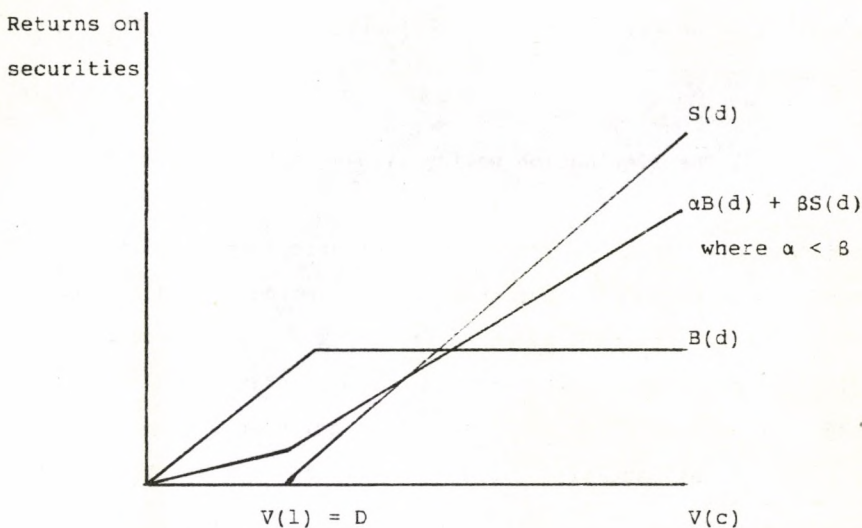


Figure 1: Weak vs. strong incentives

If  $V(c) < V(1) = D$ , bondholders have a strong incentive to choose the right decision -i.e., liquidation- since  $B(1) = D >$

$B(c) = V(c)$ ; shareholders have a weak incentive to choose liquidation since  $S(l) = S(c) = 0$ ; and a mixed creditor/shareholder has strong incentive to choose liquidation since  $\alpha B(l) + \beta S(l) = \alpha D > \alpha B(c) + \beta S(c) = \alpha V(c)$ .

On the other hand, if  $V(c) > V(l) = D$ , shareholders have a strong incentive to choose the right decision -i.e., continuation- since  $S(c) = V(c) - D > S(l) = 0$ ; bondholders have a weak incentive to choose continuation since  $B(l) = B(c) = D$ ; and a mixed creditor/shareholder has a strong incentive to choose continuation since  $\alpha B(c) + \beta S(c) = \alpha D + \beta[V(c) - D] > \alpha B(l) + \beta S(l) = \alpha D$ .

#### 4. The liquidation policy with uncertainty

Assume here that  $V(c)$  is now stochastic, but  $V(l)$  is still non-stochastic. Assume further that security holders of all three types are risk neutral and share at time 1 a common probability distribution about the firm's return from continuation. It is assumed that if the firm continues operating, then the total cash distribution to all security holders will be either  $V_1(c)$  or  $V_2(c)$ , with probabilities of  $p_1$  and  $p_2$ , respectively, where  $p_1 > 0$ ,  $p_2 > 0$ , and  $p_1 + p_2 = 1$ . We define  $V(c) = p_1 V_1(c) + p_2 V_2(c)$  as the expected value of the ongoing firm. It is also assumed that if the firm continues operating, then the claim  $D$  will be paid in full only if state 1 occurs at time 2, and that the total cash

distribution to all security holders from continuation will always be positive. These assumptions can be summarized as follows:  $V_1(c) > D > V_2(c) > 0$ .

Given the above definition and assumptions, we have the following propositions.

Proposition 3: There may no longer be even a weak incentive for either bond or shareholders to maximize the firm's expected value.

Proof: For simplicity, assume that the firm is insolvent in a bankruptcy sense. That is, whether the firm liquidates or continues,  $V(d) < D$ .

Assume first that  $D > V(l) > V(c)$ . The expected returns on shares which are associated with liquidation and continuation are  $S(l) = 0$  and  $S(c) = p_1[V_1(c) - D] > 0$ . Thus,  $S(l) < S(c)$ , and so shareholders will prefer continuation to liquidation, although from an economic viewpoint the firm should be liquidated because  $V(l) > V(c)$ .

In addition, shareholders may prefer to conduct a riskier, inefficient continuation activity if  $p_1[V_1(c) - D]$  is increased since they receive all the remaining cash after debt holders are paid in state 1, and risk nothing in state 2 in which bondholders bear all the risk.

Assume now that  $D > V(c) > V(l)$ . The expected returns on bonds which are associated with liquidation and continuation are  $B(l) =$

$V(1)$  and  $B(c) = p_1 D + p_2 V_2(c)$ . If  $V_2(c)$  is less than  $V(1)$ , then  $B(c)$  can easily be smaller than  $B(1)$  - indeed, it will be if  $p_2[V(1) - V_2(c)] > p_1[D - V(1)]$ .

When  $B(c) < B(1)$ , then bondholders will prefer liquidation to continuation, although from an economic viewpoint the firm should continue because  $V(c) > V(1)$ .

In addition, bondholders may prefer to conduct a safer, inefficient continuation activity if  $p_1 D + p_2 V_2(c)$  is increased since they recover  $D$  in state 1, and bear the entire risk in state 2.

Security holders have an economically inefficient incentive if they stand to gain incrementally from the wrong decision. However, if the total cash distribution to all security holders remains constant and positive, such a gain will have to be at the expense to other security holders. So, the perverse decision incentives arise because the wrong decision may engender wealth transfers between debt holders and equity holders. On the other hand,

Proposition 4: A mixed creditor/shareholder who owns equal positive proportions of both debt and equity has a strong incentive to maximize the firm's expected value.

Proof: If  $\alpha = \beta = \theta$ , the mixed creditor/shareholder will maximize  $E \theta [B(d) + S(d)] = E \theta V(d) = \theta V(d)$  with respect to decision  $d$ , which is always increasing in  $V$ .

In addition, since he receives a fraction of the upside cash in state 1, and bears a fraction of the risk in state 2, a mixed creditor/shareholder may be more of a risk-taker than debt holders and less of a risk-taker than equity holders, thus reducing the tension between debt and equity regarding the attitudes to risk.

## 5. Conclusion

The central problem when either debt holders or equity holders exercise complete control is that they each act solely in their own interests. The actions of these classes of investors are therefore not based on maximizing the total value of the firm and may be taken at the expense of other classes.

The main result of the paper is that the waste from non-maximizing decisions is reduced and may be even eliminated if a mixed creditor/shareholder is given control. The explanation stems from the very specific nature of this kind of investor. Because he is both a debt holder and an equity holder, a mixed creditor/shareholder has less incentive to make decisions that benefit one class of investors at the expense of another. Furthermore, as the proportions of the firm's debt and equity which the investor owns become closer, so his incentive structure becomes economically more efficient. And when the proportions are equal he always has a strong incentive to choose exactly the right decision.

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