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The Corporate Bankruptcy Decision

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A central tenet in economics is that competition drives markets toward a state of long-run equilibrium in which those firms remaining in existence produce at minimum average costs. In the process of transition to long-run equilibrium, inefficient firms, firms using obsolete technologies and those producing products that are in excess supply, are eliminated. Consumers benefit because in the long-run, goods and services are produced and sold at the lowest possible prices. The mechanism through which inefficient firms most often are eliminated is that of bankruptcy, the legal process applied to firms unable to pay their debts.¹ In 1984, around 62,000 business firms filed for bankruptcy. Around two-thirds of them filed to liquidate in bankruptcy and the rest filed to reorganize in bankruptcy.² The total liabilities of firms that filed for bankruptcy in 1985 came to approximately \$33 billion.³

This suggests that bankruptcy serves as a screening process and that it should be designed to eliminate only those firms which are economically inefficient, whose resources can be better used in some other activity. However, firms typically file for bankruptcy voluntarily and they do so based on financial rather than on economic efficiency criteria—they seek bankruptcy court protection when they cannot meet financial obligations currently due. This raises the possibility that firms in bankruptcy might not always be economically inefficient and that inefficient firms might not always end up in bankruptcy. In fact we show in this paper that none of the commonly considered bankruptcy priority rules gives firms an incentive to choose bankruptcy or to remain out of bankruptcy only when that alternative is more economically efficient. Failing firms may liquidate even in circumstances when their resources are most valuable if they continue operating and they may continue to operate even when their resources can better be employed in some new use. When reorganization is added as an additional bankruptcy alternative, the analysis suggests that too many failing firms are likely to continue operating in the same line of business in which they were previously making losses. Thus the U.S. bankruptcy system appears to delay the movement of resources to new and higher value uses.

This paper has two purposes. First, it considers what the features of an economically efficient bankruptcy procedure would be and how such a procedure might differ from actual U.S. bankruptcy law. Second, it examines how the bankruptcy procedure has been modeled in the finance and economics literatures and indicate the problems that sometimes arise from ignoring important features of the process. I consider bankruptcy liquidation and reorganization in separate sections below.

1. Liquidation

The basic bankruptcy procedure is a liquidation. While most large firms that file for bankruptcy are likely to reorganize rather than liquidate, the liquidation procedure is important to consider because it sets the framework for bargaining over a reorganization.

¹ However, a firm which is losing money might be owned by a profitable parent corporation. In this case if the parent terminated the operations of the subsidiary, it would be liable for the latter's debts.

² Administrative Office of the U.S. Courts, *Federal Judicial Workload Statistics*, 1985.

³ Dun & Bradstreet, *The Business Failure Record*, 1986. This figure includes liabilities of firms (such as Chrysler) that did not formally file for bankruptcy, but whose creditors incurred losses.

When a firm files to liquidate in bankruptcy, the court appoints a trustee who shuts the firm down, sells its assets and turns the proceeds over to the court for payment to creditors. The bankruptcy priority rule then determines in what order creditors are paid and how much each receives.

Economic efficiency considerations

The bankruptcy filing itself initiates a collective legal procedure by which all claims against the firm are settled. Having such a procedure is worthwhile from an efficiency standpoint. Otherwise, individual creditors would engage in a race to be first to sue the firm for repayment of their own claims. Those who sued first would receive payment in full until the firm's assets were exhausted, after which other creditors would receive nothing. Resources would be consumed both by duplicative monitoring expenses incurred by creditors in deciding whether and when to sue the firm and by the costs of the lawsuits themselves. Also without a bankruptcy procedure, few lenders would be willing to make loans to firms on a long-term basis, since long-term lenders might be forced to stand by holding unmatured claims while short-term creditors sued the failing firm and depleted its assets. By the time the long-term claims matured, the firm might have no assets left. But as part of the bankruptcy process, long-term claims are "accelerated" to become due immediately and are settled along with all other claims.

What priority rule would be economically efficient? Consider three possible priority rules. The first is the well-known "me-first" rule of Fama and Miller.⁴ Under this rule, all creditors of the firm are ranked in order of the date on which they made their loans to the firm, with the earliest claims ranked highest. In bankruptcy the proceeds of selling the firm's assets are used to pay off creditors' claims in full in order of their ranking. If anything remains, it goes to equity holders, who otherwise receive nothing.⁵ The second rule is the "last lender first" (LLF) rule, which is identical to the me-first rule except that creditors are ranked in reverse chronological order. Thus the most recent lender ranks first and the earliest lender ranks last. We will see that this rule is important in practice, because later lenders often take a security interest in the firm's assets, or use some other device which allows them to appropriate the value of assets that would otherwise be used to pay earlier lenders' claims in bankruptcy. The third rule is the equal priority (EP) rule, in which all creditors have equal ranking in bankruptcy. Here all creditors are paid the same fraction of the face value of their claims.

Consider what effect each of the three priority rules have on the economic efficiency of the firm's behavior. We assume either that managers, representing equity, make decisions so as to maximize the value of equity, or else that decisions are made by a coalition of equity and a lender referred to as the "bank." The coalition assumption is used when the firm is failing, *i.e.*, it has insufficient assets to pay obligations which are due in the current

⁴ (1972), pp. 150-152.

⁵ Note that creditors do not get actual ownership of the firm, as is often assumed. They get the proceeds of selling the firm's assets, usually by auction. See Aghion and Bolton for a model of bankruptcy in which control of the firm is shared between debt and equity holders and varies continuously depending on the outcome of firm's investment project, rather than shifting from full control by equity outside of bankruptcy to no control by equity in bankruptcy.

period. Then to avoid bankruptcy, it must obtain new financing, which is assumed to take the form of a loan from the bank. In this case, the decision concerning whether or not the firm files for bankruptcy is made to maximize the total value of the coalition's holdings. Coalition models of the bankruptcy decision were first proposed by Bulow and Shoven and have been analyzed by Ang and Chua and by White (1980) and (1983). They rely on the assumption that some lenders make short-term loans to the firm, monitor its behavior closely and have bargaining power since they are willing under some circumstances to make new loans to the firm. Other lenders do not have such bargaining power, and are unwilling to make new loans to the firm. The latter are referred to here as "debt," but they might include trade creditors, tax claims, long-term bondholders, and others. (See below for discussion.)

I assume that the failing firm's bankruptcy decision is made in the first period of a two period model. The firm has outstanding debt of amount D_1 due in period 1 and D_2 due in period 2. Suppose the firm filed for bankruptcy and liquidated in period 1. Then its assets (sold piecemeal) would be worth L . I assume that $L < D_1 + D_2$, so equity would receive nothing in this case. Alternatively, the firm might continue operating outside of bankruptcy for another period. By assumption, it has no cash on hand. So in order to avoid bankruptcy in period 1, it must obtain a new loan of amount $B_1 = D_1$ which will be used to pay off debt due in period 1. (Interest and discount rates are assumed to be zero for simplicity.)⁶ The new loan will come from the bank. The coalition is assumed to choose that alternative which maximizes the total value of equity and the bank's claim. This means that equity holders are willing to give the bank up to the entire value of equity in order to induce it to make a new loan, so that the firm can avoid bankruptcy this period. They are willing to do this since equity is wiped out if the firm files for bankruptcy in period 1.

If the firm continues, its earnings after non-debt expenses are paid are assumed to be P_2 with certainty in period 2. Then from an economic efficiency viewpoint, it is efficient for the firm to continue operating if $P_2 > L$ and to shut down and file for bankruptcy if $L > P_2$. What decision will be made under each of the three priority rules? Consider the me-first rule first. If the coalition chooses bankruptcy in the current period, then it will receive nothing. If the coalition chooses continuation, then it will receive $P_2 - D_2$ in period 2, since the debt D_2 ranks above the bank's loan and since D_1 has already been paid off. But the bank's loan of B_1 must be subtracted from the coalition's return. Thus the coalition will choose continuation if $P_2 - D_2 - B_1 > 0$. But this must imply that P_2 exceeds L , since $L - D_2 - B_1 < 0$. Therefore continuation will only be chosen if it is economically efficient. However, suppose $P_2 - D_2 - B_1 < 0$. Then both liquidation and continuation lose money, but either alternative might be more economically efficient. The coalition in this case chooses liquidation. Thus under the me-first rule, the coalition chooses continuation only when that alternative is economically efficient, but it sometimes may choose liquidation even when continuation is more efficient. Thus some firms that end up in bankruptcy should continue to operate from an economic efficiency standpoint. Even in this simplest of cases, the me-first rule does not lead to economically efficient incentives

⁶ The results would be the same if the interest rate and the discount rate were assumed to be positive but equal to each other.

concerning the bankruptcy decision.

Alternately, suppose the LLF rule were used. Then the coalition's return under liquidation is the same as above. The coalition's net return under continuation is $P_2 - D_2 - B_1$, if this amount is positive. Here continuation is economically efficient and it is preferred by the coalition. But if $B_1 < P_2 < D_2 + B_1$, then the coalition's net return is 0, since the bank ranks first for its claim of B_1 , but the coalition incurs costs of B_1 . Thus when both alternatives lose money but either could be more efficient, the coalition is indifferent between them. Finally, under the EP rule the return to the coalition if continuation is chosen is between those under the other two rules. Thus the coalition also has an incentive under the EP rule to choose continuation only when it is efficient, but sometimes to choose liquidation when continuation is more efficient. We have therefore shown that when there is no uncertainty, all three bankruptcy priority rules have similar results. All have a "one-sided" efficiency property in that they give the coalition an incentive to choose continuation only when it is efficient but give the coalition an incentive sometimes to choose bankruptcy when it is not the most efficient outcome. Even in this simplest of cases, none of the three bankruptcy priority rules *always* gives the bank-equity coalition an incentive to make economically efficient bankruptcy decisions.

Turn now to the more realistic case when the firm's earnings under continuation are uncertain. Suppose everything else remains the same, but now if the firm continues, it earns $P_2 \pm G$, with probabilities p and $1 - p$. We assume that if the good outcome occurs in period 2, then the firm will be able to pay all its debts. If the bad outcome occurs, then the firm will not be able to pay all its debts and will file for bankruptcy then. However we assume that $P_2 - G > 0$. Suppose the me-first rule is in effect. Then the coalition's return if continuation is chosen and if $P_2 - G \leq D_2$ is $p(P_2 + G - D_2) - B_1$.⁷ The coalition gets $P_2 + G - D_2$ if the good outcome occurs, but gets no return if the bad outcome occurs, since all the firm's earnings are assumed to go to debtholders, who have higher priority. Continuation will be chosen if this expression is positive. But continuation is only economically efficient if $EP_2 > L$, where EP_2 is the expected value of P_2 . Thus under the me-first rule, continuation may be chosen even if liquidation is economically more efficient and *vice versa*. Continuation becomes more attractive to the coalition, even in situations when liquidation is more efficient, as G and/or p get larger, since the coalition receives all the profits after debtholders are paid if the good outcome occurs, but loses only B_1 while debtholders lose the rest if the bad outcome occurs. Continuation is also more attractive if the firm has relatively more debt due in period 2 rather than period 1, since the new bank loan required to finance continuation is smaller. The opposite conditions make liquidation more attractive to the coalition, even in situations when continuation is more economically efficient.⁸

Under the LLF rule, the coalition's gain from choosing continuation is larger than under the me-first rule, because the bank has priority over debt when the bad outcome occurs. Its return in continuation is either $p(P_2 + G - D_2) + (1 - p)(B_1) - B_1$ or $p(P_2 + G - D_2) +$

⁷ I ignore the possibility that parties are risk averse, since G is assumed to be idiosyncratic risk.

⁸ Stiglitz (1972) was the first to make the point that managers of firms have incentives to engage in risky investment projects when there is a possibility that the firm might go bankrupt. Here the firm continuing to operate can be interpreted as a risky investment decision.

$(1 - p)(P_2 - G) - B_1$, depending on whether $P_2 - G$ is greater than or less than B_1 . In the former case, the coalition chooses continuation as long as $p(P_2 + G - D_2 - B_1) > 0$, or as long as the coalition makes a profit when the good outcome occurs. The coalition has an extremely strong incentive to choose continuation over liquidation in this case and is likely to choose continuation even in situations where liquidation is economically more efficient.⁹

Further, suppose the LLF rule is followed and $P_2 - G \geq B_1$. Then for the coalition to choose bankruptcy in period 1 implies that $P_2 + G - D_2 - B_1 \leq 0$. Since $D_1 = B_1$, this implies that $P_2 + G \leq D_1 + D_2$ for firms in bankruptcy. The ratio of liabilities to assets for firms in bankruptcy will therefore be $(D_1 + D_2)/L$, which is greater than or equal to $(P_2 + G)/L$. Since $P_2 + G$, the value of earnings in the good outcome, is expected to be significantly greater than L , this means that the ratio of liabilities to assets for firms in liquidation is expected to be significantly above one. It is a common assumption in the finance literature that failing firms file for bankruptcy as soon as their liabilities rise to the point that they equal the value of assets. However, we have just shown that firms observed in bankruptcy are likely to have liability to asset ratios well in excess of one if the LLF is followed. I argue below that in fact the LLF rule is commonly used by failing firms, since the bank lender that made new loans to finance continuation in the previous period (or periods) was in a strong bargaining position to demand favorable treatment.

Finally under the EP rule, the coalition's return if continuation is chosen is $p(P_2 + G - D_2) + (1 - p)(B_1/(B_1 + D_2))(P_2 - G) - B_1$, which is between its return under the me-first rule and under the LLF.¹⁰

It is easy to extend the analysis to consider the incentives of the coalition to undertake new investment projects. Suppose a new project costs C' and has returns $P'_2 \pm G'$, with probability p' and $1 - p'$. The project can be financed either by equity (since the firm may not be failing when it makes the new investment) or by the bank. Whether the project is economically efficient or not depends on whether EP' is greater than or less than C' . But whether the project is attractive or not to equity or to the coalition depends in part on whether the uncertainty in the return to the project is positively or negatively correlated with the uncertainty in the return on the firm's existing income stream, which is $P_2 \pm G$. If both the new project and the firm itself have their good earnings outcomes at the same time, then the effect of the project is to increase the variance of the firm's overall income stream. This makes equityholders better off, since they get all the firm's earnings in the good outcome once D_2 is paid to debtholders, and makes the existing debtholders worse off, since their losses are larger when they occur and they may also incur losses more often. In this case, even if the project is economically inefficient, it may be attractive to equity or to the bank/equity coalition. Inefficient projects can be shown to be attractive

⁹ We assumed here that the bank lender had no previous loans outstanding to the firm. However, the bank lender might often have existing loans outstanding to the firm. Then an additional inducement for the bank to lend would be the possibility of obtaining LLF treatment for its earlier claims. This causes continuation to be chosen more often.

¹⁰ If interest rates are added into the model and they have risen in the market since the firm's long-term debt was issued, then the coalition has an additional incentive to choose continuation under any of the three priority rules. Otherwise, debtholders receive a windfall gain, since their claim in liquidation is for the face value of the debt, which is greater than its market value even ignoring default risk.

under any of the three priority rules in bankruptcy. In contrast, if the new project earns its good outcome when the firm's existing income stream has its bad outcome and *vice versa*, then the new project has the effect of decreasing the variance of the firm's overall income stream. This makes debtholders better off and equity worse off, since it increases the expected value of the return to debt at the expense of the return to equity. This result holds under any of the three priority rules in bankruptcy.¹¹

We have shown that no single priority rule in bankruptcy "works" in the sense of giving the bank/equity coalition an incentive to choose continuation or liquidation only when that alternative is more economically efficient. When the firm's future earnings are uncertain, the me-first rule appears to discourage inefficient continuation decisions more effectively than either the LLF or the EP rules. But when the firm's future earnings are certain, the me-first rule sometimes discourages continuation decisions even when they are economically efficient. The LLF and EP rules work slightly better in the certainty case, but too much liquidation can occur under any of the three rules. Thus no bankruptcy priority rule leads to economically efficient results in all situations and none of the three rules seems clearly to dominate the others. If we view bankruptcy priority rules as, in effect, substitutes for making equity fully responsible for the firm's liabilities, then the results suggest that no simple bankruptcy priority rule works as well as unlimited liability by the firm's owners. Inefficient bankruptcy decisions and inefficient investment incentives, at least in some situations, appear to be the price of having limited liability, for any simple bankruptcy priority rule.

In contrast to these results, the finance literature has tended to emphasize the desirable properties of the me-first rule. In most finance models, the firm's future earnings are uncertain (although the distribution of earnings is known), but its investment policy is fixed. Also, the value of the firm's assets in bankruptcy is assumed to be the same as their value if the firm continues. This means that there are no economic efficiency implications of the firm's decision whether to continue operating or to file for bankruptcy. In this context, if the me-first rule is followed for all debt claims, then it prevents reductions in the value of debt from occurring after a loan is made to the firm. If the me-first rule were uniformly followed, then the debtholders would be protected from changes in the value of their claims which depended on capital structure decisions by the firm. However, in the absence of transactions or monitoring costs outside of bankruptcy, the value of the firm, defined as the value of debt plus equity, is the same under all three priority rules. This is because any reduction in the value of debt due to the firm violating the me-first rule is fully offset by increases in the value of equity. The same total return stream must be shared by the firm's debt and equity holders. Rearranging their priority ordering therefore only shares the total return stream among them in a different way. It cannot affect the value of the firm.¹² A more interesting argument could be made for the me-first rule that it reduces monitoring costs by lenders, since each lender would only have to monitor earlier

¹¹ See Higgins and Schall (1975) and White (1980).

¹² See Kim *et al* (1977), Kim (1978) and Warner (1977a). Scott (1977) has pointed out, however, that the value of the firm may rise if secured debt is substituted for unsecured debt ranked according to the me-first rule. (See below for discussion of secured versus unsecured debt.) The reason is if all or most debt is secured, then administrative expenses in bankruptcy will be low or zero, since there are few "free" assets and therefore little for the bankruptcy trustee to sell. The firm's value is defined as the present

loans to the firm and not later loans. However, this argument ignores the fact discussed above that the equity/bank coalition may have incentives to make inefficient bankruptcy decisions and investment decisions which waste the firm's assets even when the me-first rule is followed. Thus even under a strict me-first regime, lenders must continually monitor the firm for behavior which reduces the value of their claims.

U.S. law

The priority rule in bankruptcy liquidations specified by the U.S. Bankruptcy Code is called the "absolute priority rule" (APR). The APR specifies that claims are paid in full in a particular order: first, administrative expenses of the bankruptcy process itself, including court costs, lawyers' fees, the trustee's expenses, and any loans incurred by the firm after the bankruptcy filing (with the court's permission); second, claims having statutory priority, including tax claims, rent claims, consumer deposits, and unpaid wages and benefits;¹³ and, third, unsecured creditors' claims, including trade creditors, utility companies, holders of damage claims against the firm (such as claims by users injured by the firm's defective products or claims against the firm for breach of contract),¹⁴ claims of long-term bondholders, and claims by the U.S. Government for the firm's uncovered pension liabilities. Unsecured creditors' claims rank equally in priority, unless there are subordination agreements between particular creditors and the firm specifying priority orderings among unsecured creditors. Such agreements are common in long-term bond indentures, and they usually require that subsequent loans to the firm rank below the claims of the particular bondholders.¹⁵ These agreements are followed in bankruptcy by creating subclasses within the class of unsecured creditors. Finally, equity holders come last.

The APR also provides for secured creditors to be outside the priority ordering. Secured creditors are those who have bargained with the firm for the right to claim a particular asset (or its value) if the firm liquidates in bankruptcy. Their liens are recorded in public records. Thus secured creditors may receive a payoff in bankruptcy even when all other creditors receive nothing.

The APR contains some elements of all three of the rules discussed above. The me-first rule is followed among long-term bondholders if the firm has several bond issues outstanding and each is covered by a subordination agreement. The EP rule applies to unsecured creditors not covered by subordination agreements. The LLF rule prevails among some groups of creditors because the mixing of secured and unsecured claims in the same firm allows secured creditors to be paid in bankruptcy even if they made their loans to the firm later than unsecured creditors who receive nothing.¹⁶

value of future revenues minus expenditures, including expected administrative costs in bankruptcy but excluding debt service costs. Therefore, reducing expected bankruptcy administrative costs increases the value of the firm to debt and equity holders.

¹³ There are limits on the maximum size of claims in this category.

¹⁴ Pennzoil's claim against Texaco fits into this category

¹⁵ See Smith and Warner (1979) for discussion of long-term bond indentures.

¹⁶ See Schwartz (1981).

For example, suppose creditor *A* makes an unsecured loan to the firm. The firm uses the proceeds of the loan to purchase inventory. Later another creditor *B* makes a loan to the firm and takes a “floating” lien on the firm’s inventory. If the firm later files for bankruptcy, the LLF rule will determine priority between *A* and *B*, since *B* will be paid in bankruptcy and *A* will not (assuming the firm has no other assets), even though *A*’s loan was made earlier.¹⁷ It might be argued that creditors like *A* anticipate this and will either demand to be secured themselves or will lend on an unsecured basis, but raise the interest rate they charge to compensate for the added risk. However, some types of loans, such as trade credits extended by suppliers and tax claims, are too small or too short-term to make arranging a security interest worthwhile. Other claims are involuntarily unsecured, such as damage claims against the firm. Still others, such as long-term subordinate debentures, are unsecured, but are only extended to large, publicly traded firms whose probability of financial distress is viewed *ex ante* as being extremely small. While unsecured lenders may demand higher interest rates to cover extra risk, once their loans are made, the higher interest rate becomes merely a negative income effect to the firm. Afterwards, the firm has a price incentive to arrange new loans that rank high in the priority ordering, since the new loans will carry a lower interest rate due to their high priority.

Secured loans have an economic advantage in that they reduce transactions costs. Secured lenders need only to monitor the whereabouts and condition of the actual assets subject to their liens. For example, if a lender takes a lien on a drill press, he need only check when the agreement is made that the press is not already subject to a prior lender’s lien and later that the press is not being misused. The lender has no need to monitor the firm’s financial condition generally. If the lender takes a lien on inventory, then he must engage in continual monitoring of the firm’s inventory, but only of its inventory, not its general financial condition. Note that if all creditors were secured, then the priority rule in bankruptcy would be similar to the me-first rule. No new lender could take a lien on an asset already subject to a lien (unless the new lien were subordinate to the old). This would make it impossible for later lenders to improve their position in the priority ordering by reducing the return to earlier creditors in bankruptcy. The all-secured priority rule shares with the me-first rule the property that it discourages inefficient continuation decisions when there is uncertainty in the firm’s income stream. However, the expense of recording all transactions in public records would seem to make the me-first rule dominate a rule involving all claims being secured.

Characteristics of firms that liquidate in bankruptcy

Data on the characteristics of firms in bankruptcy liquidation provide some support for

¹⁷ There are many other ways in which creditors can improve their positions in the priority ordering. One involves the practice of “setoff.” Here, at the time of the bankruptcy filing, a bank having an unsecured loan outstanding can claim the firm’s account balance with the bank in partial payment of the loan. This allows the bank to jump over other unsecured and statutory creditors. Another involves the firm buying another as a subsidiary and guaranteeing its loans. This in effect allows the subsidiary’s creditors to jump ahead of the parent’s in the priority ordering. A third possibility is that an unsecured creditor might force the firm to file for bankruptcy as a condition of the creditor renewing its loan. Then the new loan is considered an administrative expense of the bankruptcy proceeding (regardless of whether the firm later liquidates or reorganizes) and is placed in the highest priority class.

the prediction of the LLF rule in the coalition model that firms observed in bankruptcy liquidation have a high ratio of total liabilities to assets. In a sample of 500 firms that filed to liquidate in bankruptcy, a study done for the Department of Justice¹⁸ found that the ratio of total liabilities to assets at the time of the bankruptcy filing was 7.3 and the ratio of secured liabilities to assets was 1.0. With these high ratios of liabilities to assets at the time of the bankruptcy filing, it should not be surprising that unsecured creditors receive little in bankruptcy liquidations. In a study by White (1984) of 90 firms that liquidated in bankruptcy, the average payoff rate to creditors having statutory priority was 6% and the average payoff rate to unsecured creditors was 4%.¹⁹

2. Reorganization

Firms filing for bankruptcy have a choice between liquidating under Chapter 7 of the U.S. Bankruptcy Code and reorganizing under Chapter 11 of the Code. In a reorganization under Chapter 11, the existing managers of the firm usually remain in control and the firm continues to operate. A reorganization plan must be agreed on which settles the claims of all pre-bankruptcy creditors. In most reorganizations, there is never a sale of the firm or its assets on the open market. Instead, the reorganization plan substitutes for a sale. The reason for having two separate bankruptcy procedures seems to be that Congress has tended to view the role of reorganization as one of providing breathing space for supposedly viable firms which are in temporary financial distress, in order to save their jobs. In contrast, the role of liquidation is viewed as being to wind up the operation of firms which are not viable. However, as long as there are two separate procedures, managers have an incentive to choose the alternative that is best for themselves and for equity, regardless of whether the firm's assets are more or less valuable if it shuts down or continues operating.

Economic efficiency considerations

Before considering the actual features of U.S. reorganization law, consider whether having a separate reorganization procedure in bankruptcy serves any purpose from the viewpoint of economic efficiency. The bankruptcy liquidation procedure involves an actual sale of the firm's assets after its operations are terminated. However, in theory, either the firm's assets could be sold piecemeal or the firm could be offered for sale on the market as a going concern. Suppose instead that all bankrupt firms were offered for sale as going concerns. Then the amount that a firm would sell for is the maximum of the value of the firm's assets and the value of the firm as a going concern, since the buyer can choose whether to close the firm down or not. Thus sale of the firm as a going concern during the bankruptcy process would automatically cause it to be shut down or continued in operation, depending on which alternative is more economically efficient. Requiring that all bankruptcies take place under a single legal procedure would thus eliminate the

¹⁸ See Ames *et al* (1983).

¹⁹ No data are collected by the bankruptcy courts concerning amounts paid to secured creditors. Note that the average size of firms in the sample was small—the mean level of total liabilities was \$1.6 million.

deadweight cost that arises when firms continue to operate whose resources are more valuable in some alternative use. Of course, the sale process itself may be expensive.

The coalition model suggested that not all firms observed in bankruptcy liquidation should be shut down. Rather, in some cases the coalition has an incentive to choose liquidation even when the firm's earnings if it continues to operate, EP_2 , exceed its shutdown value, L . (This possibility existed under both the certainty and the uncertainty models.) This suggests that reorganization can improve efficiency by allowing firms for which EP_2 exceeds L to continue operating even though they would end up in liquidation if that were the only bankruptcy procedure available. In addition, there are likely to be some external gains from firms continuing to operate rather than shutting down, such as gains to previous customers for whom obtaining replacement parts is otherwise difficult and gains to workers who save the costs of having to search for new jobs. Finally, when transactions/monitoring costs for creditors are high, then another argument for reorganization emerges from the agency problems that arise as failing firms move toward bankruptcy. If managers expect to lose their jobs when the firm files for bankruptcy, then they have incentives to waste the firm's assets in excessively risky investments that are attractive since they might save the firm. If, however, managers anticipate that they will remain in control during the reorganization procedure, then they may have greater incentives to run the firm in a more reasonable manner even though the probability of bankruptcy is high.

U.S. law

Firms that file under Chapter 11 must adopt a reorganization plan. There are two separate procedures for formulating a plan. The first is referred to as the "unanimous consent procedure" (UCP). The assumption behind the UCP is that the firm's assets will have higher value if it reorganizes than if it liquidates. This value differential (which under the APR would go entirely to high priority creditors) must be divided up among all classes of creditors and equity via a negotiating process, with all parties sharing the gain. The UCP forces all classes of creditors to negotiate with each other and to strike a bargain that is approved by a two-thirds vote of all classes of creditors and by a majority vote of equityholders. The bargain must incorporate what is normally an inflated valuation of the firm's assets, which makes them worth more than its liabilities under the reorganization plan. This makes the firm "solvent," which is required in order that the old equity be retained. (If on the contrary, it is determined that the firm is insolvent, then old equity must be eliminated, which means it is deemed to disapprove the reorganization plan and the UCP cannot be used.)

Management is in a strong bargaining position in negotiations over the reorganization plan under the UCP. During at least the first six months after the bankruptcy filing, only management has the right to propose a plan. Managers also can threaten to transfer the firm's bankruptcy filing from Chapter 11 to Chapter 7 if creditors do not agree to a plan—a threat which is often effective against unsecured creditors, who anticipate receiving little or nothing if liquidation occurs. Managers also run the firm during the negotiating process, so secured creditors often fear that the value of their lien assets is declining. Finally, even after the period when only they can propose a plan, managers remain in a strong bargaining position. This is because individual creditors are often unrepresented and severe free rider

problems crop up when creditors' groups attempt to raise funds to take an active part in bargaining, except in the largest reorganization cases.

The second scheme for adopting a reorganization plan is aptly named "cramdown." It comes into play if bargaining under the UCP breaks down or if the firm is insolvent and old equity must be eliminated.²⁰ In that case, as long as at least one class of creditors has voted in favor of the plan, the bankruptcy court can confirm the plan anyway as long as each dissenting class is treated "fairly and equitably." The "fair and equitable" standard is essentially identical to the APR.²¹ For a court to approve a reorganization plan using cramdown, it requires a more serious valuation of the firm's assets than if the UCP is used, often an actual sale of the firm itself. Cramdown thus introduces the possibility that a firm might be sold on the market as a going concern while in bankruptcy. But since most firms probably go through extended bargaining under the UCP and months of disruption before cramdown is finally used, their value when sold is likely to be less than if they were offered for sale immediately after filing for bankruptcy.

In the DOJ study of 500 firms that filed to reorganize in bankruptcy, the average ratio of total liabilities to assets at the time of the filing was 1.4 and the ratio of secured liabilities to assets was .60. These ratios are lower than for the DOJ sample of firms that filed to liquidate, suggesting that failing firms which intend to reorganize in bankruptcy are less likely to delay their bankruptcy filings than firms which eventually file to liquidate in bankruptcy. In White's study of 64 firms that filed to reorganize under Chapter 11 and completed the reorganization process, only around 40% of the firms agreed on a reorganization plan under the UCP. For the rest, bargaining over a plan under the UCP did not succeed. 30% of the sample then converted their filings to liquidations under Chapter 7. The remaining firms were sold as going concerns and the proceeds paid to creditors according to the APR. No firms in the sample formally used cramdown to adopt a reorganization plan.²²

In the White sample, the average payoff rate to unsecured creditors under the UCP reorganization plans was 16% in cash plus 18% (undiscounted) in installments payable over up to 6 years. The payoff rate to unsecured creditors of firms that were sold as going concerns while in bankruptcy was 13% in total. Thus unsecured creditors appear to do substantially better when firms reorganize than when they liquidate under Chapter 7. They also do better when firms reorganize using the UCP than when bargaining over a plan under the UCP fails.

Models of the three-way bankruptcy choice

The three-way bankruptcy decision among liquidation, reorganization and remaining

²⁰ If any class (including equity) is "unimpaired," then it is deemed to approve the reorganization plan without a vote. This sometimes gives management leeway to adopt a plan under the UCP if they can convince the bankruptcy judge that a class which objects to the plan is unimpaired.

²¹ It requires protection of secured creditors' claims up to the market value of their lien assets and it requires that if any unsecured class gets less than full payment, then all lower ranking classes get nothing.

²² The average size of these firms was quite small—the average level of total liabilities was around \$2 million. It seems possible that if a sample of large firms reorganizing in bankruptcy were collected, the proportion that use the UCP would have been much higher. See White (1984).

out of bankruptcy completely can be modeled as an extension of the bank/equity coalition decision.²³ We have already discussed the characteristics of the choice between liquidation in bankruptcy and continuation outside of bankruptcy. Now suppose as a third alternative that the firm might reorganize using the UCP. In this case, the firm continues to operate under the same management and equity interests are retained. I assume that the firm has both unsecured and secured liabilities. Unsecured claims due in periods 1 and 2 are D_1 and D_2 . Under the reorganization plan, both are cut back by some proportion and are paid in installments. Suppose unsecured creditors receive a payoff rate of u_1 per dollar of face value in period 1 and u_2 in period 2, for a total payoff rate of $u = u_1 + u_2$. Secured creditors' claims have face value of S , and we assume they are all due in period 1. Secured creditors' claims also may be cut back in reorganization, for reasons discussed below, but by a smaller proportion. They receive payoff rates of s_1 and s_2 in the two periods, for a total payoff rate of $s_1 + s_2 = s$, where $s > u$. The firm incurs a fixed transactions cost of reorganizing, T_r , which is paid in period 1. We assume that if the firm reorganizes, its earnings in period 2 before transactions costs are the same as if it continues outside of bankruptcy, or $P_2 \pm G$ with probabilities p and $1 - p$. (If earnings fall due to reorganization, this is captured as part of T_r .)

How are the payoff rates s and u determined? If the firm liquidated, secured creditors could reclaim their lien assets. Assume these assets have value L_s . If all the firm's assets are subject to liens, then L_s equals L . But if the firm has some assets not subject to liens, then $L_s < L$. Since secured creditors can block a UCP reorganization plan by voting against it, they are likely to bargain successfully for at least an amount equal to their return of L_s in liquidation, which implies a payoff rate of at least $s = L_s/S$. They may settle for a payoff rate less than this to avoid prolonged bargaining over a UCP reorganization plan, however, if disruption to the firm during the bargaining process would cause their lien assets to decline rapidly in value.²⁴

Unsecured creditors also have the power to block a reorganization plan under the UCP, but if they do and the firm liquidates, the data discussed in the previous section suggest that they are unlikely to receive more than a tiny return. Thus while u must be positive, it may be very small.²⁵

Extending the model discussed in the previous section, in order for reorganization to occur, the bank must lend the firm $B_1^r = s_1 S + u_1(D_1 + D_2) + T_r$. (Note that the new bank loan B_1^r may be smaller than the new bank loan B_1 needed to finance continuation. Even though unsecured claims due in period 2 become due immediately when the firm files for bankruptcy, nonetheless reorganizing is likely to reduce immediate cash demands on the firm, because the plan allows the firm to cut back the amount paid on its liabilities.) We assume the bank's claim takes LLF priority as an administrative expense of reorganization.

²³ See White (1983). Also see Aivazian and Callen for an approach using game theory.

²⁴ See Gordon and Malkiel for discussion of bargaining strategies of high priority creditors in reorganization which suggests that they are willing to give up 20 to 30 % of their claims to facilitate quick adoption of a plan.

²⁵ However, since the characteristics of firms that file to reorganize under Chapter 11 differ from those of firms that file to liquidate under Chapter 7, unsecured creditors may anticipate a higher return if their firm liquidated than the average unsecured creditor receives in Chapter 7.

The coalition's return in reorganization then becomes $p(P_2 + G - u_2(D_1 + D_2) - s_2S) + (1 - p)(B_1^r) - B_1^r$, as long as $P_2 - G \geq B_1^r$.²⁶ Reorganization is preferred by the coalition to liquidation as long as this expression is positive, which implies that $p(P_2 + G - u_2(D_1 + D_2) - s_2S - T_r) > 0$. Thus reorganization is favored whenever the firm's earnings in the good outcome exceed payments to all creditors plus transactions costs. (If $P_2 - G < B_1^r$, then the condition for the coalition to prefer reorganization becomes $EP_2 - p(u_2(D_1 + D_2) + s_2S) - (u_1(D_1 + D_2) + s_1S) - T_r > 0$.)

However, reorganization is more economically efficient than liquidation only if $EP_2 - T_r > L$. Comparing this expression with the conditions just derived for the coalition to choose reorganization, we can see that they are very different. First, the coalition is likely to focus on earnings in the good outcome, whereas whether reorganization is efficient or not depends on the firm's expected income. The reason for the difference is that the coalition gets the firm's extra earnings in the good outcome. Second, the coalition focuses on the amount that it must pay out to creditors under the reorganization plan, and will find reorganizing attractive if secured or unsecured creditors have made a bad bargain and *vice versa*. In contrast, these payments are transfers which do not affect the efficiency condition. Finally, whether reorganization is efficient or not depends on the liquidation value of the firm's assets, L . However, this does not directly affect the coalition's decision. The only factor which enters both conditions in the same way is the transactions cost of reorganizing. Since the coalition must pay T_r in full in period 1, it enters the coalition's decision in the same way that it enters the economic efficiency condition.

Finally, we have not examined the coalition's incentives in choosing between reorganization versus continuing to operate outside of bankruptcy. The coalition has an incentive to choose reorganization over continuation outside of bankruptcy as long as $(1 - u)(D_1 + D_2) + (1 - s)S > T_r$.²⁷ This says that reorganization is preferred when debt forgiveness under the reorganization plan exceeds the transactions cost of reorganizing, a condition which seems likely to hold for many failing firms. However, in our model, reorganization cost resources in the form of T_r but generates no efficiency gains. Therefore it is always desirable from an efficiency standpoint to minimize the number of reorganizations, assuming that continuation is the alternative that will otherwise be chosen.

Subsidies to firms that reorganize

Congress' concern with reorganization as a method of saving jobs led it to give reorganizing firms some important subsidies relative both to firms that liquidate and to firms that remain outside of bankruptcy, which the model above did not consider. First, firms that reorganize retain most of their accrued tax loss carryforwards, which would be lost if they liquidated. These loss carryforwards shelter the firm from having to pay corporate profits taxes for a period even if their operations start to be profitable. They make reorganization attractive relative to liquidation, but do not affect the choice between reorganization and remaining out of bankruptcy. Second, when reorganizing firms settle liabilities for less than their face value, they are not taxed on the amount of the loan forgiveness. This tax

²⁶ The bank is assumed here to have no prior loans outstanding to the firm.

²⁷ This assumes that $P_2 - G > B_1^r$.

advantage makes reorganization attractive relative both to liquidation and to remaining out of bankruptcy.²⁸ Third, firms reorganizing have the right to cancel collective bargaining agreements with workers. Fourth, they can terminate underfunded pension plans, with the U.S. government picking up the uncovered pension costs.²⁹ Both of the last two points give firms in reorganization advantages over firms that continue operating outside of bankruptcy, but do not affect the choice between reorganization and liquidation.

All four of these features of reorganization involve subsidies from the government or from its workers to the reorganizing firm. A final feature of reorganization which generates subsidies is that firm in reorganization can cancel any of their contracts which are not substantially completed. Thus they can get out of contracts which are unprofitable. They are liable for damages to the other party to any canceled contract, but such damage claims are unsecured claims which are likely to receive only a fractional payoff. Thus, the cost to the firm of shedding unprofitable contracts is small. This feature of "selective decontracting" makes reorganization attractive both relative to continuing outside of bankruptcy (where firms must perform all their contracts) and relative to liquidating (which cancels all contracts).³⁰

These subsidies fit into the model discussed above as additional liabilities of the firm. In the context of the model, the firm's expected earnings, EP_2 , must be redefined as some higher amount, EP_2'' , which is before any payments are made to the five categories of creditors just enumerated. Also, these five types of claims either become additional unsecured claims against the firm which receive a payoff rate of u , as in the case of damage claims by parties to canceled contracts of the firm, or else are completely forgiven and receive a payoff rate of zero, as in the case of uncovered pension liabilities and the other subsidies mentioned above. Thus the total of the subsidies becomes an increase in the expected earnings of the firm if it reorganizes.

These subsidies from the government and from workers clearly make reorganization more attractive to the coalition relative to the alternatives or liquidation or remaining out of bankruptcy. However, the increase in the firm's future earnings may improve the bargaining position of its creditors generally. If no UCP reorganization plan can be agreed upon, then the bankruptcy court is likely to order the firm to be sold on the open market as a going concern as part of a cramdown reorganization plan. In that case, the subsidies would cause the firm's sale price to rise by the full amount of the subsidy-induced increase in its expected earnings. But if the sale proceeds were distributed to creditors according to the APR, then creditors would get the full benefit of the subsidies, since under the APR they would get the full increase in the firm's sale price. Thus in bargaining over a

²⁸ This means that when a creditor is paid only part of the face value of his claim, the amount not paid is deducted as a loss by the creditor but is not taxable income to the reorganizing firm. However, since 1980, the loan forgiveness amount becomes taxable (although with a long lag) if the reorganized firm becomes profitable, either by reducing its tax loss carryforward or its depreciation allowances.

²⁹ Three steel firms, LTV, Wheeling-Pittsburgh and Allis-Chalmers, recently filed for bankruptcy and terminated their pension funds. They together transferred nearly \$3 billion of uncovered pension liabilities to the government.

³⁰ Firms not in bankruptcy also have the right to avoid performing their contracts by paying damages. But for firms not in bankruptcy, the damage payment is considerably higher, making it not worthwhile to default except in very unusual cases.

plan under the UCP, creditors are likely to demand higher payoff rates. But to the extent that the subsidies are intended to help save the firm and its jobs, they are wasted if they "leak" out of the firm in the form of an increase in the amount paid to creditors. Thus the subsidies could more efficiently accomplish their goal if the reorganization procedure in bankruptcy were changed so as to prevent the gain to the firm from leaking out in the form of increased payments to creditors.

The subsidies also may have an effect on the coalition's decision whether or not to file to reorganize under Chapter 11. At an extreme, if creditors were able to increase their total payoff by the full amount of the subsidies, then the subsidies would have no effect on the coalition's return in reorganization and no effect on the coalition's incentive to choose reorganization over liquidation or continuation. But, more realistically, creditors and the coalition probably share the subsidies between them. In that case, the effect of the subsidies must be to cause the coalition to choose reorganization more often. However, the subsidies have no effect on the economic efficiency of reorganization relative to liquidation or continuation. Thus if too many firms were already choosing reorganization, then the subsidies would have the effect of worsening the problem.

These subsidies probably vary in importance for different industries. But taken together, they have the potential to enable unprofitable firms to reduce their costs substantially by filing for bankruptcy under Chapter 11. This may have serious effects on the structure of the whole industry. In the steel industry, bankruptcy filings by the weakest firms have enabled them to reduce their costs by up to 20%. This both enables the reorganized firms to remain in the industry and puts pressure on their competitors to file for bankruptcy as well. The result is that subsidies financed at least partially by tax revenues enable inefficient firms to remain in operation and slow the movement of assets from less valuable to more valuable uses.³¹

Bankruptcy costs in reorganization

Our previous discussion suggests that bankruptcy costs play an important role in firms' three way choice among liquidation, reorganization and continuation outside of bankruptcy.³² Thus it is of interest to know how high these costs actually are. Research on bankruptcy costs has tended to divide them into two categories. The first is the set of administrative costs for which bankruptcy courts keep records—including lawyers' costs, trustees' fees, and auction and appraisal costs. The second is often referred to as the indirect costs of bankruptcy, which include lost sales and profits due to disruption, foregone investment opportunities, and the costs of keeping asset in other than their best use.

³¹ Analysts recently estimated that LTV, one of the large steel companies to file under Chapter 11 recently, was able to reduce its steelmaking costs from \$460 to \$380 per ton, or nearly one-fifth, as a result of reorganizing in bankruptcy. Its costs were estimated to be \$60 below average steel industry costs. However, one year after its bankruptcy filing, no reorganization plan had been adopted. See "LTV is Healthier Under Chapter 11, but Not Cured," by C.F. Mitchell and J.E. Beazley, *The Wall Street Journal*, Friday, July 24, 1987, p. 5, col. 1.

³² Haugen and Senbet first pointed out that bankruptcy costs in reorganization would be the relevant opportunity costs of bankruptcy if they were lower than bankruptcy costs in liquidation. They argued that bankruptcy costs in reorganization were low, but did not present any estimates.

Warner (1977) first examined the administrative costs of bankruptcy reorganization for a small sample of railroads that reorganized in the 1930's. He found that these costs were around 5.5% of the total market value of debt plus equity at the time the firms filed for bankruptcy. White (1984) compared the same administrative cost items to the total amount paid to creditors under the reorganization plan for the sample of firms referred to above that reorganized using the UCP. She found a figure of 3.4%. Both of these figures seem low. On the other hand, Baird gives a typical cost estimate of \$100,000 for a firm going through a "straightforward" Chapter 11 proceeding. If half of the 17,000 firms that filed for bankruptcy under Chapter 11 in 1985 spent \$100,000 each, this would imply a total expenditure on bankruptcy administrative costs of around \$8.5 billion per year—which does not seem so low.

There have also been a few efforts to measure indirect bankruptcy costs in reorganization. Altman (1984) estimated lost profits due to bankruptcy induced disruption for a sample of 18 publicly traded retailing and manufacturing firms. He found that the total of administrative costs plus indirect bankruptcy costs equaled 17% of the total value of the firm at the time of the bankruptcy filing. White (1983) used a coalition model similar to the one discussed above to show that when firms choose reorganization but liquidation is more efficient, then the transfers to the coalition resulting from the decision to reorganize are an upper bound on the level of deadweight costs resulting from the inefficient decision. The deadweight costs ($EP_2 - T_r - L$ in our previous notation) include both direct and indirect bankruptcy costs. White estimated that direct bankruptcy costs due to reorganization were \$.85 billion in 1980 dollars and that the indirect bankruptcy costs of inefficient decisions to reorganize were bounded from above at \$9 billion in 1980 dollars. Thus total deadweight bankruptcy costs due to inefficient decisions to reorganize could be as high as 11 times the level of direct bankruptcy costs alone.³³

Thus these studies suggest that deadweight bankruptcy costs resulting from firms having inefficiently high incentives to reorganize could potentially be quite large. These figures would be even larger if they included the costs to the government in higher taxes, and the costs to workers and other firms, resulting from the subsidies paid by these parties to firms that reorganize.

Proposed reforms of the reorganization procedure

Several writers in the law and economics area have recently proposed changes in the role of reorganization which would drastically change or even eliminate it. Their motivation for suggesting changes seems to be concern that equity gets too much and high priority creditors too little in reorganization under the UCP. But we have pointed out the fact that equity and efficiency are related in the bankruptcy context: the larger the transfers between classes of creditors and equity that result from the bankruptcy decision, the larger the incentive for the coalition to make an inefficient bankruptcy decision. Thus by reducing the transfers, the deadweight costs can potentially be reduced.

The first of these proposals is that of Roe (1983). He proposed, first, that all firms reorganizing be required to have an all-equity capital structure after reorganization and,

³³ A similar expression relating transfers to the coalition and deadweight costs of inefficient choices can be derived for the choice between liquidation and continuation outside of bankruptcy. See White (1983).

second, that the value of the assets of all firms reorganizing be set by an actual sale of equity on the market. For large firms, Roe proposed that 10% of the new shares be sold on the market. For firms too small to justify selling a new equity issue publicly, the firm itself would be offered for sale on the market. The resulting market valuation in either case then would be used to determine whether the firm is solvent or not and therefore whether old equity interests will be retained or not. Creditors would be compensated according to the APR, but with a mix of cash and new equity in the firm. Roe's proposal would in effect force all reorganizations to use the cramdown procedure described above. More recently, Bebchuk (1986) proposed a variation on Roe's idea which would also require that the reorganized firm have an all-equity capital structure, but would involve creditors and old equity holders receiving options on the firm's new equity. The overall effect would be to insure that creditors and equityholders were paid according to the absolute priority rule.

An advantage of the Roe/Bebchuk proposal is that it increases the reorganized firm's future viability by eliminating its old debt. With the new firm having no debt, it can easily attract working capital from a new lender, even if the old bank lender refused to make a new loan. Also by requiring that the APR be used in all bankruptcies, it makes creditors' return more predictable, which should make senior debt less risky and therefore available at lower interest rates. But its main advantage from an economic standpoint is that it would ensure that firms reorganizing in bankruptcy would always shut down or continue operating depending on which alternative is more valuable. Buyers of bankrupt firms would choose shutdown if $L > EP_2$ and continuation otherwise. (Transactions costs would be incurred regardless, although they might be different from T_r .)

A more drastic proposal was made recently by Baird (1986) to eliminate bankruptcy reorganization completely.³⁴ Baird proposed that all bankruptcies take place under Chapter 7, but that the old managers continue to run the firm temporarily, rather than shutting it down immediately. The firm would then be sold as a going concern if such a sale seemed likely to bring in more than the value of the firm's assets sold piecemeal. The proceeds of sale would be paid to creditors according to the APR.³⁵

These proposals would improve the incentives of managers in making their bankruptcy decisions, although some potential for inefficient outcomes would still remain. Since old equity would almost always be eliminated, managers (to the extent they represent equity or own equity themselves) would still have an incentive to undertake risky projects in order to avoid filing for bankruptcy. This means that it would still be possible for firms whose resources would be more valuable if they shut down to continue to operate outside of bankruptcy. However, the opposite problem, that firms whose resources would be more valuable if they continued to operate sometimes liquidate in bankruptcy, would no longer occur. This is because the bankruptcy procedure would provide for sale of all bankrupt firms as going concerns, with the buyer deciding whether to shut down the firm or not. Thus there would be an efficiency gain from having failing firms file for bankruptcy, because then

³⁴ Jackson (1986) has made a similar point.

³⁵ Changes in current bankruptcy law and bankruptcy tax law would be needed to implement any of these proposed changes. For example, current bankruptcy law does not allow secured creditors to be compensated by receiving equity claims on the reorganized firm, as would occur under the Roe/Bebchuk proposal.

a market test would insure that they would shut down or continue operating depending on which possibility makes more valuable use of their assets.

When transactions/monitoring costs for creditors are high, then another argument for these proposals is that having a single reorganization procedure would strengthen the market for failing firms sold as going concerns while in bankruptcy. Currently, this market is probably subject to severe lemons problems, since potential buyers are likely to assume that firms offered for sale on it have undisclosed problems which are too expensive for outside buyers to determine, and that relatively healthy failing firms will be disposed of in some other way. In this situation, bankrupt firms will receive only very low bids from outside buyers, or there may be no market at all for the going concern value of bankrupt firms.³⁶ The current reorganization procedure—which in effect arranges a direct sale to creditors for most failing firms—is likely to exaggerate the lemons problem. The proposal to have only a single reorganization procedure which requires that all bankrupt firms be sold on the open market, should reduce the severity of the lemons problem and improve the market for failing firms.

However, having a single bankruptcy procedure would not solve the problem pointed out above that substantial subsidies now going to firms that reorganize probably leak out of the firm in the form of higher payoff rates to creditors. Selling the firm as a going concern on the open market and paying the proceeds to creditors according to the APR would cause the capitalized value of the subsidies to go entirely to creditors and not enhance the reorganized firm's prospects at all.

³⁶ Bankruptcy judges often argue that when failing firms are sold on the open market, their sale price is less than their "true" value, which would be consistent with "lemons" problems in the market. See Roe for discussion.

3. References

- Aivazian, V. and J. Callen () "Reorganization in Bankruptcy and the Issue of Strategic Risk," *J. of Banking and Fin.*, 7, 119-133.
- Aghion, P., and P. Bolton (Dec. 1986) "An 'Incomplete Contracts' Approach to Bankruptcy and the Optimal Financial Structure of the Firm," draft, Harvard University.
- Altman, E.I. (Sept. 1984) "A Further Empirical Investigation of the Bankruptcy Cost Question," *J. Fin.*, XXXIX:4, 1067-1089.
- Ames, N., et al. (1983) *An Evaluation of the U.S. Trustee Pilot Program for Bankruptcy Administration: Findings and Recommendations*. Cambridge, Mass.: Abt Associates (consultants' study for the U.S. Dept. of Justice).
- Baird, D. (Jan. 1986) "The Uneasy Case for Corporate Reorganizations," *J. Legal Stud.*, XV, 127-147.
- Bebchuk, L. (1986) "A New Method for Corporate Reorganization," Harvard Law School.
- Bulow, J., and J. Shoven (Autumn 1978) "The Bankruptcy Decision," *Bell J. Ec.*, , 437-456.
- Fama, E.R., and M.H. Miller (1972) *The Theory of Finance*. New York: Holt, Rinehard and Winston.
- Gordon, R.H., and B. Malkiel (1981) "Corporation Finance," in *How Taxes Affect Economic Behavior*, ed. H. Aaron and J. Pechman. Washington, D.C.: Brookings Institution.
- Higgins, R.D. and L.D. Schall (March 1975) "Corporate Bankruptcy and Conglomerate Merger," *J. Fin.*, , 93-113.
- Jackson, T.H. (1986) *The Logic and Limits of Bankruptcy Law*. Cambridge, Mass.: Harvard University Press.
- Kim, E.H. (Mar 1978) "A Mean-Variance Theory of Optimal Capital Structure and Corporate Debt Capacity," *J. Fin.*, , 45-63.
- Kim, E.H., J.J. McConnell and P.R. Greenwood (June 1977) "Capital Structure Rearrangements and Me-First Rules in an Efficient Capital Market," *J. Fin.*, , 789-810.
- Roe, M. (April 1983) "Bankruptcy and Debt: A New Model for Corporate Reorganization," *Columbia Law Review*, 83:3, 527-602.
- Schwartz, A. (Jan. 1981) "Security Interests and Bankruptcy Priorities: A Review of Current Theories," *J. Legal Stud.*, , 1-38.
- Scott, J.H. (March 1977) "Bankruptcy, Secured Debt, and Optimal Capital Structure," *J. Fin.*, , 1-19.
- Smith, C.W., and J.B. Warner (1979) "On Financial Contracting: An Analysis of Bond Covenants," *J. Fin. Econ.*, 7, 119.
- Stiglitz, J.E. (Autumn 1972) "Some Aspects of the Pure Theory of Corporate Finance: Bankruptcies and Take-Overs," *Bell J. Ec. Man. Sci.*, , 458-482.

- Warner, J.B. (May 1977a) "Bankruptcy, Absolute Priority, and the Pricing of Risky Debt Claims," *J. of Fin. Ec.*, 4:3, 1-38.
- Warner, J.B. (May 1977b) "Bankruptcy Costs: Some Evidence," *J.Fin.*, , 337-348.
- White, M.J. (1984) "Bankruptcy Liquidation and Reorganization," in *Handbook of Modern Finance*, ch.35, ed. D. Logue. : Warren, Gorham & Lamont.
- White, M.J. (Autumn 1980) "Public Policy toward Bankruptcy: Me-First and Other Priority Rules," *Bell J.of Econ.*, , 550-564.
- White, M.J. (May 1983) "Bankruptcy Costs and the New Bankruptcy Code," *J.Fin.*, XXXVIII:2, 477-487.

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