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THE COSTS OF CORPORATE BANKRUPTCY: A U.S.-EUROPEAN COMPARISON

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Abstract

Both Britain and France have adopted new bankruptcy/insolvency laws since 1985 and a new bankruptcy law has also been proposed in Germany, although not yet adopted. In all three countries, a major purpose of the new laws is to shift the focus of bankruptcy law away from exclusively protecting creditors' interests and toward a balance between protecting creditors versus saving distressed firms. However, many of the features of bankruptcy law differ in the three countries and all three countries' bankruptcy laws differ quite strongly from bankruptcy law in the U.S. This Paper has several purposes. First, basic differences between bankruptcy laws in the four countries are identified and compared. Second, the costs (losses in economic efficiency) attributable to bankruptcy are identified. Bankruptcy costs are shown to occur at three different times: before it is known whether individual firms will be financially distressed, after firms have become financially distressed but before they file for bankruptcy, and after firms file for bankruptcy. Third, the costs of bankruptcy under the laws of the four countries, as well as under various proposed bankruptcy reforms, are analyzed.

The major conclusion of the paper is that bankruptcy costs incurred before it is known whether firms will be financially distressed are likely to be much more important determinants of whether bankruptcy policy is economically efficient than bankruptcy costs incurred after firms have become financially distressed and/or after they have filed for bankruptcy. This is simply because the number of firms that become financially distressed and the number that file for bankruptcy are small relative to the number of firms in total. But efficient bankruptcy policy for firms in general is likely to differ from efficient bankruptcy policy for firms already in financial distress.

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The major conclusion of the paper is that bankruptcy costs incurred before it is known whether firms will be financially distressed are likely to be much more important determinants of whether bankruptcy policy is economically efficient than bankruptcy costs incurred after firms have become financially distressed and/or after they have filed for bankruptcy. This is simply because the number of firms that become financially distressed and the number that file for bankruptcy are small relative to the number of firms in total. This means that if the goal is to design an economically efficient bankruptcy law, then the effects of the law on firms that are in financial distress or bankruptcy are less important than the incentives that the law sets up for managers of healthy firms. But the analysis suggests

that these two considerations are likely to pull bankruptcy policy in opposite directions, with the result that it is impossible to determine from theory which type of bankruptcy policy is more economically efficient.

1. Corporate Bankruptcy Laws Compared

In this section, I compare basic features of bankruptcy law in the four countries and identify important differences among them. Table 1 highlights differences between bankruptcy law in the U.S. versus the three European countries.¹

A. How is bankruptcy initiated? The first set of differences between bankruptcy law in the U.S. versus the three European countries concerns how bankruptcies begin. Bankruptcy filings may be initiated either voluntarily by managers or involuntarily by other parties such as creditors. U.S. bankruptcy law discourages involuntary bankruptcy filings by requiring that three or more creditors together initiate an involuntary bankruptcy petition. Creditors bear the burden of proving that the firm is not paying its bills generally and managers may dispute their claims and file countersuits for damages. As a result, only about 2 to 3% of Chapter 11 bankruptcy filings and well under 1% of Chapter 7 bankruptcy filings in the U.S. were involuntary during the period 1980-1982.² However, some voluntary bankruptcy filings are voluntary in name only, since managers of U.S. firms often file for bankruptcy because a creditor is about to shut the firm down by removing essential assets. In contrast, European bankruptcy laws encourage any involved party—including creditors, managers, members of boards of directors, workers' representatives, and the bankruptcy court itself—to initiate involuntary bankruptcy filings. When an outside party initiates bankruptcy, the onus is on managers to show that the firm should not be in bankruptcy, rather than on creditors to show that it should.³ Despite the encouragement given to

¹ Despite the English Channel, I use the term "European countries" to denote France, Germany and Britain together. Note that the discussion of German bankruptcy law is applicable only to the former West Germany. See Campbell (1992).

² In 1981, 170 of 7,310 Chapter 11 bankruptcy filings were involuntary, or .2%. See Administrative Office of the U.S. Courts, *Federal Judicial Workload Statistics, 1981*, tables F2A and F2B. (More recent data is not available.)

³ This presumption is probably weakest in Germany, where creditors must convince the court that there is a material reason for bankruptcy. See Campbell (1992), p. 215.

involuntary bankruptcy initiation in Europe, however, it is unclear how frequently they actually occur.⁴

B. The timing of bankruptcy. In the three European countries, bankruptcy law provides for sanctions against managers and others if they delay filing for bankruptcy past a certain point. In France, managers are obliged to file for bankruptcy within 15 days of the date when the firm becomes unable to pay debts as they come due. Managers who delay past this point face the possibility of being held personally liable for the firm's debts and being barred from managing any other enterprise in the future. If in addition they conceal the firm's financial status, then they face criminal penalties as well. The firm's bank can also be held liable for its debts.⁵ Germany requires that managers file for bankruptcy within three weeks of the time when the firm becomes insolvent. The manager faces potential civil or criminal liability for delay in filing and the firm's bank also faces liability if it attempts to conceal the situation.⁶ In Britain, directors can be held personally liable for the extra losses sustained by creditors if the firm continues to operate after it becomes insolvent. Insolvency is defined to include both inability to pay debts as they come due and having liabilities in excess of assets.⁷ In contrast, the U.S. has no explicit policy toward delay in filing for bankruptcy.⁸

Why have a policy favoring early initiation of bankruptcy? In general, the earlier firms enter bankruptcy, the less financially distressed they are. From an efficiency standpoint, early bankruptcy for distressed firms is therefore desirable, both because it minimizes losses to creditors if the firm is liquidated and because it maximizes the likelihood of saving the firm if an attempt is made to reorganize. However, managers often prefer to delay filing

⁴ Recent data from Germany show that nearly half of all bankruptcy filings are initiated by other parties than the debtor. However, the figures do not distinguish between corporate and individual filings. See Drukarczyk (1987), table 2.1.

⁵ See Beardsley (1985) and Campbell (1992), p. 183.

⁶ See Klasmeyer and Kubler (1991) and Ihle (1989).

⁷ See Cuthbertson and Hudson (1991), Campbell (1992), and Halliday and Carruthers (1992).

⁸ However, U.S. law does provide for criminal penalties if firms fail to pay withholding taxes.

for bankruptcy, particularly if they lose their jobs once the filing occurs. In their attempts to avoid bankruptcy, they have an incentive to act in ways that waste the firm's resources. The approach in the three European countries is to encourage early bankruptcy filings by penalizing managers and banks for delay in filing and by making it easier for creditors and others to initiate involuntary bankruptcies. As will be seen, the approach in the U.S. is to encourage early bankruptcy filings by treating managers more leniently in bankruptcy. However, it is questionable whether either approach is effective. Sanctions for delay in filing for bankruptcy are only effective if they are used frequently and are severe, but there is no evidence that this is the case. Also, creditors have little incentive to initiate involuntary bankruptcy filings. Secured creditors would prefer to reclaim their collateral and have little to gain from initiating bankruptcy since it may prevent or delay them from doing so. Unsecured creditors could potentially gain from initiating bankruptcy, but often their claims are small so they do not find it worthwhile to incur the expense. Further, the free rider problem prevents them from getting together even though as a group they might benefit from forcing the firm into bankruptcy. Another reason that creditors are unlikely to initiate involuntary bankruptcies is that they often benefit more from negotiating individually with managers to resolve their claims than from initiating bankruptcy, which—as a collective procedure—mainly benefits others.⁹

C. Who manages the firm during bankruptcy? In the three European countries, the bankruptcy judge always appoints an outside official who either replaces the existing managers or has authority over them in operating the business. Outside bankruptcy officials in the European countries are normally accountants who specialize in insolvency practice and they expect their involvement in any particular firm to be short-term. In contrast in the U.S., existing managers typically remain in control as “debtors-in-possession” if the bankruptcy filing is under Chapter 11. Bankruptcy judges can appoint an outside official—called a trustee—to replace the manager, but only for a cause such as fraud or

⁹ See Bulow and Shoven (1978), White (1980) and (1989), and Gertner and Scharfstein (1990) for models of the bankruptcy decision and Jackson (1986) for general discussion.

incompetence and such appointments are rare.¹⁰ Assuming that managers file under Chapter 11 and remain in control, the bankruptcy court provides some loose surveillance over their actions, since judges must approve new loans to the firm and sales of assets, but less than would occur under an outside bankruptcy official. If the bankruptcy filing is under Chapter 7, then an outside official is always appointed who acts as the firm's liquidator.¹¹

D. Who decides initially whether the firm will be reorganized or liquidated? In the three European countries, the outside official decides whether the firm will be shut down and its assets liquidated or continue to operate while an attempt is made to reorganize it.¹² In contrast in the U.S., managers have the right to choose between filing for bankruptcy under Chapter 7 or Chapter 11 of the U.S. Bankruptcy Code. (They are allowed this choice even if the bankruptcy filing is involuntary.) Since Chapter 7 is the U.S. bankruptcy liquidation procedure and Chapter 11 the U.S. bankruptcy reorganization procedure, this means that managers make the initial decision whether the firm will be liquidated or reorganized. Unless the firm has already shut down, managers have an incentive to file under Chapter 11 rather than Chapter 7, since under Chapter 11 they retain their jobs at least temporarily.

These differences between U.S. and European bankruptcy procedures are related, since whether creditors find it worthwhile to initiate involuntary bankruptcies depends on what happens to the firm after the bankruptcy filing. Creditors in the U.S. are unlikely to incur the expense of initiating an involuntary bankruptcy filing because, even if they succeed, managers are likely to choose to reorganize under Chapter 11 and to remain in control

¹⁰ In separate samples of small and very large firms in Chapter 11, LoPucki (1983) and LoPucki/Whitford (1990) found that the probability of a trustee being appointed was only 6% and 5%, respectively. For small firms, the 6% figure includes some cases in which the manager had abandoned the business by the time of the bankruptcy filing, so that the appointment of a trustee was unopposed.

¹¹ In the U.S., even when trustees are appointed to replace managers in Chapter 11 cases, a problem is that trustees view themselves as replacement managers who have a potentially long-term interest in the firm. Thus, like managers, they have an incentive to keep the firm in operation as long as possible. In contrast, the outside official appointed by the bankruptcy court in France only remains with the firm long enough to decide whether it should be reorganized and, if so, to formulate the plan. A different official then is appointed either to carry out the plan or to liquidate the firm's assets. Similarly, in Germany and Britain the outside official does not expect to remain with the firm on a long-term basis.

¹² In Germany, the bankruptcy judge rather than the outside bankruptcy official decides whether the firm will be shut down or not, based on a report by the outside official. Under the proposed new German bankruptcy law, the outside bankruptcy official would make the decision. See Ihle (1989). In both Germany and France, the bankruptcy official (or judge) receives advice from representatives of creditors and workers.

of the firm. In contrast, creditors in Europe face lower costs in initiating involuntary bankruptcies and stand to gain more since an outside official takes over the firm. This does not necessarily imply that initiating an involuntary bankruptcy is worthwhile for creditors in the three European countries, but it does suggest that the cost-benefit analysis looks more favorable to them than to creditors in the U.S.

E. The bankruptcy liquidation procedure. Economists discussing bankruptcy liquidation in the U.S. usually stress its role as a collective procedure which settles all claims against the firm.¹³ Once the firm files to liquidate in bankruptcy, unsecured creditors' individual legal actions against the firm are subject to the "automatic stay". The bankruptcy court appoints an official who liquidates the firm's assets. The proceeds are distributed to creditors according to a priority ordering called the "absolute priority rule" (APR) in the U.S. Under the APR, administrative expenses of the bankruptcy procedure are paid first, followed by priority claims and then unsecured claims. Claims are paid in full until funds are exhausted. The remainder, if any, goes to equity. Secured creditors either claim their security directly or, if the security is worth more than the claim, then the trustee sells it, pays the secured creditor and uses the rest to pay other creditors according to the APR.¹⁴ The advantage of settling all claims against the firm at once is that it reduces individual creditors' incentive to race to be first to sue the firm for repayment of their claims. As in a bank run, those creditors who were first to succeed in their suits against the firm would be paid in full while others would receive nothing. But the race is costly, because creditors engage in duplicative efforts to monitor the firm, because the firm may be shut down prematurely, and because the overall value of the firm's assets is reduced by creditors claiming assets piecemeal. (Creditors have an incentive to take the most easily sold assets first, but these assets may be more valuable in combination with others.) The collective

¹³ See Jackson (1986).

¹⁴ Administrative claims include the costs of lawyers and the outside bankruptcy official's compensation. Priority claims include claims for unpaid taxes, social insurance payments, wage and benefit claims, rent claims and claims for consumer deposits. The absolute priority rule treats claims of equal priority equally, regardless of when they are due. Debts due in the future are accelerated to the present at full face value. Among unsecured claims, subordination agreements made outside of bankruptcy are followed in bankruptcy.

procedure of bankruptcy liquidation reduces creditors' incentive to race to be first because they anticipate that if they succeed in their legal actions, the firm's managers will file for bankruptcy and they will receive no more than what they would be entitled to anyway under the APR.¹⁵

In each of the three European countries, a collective bankruptcy liquidation procedure similar to that in the U.S. exists, but it is less likely to be used. The French bankruptcy liquidation procedure is most similar to that in the U.S. The main difference is that in France, firms in bankruptcy must go through a mandatory period of observation of at least 6 months under a court-appointed outside official before liquidation is allowed. At the end of the observation period, the outside official decides whether to liquidate the firm. If liquidation occurs, the priority ordering is similar to that in the U.S.¹⁶ However, in Germany and Britain, liquidation generally occurs outside of bankruptcy and is not a collective procedure. In Germany there is no discharge of unpaid debts in bankruptcy. In addition, filing for bankruptcy in Germany is expensive and many bankruptcy petitions are rejected by the bankruptcy court on the grounds that firms have insufficient assets to pay the costs of the procedure. As a result, managers of failing firms have little incentive to file for bankruptcy at all.¹⁷ In Britain, liquidations are generally managed by secured creditors rather than by the bankruptcy court. Britain has two types of secured creditors: "fixed charge creditors," who have a security interest in a particular asset, and "floating charge creditors," who have a security interest in the firm's inventory, accounts receivable and other assets not subject to fixed charges. If the firm defaults, both types of creditors have the right to appoint receivers. Receivers appointed by fixed charge creditors have only the right to sell the asset subject to the fixed charge. Receivers appointed by floating charge creditors, however, may sell any assets in order to repay the claims of both fixed and

¹⁵ See Webb (1987) for a discussion of the race to be first as a prisoner's dilemma model.

¹⁶ See Campbell (1992).

¹⁷ Bankruptcy courts in Germany accept only about one-fourth of all petitions, with the rest denied on the grounds that the firm lacks sufficient assets to pay for the procedure. However, this does not distinguish between petitions by firms versus individuals. See Ihle (1989) for data and Klasmeyer and Kubler (1991) and Campbell (1992) for discussion.

floating charge creditors.¹⁸ Only when there are assets left over does the bankruptcy court appoint a liquidator, who takes charge of selling the remaining assets to repay priority and unsecured claims. Thus most bankruptcy liquidations are privately managed by an official appointed by the floating charge creditor, rather than publicly managed by a bankruptcy court-appointed official. There is an obvious problem that privately-appointed receivers who are searching for easily liquidated assets may harm the firm by selling off assets essential to its continued operation, thus causing it to shut down prematurely. They also may sell assets for less than market value, since their only concern is to repay debt owed to a particular creditor.¹⁹

F. Treatment of secured creditors in reorganization. Now suppose that the firm has filed for bankruptcy and an initial decision has been made to reorganize it. Secured creditors have a right to claim assets in which they have a security interest whenever the firm defaults. In order for the firm to reorganize, it must retain assets which are essential to its operations, but often these are the assets subject to secured creditors' claims. Thus there is often a conflict between the right of secured creditors to be repaid versus the goal of reorganizing the firm. An important means of facilitating bankruptcy reorganization is to allow managers and/or outside officials to override secured creditors' right to reclaim assets even though delay or wear and tear make the assets less valuable. In the U.S., the automatic stay is applied to secured creditors in Chapter 11, which prevents them from removing their security. However, they must be given other, equivalent protection. France also applies the automatic stay to secured creditors in reorganization, but Germany does not. Britain stays secured creditors under the administration order procedure, but not under receivership (see below for discussion).²⁰

¹⁸ Receivers appointed by floating charge creditors are called "administrative receivers." If they sell assets subject to a fixed charge, they must use the proceeds to pay the fixed charge creditor's claim first.

¹⁹ The existence of a floating charge against a firm is not publicly registered in Britain. This harms unsecured creditors such as trade creditors, since goods they supply to the firm may become the property of the floating charge creditor. Halliday, Carruthers and Parrott (1992) note that starting in the mid-1970's, trade creditors in Britain began to retain title to goods that they supplied to the firm, so that they could reclaim the goods in the event of a receiver being appointed.

²⁰ See Campbell (1992).

G. The reorganization plan: who formulates it and how is it adopted? Here, procedures in the four countries differ widely. Consider the U.S. first. In U.S. bankruptcy law, there is a strong presumption that the manager will formulate the reorganization plan. Managers have an exclusive right for the first 120 days after the bankruptcy filing to propose a plan, plus an additional 60 days for it to be adopted. Further, managers normally petition the bankruptcy judge to extend the exclusivity period and extensions are usually granted, so that managers may remain in control for a prolonged period. The long exclusivity period encourages continuation of the firm's operations, since managers generally favor saving the firm and creditors must either accept managers' plan or wait until the exclusivity period has been terminated to propose their own plans. Even after the exclusivity period has ended, for free rider reasons creditors rarely propose their own reorganization plans. Instead, creditors are likely to petition the bankruptcy judge to lift the automatic stay, which would in effect force the firm into liquidation. These petitions rarely succeed.²¹

The reorganization plan proposes a settlement of all pre-bankruptcy creditors' claims against the firm, usually with payments made over several years. A typical reorganization plan in the U.S. might provide for unsecured creditors to receive repayment of 25 to 50% over 5 years, with large firms usually paying more than small firms.²² Creditors vote on the plan by class and each class of creditors must adopt it by a majority in number of claims and a two-thirds majority by value. A majority of old equity must also vote in favor of the plan. The fact that old equity must vote in favor of the plan encourages continuation of the firm's operations. This is because if the firm were liquidated, the sale price would inevitably be less than the firm's liabilities, so that equity would receive nothing and would be "deemed" to have voted against the plan. But if the firm continues to operate, then no sale occurs, no sale price is established and the fiction that the firm is solvent is maintained. If the reorganization plan is not adopted by vote, then the judge may adopt it anyway

²¹ In 34 of 43 large bankruptcies studied by Lopucki/Whitford (1990), managers' exclusivity period was extended until a reorganization plan was adopted, so that creditors never had a chance to present reorganization plans. In Weiss' (1992) study of 35 large firms that adopted Chapter 11 reorganization plans, only one plan was proposed by creditors. When creditors propose a plan, they—unlike managers—must back it up with expensive outside appraisals.

²² See White (1994) for a summary of the evidence.

under a procedure known as “cramdown.”²³

Now turn to France. The new French bankruptcy law is explicitly intended to save failing firms: its primary objectives are “safeguarding the business” and “maintaining the firm’s operations,” while “discharging liabilities” ranks only third.²⁴ When a firm files for bankruptcy, the bankruptcy judge appoints an outside official who represents the interests of the State rather than of creditors. There is a “period of observation” which lasts for 6 to 18 months during which the firm continues to operate. During this time, the court may order that managers remain in control under the outside official’s supervision or that managers be replaced. At the end of the period, the outside official decides whether or not the firm can be saved.²⁵ If the decision is made to liquidate the firm, then the bankruptcy judge appoints a liquidator to sell the firm’s assets. If the decision is to save the firm, then the outside official formulates a plan of rehabilitation and proposes a repayment rate and a schedule of payments. Plans of rehabilitation frequently involve leasing the firm to an outsider who must purchase it after two years. The bankruptcy judge decides whether to adopt the plan.²⁶ Thus creditors in France have little influence on the reorganization process.

Turn now to Britain. The new British reorganization procedure, known as an “administration order,” is intended to encourage reorganization of failing firms. Under it, the bankruptcy court appoints an outside official—known as an “administrator”—who represents creditors generally. The administrator has up to three months to decide whether to reorganize the firm, sell it as a going concern, or liquidate its assets and the automatic stay is applied to all creditors during this period. If the administrator decides that the firm should be reorganized, s/he proposes a plan to creditors who must approve it by a simple

²³ Cramdown is used when some class(es) of creditors has not accepted the plan by the required majority vote. Cramdown is used infrequently since it requires a valuation of the firm’s assets, which is expensive. But is useful to managers as a threat in bargaining with creditors.

²⁴ See Simeon *et al* (1987), p. 18A-19.

²⁵ There is a simpler procedure for firms with under 50 employees. See Martin (1989).

²⁶ See Beardsley (1985), Martin (1989) and Campbell (1992).

majority vote (by value). If creditors do not approve the plan, then the administration order ends and the firm is liquidated.

However, just as managers of failing firms in Britain cannot invoke a collective bankruptcy liquidation procedure to prevent secured creditors from removing assets, they also cannot invoke the collective bankruptcy reorganization procedure to stop secured creditors. Suppose a manager petitions the bankruptcy court for an administration order. Before the bankruptcy court issues the order, it notifies the firm's floating charge creditor. The floating charge creditor can block the administration order by immediately appointing a receiver. Thus unlike the U.S., managers of failing firms cannot defeat creditors' attempts to claim their security by invoking a collective bankruptcy reorganization procedure. Because of this, the new administration order procedure is not frequently used.²⁷

Turn now to Germany. Although current German law provides for a bankruptcy reorganization procedure, it seems to be even less frequently used than the British procedure. Under the procedure, the bankruptcy court appoints an outside official to take charge of the firm. An assembly of all creditors is called within one month and creditors may either confirm the outside official's appointment or substitute someone else. The official recommends to creditors whether the firm should be liquidated or reorganized and, if the latter, recommends a plan of reorganization. The reorganization plan must pay unsecured creditors at least 35% of their claims or 40% if payment is delayed for more than a year. Creditors vote on the plan and to be accepted it must receive votes representing at least a majority of unsecured creditors and at least 50% of the value of unsecured claims. If the plan is not adopted, the firm is liquidated.²⁸

The German reorganization procedure is rarely used because it does not include an automatic stay for secured creditors. Thus secured creditors can terminate reorganization

²⁷ During 1987, 277 petitions for administration orders were filed in Britain and 150 administration orders were issued. In the other 127 cases, either a floating charge creditor objected to the appointment of an administrator or else the company's directors decided to proceed directly to liquidation. Of the 150 administrator orders issued, 44 involved firms that had floating charge creditors who consented to the order. Administrators sold the business as a going concern in 54 cases, often without consulting creditors. See Spicer & Oppenheimer & Partners (1988). Spicer & Oppenheimer note that after the adoption of the administration order procedure, banks lenders that would previously have taken only fixed charges began routinely to take floating charges, so as to have the power to block an administration order.

²⁸ See Drukarczyk (1987) and Campbell (1992).

proceedings at any time and, in effect, must agree voluntarily to any reduction in the value of their claims. Unsecured creditors' claims, in contrast, can be cut back in reorganization, but most German firms have relatively little unsecured debt. This means that there is little gain from having a formal in-court reorganization as opposed to an informal out-of-court workout with creditors. The high required repayment rate to unsecured creditors is another deterrent to reorganization, as is the high cost of a bankruptcy filing. Only about 1% of German bankruptcy filings are reorganizations.²⁹

The proposed new German bankruptcy law is intended to make bankruptcy reorganization more attractive to failing firms. It institutes an automatic stay in bankruptcy against secured creditors, so that reorganization plans will be able to reduce the claims of both secured and unsecured creditors. It also provides for discharge of debt covered by the plan after 7 years and it eliminates the minimum payoff requirement for unsecured debt.³⁰

H. Provisions to aid failing firms in reorganization. U.S. law contains a number of provisions which facilitate reorganization of failing firms. Some of the same provisions exist in the European countries. Once a firm has filed under Chapter 11, it stops paying interest on pre-bankruptcy debts, both secured and unsecured, until a reorganization plan is approved.³¹ Managers also have the right to reject or assume any uncompleted pre-bankruptcy contracts with suppliers or customers. This allows them to reject unprofitable contracts while continuing profitable ones. Also once the firm has filed under Chapter 11, new loans are given highest priority as administrative claims, so that they leapfrog pre-bankruptcy creditors in the priority ordering if the firm later liquidates. This makes it easier for the firm to obtain new financing. Finally, firms in Chapter 11 also benefit

²⁹ See Drukarczyk (1987). Debt renegotiations are relatively easy for large firms in Germany, since major bank lenders tend to be represented on firms' boards of directors and there is less reliance on publicly traded debt. As a result, the number of parties that must agree on a voluntary restructuring is relatively small. See Gilson, John and Lang (1990) for a study of non-bankruptcy workouts of large firms in the U.S. Their results suggest that workouts are more likely to succeed without a formal bankruptcy filing when the firm's capital structure is less complicated and when it involves relatively more bank (secured) debt and less publicly-traded (unsecured) debt.

³⁰ The reform proposal has gone through a number of changes. See Ihle (1989) and Schiessel (1988) for discussion of early versions.

³¹ Only secured creditors whose collateral is worth more than the value of their claims have the right to receive interest during the period of reorganization.

from government subsidies such as the right to keep their tax loss carryforwards if they reorganize in bankruptcy and the ability to transfer their pension plans—which are normally underfunded—to the Pension Benefit Guaranty Corporation, a public agency.³² But despite these favorable provisions, several studies have found that only about one-quarter to one-third of firms that file under Chapter 11 actually adopt reorganization plans that provide for the firm to continue operating. (For the largest firms, however, the probability is much higher.)³³

Only France goes as far as the U.S. in measures to aid failing firms to reorganize. Under the French reorganization procedure, new loans to the firm receive post-petition priority, the outside official can reject uncompleted contracts, and (unlike in the U.S.) debts due in the future are not accelerated to the present when firms reorganize. In addition, when a firm files for bankruptcy, the bankruptcy court sets a official date at which the firm became unable to pay its debts and the outside official can challenge any payments made by the firm up to 18 months before this date. To the extent that the outside official can recover funds, the extra cash facilitates the reorganization.³⁴ Most of these provisions do not apply in Germany or Britain.

To summarize, this discussion of bankruptcy law suggests that there are important differences among the U.S. and the three European countries in their approaches to bankruptcy. In the U.S., managers of failing firms are encouraged to file for bankruptcy earlier by the “carrot” of Chapter 11, which allows them to remain in control and gives them bargaining power over creditors in determining the reorganization plan. The European countries, in contrast, use a “stick” approach, with managers facing penalties for delay in filing for bankruptcy. Another important difference is that in the three European countries, an outside official is always appointed to take over the firm when it files for

³² See White (1989) for discussion.

³³ For data on small firms in Chapter 11, see LoPucki (1983) and Flynn (1989). For large firms, Weiss (1990) found a probability of .86 that a reorganization plan was adopted.

³⁴ See Campbell (1992).

bankruptcy; while in the U.S., the existing manager usually remains in control. The replacement of managers in bankruptcy in the three European countries gives them a strong incentive to avoid or delay bankruptcy as long as possible. Reorganization procedures also differ widely among the four countries. Secured creditors are prevented from claiming their security while firms are attempting to reorganize in the U.S. and in France, but not in Germany and not in the U.K. under the receivership procedure.

2. The Costs of Bankruptcy

In this section, I enumerate and discuss the various bankruptcy costs (efficiency losses) generated by the existence of limited liability and bankruptcy. Bankruptcy costs are defined to include any reduction in the value of output in the real world relative to the hypothetical first best world that is due to bankruptcy. The first best world here is assumed to be a world in which there is full information, no risk aversion, zero transactions costs, no agency problems between managers and shareholders, and no limited liability. In the real world, however, information is incomplete, parties are risk averse, transacting is costly and corporations have limited liability, so there is bankruptcy. There are several types of bankruptcy costs and each type may vary depending on the characteristics of bankruptcy policy. The goal of bankruptcy policy is assumed to be that of minimizing bankruptcy costs, or, equivalently, of maximizing the value of output. Table 2 summarizes the results.³⁵

Bankruptcy costs are assumed to occur at three different points in time: (1) before it is known whether the firm will be financially distressed or not, (2) after the firm has become financially distressed, but before it files for bankruptcy, and (3) after the bankruptcy filing, if one occurs. Just enumerating the various types of bankruptcy costs is important, since many authors have tended to focus on particular deadweight costs and to espouse reforms which reduce them. But reforms that cause particular bankruptcy costs to fall may simultaneously cause other bankruptcy costs to rise, thereby offsetting the benefit and perhaps making things worse.

³⁵ In traditional public finance, the term “deadweight costs” is used to refer to the loss of economic efficiency resulting from either market failure or government intervention in the economy. In the bankruptcy context, deadweight costs are losses in economic efficiency attributable to limited liability and bankruptcy. But the bankruptcy literature has traditionally referred to these costs as bankruptcy costs. For a brief summary of the literature on bankruptcy costs, see White (1992a).

2.1 Ex ante costs of bankruptcy: The punishment effect

Consider first the costs of bankruptcy that occur before it is known whether the firm will be financially distressed or not. Suppose we think of the firm as a contract between shareholders and a manager, where the expected value of the firm in the future, denoted V , depends on managers' level of effort (or ability), e . Greater effort by managers is assumed to increase the expected value of the firm. Managers are assumed to expend effort according to how they are paid. In the first best world, managers are risk neutral and therefore the optimal compensation contract is one in which they pay a fixed fee to equityholders in return for the right to run the firm and receive all of its value net of the fee. In this case, managers expend effort up to the point where a marginal increase in effort has a payoff equal to managers' opportunity cost of time. More generally, this line of argument implies that managers should receive high pay when their firms make high profits and should receive low pay or no pay or be dismissed when their firms make losses.

In the real world, this line of argument suggests that managers of firms in financial distress should be punished by losing their jobs. Aghion, Hart and Moore (1992) argue along these lines that Chapter 11 in the U.S., which presumes that existing managers will remain in control during bankruptcy reorganization, treats managers too leniently. On the other hand, while managers in the first best world are risk neutral by assumption, managers in the real world may be risk averse. Risk averse managers may work harder if the variability of their incomes is reduced, *i.e.*, lower income when the firm is successful in return for more lenient treatment when the firm is in financial distress. There is empirical evidence to support the view that managers prefer some smoothing of income. In an examination of the pay structure of Chief Executive Officers (CEO's) of large U.S. corporations, Jensen and Murphy (1990) regress CEO compensation, including the value of stock options, on the value of the firm and find that when the value of the firm rises by a dollar, CEO compensation rises but by only a tiny amount—\$.0003. This suggests that real world managers may work harder if they are treated leniently, rather than harshly, when the firm is in financial distress.³⁶

³⁶ One reason for managers' risk aversion may be that the value of the firm depends both on managers' effort and on industry-wide or economy-wide factors that are beyond the manager's control. If a firm is

Suppose managers' effort level under bankruptcy policy i is denoted e_i , so that the value of the average firm under bankruptcy policy i is $V(e_i)$. Then $\Delta V(e_i)$ represents the reduction in the expected value of firms under bankruptcy policy i , relative to the expected value of firms in the first best world. Suppose N is the total number of firms in the economy. Then the *ex ante* cost under bankruptcy policy i is $\Delta V(e_i)N$, or the average loss of value per firm under bankruptcy policy i times the number of firms in the economy. I refer to this as the punishment effect. Aghion, Hart and Moore's (1992) argument implies that the punishment effect is low or zero under a bankruptcy policy that treats managers harshly, such as a policy of liquidating all firms in bankruptcy or a policy of replacing all managers of firms in bankruptcy with outside officials. Conversely, they would argue that the punishment effect is high under a policy of treating managers leniently in bankruptcy, such as Chapter 11. However, it is not at all clear whether things actually work this way and, in fact, the opposite might be true, *i.e.*, many managers may be risk averse and work harder under a bankruptcy policy that smooths their income stream.³⁷ In the analysis below, I assume—following Aghion, Hart and Moore (1992)—that the punishment effect is smallest under a harsh bankruptcy policy. But this further research is clearly needed on this point.

What about creditors and equityholders—is there a punishment effect for them? A punishment effect for creditors and equity would imply that firms' overall cost of capital varies depending on the characteristics of bankruptcy policy, so that some economically efficient projects are passed over under particular bankruptcy policies. Bankruptcy policy can be structured to reduce risk for particular types of creditors or for equityholders. Examples include not subjecting secured creditors to the automatic stay in bankruptcy, which reduces secured creditors' risk, or requiring that equityholders approve reorganization plans, which reduces equityholders' risk but increases creditors' risk. But when firms

unsuccessful, it could either be because managers' effort level was low or because factors beyond managers' control were unfavorable, and shareholders may not be able to distinguish between these two. See Hölmstrom (1982).

³⁷ In 19th century England, an even harsher policy was routinely used to punish debtors for bankruptcy—they were put in prison. As noted above, the European countries still provide for criminal penalties for managers who delay filing for bankruptcy. Gilson (1990) argues that the turnover of managers is relatively high in Chapter 11, but the correct comparison, which would be to managerial turnover rates in reorganization in the European countries, is not available.

are insolvent, bankruptcy policy cannot reduce risk for all types of creditors and for equity simultaneously. If all creditors were risk neutral and transactions costs were zero, then firms' overall borrowing cost would be unaffected by the priority ordering among creditors in bankruptcy. In the real world, it can be argued that creditors and equityholders are in effect risk neutral, since if they are risk averse they diversify their portfolios by holding small amounts of many different types of claims issued by many different firms.³⁸ However, transactions costs are not zero in the real world and a number of writers have argued that transactions cost considerations lead to economic efficiency gains under certain types of financial structures. For example, the use of secured credit may reduce monitoring costs, since secured creditors need only monitor the firm's use of their security rather than the firm's condition as a whole. Having debt of any type increases managers' level of effort, since it introduces the possibility that the firm may fail. Also, having unsecured debt may benefit firms by enabling them to signal to the market that they have good prospects, since an informed lender has been willing to lend to them on a low priority basis. Thus particular financial structures may reduce bankruptcy costs by reducing firms' overall cost of capital. On the other hand, there are many theories about which types of financial structures are preferable and no agreement about which is correct. There is also evidence of substantial differences across countries in patterns of financing. Therefore I ignore the possibility here that *ex ante* bankruptcy costs result from firms' financial structure. (These costs could easily be incorporated into the general bankruptcy cost framework discussed here, however.)³⁹

2.2 Bankruptcy costs after firms are in financial distress

Now suppose some firms have become financially distressed, but have not filed for bankruptcy. Assume that d denotes the probability of firms becoming financially distressed.

³⁸ The exception is equity claims held by managers, which are non-diversifiable. They are implicitly included in the punishment effect as part of managers' compensation.

³⁹ Note that if the firm's financial structure affects its behavior once it is in financial distress, then the resulting bankruptcy costs are included in the underinvestment or overinvestment effects discussed below. For discussion and various viewpoints, see Myers and Majluf (1984), Stulz and Johnson (1985), Jackson (1986), Baird (1992), and Adler (1993).

The probability of firms becoming financially distressed is assumed to depend on the level of effort by managers, e , which in turn depends on the characteristics of bankruptcy policy i . Thus the total number of financially distressed firms is $d(e_i)N$. A bankruptcy policy that treats managers harshly will tend to increase the level of managerial effort and therefore to reduce the number of firms that become financially distressed.

Three types of bankruptcy costs are associated with the behavior of managers of failing firms who attempt to avoid or delay filing for bankruptcy: the overinvestment effect, the underinvestment effect and the delay effect.

A. The overinvestment and underinvestment effects. The overinvestment effect refers to the fact that managers of firms in financial distress have an incentive to undertake excessively risky investments as a means of avoiding bankruptcy. If the risky investment succeeds, its high return enables the firm to avoid or at least delay bankruptcy. If it fails, the firm goes bankrupt, but managers are no worse off since it would have gone bankrupt anyway without the investment. Losses on risky investments are borne by creditors in the form of a lower payoff in bankruptcy. In contrast, the underinvestment effect refers to the fact that managers of firms in financial distress have an incentive to pass up safe investments that are economically efficient. The reason is that these investments, by reducing the variability of the firm's return, make creditors better off and equityholders worse off.⁴⁰

As an example, suppose a firm owes \$100 to a creditor next period. The firm has only \$20 in cash on hand and no lender is willing to loan the remaining \$80. An investment project is available which costs \$20 and pays \$100 with 15% probability before next period. The project is attractive to managers since it gives the firm a 15% probability of avoiding bankruptcy next period, when otherwise it would fail with certainty. But the project's expected return of \$15 is less than its cost of \$20, so that undertaking it causes an economic loss of \$5. The overinvestment effect is the economic loss on the project, \$5 in the example,

⁴⁰ The overinvestment and underinvestment effects were pointed out by Stiglitz (1972), Jensen and Meckling (1976), and Myers (1977). White (1980) showed that they also apply to managers' decision whether to file for bankruptcy versus continue operating the firm outside of bankruptcy. See Gertner and Picker (1992) for a series of models of managers' investment incentives in the context of bankruptcy. Bebchuk and Picker (1992) for a model in which managers choose investments which rely heavily on their skills and therefore contribute to managerial entrenchment.

times the probability of managers undertaking it. Alternately, suppose an investment project is available to the firm which costs \$20 and pays \$30 with certainty before next period. The project is unattractive to managers since the firm's probability of going bankrupt next period is one regardless of whether managers undertake it or not. But the project's expected return of \$30 is greater than its cost of \$20, so that it has an economic return of \$10. The underinvestment effect is the net value of the project, \$10 in the example, times the probability of managers passing it up.

Suppose O denotes the expected value per failing firm of resources wasted in excessively risky investment projects and assume that it varies with the characteristics of bankruptcy policy i . In the first best world, O_i would equal zero, since with unlimited liability, excessively risky projects would be unattractive to shareholders and managers would not undertake them. However in the real world, a harsh bankruptcy policy increases managers' incentive to overinvest once their firms have become financially distressed, since managers lose their jobs in bankruptcy. Conversely, a lenient bankruptcy policy reduces managers' incentive to overinvest since the incentive to avoid bankruptcy is smaller. The aggregate overinvestment effect under bankruptcy policy i is $d(e_i)NO_i$.

Suppose U denotes the expected value per failing firm of profitable projects that managers do not undertake. In the first best world, there would be no underinvestment effect since liability is unlimited and therefore safe, profitable projects would always benefit equityholders. But in the real world, the characteristics of bankruptcy policy affect the size of the incentive to underinvest. Under a harsh bankruptcy policy, managers of distressed firms have little incentive to invest in projects unless they reduce the probability of bankruptcy. Conversely under a lenient bankruptcy policy, managers anticipate remaining in control of the firm in bankruptcy, so that they have an incentive to undertake investments that improve the firm's financial condition even if they do not reduce the probability of bankruptcy. The aggregate underinvestment effect under bankruptcy policy i is $d(e_i)NU_i$.⁴¹

⁴¹ Strictly speaking, both effects also apply to managers of non-failing firms, but they are much weaker since the probability of bankruptcy is much lower.

An important point is that harsh versus lenient bankruptcy policies have offsetting effects on the strength of the overinvestment and underinvestment effects per firm versus on the number of affected firms. Under a harsh bankruptcy policy, managers have an incentive to work hard, so that the number of firms that become financially distressed, $d(e_i)N$, is low. But a harsh bankruptcy policy increases the strength of managers' incentive to overinvest and underinvest, so that O_i and U_i are both high. A lenient bankruptcy policy has the opposite effects. These offsetting factors make the size of the overinvestment and underinvestment effects ambiguous under any bankruptcy policy.

B. The delay effect. The delay effect refers to the fact that managers of financially distressed firms have an incentive to delay filing for bankruptcy, particularly if bankruptcy policy requires that all managers be replaced. The implications of delay depend on whether failing firms are economically efficient or inefficient. If firms are economically efficient, then delay has no economic cost. But if firms are economically inefficient, then delay increases bankruptcy costs. Suppose a proportion f of financially distressed firms is economically inefficient. Like d , f depends on the characteristics of bankruptcy policy via its effect on the level of work effort by managers. Under a harsh bankruptcy policy, managers have an incentive to work hard and few firms become financially distressed, so that $f(e_i)$ is low. A lenient bankruptcy policy has the opposite effect. The total number of financially distressed firms and economically inefficient firms in the economy is $f(e_i)d(e_i)N$.

Figure 1 shows the situation of a financially distressed firm which is economically inefficient. $R(t)$ represents the firm's revenues at time t , i.e., revenues generated by the firm's capital in its current use. Revenues are declining over time, perhaps because the firm's products are becoming technologically outmoded or are going out of style. $A(t)$ represents the revenues that the firm's capital would generate if it were shifted to its best alternate use, net of the cost of conversion. $E(t)$ is the firm's expenses at time t , including principle and interest payments due at t on all types of debt, and obligations to pay for inputs, wages and taxes. For simplicity, expenses are assumed to be constant over time and are also assumed to be the same under both the actual and the best alternate use of the firm's capital. From time t_2 onward, the firm makes losses.⁴²

⁴² $R(t) - E(t)$ does not correspond to profit, because expenses may include repayment of principle and

From time t_1 onward, it is economically efficient for managers to reinvest the firm's capital. If managers do not invest, there will be an efficiency gain from shutting the firm down and liquidating its assets, which will free them to move to the higher value use. In most cases, existing managers will undertake the investment, since it is profitable. There are various reasons why managers might fail to do so, however. One possibility is that no lender will finance the investment, since the new loan may be risky and the firm has no free assets that can provide security. Another possibility is that managers' human capital is specialized to the old use of capital.

Suppose the firm files for bankruptcy at time t_3 , after it has been making losses for several periods. The cost of delay in filing for bankruptcy per economically inefficient failing firm, denoted D , equals the area between the $A(t)$ and the $R(t)$ curves from time t_1 until t_3 , or the area abc in figure 1. In the first best world, the cost of delay in filing for bankruptcy would be zero, since with unlimited liability, equityholders would bear the cost of extra losses due to delay and, with no agency problems, managers would not delay in filing for bankruptcy. In the real world, however, the characteristics of bankruptcy policy affect the costs of delay. A harsh bankruptcy policy gives managers a strong incentive to delay filing for bankruptcy, so that the delay effect D_i per firm is high. However if creditors can appoint receivers who liquidate firms' assets or if creditors frequently initiate involuntary bankruptcy petitions, then managers have little opportunity to delay and D_i will be low. The aggregate cost of delay is $f(e_i)d(e_i)ND_i$.

Engaging in delay versus overinvestment are to some extent substitute strategies for managers of financially distressed firms who are attempting to avoid bankruptcy. Risky investment projects, assuming they do not pay off, use up the firm's cash and reduce the resources managers have available to delay bankruptcy. Greater delay is possible if managers conserve cash instead of investing in risky projects.⁴³

To what extent are overinvesting, underinvesting, and delay in filing for bankruptcy important in practice? All three phenomena imply that when firms finally liquidate in

⁴³ Baird (1993) argues that the delay effect mainly applies to managers of small, closely held firms.

bankruptcy, unsecured creditors receive little. This is because managers “use up” the firm’s assets before filing for bankruptcy, obtaining cash by giving creditors liens on the firm’s free assets. The cash is then used either to finance risky investments or to finance continued delay in filing for bankruptcy by, say, paying for new deliveries of materials. When firms finally file for bankruptcy, secured creditors claim their security and few assets are left to repay unsecured creditors’ claims. Evidence from both the U.S. and Germany suggests that when firms liquidate in bankruptcy, unsecured creditors receive a payoff rate of only 2 to 3%.⁴⁴ The low payoff rate in Germany also suggests that the policies of encouraging creditors to initiate involuntary bankruptcy filings and penalizing managers for delay in filing are both ineffective.

2.3 Bankruptcy costs after firms have filed for bankruptcy

We have already noted that only some firms in financial distress are economically inefficient. Figure 2 shows a firm that is financially distressed but is nonetheless economically efficient. Its revenues $R(t)$ fluctuate over time, but they exceed its alternate net revenues $A(t)$ over the time period shown in the figure, so that the best use of the firm’s capital is the current use, *i.e.*, the firm is economically efficient. However, from time t_2 to t_3 , the firm makes losses. It may or may not enter bankruptcy, depending on how long and severe its losses are. I assume that all firms in financial distress either are economically inefficient and fall into the situation depicted in figure 1 or economically efficient and fall into the situation depicted in figure 2.⁴⁵

When an economically inefficient firm enters bankruptcy, the best outcome is for its assets to be liquidated, thereby releasing its capital to move to higher value uses. But when an economically efficient firm enters bankruptcy, the best outcome is for it to continue operating, since its capital has no higher value use. The economic justification for having

⁴⁴ Drukarczyk (1987) finds a payoff rate in Germany of 2.4% for a sample of firms. See Flynn (1989) and White (1994) for evidence of a similar payoff rate in the U.S.

⁴⁵ This is somewhat oversimplified. Firms in financial distress could also fall between the two cases. Also, suppose the $A(t)$ and $E(t)$ curves in figure 1 were reversed for some firms. Then these firms might file for bankruptcy and liquidate before it is economically efficient for them to shut down, rather than after. In that case there would be type II associated with these firms. These possibilities would not change the basic analysis.

reorganization in bankruptcy is to save firms that are economically efficient but financially distressed, *i.e.*, figure 2 firms. In the first best world, there is perfect information so that failing firms would always be correctly classified in bankruptcy: figure 1 firms would liquidate and figure 2 firms would reorganize. However in the real world, when failing firms enter bankruptcy, it is difficult to tell with certainty which type they are. As of time t_2 in figures 1 and 2, both types of firms have revenues which are falling over time and both are beginning to make losses. Thus they look essentially alike. The differences between them depend on alternate net revenues, $A(t)$, and on future revenues, $R(t)$, both of which are unobservable. Because of the uncertainty about which firms in bankruptcy are which type, any real world bankruptcy system that incorporates a reorganization procedure is likely to make errors.

The fact that there are two different types of distressed firms that should be treated differently in bankruptcy gives rise to type I and type II error. Suppose a reorganization procedure in bankruptcy exists. Then some economically inefficient failing firms (figure 1 firms) may be mistakenly categorized as efficient and allowed to reorganize. Since these firms should have been liquidated, type I error costs occur. Conversely, suppose some economically efficient but failing firms (figure 2 firms) liquidate in bankruptcy, either because no reorganization procedure exists or because a procedure exists but some efficient firms are mistakenly categorized as inefficient. Since these firms should have reorganized, type II error costs occur.⁴⁶

A. Costs of type I error in bankruptcy. Consider first the cost of failing to identify economically inefficient firms in bankruptcy, so that these firms go through the reorganization procedure. I assume that the reorganization procedure fails to save them on any long-term basis, but does allow them to operate longer than they would have otherwise. If there were no reorganization procedure, we previously assumed that economically inefficient firms would file for bankruptcy and liquidate at time t_3 in figure 1. But if there is a reorganization procedure, suppose these firms continue operating until some later time t_4 , including the time spent in reorganization. The cost of type I error per firm, denoted C_I ,

⁴⁶ See White (1992b) for a game-theoretic model of type I and type II error in bankruptcy.

is the area between the $A(t)$ and the $R(t)$ curves from time t_3 to t_4 in figure 1, or the area $cbde$. Thus the cost of type I error in bankruptcy equals the increase in the cost of delay per firm when firms reorganize rather than liquidate in bankruptcy. The cost of type I error, like the cost of delay, is economic stagnation since resources move more slowly from less efficient to more efficient uses.

Suppose the probability of distressed, inefficient firms filing to reorganize in bankruptcy is r , where r is assumed to depend on the characteristics of bankruptcy policy. There are $r_i f(e_i) d(e_i) N$ economically inefficient and financially distressed firms that file to reorganize in bankruptcy. The characteristics of bankruptcy policy also affect the costs per firm of type I error, C_I , so that the aggregate cost of type I error under bankruptcy policy i is $r_i f(e_i) d(e_i) N C_{Ii}$. For example, under a liquidation-only bankruptcy policy, no firms reorganize so that r_i is zero and the costs of type I error are therefore zero. Under a more lenient bankruptcy policy, r_i may be positive since managers of some inefficient distressed firms wish to reorganize and bankruptcy policy may permit them to do so. The characteristics of bankruptcy policy affect C_{Ii} through such factors as how long economically inefficient firms are permitted to continue operating under the reorganization procedure.

B. Costs of type II error in bankruptcy. Now consider the costs of not saving firms of the type shown in figure 2 that are economically efficient but financially distressed. The cost of failing to save efficient but distressed firms is the loss of their going concern value, which equals the difference between the area under the $R(t)$ curve and the area under the $A(t)$ curve over the entire time period shown in figure 2. This amount, denoted C_{II} , is positive over the long run by assumption. How large the costs of type II error in bankruptcy are is a matter of dispute. Under a low transactions cost view of the world, if an economically efficient firm shuts down in bankruptcy and is liquidated, its going concern value is not lost since a new owner will quickly buy the firm's assets from the bankruptcy trustee and reopen it. Thus C_{II} is low on average, since shutdowns of economically efficient distressed firms are temporary. But under a high transactions cost view of the world, these costs could be much higher. According to this view, bankruptcy disrupts the nexus of relationships between the firm, its suppliers and customers, and these relationships are costly to re-establish. (See Williamson, 1975.) Also, workers with specific

human capital may find other jobs and secured creditors may quickly claim essential assets, thus preventing the bankruptcy trustee from selling the firm as a viable concern. Which of these stories is accurate probably differs for different types of firms. Note that the cost per firm not saved, C_{II} , does not depend on the characteristics of bankruptcy policy i .

Under bankruptcy policy i , the total number of economically efficient but financially distressed (figure 2) firms is $(1 - f(e_i)) d(e_i) N$. Of these firms, suppose a proportion l_i files to liquidate in bankruptcy, a proportion r'_i files to reorganize in bankruptcy, and the remaining proportion $(1 - l_i - r'_i)$ avoids bankruptcy completely, perhaps by having an informal workout. All of the firms that liquidate cause type II error.⁴⁷ Of those that file to reorganize, not all succeed and those that do not succeed also liquidate and cause type II error. Suppose the probability of a figure 2 firm successfully reorganizing under bankruptcy policy i is s_i . Then a proportion $r'_i(1 - s_i)$ of economically efficient distressed firms also cause type II error. Thus the total cost of type II error under bankruptcy policy i is $[l_i + r'_i(1 - s_i)](1 - f(e_i)) d(e_i) N C_{II}$. The cost of type II error depends both on how effective bankruptcy policy is in identifying economically efficient but financially distressed firms, as measured by r'_i , and on how effective bankruptcy policy is in saving those efficient but distressed firms that enter the reorganization process, as measured by s_i .⁴⁸

C. The direct costs of bankruptcy. Finally, when firms file for bankruptcy, the transactions costs of the bankruptcy process are referred to as direct costs. These include actual court fees, the cost of the outside official, if any, and the costs of lawyers, accountants and other professionals who provide advice to the various parties involved in the bankruptcy. Suppose the direct costs of bankruptcy per firm under bankruptcy policy i are K_i . Also suppose b_i denotes the probability of firms that are financially distressed filing for bankruptcy under bankruptcy policy i . Therefore the total direct costs of bankruptcy are $b_i d(e_i) N K_i$. In general, more distressed firms will file for bankruptcy under a lenient

⁴⁷ Note that r'_i differs from r_i , since the former is the probability of efficient failing firms reorganizing and the latter is the probability of inefficient failing firms reorganizing.

⁴⁸ U.S. data suggests that only one-sixth to one-quarter of firms that file under Chapter 11 adopt reorganization plans. But this figure includes both economically efficient and inefficient firms. See Flynn (1989) and White (1994).

than a harsh bankruptcy policy. Direct costs per firm probably rise as the bankruptcy procedure takes longer. They also have a higher fixed component when an outside bankruptcy official is appointed.

2.4 Total costs of bankruptcy

Total bankruptcy costs are equal to the sum of the costs just discussed, or:⁴⁹

$$N\Delta V(e_i) + d(e_i)N[O_i + U_i] + f(e_i)d(e_i)ND_i + r_i f(e_i)d(e_i)NC_{II} + [l_i + r'_i(1 - s_i)](1 - f(e_i))d(e_i)NC_{II} + b_i d(e_i)NK_i$$

As discussed, these costs apply to different numbers of firms. The punishment effect has the widest effect, since it applies to all N firms in the economy, while the costs of type I and type II error have the narrowest effects, since they apply only to firms that file for bankruptcy and are mistaken classified. If each of the six bankruptcy costs were the same on a *per firm* basis, then the punishment effect would be by far the most important source of bankruptcy costs since it applies to many more firms. Even if the punishment effect were much smaller than the other effects on a per firm basis, the aggregate punishment effect is likely to be larger, since—at least in the U.S.—the proportion of firms that fail is only about 1%.⁵⁰ While the number of firms in financial distress is greater than the number of firms that fail, it is still much smaller than the total number of firms.

This discussion suggests that the most important issue in evaluating bankruptcy policy is the punishment effect, since it is large enough by itself to more than offset all the other sources of bankruptcy costs. But so little is known about the punishment effect that there is disagreement concerning even its direction. If Aghion, Hart and Moore (1992) are correct, then a harsh bankruptcy policy reduces the punishment effect and is therefore desirable on economic efficiency grounds. But we argued above that a harsh bankruptcy policy might in fact increase the punishment effect if managers tend to be risk averse.

⁴⁹ Another cost of bankruptcy, not considered explicitly here, is the effect on parties not directly represented in the bankruptcy process, such as workers. See Franks and Torous (1991).

⁵⁰ The Dun & Bradstreet failure rate has been about 1% each year since the early 1980's. See Dun & Bradstreet (1992).

3. Bankruptcy Costs Under Alternate Bankruptcy Policies

In this section, the costs of bankruptcy under the bankruptcy laws of the four countries are analyzed, using the framework developed in the previous section. Bankruptcy reform proposals are also considered.

3.1 Liquidation-only

Consider first a hypothetical policy of liquidating all firms in bankruptcy. This is the *de facto* bankruptcy policy in Germany and Britain at present, since very few firms reorganize in bankruptcy in either country. The effects of this policy are shown in the first line under "policies" in table 2. Under it, the punishment effect is low, assuming that harsh punishment for failure increases work effort by managers. Also, the cost of type I error is zero: since there is no bankruptcy reorganization at all, no economically inefficient firms reorganize. In addition, the direct costs of bankruptcy are low, since relatively few firms end up in bankruptcy and the liquidation process itself is quick. However, the other three effects are all ambiguous in size, mainly because the number of firms involved trades off against the size of the effect per firm. Consider the over-/underinvestment effect first. Under liquidation-only, managers have an incentive to work hard, so that their effort level, e_i , will be high and the number of firms in financial distress, $d(e_i)N$, will be low. But once firms are in financial distress, managers have a strong incentive to take whatever measures they can to avoid bankruptcy, so that the over- and underinvestment effects per firm, O_i and U_i , will be high. This means that it is difficult to characterize the size of the aggregate over-/underinvestment effect from theoretical considerations alone. Now turn to the cost of type II error. Again the number of financially distressed firms, $d(e_i)N$, will be low, but the proportion that are economically efficient, $(1 - f(e_i))$, will be high. Thus the number of firms affected by type II error, $(1 - f(e_i))d(e_i)N$, is ambiguous and the aggregate level of type II error is also ambiguous. Finally, the delay effect is also ambiguous, but for a different reason. The policy of liquidation-only causes managers to work hard, so that the number of inefficient, financially distressed firms, $f(e_i)d(e_i)N$, will be low. Managers of these firms have a strong incentive to delay filing for bankruptcy as long as they can, which would suggest that the per firm delay effect, D_i , is high. However

other aspects of bankruptcy policy also affect the extent to which managers can delay. In Britain, the fact that individual creditors can begin liquidating the firm by appointing a receiver suggests that the per firm delay effect is low. But in countries where the liquidation process is collective, the per firm delay effect will be higher since involuntary bankruptcy filings are relatively rare and penalties for delay in filing appear to be ineffective. Thus the aggregate delay effect is low under liquidation-only when the liquidation process is predominantly private, but may be higher when the liquidation process is collective.⁵¹ In table 2, ambiguous effects are indicated by question marks.

Thus the liquidation-only bankruptcy policy has a low punishment effect, low direct costs and low costs of type I error. If only these costs were considered, the policy would appear to be very attractive from an economic efficiency standpoint. However, it has high per firm costs of over-/underinvestment and type II error, so that these costs rise quickly as the number of distressed firms increases. How large the latter effects are relative to the former is unknown and the question can only be answered empirically. Unfortunately, this ambiguity turns out to be characteristic of all the bankruptcy policies considered.

3.2 The "new" European bankruptcy policy

Now consider bankruptcy costs under a bankruptcy policy that represents the system toward which the three European countries appear to be moving. Under this policy, an outside bankruptcy official is appointed to replace managers in all bankruptcy cases, a reorganization procedure exists, and the official decides whether the firm should be reorganized or liquidated. Harsh penalties for delay in filing for bankruptcy are enforced and are assumed to be effective. Assume also that individual creditors do not have the power to appoint receivers, *i.e.*, liquidation is collective rather than private.

Under these assumptions, the punishment effect is still low, since managers are still treated harshly in bankruptcy. The over- and underinvestment effects are ambiguous for the same reasons as under the liquidation-only bankruptcy policy, *i.e.*, the per firm effects are high but the number of firms affected is relatively low. Direct costs are also low, because

⁵¹ If creditors begin the liquidation process before time t_1 in figure 1, then bankruptcy costs rise because of additional type II error when firms close down too early.

the number of firms in bankruptcy is relatively low and also because the reorganization process under the outside official is relatively quick. Assuming that penalties for delay in filing for bankruptcy are severe and are routinely enforced (this is a strong assumption!), then the aggregate delay effect would be low.⁵² Now turn to the costs of type I and type II error. Here the costs depend on how accurately outside officials classify bankrupt firms as economically efficient versus inefficient. If the outside officials were omniscient, then the costs of both type I and type II error would be zero. More likely, outside officials would tend to make errors, but the errors would be random. Assuming that the error rate is low, the costs of type I and type II error would be low.

If we compare lines 1 and 2 in table 2, it is unclear whether the new European bankruptcy policy has higher or lower bankruptcy costs than the policy of liquidating all bankrupt firms. The delay effect is lower under the new policy, but only if harsh penalties for delay are routinely enforced. And while the aggregate cost of type II error in bankruptcy probably falls, the cost of type I error in bankruptcy definitely rises. Further, if outside officials in bankruptcy have a mandate to serve the interests of the State by saving failing firms—as is the case in France—then the costs of type I error will be high since officials will tend to save more distressed inefficient firms in their efforts to avoid liquidating distressed efficient firms.

3.3 Chapter 7/Chapter 11

Next consider actual U.S. bankruptcy policy, referred to as Chapter 7/Chapter 11. It allows managers to choose between liquidation versus reorganization in bankruptcy and to control the reorganization process, at least initially. It therefore treats managers relatively leniently. As a result, managers' incentive to work hard to avoid financial distress is reduced, the number of firms in financial distress, $d(e_i)N$, will be high, and the punishment effect will be high. Now consider the over- and underinvestment effects. Because managers are treated leniently in bankruptcy, the number of financially distressed firms will be

⁵² Since the outside official's job includes examining the firm's condition to decide whether it should be reorganized or liquidated, the official could also determine whether delay or overinvestment behavior by managers exceeds some threshold and, if so, administer penalties.

high. However, because managers anticipate being treated leniently in bankruptcy, their incentive to over-/underinvest is reduced. Therefore the size of the over-/underinvestment effect is again ambiguous. The delay effect is also ambiguous. Managers of failing firms may decide to file for bankruptcy under Chapter 11 and attempt to reorganize, since they anticipate remaining in control during the reorganization process. In this case, they are likely to file for bankruptcy early, since the chance of a successful reorganization rises as the firm's financial condition is better. However, managers alternately may choose to delay filing for bankruptcy as long as possible, either in hopes that the firm's financial condition improves on its own or because they expect to remain in control longer by remaining out of bankruptcy and eventually just shutting down. Thus the per firm delay effect may be either high or low. Now turn to the costs of type I and type II error. Since managers have the right to choose between Chapters 7 and 11, many economically inefficient and distressed firms will file under Chapter 11 and attempt to reorganize, but few economically efficient distressed firms will file to liquidate under Chapter 7. Therefore the aggregate cost of type I error will be high and that of type II error will be low. Finally, direct costs will be high. This is both because many firms are financially distressed and file for bankruptcy and because the costs per firm of reorganization under Chapter 11 are very high. Since managers remain in control under Chapter 11 and equityholders (in addition to creditors) must vote in favor of the reorganization plan, the reorganization process tends to be prolonged and costs rise with time spent in reorganization.

The costs of Chapter 7/Chapter 11 are shown on line 3 of table 2. Because of the many ambiguous terms, it is impossible to draw firm conclusions concerning relative bankruptcy costs under Chapter 7/Chapter 11 versus either of the two policies just discussed.

The U.S. bankruptcy system is clearly attractive to policymakers, since they see it as saving the jobs provided by financially distressed firms. Saving these firms saves money for the government, since the immediate costs are borne by creditors, while workers who would otherwise lose their jobs would be eligible for publicly financed unemployment compensation and retraining programs. Thus the benefits of a bankruptcy policy which encourages reorganization and has low type II error are immediate and obvious to policymakers. The costs of such a policy are easy for policymakers to disregard, since the high costs of the punishment effect and of type I error are long-term and hidden.

3.4 Selling all firms in bankruptcy

Finally, consider a reform proposal which in various forms has been advocated by a number of U.S. writers on bankruptcy. It calls for selling all firms in bankruptcy on the open market as quickly as possible after the bankruptcy filing. Firms would be sold as going concerns whenever possible. Their new owners would make the decisions whether to shut them down versus continue operating them and, if the latter, whether to retain the pre-bankruptcy managers or not. The proceeds of selling the firm would be used to pay creditors under the absolute priority rule.⁵³ This proposal is attractive since new owners—having their own money at stake—have a strong incentive to make careful, accurate decisions about whether to liquidate versus reorganize failing firms. Thus the costs of type I and type II error should be close to zero. Also, since managers are treated harshly in bankruptcy, the punishment effect would be low. However, the per firm costs of delay, overinvestment and underinvestment could be high, since managers would probably assume that new owners would replace them and would therefore do all they can to avoid or delay bankruptcy. Thus the aggregate costs of delay and over-/underinvestment are ambiguous.

If we compare this policy to the liquidation-only and the new European bankruptcy policies, all treat managers harshly in bankruptcy and therefore all have low punishment costs. Also, all have ambiguous costs of delay, overinvestment and underinvestment, since per firm costs are high but relatively few firms are affected. However the differing treatment of firms once they file for bankruptcy implies that the costs of type I and type II error differ. The new European bankruptcy policy and the reform proposal both have an advantage over liquidation-only in that they allow for economically efficient but financially distressed firms to reorganize in bankruptcy, which reduces the cost of type II error relative to the policy of liquidation-only. An additional advantage of the new European bankruptcy policy over both alternatives is that the outside official could potentially be used to administer penalties for delay in filing for bankruptcy. In contrast, under liquidation-only or the reform proposal, no one is in a position to administer penalties for delay. Thus from a

⁵³ Various versions of this proposal include Roe (1983), Baird (1986), Jackson (1986), Bebchuk (1988), Aghion, Hart and Moore (1992), and Bradley and Rosenzweig (1992).

theoretical standpoint, the proposal to sell all firms in bankruptcy appears to be at least as desirable on economic efficiency grounds as the new European approach to bankruptcy.

4. Conclusion

Summarizing the results in table 2, the strongest implication is that there are no clear conclusions. A clear choice of one bankruptcy system over the others requires estimating numerical values for the various bankruptcy cost elements. Further, there is no reason to expect that the same bankruptcy policy will be optimal for every country, since underlying conditions are likely to differ across countries.

The analysis has important implications nonetheless. First, if we evaluate bankruptcy policy based on how it treats firms already in bankruptcy, we are allowing the tail to wag the dog, since the number of firms in bankruptcy is small relative to the total number of firms affected by bankruptcy policy. The primary goal of bankruptcy policy should not be to save efficient but financially distressed firms. Instead it should be to create efficient incentives for managers of firms in general. Since the punishment effect applies to all firms rather than just firms in financial distress or firms already in bankruptcy, the implication is that policies that treat managers harshly in bankruptcy—such as liquidation-only, the new European policy and the proposal to sell all firms in bankruptcy—are likely to be more economically efficient than policies such as Chapter 7/Chapter 11 that stress saving failing firms. Second, the specifics of the reorganization procedure itself—such as whether the reorganization plan is formulated by managers, creditors or outside officials, whether the plan is adopted by the bankruptcy judge or by a vote of creditors, and whether equityholders have the right to vote on the plan—are of minor importance as factors in total bankruptcy costs. Third, the traditional goal of bankruptcy policy in the European countries—that of protecting the interests of creditors—is probably no longer important given the ability of creditors to diversify by holding claims of different types against many different firms.

Finally, since at this point we know neither the size nor the direction of the punishment effect, the characteristics of the optimal bankruptcy policy are unknown. To illustrate this, suppose the punishment effect turned out to have the opposite sign than assumed here,

i.e., under a harsh bankruptcy policy, managers would work *less* hard than under a lenient bankruptcy policy. In that case, average firm value would be lower and the proportion of firms that are distressed would be higher under a harsh than a lenient bankruptcy policy. Then the punishment effect under all the policies in table 2 would be reversed and most of the ambiguous entries in the table would become clear. For example, a liquidation-only bankruptcy policy would then have a high punishment effect, high overinvestment, underinvestment and delay effects, and high cost of type II error, but would still have low cost of type I error and low direct costs. In contrast, Chapter 7/Chapter 11 would have a low punishment effect, low overinvestment, underinvestment and delay effects and low cost of type II error, but would still have high cost of type I error and high direct costs. Under these circumstances, the Chapter 7/Chapter 11 approach to bankruptcy policy would appear much more attractive. Further research—particularly empirical research and particularly on the punishment effect—is clearly needed.

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**Table 1: Comparison of Bankruptcy Laws
in the U.S. versus Three European Countries**

	U.S.	Europe
How is bankruptcy initiated?	Voluntary filings by managers	Involuntary and voluntary filings
Timing of bankruptcy	No sanctions for delay in filing	Sanctions for delay in filing
Is an outside official appointed?	Normally not	Always
Who decides between liquidation and reorganization?	Existing managers (during the exclusivity period)	Outside official or bankruptcy judge
Type of bankruptcy liquidation procedure	Collective	France: Collective Germany: Private Britain: Private
Is there an "automatic stay" of secured creds. in reorganization?	Yes	France: yes Germany: no Britain: yes under admin. order
Who proposes the reorganization plan?	Managers during period of exclusivity	Outside bankruptcy official
How is the reorganization plan adopted?	Majority vote by creditors' classes and equity	France: bank. court Britain: vote by creditors' committee Germany: majority vote by creditors

**Table 2: Bankruptcy Costs
Under Alternative Bankruptcy Policies**

	Punish- ment Effect	Over/Under- investment Effects	Delay Effect	Type I Error	Type II Error	Direct Costs
Applies to:	All firms	All distressed firms	Distressed inefficient firms	Distressed inefficient firms	Distressed efficient firms	All bankrupt firms
Cost:	$N\Delta V(e_i)$	$d(e_i)N[O_i + U_i]$	$f(e_i)d(e_i)ND_i$	$r_i f(e_i) d(e_i) * NC_{Ii}$	$[l_i + r'_i(1 - s_i)] * (1 - f(e_i)) * d(e_i) NC_{II}$	$b_i d(e_i) NK_i$
Policies:						
Liquidation only	<i>low</i>	?	<i>low?</i>	0	?	<i>low</i>
New European	<i>low</i>	?	<i>low?</i>	<i>low?</i>	<i>low?</i>	<i>low</i>
Chapter 7/ Chapter 11	<i>high</i>	?	?	<i>high</i>	<i>low</i>	<i>high</i>
Reform Proposal	<i>low</i>	?	?	0	0	<i>low</i>

Figure 2

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