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Investment decisions under Chapter 11 Bankruptcy

Hotchkiss, Edith Harriet Shwalb, Ph.D.

New York University, Graduate School of Business Administration, 1994

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INVESTMENT DECISIONS UNDER CHAPTER 11 BANKRUPTCY

**A DISSERTATION
SUBMITTED TO THE DEPARTMENT OF FINANCE
AND THE FACULTY OF THE LEONARD N. STERN SCHOOL OF BUSINESS
OF NEW YORK UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY**

**By
EDITH SHWALB HOTCHKISS
August, 1993**

I, Edith Hotchkiss,

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I certify that I have read this thesis and that in my opinion it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy.

A handwritten signature in black ink that reads "Kose John". The signature is written in a cursive style and is positioned above a horizontal line.

Kose John
(Principal Advisor)

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I would like to dedicate this dissertation in memory of Sylvia Shwalb.

Abstract

The dissertation consists of three essays which consider the effect of the Chapter 11 Bankruptcy process on real investment decisions.

The first essay examines the performance of 197 public companies which emerged from Chapter 11 Bankruptcy. Almost 40% of the sample firms continue to experience operating losses in the two years following bankruptcy, while over 16% file a second time. Management often retains substantial influence over restructuring decisions during bankruptcy, and frequently is not replaced until a plan of reorganization has been confirmed. The continued involvement of pre-bankruptcy management in the restructuring process is strongly associated with poor post-bankruptcy performance. The substantial number of firms emerging from Chapter 11 which are not viable or which need further restructuring provides little evidence that the process effectively rehabilitates distressed firms, and is consistent with the view that there are economically important biases toward continuation of unprofitable firms.

The second essay studies the outcomes of attempted reorganizations for a large sample of public companies that filed under Chapter 11 of the Bankruptcy Code. Based on hypotheses suggested by theoretical models of the reorganization, this paper examines the relationship of industry conditions, pre-bankruptcy capital structure, characteristics of management and pre-bankruptcy firm characteristics to the reorganization/liquidation choice. The results show that industry conditions, in particular high leverage of other firms in the industry, increase the probability of liquidation. Larger firms, particularly those with public debt outstanding prior to filing, have a greater probability of emergence from bankruptcy. There does not appear to be strong support for models which suggest capital structure affects the decision. Finally, there is weak support for the idea that newly appointed board members are more responsive to creditor pressures to liquidate.

The third essay examines asset sale decisions by large public companies entering bankruptcy. The paper examines stock price reactions to announcements of asset sales, and finds contrasting effects for asset sales before versus during bankruptcy. The evidence presented is consistent with hypotheses that, particularly prior to bankruptcy, agency conflicts may lead to asset sales which are not necessarily value enhancing.

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Essay #1

**"The Post-Bankruptcy Performance of Firms
Emerging from Chapter 11"**

The Post-Bankruptcy Performance of Firms Emerging From Chapter 11

The dramatic rise in the number and size of firms filing for Chapter 11 bankruptcy in the 1980s has led to substantial interest among financial economists in understanding how financial distress affects the allocation of resources. Jensen (1991) describes the Bankruptcy Code as strongly pro-debtor and argues that "chronic inefficiencies" arise from certain features of this process. The current structure of the Code allows incumbent management to retain control of the firm in bankruptcy and gives management an initially exclusive right to propose a plan of reorganization. Critics of the Chapter 11 process have argued that this structure leads to excessively long and expensive conflicts among claimholders and that the process is biased toward reorganization rather than liquidation.

Much of the recent empirical work in the area of bankruptcy and financial distress has focused on documenting the strategic outcomes and costs of renegotiation in bankruptcy.¹ However, the empirical evidence to date does not consider the post-bankruptcy performance of firms and the influence of the structure of Chapter 11 on this performance. This paper examines the performance of firms which have emerged from the Chapter 11 process and provides evidence consistent with the idea that there are economically important biases toward continuation of unprofitable firms. The evidence is also consistent with the view that management's continued participation in the process is an important source of this bias. These results control for more exogenous factors, perhaps outside of management's control, which are

¹ Several authors have documented that in Chapter 11 lower priority creditors, particularly shareholders, often receive some distribution under the plan of reorganization even though more senior creditors are not repaid in full. See for example Eberhart et al. (1989), Weiss (1990) and Franks & Torous (1991). Warner (1977), Altman (1984) and most recently Weiss (1990) provide measures of bankruptcy costs. Gilson (1989) focuses on the costs of financial distress to management.

also strongly related to subsequent performance.

The post-bankruptcy performance of firms emerging from Chapter 11 is examined using a unique sample, consisting of all firms filing for Chapter 11 between October 1979 and September 1988 which have emerged as public companies. A surprisingly large number of firms continue to perform quite poorly after they emerge. Almost forty percent of the firms emerging from bankruptcy continue to experience operating losses in the two years following bankruptcy. Over sixteen percent of the sample firms actually fail a second time. The substantial number of firms emerging which are not viable or which need further restructuring provides little evidence that the process effectively rehabilitates distressed firms. The costs of overinvestment in unprofitable firms or of mismanagement may outweigh some potentially beneficial effects of financial distress suggested by Jensen (1989) and Wruck (1990), who argue that firms which cannot meet their financial obligations are forced to make corrective changes in corporate policy.

Management's participation in the restructuring process is examined as a source of the bias toward excessive continuation. Pre-bankruptcy management often retains significant influence during Chapter 11 and is not replaced until the firm emerges from bankruptcy. The continued involvement of original management in the restructuring process is strongly associated with poor post-bankruptcy performance. Furthermore, firms are more likely to perform worse than was projected at the time of reorganization when original management remains in office during bankruptcy. These findings support the idea that the rules of the game favoring management may lead to inefficient investment decisions. This interpretation is consistent with models of managers' self-serving behavior which are well developed in the corporate finance literature².

² Numerous models starting with Jensen & Meckling (1976) have described management/shareholder conflicts. Jensen (1986), Shleifer & Vishny (1989), and Stulz (1990) are recent examples of models where managements' self-serving behavior leads to overinvestment. In bankruptcy, managers may attempt to preserve both the firm and their own ability to find future employment.

This study also sheds light on claims that financial distress leads to improved monitoring and creditor influence over resource allocation. Firms which issue large amounts of stock in the reorganized firm to creditors, and therefore emerge with lower leverage, tend to perform worse after bankruptcy. These results are more consistent with models of the benefits to the reorganized firm of higher leverage, and of the benefits of restrictive covenants in restructured debt securities as noted by Gilson (1990). However, a causal relationship is not clear; the results are also consistent with models of asymmetric information such as Myers & Majluf (1984) and Brown, James & Mooradian (1991) in which firms with poor prospects will issue more stock. In contrast, these results do not support the idea that distressed firms benefit from an increased concentration of shareholdings through large equity stakes given to creditors.

The paper also provides some evidence that a number of more exogenous factors are associated with better post-bankruptcy performance. A firm which has suffered from some exogenous shock may continue to struggle, even though the original management is retained because it is still the best available to run the firm. Consistent with this explanation, the data shows that post-bankruptcy profitability is strongly related to pre-bankruptcy profitability. Another explanation for poor performance either before or after bankruptcy is that the problems are largely industry related. Though many of the firms filing for Chapter 11 are in depressed industries (such as oil & gas related businesses), several measures of industry performance are only weakly positively related to post-bankruptcy performance. Furthermore, many firms do not appear to benefit from industry recoveries after bankruptcy. Finally, larger firms, measured prior to bankruptcy, are more likely to show positive operating income after bankruptcy. Firms which enter bankruptcy with a greater number of diverse businesses may have an opportunity to divest their unprofitable operations and turn around the company by focusing on core businesses. However, the evidence does not show that more diverse companies have a greater

probability of success after bankruptcy.³

Overall, the results support hypotheses that by allowing incumbent management to retain control of the firm, the Chapter 11 process will be biased toward preserving risky and often unprofitable investment. The paper proceeds as follows. The following section provides some background on the Chapter 11 process, related research and hypotheses. Section II describes the sample and data collection, while Section III describes several measures of the firms' post-bankruptcy "success". Section IV examines specific characteristics of the restructurings based on data obtained from bankruptcy court documents and uses multivariate analysis to identify factors associated with improved performance. Section V concludes.

I. Related Research & Hypotheses.

When a firm files for Chapter 11, control of ongoing operations generally remains with the "debtor in possession", specifically the firm's management. Management may only be replaced by a court appointed trustee in cases where fraud or gross mismanagement can be shown.⁴ In order to emerge from bankruptcy, a reorganization plan providing the terms for restructuring all claims must be approved. Management has the exclusive right to propose this plan during the first 120 days of bankruptcy, a deadline which the courts routinely extend.

The plan of reorganization divides claims and interests into often numerous classes of similar

³ John, Lang & Netter (1992) study the voluntary restructurings of 46 large firms in response to earnings declines and find that on average these firms retrench quickly and increase their focus on core operations. Many of the more diversified firms studied in this paper behave similarly.

⁴ The appointment of a trustee is a difficult process which does not commonly occur. Only three firms in the sample described below, Beker Industries, Helionetics, and Nucorp Energy, had court-appointed trustees. Practitioners have suggested that management is more likely to resign to avoid the appointment of a trustee.

securities, which forms the voting structure for approval of the plan. For example, unsecured trade claims, unsecured public debt, preferred stock, and shareholders are each separately grouped into at least one class. Secured creditors are generally treated as individually voting classes. The plan must be accepted by each "impaired" class, though the court can "cram down" the settlement on a dissenting class if they are as well off under the reorganization plan as they would be under the alternative of liquidation.⁵ The consensual agreement needed to exit Chapter 11 may contribute largely to the time spent renegotiating claims in bankruptcy.

Several theoretical models describe potential inefficiencies in the investment decisions of distressed firms. Bulow and Shoven (1978) and White (1989) consider the reorganization versus liquidation choices of firms in financial distress and show how the risk shifting incentives of lower priority claimants can lead to excessive continuation of investment. Gertner and Scharfstein (1991) also describe the conflicting investment incentives of different priority claimants of a distressed firm, and show that these inefficiencies persist even in a more general model allowing for renegotiation of public debt.

Game theoretical models of bankruptcy negotiations focus not on investment decisions but rather on how deviations from absolute priority arise from the structure of the Chapter 11 process. Models such as Bebchuk & Chang (1992) and Kaiser (1991) demonstrate that management's exclusive right to propose a plan and their ability to delay the process enables management, acting on equity's behalf, to extract value from creditors even when the firm is clearly insolvent. Each of the models described this far assume that management acts on behalf of shareholders. Shareholder-oriented management may be biased towards preserving risky

⁵ A class is "unimpaired" if the plan does not alter its original contractual rights (Bankruptcy Reform Act of 1978, Section 1124). For additional description of the Chapter 11 process see Gilson, John and Lang (1990).

investment since the option value of equity claims in a highly leveraged firm is lost when assets are liquidated.

Management acting in their own self interest may have similar tendencies toward overinvestment. Boot (1992) develops a model of managers' incentives to hold on to losing projects when divestitures adversely affect perceptions of their ability. Managers who are concerned about their reputation may be less willing to take corrective actions. Shleifer & Vishny (1989) also show how management's choice of investments reflects concern for their own survival.

The idea that managers of firms in bankruptcy will act in their own self interest to preserve both the firm and their own ability to find future employment has been suggested but is not as well developed in the theoretical or empirical bankruptcy literature.⁶ The debate over management's influential role in the restructuring process has led to a number of proposals for reform of the current system (these include Baird (1986) and Aghion, Hart & Moore (1992)) which would be free from such sources of inefficiencies and would place appropriate discipline on management. New management, whose reputation is less tied to existing assets, who has less firm-specific human capital, and who often has lower initial shareholdings, may be less likely to share the biases described above.

Based on the models described, if managers act on behalf of shareholders and/or in their own interests, the structure of the Chapter 11 process which gives management considerable control over restructuring decisions is likely to lead to overinvestment. Poor investment and restructuring decisions made in bankruptcy will be reflected in the post-bankruptcy performance of firms emerging from the process. To examine the extent of management's influence on the process, the replacement of top officers as well as board members both prior to and immediately

⁶ See for example Bradley & Rosenzweig (1992).

following emergence from bankruptcy is considered. A strong relationship between the continued involvement of prepetition management during bankruptcy and poor post-bankruptcy performance is consistent with the hypothesis that managerial incentives are an important source of the bias toward reorganization. Overly optimistic earnings forecasts for the reorganized firm may also reflect managerial biases toward preserving the firm.

Several alternative explanations of poor post-bankruptcy performance need to be considered. Prior to bankruptcy, some firms may experience an exogenous shock to earnings which is outside management's control. Management may be retained simply because they are the best available to run the firm. Even if management has taken whatever corrective actions are appropriate, if performance is driven by more exogenous factors we may expect some persistence in the firm's profitability. This suggests that pre-bankruptcy profitability will be strongly related to post-bankruptcy profitability.

Industry related problems are also likely to influence performance both before and after bankruptcy. John, Lang & Netter (1992) find that distressed firms frequently cite exogenous causes for their decline such as industry shocks. Shleifer & Vishny (1992) argue that when other firms in the same industry also are distressed, the market for the firm's assets will be illiquid; a low liquidation value could justify the firm's reorganization independent of management's ability. The analysis below considers both industry and firm specific performance (net of industry effects) before and after bankruptcy. Industry declines prior to bankruptcy clearly affect many of the firms studied in this paper. However, if industry troubles largely explain the firm's decline, we may expect that either continued industry weakness or industry recoveries will be reflected in the firms' post-bankruptcy performance.

The analysis of post-bankruptcy performance also considers the financial structure of the reorganized firm. Gilson (1990) describes the benefits of an increased concentration of

shareholdings, leading to increased monitoring of management and influence over resource allocation. This suggests that firms which issue large blocks of stock to creditors under their reorganization plan, and therefore emerge with lower leverage, will be more likely to improve their performance. On the other hand, a substantial literature starting with Jensen & Meckling (1976) and more recently Jensen (1986) describes the role of leverage in reducing agency problems. Gilson (1990) also notes the extensive use of restrictive covenants in restructured debt securities. This work suggests that firms which emerge with higher leverage, i.e. those that issue new debt securities to creditors as part of their bankruptcy restructuring plan, will tend to perform better after bankruptcy. However, an alternative explanation for a positive relationship between the leverage of the reorganized firm and post-bankruptcy performance (or a negative relationship between the amount of stock distributed to creditors and performance) is based on models such as Myers & Majluf (1984) and Brown, James & Mooradian (1991). These models suggest that when managers have better information about firm value, firms with poor prospects will issue securities in the restructuring which are more sensitive to the firm's value.

Finally, there is considerable variability in the size and diversity of firms entering Chapter 11. Larger, more diversified firms may have an opportunity to divest unprofitable assets and still survive as an operating company. John, Lang & Netter (1992) demonstrate that distressed firms often increase their focus on core operations.⁷ Both the firm's size and number of business lines are examined to determine whether diversified firms are more likely to improve performance when they emerge from bankruptcy. Alternatively, these firms may be more likely to finance their plan of reorganization through asset sales and emerge without making sufficient

⁷ Comment & Jarrell (1992) document a trend toward increased focus in the last decade and a positive relationship between stock returns and focus changes. Lang & Stultz (1992) document a negative relationship between Q and the firm's degree of diversification.

corrective changes in their core operations.

II. Sample Description.

Annual reports of the SEC and additional unpublished memoranda available from the SEC were used to obtain a listing of 806 public companies filing for Chapter 11 between October 1979 and September 1988. This sample represents all public companies known to the SEC which filed for Chapter 11 during this time period, but does not include some large private firms (such as failed leveraged buyouts) which filed for Chapter 11. For each firm, the status or outcome of the filing as of the firm's 1989 fiscal year end was determined using various sources including the Wall Street Journal, Predicast's Index of Corporate Changes, press releases, and individual company SEC filings. Of the firms for which a plan of reorganization was confirmed, 197 (24% of all filings) emerged from bankruptcy as public companies which continued to file financial statements with the SEC following the completion of the reorganization.⁸ These 197 firms form the sample used to evaluate post-bankruptcy performance.

Selected characteristics of the sample of firms emerging as public companies versus all other filing outcomes are described in Table I. Firms which emerge as public companies tend to be larger, as measured by both book value of assets at the time of filing and total revenues at the fiscal year end preceding filing. Although these firms tend to be larger than other firms filing under Chapter 11, the sample includes smaller firms than considered by previous studies of distressed companies (for example, the median book value of assets in Gilson's (1990) study is

⁸ Other firms may be classified as emerged private (18%), merged (7%), liquidated (15%), or still in bankruptcy or unresolved by their 1989 fiscal year end (36%). Hotchkiss (1992) examines hypotheses concerning which firms will successfully emerge from Chapter 11. Firms which emerged as private companies were significantly more distressed based on leverage and operating losses prior to bankruptcy.

\$75 million versus \$21 million here). The mean leverage at filing, measured as the book value of liabilities divided by assets, is considerably lower than for other firms; the median leverage is closer but still significantly different. The high leverage at the time of filing for Chapter 11 indicates severe financial distress. Finally, the firms emerging as public companies more often have public debt outstanding.

Table II shows that the distribution of the year of filing is similar between the emerged public sample and all other filings, though the latter group includes more firms in later years whose outcome had not yet been resolved by 1989. Based on the year of exit from Chapter 11 for the 197 firms in the sample, we have at least two years of post-bankruptcy data to evaluate performance; for 80% of the sample we have at least four years of data. Table III describes the industry membership based on 2 digit SIC codes for the firms emerging as public companies. Three industry groups, Oil & Gas Extraction, Industrial & Commercial Machinery & Computer Equipment, and Business Services together comprise approximately 33% of the sample. Industry membership of the sample of emerged public firms is similar to that of all other filings (not reported).

Bankruptcy court documents including a plan of reorganization and disclosure statement were obtained for 125 of the emerging public firms.⁹ These documents, distributed to creditors prior to voting on the plan, have been approved by the court as providing sufficient information to "enable a hypothetical, reasonable investor, typical of those involved in the case, to make an informed judgement about the plan."¹⁰ The court documents as well as 10K and 8K filings were used to obtain detailed information concerning the events leading to and during bankruptcy,

⁹ Documents were obtained directly from companies, from the bankruptcy court for the Southern District of New York, or when possible, from 8K filings.

¹⁰ Bankruptcy Reform Act of 1978, Section 1125(a).

terms of the restructuring, and the business plan for the reorganized firm.

III. "Success" After Bankruptcy.

Performance after bankruptcy can be described in several ways. Accounting data can be used to measure each firm's profitability as well as its performance relative to other firms in the same industry. Performance can also be judged by the ability to meet cash flow projections developed at the time of reorganization. Returns on the reorganized stock provide additional, though less complete, information. Finally, the most basic measure of post-bankruptcy success is that the reorganized business does not fail again for some time following bankruptcy. This section examines performance after bankruptcy using these four approaches for the 197 firms which emerged from Chapter 11 as public companies.

A. Accounting measures of post-bankruptcy performance.

Accounting measures of profitability have been used in previous studies to identify improvement in performance of firms following leveraged buyouts, management buyouts and mergers.¹¹ Similar variables are considered here using data obtained from both Compustat and 10K statements. Data was collected from 10Ks for approximately 50 firms which did not reappear on Compustat following bankruptcy in order to avoid a source of sample selection bias. Typically, these firms chose not to, or were unable to, list their reorganized stock on an exchange so that excluding them from the analysis might bias the results toward stronger performance.

Industry portfolios for each firm are constructed using all other Compustat firms with the

¹¹ See for example Kaplan (1989) and Smith (1990) on management buyouts, Muscarella and Vetsuypens (1990) on leveraged buyouts, and Healy, Palepu and Ruback (1992) on mergers.

same 3 digit SIC code. The firm's primary SIC code was verified each year from 10K's and other SEC filings. This procedure allows firms to change industry groups, which commonly occurs in the years surrounding the reorganization. Two cash flow measures are reported, both at absolute levels and adjusted for industry effects by subtracting the median of the industry portfolio:

(1) Return on assets (EBITD/total assets): Earnings before interest, taxes and depreciation divided by the average of the current and prior year end book value of total assets.

(2) Operating margin (EBITD/sales): Earnings before interest, taxes and depreciation divided by sales.

EBITD/total assets measures operating cash flow before interest expense, dividends or taxes and so is not affected by differences in capital structure. Earnings are normalized by the average of the current and prior year end total assets. Using the book rather than market value of total assets in the denominator may affect the results for firms which write down or sell assets (these effects, as well as effects of accounting changes at reorganization are discussed below). The second measure, EBITD/sales is less directly affected by asset write downs or divestitures.

The following schematic illustrates the dating convention used to describe performance:

-5 -4 -3 -2 -1 F ... C +1 +2 +3 +4 +5

F represents the fiscal year during which the company filed a petition for Chapter 11, and C represents the fiscal year during which the plan of reorganization was confirmed. Year +1 represents the first full year of post-bankruptcy results. Performance for years between F and C is not considered: the number of years varies by firm (averaging 2 years with a maximum of 7 years). A large number of firms also fail to file 10K reports for some years while they are in bankruptcy.

Table IV-A reports the medians of the absolute and industry adjusted accounting variables

for the 197 firms. The percentage of observations showing negative operating income (EBITD) and the percentage of observations lower than the industry median are also shown. Missing observations are due to firms which failed to file financial statements in certain years before or after bankruptcy or have been out of bankruptcy less than 5 years¹², but both pre- and post-bankruptcy data are included for all 197 firms. The firms which did not remain on Compustat for which 10K data was collected show slightly more negative results than the sample as a whole (not reported).

Starting at 5 years prior to bankruptcy, the median earnings are significantly positive and the industry adjusted medians are not significantly worse than the industry. However, as we would expect, EBITD/total assets and EBITD/sales fall closer to filing, and are also significantly worse than the industry groups. The percentage of firms with negative operating income increases to 67.5% by the year of filing. The magnitude of operating losses indicates that more than just a financial restructuring is needed for many firms. Following the confirmation of a plan and exit from bankruptcy, there does appear to be some improvement in the medians, though EBITD/total assets and EBITD/sales do not reach the level of 3 years prior to bankruptcy. However, there is still a strikingly large percentage of firms with negative cash flow, and all years after bankruptcy are significantly worse than the industry for both

¹² Observations are missing in post-bankruptcy years for 23 firms which reentered Chapter 11 or liquidated. Eleven firms merged or were taken private, which could be viewed as an indication of the success of the reorganized company. Of the remaining firms for which observations are missing, approximately 2/3 experienced operating losses in the year prior to leaving the sample. Therefore, the percentage of negative observations reported in Tables IV-A through IV-C may understate the number of firms experiencing operating difficulties after bankruptcy.

variables.¹³

The poor industry adjusted performance might be due partly to the fact that the reorganized firms tend to be smaller than others in their industry groups. A similar analysis was performed using only firms with total assets prior to filing in excess of the sample median of \$21 million. The median book value of assets prior to bankruptcy of these larger firms is \$70 million, close to the median book value of assets of firms in Gilson's study (1990). Table IV-B shows the post-bankruptcy performance of this group is slightly better, though there is still a large percentage of firms showing negative earnings and performance is significantly lower than the industry for both variables following bankruptcy. The sample size drops after year +3 since the largest bankruptcies in the sample tended to occur in later years and so have less years of post-bankruptcy data.

All firms have at least two years of operating data following bankruptcy. However, to consider whether there is any time trend in this performance, Table IV-C shows the same calculations using only those firms with at least four years of post-bankruptcy data. This also allows us to consider whether some firms simply need more than two years before they can show a profit. The percentage of firms with negative operating income remains near 40% even in years +3 and +4, and again all post-bankruptcy years are significantly lower than the industry groups. While some firms did not experience difficulties until several years after bankruptcy, overall the performance of this group does not appear to improve with time.

The industry adjusted accounting measures may not be a fair comparison if the total assets reported by the reorganized firm are closer to their true market value than they are for other

¹³ A valuable asset of firms which emerge is their net operating loss carryforwards. Therefore, EBITD-taxes paid was also tested, producing slightly more favorable but similar results. Results based on means rather than medians are also similar, as are results using only the 125 firms for which court documents are examined.

firms in the industry portfolio. Some firms in the sample wrote down assets and made accounting changes following reorganization. Over 20% of the firms in the sample elected a "quasi-reorganization" for accounting purposes: these firms adjusted their assets and liabilities to fair market value when the next fiscal year end results were reported.¹⁴ Particularly in depressed industries where other firms may be reporting book values of assets greater than their market value, this effect may exaggerate the negative return on assets relative to the industry. Therefore, comparisons based on the market value of assets, estimated as the book value of liabilities plus market value of equity, would be desirable. The market value of assets can only be computed for firms whose stock is actively traded soon after bankruptcy, biasing the results toward the stronger performing firms. However, when EBITD/(market value of assets) is calculated for 125 firms for which post-bankruptcy stock data is available, the results (not reported) are quite similar to those discussed above. The medians are still significantly worse than the industry groups, and the percentage of firms showing negative operating income remains at 37% and 34% in the two years following confirmation.

Finally, Table IV-D provides a more direct comparison as well as tests of the significance of changes relative to the year prior to filing; annual percentage changes are also shown for the two years following bankruptcy. The analysis also considers measures of performance such as growth in sales, assets and number of employees that might reflect other goals of the reorganized company. The median percentage change in each variable is reported, as well as the percentage of observations showing a positive change. The decline in revenues, total assets and employees from before to after bankruptcy demonstrates the considerable downsizing that occurs for the emerging firms. The ratios describing profitability relative to before bankruptcy show improvement for about 2/3 of the firms. Based on the annual changes in the years following

¹⁴ In several cases, the firm's assets were already recorded at close to fair market value.

bankruptcy, it does appear that some firms are experiencing positive growth, though not as much in the second year after bankruptcy. However, the measures of profitability do not appear to be improving, and the median changes in these measures are negative though not significant. This again does not provide evidence that the firms simply need more time to improve.

B. Ability to meet cash flow projections.

In order for a plan of reorganization to be confirmed by the court, the debtor must show that the plan is "feasible", i.e. it is not likely to be followed by the need for further restructuring. To meet this requirement, many firms provide earnings forecasts, generally prepared by management or their financial advisors, when the plan is submitted to creditors and the court. The ability to meet these projections provides another measure of post-bankruptcy success, though we must also consider how industry and market conditions influence the results. Using the subsample of firms for which bankruptcy court documents were obtained, cash flow projections for 72 firms are available.

Table V summarizes this data for operating income (EBIT), return on assets (EBIT/total assets) and operating margin (EBIT/sales). Projections for the year of confirmation (Year C) are included if they cover at least six months of post-bankruptcy data. The median percentage deviations of actual from projected performance is reported as well as the percentage of negative observations where firms did not meet their forecasts. Based on the results for all firms with projections available, the median forecast errors are in each case negative and significant. The inability to meet the projections cannot be solely attributed to industry performance, based on a low number of firms for which actual performance was lower than projected but still better than industry groups (not reported).

If managers have private information about their firm's prospects, they may have incentives

to overstate or understate these projections (these incentives are described by Brown, James & Mooradian (1991)). Management of firms with poorer prospects may overstate their forecasts in order to justify giving a greater share of the reorganized stock to prepetition equity holders. Management, concerned with the firm's survival, may also need to convince creditors and the court that the firm value is high enough to warrant reorganization rather than liquidation. Alternatively, they may have incentives to understate the firm's prospects in order to justify greater concessions from creditors.¹⁵ The tendency found in this sample to overstate projected operating income is consistent with the former view, and similar to the findings of Kaplan (1989) in the case of management buyouts.¹⁶

This interpretation suggests that the projections may be less subject to management's biases if original management has already been replaced at the time the projections are made. Table V shows the difference in actual versus projected performance for groups based on whether top management, *i.e.* individuals holding the titles of President, Chairman, and CEO two years prior to bankruptcy, had been replaced by the time the plan was proposed. The median deviations are significantly negative each year for firms which retained top management. The median deviations for the group replacing top management are also negative but smaller and not significant until year +2. This is again consistent with the idea that original management has incentives to preserve the firm or is more shareholder-oriented than replacement management. By year +2, the difference between firms replacing and retaining management has narrowed, though the forecast errors remain significantly negative.

¹⁵ Consistent with this view, DeAngelo, DeAngelo & Skinner (1992) provide evidence that income-decreasing accounting choices help managers convince outsiders (in their case unionized labor) that the firm is seriously troubled and concessions are warranted.

¹⁶ In contrast, McNichols (1989) finds no support for the hypothesis that management earnings forecasts are systematically biased.

C. Stock performance.

An alternative measure of performance is stock returns. Of the 197 firms in the sample, 84 were listed on the NYSE or AMEX at some time during the two years preceding bankruptcy, while the remaining firms were quoted on NASDAQ (101 firms) or regional exchanges or the National Quotation Bureau pink sheets (12 firms). Firms generally had their securities delisted at some point prior to or during bankruptcy. The firms routinely state in their disclosure statement that they will attempt to relist their securities on an exchange after reorganization; failure to relist the stock can be interpreted in many cases as due to weakness of the reorganized firm in meeting its goals. Within two years following bankruptcy, 60% of the firms reappeared on NASDAQ (90 firms), NYSE (22 firms) or AMEX (10 firms), with most of the remaining firms quoted on pink sheets (75 firms). A large number of firms either chose not to, or were unable to, relist their securities on an exchange after bankruptcy.¹⁷

It is difficult to measure stock returns after bankruptcy since data is not available for all firms. In order to ensure the preservation of tax loss carryforwards, a few firms initially restrict trading in their stock, though this type of restriction does not appear to last more than two years. Furthermore, the firms which trade over the counter generally trade at very low stock prices so that a discreteness problem makes the returns difficult to interpret. Data is also not available for some firms which did not relist their stocks.

Stock data is available for 145 (152) firms in the first (second) year following bankruptcy using data from CRSP if available or from the National Quotation Bureau. The average stock price for firms when new securities trade after confirmation is only \$2.10 (median \$.875), versus an average stock price of \$6.10 (median \$4.00) one year prior to filing. The median

¹⁷ Some firms which relisted their stock following bankruptcy were later delisted for failure to meet capital or other exchange requirements.

absolute return for the first year after bankruptcy is zero, and 0.08% for the first two years after bankruptcy. However, by the end of the first year after confirmation, almost 10% of the stock prices are at least three times the price at the first trading day after confirmation.

The reorganized firms' ability to pay dividends on their new stock also does not appear strong. Less than 20% of the firms paid any dividend in the two years before they filed for Chapter 11. This behavior is consistent with the findings of DeAngelo and DeAngelo (1990) that distressed firms act early to reduce and eventually omit dividends. However, the firms which do relist their securities on an exchange following bankruptcy rarely pay dividends for several years following bankruptcy. Covenants in debt securities or preferred stock distributed at reorganization often prohibit the payment of dividends on common stock until the more senior securities have been retired; as a result, even the better performing companies may not pay dividends.

D. "Second time around" bankruptcies.

Perhaps the most basic measure of success after bankruptcy is the firm's ability to continue its business without the need for further restructuring. In fact, a judgement about the feasibility of the plan is one of the court's requirements for confirmation. Thirty three of the 197 firms (16.8%) actually failed again after the reorganization (only three of the second time filings are included in the sample of 197 emerging public companies). These firms either reentered Chapter 11 or were subsequently liquidated despite their reorganization plan. The group of firms which failed twice includes some of the largest bankruptcies: the median total assets of these firms at year -1, \$79.4 million, is significantly larger than the median total assets of other companies in the sample.

The appendix describes the firms which failed a second time, and for a number of these

firms provides brief descriptions of the reasons for both failures stated by management. The median time from confirmation of the first reorganization plan to the subsequent filing or liquidation is 3.5 years. The need for further restructuring appears quickly in several cases; eight firms failed within two years of the first plan. Some firms did suffer a relatively more exogenous shock prior to the second filing (see for example Lionel). However, the reasons cited by management for the second bankruptcy show that many of these firms suffered from the same problems as when they originally failed, suggesting they had not made adequate corrective changes in corporate policy.

IV. Influences on Post-Bankruptcy Performance.

Overall, the results above show that a large number of firms continue to struggle with losses even after they emerge from bankruptcy. However, there is wide variability in performance. This section considers hypotheses about how various groups' influence on the restructuring process, particularly managements', is related to performance.

The following sections summarize characteristics of firms and their restructurings for the full sample and for groups based on post-bankruptcy success. The sample of 197 emerging companies is first divided according to firms' ability to achieve positive operating income after bankruptcy. A dummy variable, cash flow performance, is defined as zero if the firm had negative operating income in two of the three years following bankruptcy or if the firm failed again with three years after bankruptcy. The sample is also divided based on industry adjusted performance. The dummy variable, industry adjusted performance, equals zero if the firm had a return on assets (EBITD/total assets) and operating margin (EBITD/sales) lower than the

median of its industry group in two out of three years after bankruptcy.¹⁸ Sections IV-A through IV-C describe aspects of the restructurings and provide preliminary evidence on the relationship to post-bankruptcy performance, while Section IV-D provides multivariate results. Where possible, the analysis considers the full sample of 197 firms: where noted, the subsample of 125 firms for which court documents was obtained is used.

A. Management and board changes.

The power retained by management, and in whose interests it is exercised, will have an important influence on the restructuring process. Once in bankruptcy, management's concern for the firm's survival may conflict with equity or firm value maximizing policies. Management has already suffered a loss of reputation, and it may be more important for them to be able to preserve the firm and attempt to turn it around. The normal processes for disciplining management may not apply in bankruptcy. For example, takeovers once a firm is in bankruptcy are difficult. The strongest check on management's discretion is the likelihood they will be removed.

Management in place during bankruptcy seems to retain significant influence over the restructuring process and the development of the reorganization plan. In Chapter 11, management may continue operations much as they would outside of bankruptcy, except that the court must be notified of activities "outside the ordinary course of business" such as asset sales

¹⁸ The results are robust to alternative definitions of the performance groups. Missing observations are set to 0 (worse performance group) if the firm reentered bankruptcy or failed to file financial statements due to reported operating difficulties. Missing observations due to mergers of two firms are set to 1 (better performance group). The analysis uses performance groups rather than performance based on continuous accounting variables to minimize the influence of missing observations and of differences in accounting treatment at reorganization, particularly for variables using total assets.

or certain types of borrowing. Only in these cases do creditors have the ability to object to management's actions, though the court may still defer to management's business judgement. LoPucki & Whitford (1993) study the corporate governance of large, publicly held corporations in Chapter 11 and conclude that creditors are more likely to influence the reorganization plan itself (largely the financial restructuring) than the ongoing operations of the company or the development of a business plan for the reorganized firm. Furthermore, extensions to management's 120 day exclusive period to propose a plan were frequently granted for firms in this sample. Only 7 of the 125 cases for which court documents were analyzed had a plan confirmed plan that was not proposed by the debtor. In several cases where other creditor groups were permitted to file plans, their plans were eventually dropped and one jointly negotiated with the debtor was adopted.

Given management's potential influence on the restructuring process, it is important to consider not only whether the pre-bankruptcy management is replaced, but also at what point in the process they are replaced. Figure 1 describes the number of firms which have retained their CEO and top management in office 2 years before bankruptcy relative to the month of filing and relative to the month of confirmation of a plan. Data for the entire sample of 197 firms is collected from proxy, 10K and disclosure statements. Top managers include individuals holding the titles of CEO, Chairman, or President. By the month after filing, 122 (62%) of the firms have not yet replaced their CEO, and 127 have retained at least two of their three top managers. A more dramatic shift in management occurs once firms exit bankruptcy, as replacement is often directly related to the confirmation and implementation of the plan. Turnover following confirmation is similar to the rates reported by Gilson (1990).¹⁹ An

¹⁹ Evidence reported by Warner, Watts & Wruck (1988) and by Weisbach (1988) has also shown that turnover is higher following a period of poor performance. However, the board and

additional 38 companies which had already replaced their original management prior to confirmation made further changes at the time the firm left Chapter 11. Many of these individuals were interim managers brought in during the bankruptcy.

Limitations on the ability of shareholders, creditors or the board to remove management in bankruptcy may explain why much of the management replacement does not occur until confirmation. In Chapter 11, shareholders may be unable to meet to elect a new board of directors and replace management.²⁰ Creditors may attempt to replace management by seeking the appointment of a trustee, but this is a difficult process which occurs rarely in practice. The removal of management in bankruptcy will most likely be the board's decision. However, long standing board members may support the pre-bankruptcy management's efforts to preserve the firm. As shown below, much of the change in the composition of the board also does not occur until confirmation.

Table VI-A describes the relationship between management changes and post-bankruptcy performance. The table reports the mean (median) fraction of top management in place at least two years before bankruptcy which remains in office 1) throughout bankruptcy, at least until the time the final plan of reorganization is proposed and 2) following confirmation of a plan and exit from bankruptcy. When the sample is divided by either cash flow or industry adjusted performance, the worse performing groups retain a significantly greater fraction of their top management through bankruptcy. Following confirmation, the differences are not significant;

top management turnover reported here are far in excess of normal rates reported (though for samples of NYSE and AMEX firms) and closer to those reported by Gilson (1989,1990). Gilson (1990) reports a management survival rate of .29 for 69 Chapter 11 companies, though 17 of these firms were merged or liquidated.

²⁰ LoPucki & Whitford (1992) show that shareholder attempts to meet for the purpose of electing new directors are rare and may be blocked by the court.

the high rate of replacement following confirmation does not support the idea that original management was essential to run the reorganized firm or that creditors did not believe a new management team would significantly improve performance.

Table VI-A also shows that board replacement for the full sample follows a pattern similar to management replacement. The entire board is replaced for 36% of the firms, but again much of this change does not occur until confirmation. While the fraction of the board retained throughout bankruptcy is higher for the worse performing groups, only the difference in means for the industry performance groups is statistically significant.

Though board turnover is high, if these changes merely reflect a reduction in the size of the board rather than the addition of new outside board members, the influence of the remaining directors may actually be increasing. To capture this effect, Table VI-A also reports the fraction of the board during bankruptcy and following confirmation that consists of newly appointed members, defined as those members who were not officers or directors of the company in the two years prior to bankruptcy. It appears that much of the board turnover prior to confirmation leads to a reduction in board size rather than the appointment of new members whose interests might be more closely aligned with those of creditors. A more substantial shift in the composition of the board occurs after confirmation. The median fraction of new board members prior to confirmation is actually greater for the worse cash flow group. Increased monitoring by new board members may not occur during the bankruptcy restructuring, and the changes that do occur at confirmation are not strongly related to the company's post-bankruptcy success.

Finally, some of the management and board changes at confirmation are related to new equity investment in the reorganized firm. Forty nine of the 125 firms analyzed obtained additional funds needed to make payments under their plan from outside investors, who sometimes received a majority of the stock of the reorganized company. This source of funding

appears particularly important to smaller firms or single-line businesses, perhaps because they are not able to generate sufficient cash from asset sales to fund a reorganization plan.²¹ The mean fraction of top management retained during bankruptcy for firms with new investment is .65 (not reported) versus .45 for all other firms, though these managers are less likely to remain after the reorganization. If managers' reputations and ability to find future employment depend on the firm's survival, they may be open to friendly negotiations with new investors.

The resulting pattern of management replacement shows that pre-bankruptcy management often has substantial influence on the ongoing operations of the firm during Chapter 11 and the development of a business plan for the reorganized firm. The positive relationship between early management replacement and post-bankruptcy performance is consistent with models of managerial incentives to preserve investment. Though it may be difficult to attract new management to the firm while the company's survival is still in question, many firms with poor prospects ex-post are able to bring in new management once the firm leaves bankruptcy. Combined with the evidence above that incumbent managers are more likely to issue optimistic forecasts for the reorganized firm, this suggests the differences are not simply due to the inability to bring new managers to certain types of firms.

When management is in fact replaced early in the process, the new management may be less tied to existing assets and may be more creditor oriented. Gilson (1989, 1990) finds in a sample of distressed firms that creditors, in particular banks, sometimes directly influence management as well as board changes, though in this sample, many of these changes are related to the implementation of the plan of reorganization. A stronger alignment with creditors in bankruptcy

²¹ By obtaining additional funds from investors which can be used to reinstate original debt claims, lower priority creditors may be able to engage in the type of risk shifting behavior described by Bulow and Shoven (1978) and by White (1989).

is also more likely when management has lower shareholdings. Replacement managers tend to have lower initial stockholdings than their predecessors. In this sample, the median percentage of stockholdings by officers and directors drops from 20.0% prior to filing to 14.8% just prior to confirmation (not shown); the decline is significantly greater for firms that replace management and board members.²²

B. Financial restructuring and ownership of the reorganized firm.

Table VI-B describes the financial restructuring and ownership of the 125 firms for which court documents were examined. The percentage of stock in the reorganized firm distributed to creditors, 35% fully diluted, is substantially lower than found for Gilson's (1990) sample of 45 bankruptcy restructurings in which creditors receive on average 88% of the fully diluted stock. Some of this difference is due to stock given to new investors and other groups such as management and financial advisors.

There is no clear relationship between the amount of stock given to creditor groups and the performance groups, except that secured creditors (often banks) in the worse cash flow group on average receive more stock. The beneficial effects of large stock distributions to creditors through increased monitoring and creditor influence over resource allocation are not obvious from these preliminary results. Pre-petition equity holders retain a larger share of the stock in

²² When management has strong ties to shareholder interests, we may also expect to see greater deviations from absolute priority if this is an accurate indication of stronger bargaining power in shareholders' behalf. Betker (1992) examines a sample of 75 large firms, some of which were liquidated or merged. He finds that deviations from absolute priority are smaller when a new CEO, not previously an officer of the company, has been brought in prior to the proposal of the reorganization plan. For the sample studied in this paper, deviations from absolute priority are not significantly different (based on group means or medians) between firms which did or did not retain management. The relationship between deviations from absolute priority and subsequent performance is discussed below.

the better performance groups, though the difference in medians is significant only at the 10% level. The larger share of stock retained may indicate that these firms were not as distressed by the time of restructuring; it may also be an indication of bargaining strength on equity's behalf since writedowns of unsecured claims are also greater for the better post-bankruptcy performance groups.²³ New investors receive a greater share of the reorganized stock in the poorer performance groups, though the differences are not significant. Deviations from absolute priority also are not significantly different between performance groups.

Finally, the pro-forma leverage of the reorganized firm, measured for 89 companies at confirmation prior to accounting changes, still appears rather high; the median leverage is .73 for the full sample, though the median reduction in proforma leverage (not shown) is over 50%. Difficulties after bankruptcy may occur for firms which are still too highly leveraged. However, the pro-forma leverage is actually higher for the better cash flow and industry adjusted performance groups, though these differences are not significant. Additional evidence regarding these relationships is provided in the multivariate analysis below.

C. Other firm characteristics and industry performance.

Performance both before and after bankruptcy may be influenced not only by the bankruptcy process itself, but also by more exogenous factors outside of management's control.

Similar to the findings of John, Lang & Netter (1992), management frequently cites exogenous

²³ Pre-petition shareholders received some distribution in all but 6 cases, but in 16 cases they retained 100% of the stock. In 4 of these 16 cases, all other classes were unimpaired or received securities valued at the full amount of their claim. However, in the remaining cases, creditors accepted writedowns of their claims despite the fact that shareholders retained all the stock (these writedowns range from 2.3% to 65.0%). The percentage of stock retained together with creditor writedowns can be interpreted as an indication of bargaining strength on behalf of pre-petition shareholders.

factors such as poor economic conditions and increased competition as the causes of their bankruptcy. The most frequently cited cause of filing is by far industry decline, due partially to the concentration of oil and gas companies in the sample.²⁴

Table VI-C describes firm performance net of industry effects prior to bankruptcy, as well as measures of industry performance before and after bankruptcy. As shown earlier, based on the significantly negative industry adjusted return on assets and operating margin, the companies in this sample are clearly experiencing firm-specific difficulties prior to filing. Though the differences are only significant between the cash flow performance groups, there appears to be some persistence in both return on assets and operating margin; firms in the worse post-bankruptcy cash flow performance group were also more distressed prior to filing.

For each firm, the contemporaneous industry performance is measured by the median change in return on assets or operating margin of all firms in the same industry (based on three digit SIC codes, as in Section III above). Industry group performance is measured for the two years prior to and the two years following bankruptcy. Though the industry groups are also experiencing declines in return on assets and operating margin before bankruptcy²⁵, there is no significant relationship to the firms' post-bankruptcy performance groups. There appears to be a sizeable improvement in industry performance itself prior to and after bankruptcy. Alternative industry portfolios (based only on surviving firms and not reported) show that this improvement does not appear to be due to the survivorship of stronger firms in the industry. Shleifer &

²⁴ Frequently cited causes of filing of 125 firms examined were industry decline (46% cited this cause), cost increases (26%) and increased competition (23%). More strategic causes of filing included failed diversification (10%), failed new products (12%) and failed expansion plans (16%).

²⁵ This is consistent with the findings of Lang & Stulz (1992) that bankruptcy filings convey negative information about other firms in the industry.

Vishny (1992) argue that when other firms in the same industry are distressed as well, the market for the firm's assets will be illiquid; a low liquidation value of the firm could justify the firm's reorganization independent of management's ability. However, while the data supports managements' claims that problems before bankruptcy were industry related, it is not clear why more firms do not benefit from industry recoveries after bankruptcy.

Several of the factors described this far, including management replacement, may be related to firm size. Larger firms are more likely to emerge from bankruptcy as public companies, but the implications for post-bankruptcy performance are less clear (several of the largest companies are among those that failed twice). Table VI-C describes firm size by performance group, measured by total assets and total revenues before bankruptcy. Size appears to have a stronger relationship to cash flow performance than industry performance, as the mean and median size of the better cash flow performance group is larger²⁶; in contrast, firms in the better industry performance group are smaller, though not significantly. The diversity of the firm's pre-bankruptcy business is measured by the number of 2 digit SIC codes reported by the company to the SEC two years prior to bankruptcy. This measure is positively correlated with size and so, not surprisingly, is higher for the better cash flow performance and for the worse industry performance group. By examining both size and the number of business lines, we can examine whether the more diversified firms are better able to divest their unprofitable operations and still survive as an operating company.

D. Multivariate analysis.

²⁶ Firms in the better cash flow performance group spend on average 22 months in bankruptcy, which is significantly greater (at the 10% level) than the average time of 18 months for the worse cash flow performance group. This may indicate more protracted bargaining, or simply the complexity of the larger cases.

Table VII provides several specifications of logistic regressions predicting post-bankruptcy success based on the performance groups described above, cash flow performance (regressions (1) through (3)) and industry adjusted performance (regressions (4) through (6)). The first three variables in each regression show the relationships of firm-specific and industry group performance to the probability of being in the better performance group. As suggested above, there is some evidence of persistence in firm-specific pre-bankruptcy profitability, as industry adjusted return on assets is positive and significant for industry adjusted performance. The relationship of industry groups' performance, based on the change in return on assets, is weaker. The causes cited by management at filing and the industry groups' declining profitability shown in Table VI-C clearly show that there were industry related problems before bankruptcy; however, the post-bankruptcy success does not appear strongly related to these measures. Alternative measures of firm specific and industry group performance, such as operating margins or growth in the number of employees, produce results similar to those reported in Table VII.

Each regression also controls for firm size (log of total assets at year -2) and the diversity of the pre-bankruptcy firm measured by the number of two digit SIC codes reported. As suggested by the preliminary results of the previous section, larger firms are associated with a greater probability of better cash flow performance. The coefficient for the size variable is negative but more weakly related to industry adjusted performance. However, the number of two digit SIC codes prior to filing is negative and is strongly significant for the industry performance measure. These results do not support the idea that larger firms which enter bankruptcy with a greater number of diverse businesses are able to turn around their companies by divesting unprofitable operations and focusing on core businesses. One explanation for this finding is that the sale of certain divisions was part of the strategy for these firms to survive bankruptcy, even though prospects for the success of the remaining investments were not high.

In many cases, even after the divestiture of unrelated activities, problems in core operations persisted (see for example the description of Towle Manufacturing in the Appendix). Measures of the extent of asset restructuring such as the number of businesses divested, or changes in total assets or employment (not reported) are not significant in any of the regressions.²⁷

The next two variables included in the regressions examine the relationship between the fraction of original management and board members retained during bankruptcy to post-bankruptcy performance. The coefficient of the fraction of management retained is in each case negative and significant. Consistent with the results of the previous section, even after controlling for firm size and other factors, early replacement of management is associated with a higher probability of better post-bankruptcy performance. The relationship of the fraction of the board retained is weaker but is significantly negative for the industry adjusted performance variable. The fraction of management retained following confirmation was not significant in any regressions. Overall, these results are strongly consistent with the view of management incentives and their bias toward reorganization described above. The last two lines of Table VII show the calculated probability of being in the better performance groups, with all variables initially at their median values. Based on these regression estimates, reducing the fraction of top management retained from its median value to zero increases the probability of being in the better performance group by at least 12%.

Finally, variables related to the financial restructuring and ownership of the reorganized firm

²⁷ In ten cases, the firm sold substantially all its assets and emerged as a shell company. These plans were designed primarily to preserve net operating losses which would shelter earnings on subsequent acquisitions from income taxes. These firms are evenly divided between the post-bankruptcy performance groups. A dummy variable indicating that the primary SIC code of the firm had changed after bankruptcy was not significant. Finally, a dummy variable indicating that the firm was in the oil & gas industry, which experienced substantial industry-wide difficulties, was also not significantly related to the post-bankruptcy performance groups.

are examined. The percentage of the reorganized stock distributed to creditors is negative and significant in the first two cash flow performance regressions but insignificant in the industry adjusted performance regressions. This again does not provide support that the benefits of granting creditors large amounts of stock are reflected in subsequent performance. The alternative, granting creditors new debt securities typically with increased restrictive covenants, may be more beneficial; the coefficient for the pro-forma leverage of the reorganized firm (shown in regressions (3) and (6)) is positive and significant for industry adjusted performance. Another explanation for this result is that firms which distribute large amounts of stock may not anticipate sufficient future cash flow to support a more highly leveraged capital structure. This relationship is also consistent with signalling models which show that firms with poor prospects will choose to issue stock (see for example, Brown, James & Mooradian (1991)). Variables suggested as indications of bargaining power on equity's behalf, such as deviations from absolute priority, the percentage of stock retained by pre-petition equity holders, and writedowns to unsecured creditors, did not appear significant in these regressions.

V. Conclusions.

This study contributes to our understanding of the bankruptcy restructurings of public companies. Two particularly striking results appear from the analysis. The first is that a large number of the firms which emerge either are not viable or soon require further restructuring. The evidence provided questions the view that financial distress leads to rehabilitating changes in corporate policy, and supports arguments that there are economically important biases toward reorganization given the structure of Chapter 11. The second is that continued participation of pre-bankruptcy management and post-bankruptcy performance are strongly negatively related. The evidence presented is consistent with models of managerial tendencies to preserve the firm.

While we cannot prove that liquidation was the preferred alternative for these firms, there is some support for alternatives to the current process which would place appropriate discipline on management in bankruptcy.

In deriving policy implications from this analysis, we should consider whether there are alternative mechanisms for restructuring troubled companies which would eliminate costly bargaining and might be free of biases toward reorganization. Several recent proposals for reform of the Bankruptcy Code suggest an auction for the firm's assets as a way of determining the true value of the bankrupt company. However, under the existing system, while many firms sell off particular assets piecemeal, the sale of an entire concern to other firms via mergers does not appear as a common solution (see Hotchkiss, 1992). This suggests there may be some impediments to this type of restructuring such as information problems which limit the number of potential buyers, or limitations on buyers in the same industry as suggested by Shleifer & Vishny (1992). Mergers before entering bankruptcy are only slightly more common.²⁸ Difficulties in improving the business of the distressed company may make mergers unattractive to the acquirer; in a study of 37 troubled companies acquired through mergers, Clark & Ofek (1992) find that many of these transactions are unsuccessful in turning around the distressed company.

Restructuring the firm's claims outside of bankruptcy through private negotiations with lenders or exchange offers for public debt may be a less expensive and more effective alternative to Chapter 11. Previous research has studied the firm's choice between private restructurings and Chapter 11 (see for example Gilson, John & Lang (1990)). However, many of the firms

²⁸ Gilson (1990) finds very few distressed firms involved in any sort of takeover-related transaction. Asquith, Gertner & Scharfstein (1991) also find relatively few mergers of distressed firms in their sample.

studied in this paper actually went through one or more private restructurings before they filed for Chapter 11. Furthermore, many of the companies studied in prior research which were classified as private workouts have actually failed and entered Chapter 11 since that time.²⁹ Thus, it is difficult to make a direct comparison of performance after out-of-court restructurings versus Chapter 11 restructurings since we may be observing firms at different points in time in their series of restructurings.

The evidence provided in this paper is consistent with recent criticisms that the current process leaves too much control with incumbent management. Limiting management's ability to delay the process through extensions to their exclusive time period to propose a plan of reorganization, and encouraging early disclosure of information necessary to value the firm in bankruptcy may lead to more efficient economic decisions in bankruptcy.

²⁹ For example, 7 of the 47 firms (14.9%) classified by Franks & Torous (1991) as private workouts have subsequently filed for Chapter 11.

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Table I
Selected Mean and Median Characteristics for 806 Publicly Traded Firms Filing For
Chapter 11 Between October 1979 and September 1988.

Public companies filing for Chapter 11 were identified from SEC publications. Firms classified as emerged public continued to file financial statements with the SEC following bankruptcy. Other outcomes includes firms which emerged as private companies, merged, liquidated, or for which the outcome was unresolved as of the firm's 1989 fiscal year end based on information provided in the Wall Street Journal, press releases and SEC filings. Balance sheet data are measured at the time of filing from SEC publications. Revenues are measured at the fiscal year end prior to filing using data from Compustat and 10K reports. Time in bankruptcy for other outcomes is based on 320 firms for which the outcome was resolved by 1989 and which could be determined from news sources or SEC filings.

Characteristic	Mean (median) characteristics			p-value of t-test for means (Wilcoxon rank sum for medians)
	Full sample	Emerged public	Other outcomes	
Number of firms	806	197	609	
Book value of assets (\$ millions)	122.7 (10.7)	285.4 (21.1)	58.4 (7.0)	0.001 (0.001)
Revenue (\$ millions)	259.4 (22.6)	419.9 (30.2)	137.1 (17.6)	0.106 (0.021)
Book value liabilities/assets	2.50 (0.98)	1.45 (0.95)	2.92 (1.00)	0.102 (0.009)
Months in bankruptcy	19.5 (17.0)	20.2 (17.2)	19.0 (16.8)	0.723 (0.944)
Percentage of firms with public debt	17.0%	28.9%	13.1%	

Table II
Calendar Time Distribution of Date of Filing and Emergence From Chapter 11.

Sample consists of 806 public companies filing for Chapter 11 between October 1979 and September 1988. Year of filing for Chapter 11 is shown for 197 firms which emerged as public companies and for 609 other filing companies which were liquidated, merged, emerged as private companies or for which the outcome was unknown or unresolved as of 1989. Year of exit from Chapter 11 for firms emerged public is the calendar year in which a plan of reorganization was confirmed.

Year	Year of filing				Year of exit	
	Firms emerged public		All other filings		Firms emerged public	
	#	%	#	%	#	%
1979	0	0.0	1	0.2	--	--
1980	12	6.1	43	7.1	2	1.0
1981	19	9.6	37	6.1	11	5.6
1982	23	11.7	45	7.4	3	1.5
1983	29	14.7	51	8.4	22	11.2
1984	23	11.7	70	11.5	27	13.7
1985	31	15.7	103	16.9	33	16.8
1986	23	11.7	93	15.3	36	18.3
1987	18	9.1	77	12.6	22	11.2
1988	19	9.6	89	14.6	20	10.2
1989	--	--	--	--	21	10.7
Total	197	100.0%	609	100.0%	197	100.0%

Table III
Industry Membership of 197 Firms Emerging From Chapter 11 as Public Companies

Industry membership is based on 2 digit primary SIC codes reported by the company to the SEC in the year prior to filing. * Denotes industry concentrations greater than 5% of the sample.

SIC	Industry Name	N	%	SIC	Industry Name	N	%
10	Metal Mining	4	2.0%	44	Water Transportation	2	1.0%
12	Coal Mining	1	0.5%	45	Transportation by Air	3	1.5%
13	Oil & Gas Extraction	31	15.7% *	47	Transportation Services	1	0.5%
15	Building Construction-General Contractors & Builders	2	1.0%	50	Wholesale Trade-Durable Goods	7	3.6%
20	Food & Kindred Products	2	1.0%	51	Wholesale Trade-Nondurable Goods	3	1.5%
22	Textile Mill Products	4	2.0%	52	Building Materilas, Hardware, & Mobile Home Dealers	3	1.5%
23	Apparel & Other Finished Fabric Products	6	3.0%	53	General Merchandise Stores	4	2.0%
24	Lumber & Wood Products, Except Furniture	1	0.5%	54	Food Stores	1	0.5%
25	Furniture & Fixtures	1	0.5%	56	Apparel & Accessory Stores	4	2.0%
26	Paper & Allied Products	3	1.5%	57	Home Furniture, Furnishings & Equipment Stores	4	2.0%
27	Printing, Publishing, & Allied Industries	2	1.0%	58	Eating & Drinking Places	3	1.5%
28	Chemicals & Allied Products	6	3.0%	59	Miscellaneous Retail	4	2.0%
29	Petroleum Refining & Related Industries	2	1.0%	60	Depository Institutions	1	0.5%
30	Rubber & Miscellaneous Plastic Products	3	1.5%	61	Nondepository Credit Institutions	2	1.0%
32	Stone, Clay, Glass & Concrete Products	2	1.0%	62	Security & Commodity Brokers, Dealers, & Services	1	0.5%
33	Primary Metal Industries	4	2.0%	64	Insurance Agents, Brokers & Service	1	0.5%
34	Fabricated Metal Products	5	2.5%	65	Real Estate	3	1.5%
35	Industrial & Commercial Machinery & Computer Equipment	21	10.7% *	67	Holding & Other Investment Offices	3	1.5%
36	Electronic & Other Electrical Equipment & Components	9	4.6%	70	Hotels, Rooming Houses, Camps & Other Lodging Places	2	1.0%
37	Transportation Equipment	4	2.0%	73	Business Services	12	6.1% *
38	Photo, Medical & Optical Goods	6	3.0%	78	Motion Pictures	1	0.5%
39	Miscellaneous Manufacturing Industries	4	2.0%	79	Amusement & Recreation Services	1	0.5%
40	Railroad Transportation	1	0.5%	80	Health Services	1	0.5%
41	Transit & Interurban Highway Passenger Transport	1	0.5%	87	Engineering, Accounting, Management & Related Services	2	1.0%
42	Motor Freight Transportation & Warehousing	3	1.5%				

Table IV - A
Accounting Measures of Profitability Prior To and Following Chapter 11 for Sample of 197 Firms Emerged From Bankruptcy As Public Companies

Sample consists of 197 firms emerging from Chapter 11 by fiscal year end 1989. Years are shown relative to the fiscal year in which the firm filed for bankruptcy (Year F) and relative to the fiscal year in which a plan of reorganization was confirmed (Year C). N denotes the number of observations for each year. All data is obtained from Compustat and 10K reports. Industry adjusted medians are calculated by subtracting for each firm the contemporaneous median of an industry portfolio consisting of all other Compustat firms with the same three digit SIC code. * denotes medians significantly different from zero or from the industry groups based on two-tailed Wilcoxon signed rank tests at the 5% level.

Year	N	Percent negative EBITD	EBITD/(total assets)			EBITD/sales		
			Median	Industry adjusted median	Percent < industry	Median	Industry adjusted median	Percent < industry
-5	143	12.0	0.113 *	-0.022	58.1	0.085 *	-0.007	53.9
-4	159	19.6	0.097 *	-0.025 *	62.0	0.075 *	-0.011 *	59.5
-3	178	27.7	0.062 *	-0.061 *	74.6	0.045 *	-0.046 *	66.7
-2	190	39.7	0.031	-0.095 *	82.5	0.023	-0.070 *	76.8
-1	180	61.5	-0.036 *	-0.143 *	87.2	-0.040 *	-0.120 *	86.7
F	168	67.5	-0.073 *	-0.177 *	84.3	-0.084 *	-0.171 *	83.0
C	181	46.4	0.019	-0.054 *	67.0	0.015	-0.062 *	72.6
+1	191	40.7	0.029	-0.050 *	65.6	0.027	-0.051 *	71.0
+2	167	33.9	0.043 *	-0.052 *	65.9	0.042	-0.047 *	67.9
+3	126	38.1	0.039 *	-0.040 *	67.5	0.041 *	-0.042 *	68.1
+4	103	39.2	0.056 *	-0.042 *	65.7	0.035	-0.032 *	65.6
+5	74	42.5	0.041	-0.059 *	68.5	0.027	-0.031 *	59.1

EBITD/(total assets): Earnings before interest, taxes and depreciation divided by book value total assets.

EBITD/sales: Earnings before interest, taxes and depreciation divided by annual revenues.

Table IV - B
Accounting Measures of Profitability Prior To and Following Chapter 11

Sample consists of firms with book value total assets at fiscal year end prior to filing of at least \$21 million.

Year	N	Percent negative EBITD	EBITD/(total assets)			EBITD/sales		
			Median	Industry adjusted median	Percent < industry	Median	Industry adjusted median	Percent < industry
-5	86	9.3	0.115 *	-0.013	65.1	0.102 *	-0.001	50.0
-4	92	14.1	0.117 *	-0.019 *	60.4	0.087 *	-0.005	52.2
-3	96	16.7	0.076 *	-0.031 *	69.5	0.067 *	-0.021	54.7
-2	99	24.2	0.055 *	-0.061 *	77.6	0.052 *	-0.036 *	69.7
-1	100	46.0	0.013	-0.083 *	81.0	0.018	-0.062 *	80.0
F	91	58.2	-0.013 *	-0.133 *	82.2	-0.023 *	-0.104 *	80.0
C	89	41.6	0.040	-0.041 *	65.2	0.033	-0.044 *	71.4
+1	95	34.7	0.043 *	-0.045 *	67.0	0.047	-0.040 *	69.3
+2	84	31.0	0.061 *	-0.042 *	73.8	0.062 *	-0.033 *	62.8
+3	62	29.0	0.063 *	-0.034 *	72.6	0.069 *	-0.032 *	63.8
+4	50	34.0	0.059 *	-0.037 *	70.0	0.057 *	-0.026 *	59.1
+5	36	30.6	0.060	-0.030 *	69.4	0.061 *	-0.014	53.1

EBITD/(total assets): Earnings before interest, taxes and depreciation divided by book value total assets.

EBITD/sales: Earnings before interest, taxes and depreciation divided by annual revenues.

Table IV - C
Accounting Measures of Profitability Prior To and Following Chapter 11

Sample consists of firms with at least four years of post-bankruptcy data.

Year	N	Percent negative EBITD	EBITD/(total assets)			EBITD/sales		
			Median	Industry adjusted median	Percent < industry	Median	Industry adjusted median	Percent < industry
-5	76	10.5	0.112 *	-0.014	61.3	0.076 *	-0.005	51.4
-4	82	15.9	0.126 *	-0.011	58.5	0.077 *	-0.009	56.8
-3	92	26.1	0.077 *	-0.053 *	73.9	0.043 *	-0.047 *	68.5
-2	100	36.0	0.045	-0.093 *	79.8	0.035	-0.061 *	45.0
-1	92	54.3	-0.008 *	-0.126 *	85.7	-0.007 *	-0.116 *	85.9
F	85	68.2	-0.084 *	-0.188 *	86.7	-0.073 *	-0.142 *	84.5
C	95	43.2	0.034	-0.048 *	68.1	0.023	-0.053 *	67.8
+1	102	42.2	0.028	-0.051 *	68.3	0.026	-0.039 *	70.8
+2	101	37.6	0.052	-0.046 *	63.6	0.044	-0.043 *	68.4
+3	102	38.2	0.047 *	-0.038 *	68.6	0.043	-0.041 *	68.4
+4	102	39.2	0.056 *	-0.042 *	65.7	0.035	-0.032 *	65.6
+5	74	43.2	0.041	-0.059 *	68.5	0.027	-0.031 *	59.1

EBITD/(total assets): Earnings before interest, taxes and depreciation divided by book value total assets.

EBITD/sales: Earnings before interest, taxes and depreciation divided by annual revenues.

Table IV - D
Comparison of Accounting Measures of Performance Prior To and Following Chapter 11

Table values are the median percentage changes and percentage of positive changes for sample of 197 firms emerging from Chapter 11. The industry-adjusted change in profitability for a given firm is the change in the deviation from the contemporaneous industry median. Year -1 is the fiscal year preceding the year in which the firm filed for Chapter 11. Year +1 is the first full fiscal year following emergence from Chapter 11.

Variable:	Years relative to fiscal year prior to filing			Year relative to year prior	
	[-1 to +1]	[-1 to +2]	[-1 to +3]	[+1 to +2]	[+2 to +3]
Number of observations	172	149	112	166	124
Firm size:					
Total revenue	-48.6 ^a 24.0%	-42.7 ^a 29.9%	-43.1 ^c 34.5%	11.0 ^a 62.3%	7.4 ^a 59.7%
Total assets	-55.2 ^a 19.2%	-51.8 ^a 24.8%	-54.1 ^a 28.6%	6.2 ^a 57.8%	-0.1 ^c 49.2%
Employees	-51.8 ^a 13.6%	-50.5 ^a 20.0%	-52.3 ^a 22.5%	5.0 ^a 53.8%	0.0 44.9%
Firm profitability:					
EBITD/total assets	67.0 ^a 63.9%	76.7 ^a 68.5%	82.1 ^b 61.8%	-3.3 46.3%	-7.6 45.1%
EBITD/total assets - industry	67.4 ^b 66.3%	60.7 ^b 69.2%	66.7 66.4%	-7.3 46.0%	-6.4 45.9%
EBITD/sales	65.1 ^a 67.5%	78.5 ^a 66.4%	86.3 ^a 67.3%	3.0 52.6%	-6.3 45.7%
EBITD/sales - industry	57.1 65.6%	60.9 ^c 63.6%	57.2 ^c 66.9%	-1.4 49.0%	-2.5 47.0%

a,b,c indicate that the median change is significantly different from zero at the 0.01,0.05 and 0.10 probability level, respectively, as measured by two-tailed Wilcoxon signed rank statistics.

Table V
Actual Post-Bankruptcy Performance Versus Management Projections

Sample includes 72 firms for which projections were available from bankruptcy court documents. Actual EBIT (earnings before interest and taxes), total assets and sales use data from Compustat and 10K reports. Median difference of actual from projected performance is calculated as (Actual-Projected)/|Projected|. Percent < 0 shows the percentage of negative differences of actual from projected performance. Projections for Year C, the fiscal year in which the plan of reorganization is confirmed, are included if they cover at least six months of post-bankruptcy performance. Firms are classified as REPLACING top management if two of the three top officers (CEO, President, and Chairman) in office 2 years prior to bankruptcy are no longer in office at the time the projections are made. Otherwise, firms are classified as RETAINING top management. N denotes the number of observations.

	Year C	Year +1	Year +2	Year C	Year +1	Year +2	Year C	Year +1	Year +2
	EBIT			EBIT/(total assets)			EBIT/sales		
A. All firms:									
Median difference	-58.2% ^a	-80.6% ^a	-72.5% ^a	-60.4% ^a	-80.4% ^a	-69.1% ^a	-56.4% ^a	-94.2% ^a	-67.9% ^a
Percent < 0	71.8%	72.9%	65.1%	65.8%	76.8%	76.7%	76.5%	81.5%	82.9%
N	39	59	43	38	56	43	34	54	41
B. Firms REPLACING top management									
Median difference	-18.9%	-59.5%	-71.3% ^c	-14.6%	-61.3%	-65.0% ^a	-22.0%	-54.4%	-40.6% ^b
Percent < 0	56.5%	67.7%	63.2%	50.0%	75.0%	78.9%	61.9%	71.4%	79.0%
N	23	31	19	22	28	19	21	28	19
C. Firms RETAINING top management									
Median difference	-163.7% ^a	-105.4% ^a	-87.9% ^b	-167.3% ^a	-105.3% ^a	-80.7% ^a	-208.4% ^a	-105.6% ^a	-89.6% ^a
Percent < 0	93.8%	78.6%	66.7%	87.5%	78.6%	75.0%	100.0%	92.3%	86.4%
N	16	28	24	16	18	24	13	26	22

a,b,c indicate that the median difference is significantly different from zero at the 0.01, 0.05 and 0.10 probability level, respectively, as measured by two-tailed Wilcoxon signed rank statistics.

Figure 1

Management Changes Relative to Filing for Chapter 11 and Relative to Confirmation of a Reorganization Plan. The figure shows the number of firms for which the pre-bankruptcy management has remained in office, based on the full sample of 197 companies which emerged from Chapter 11 as public companies. Firms are defined as retaining their CEO if the individual in place at least two years prior to bankruptcy remains in office during that month. Firms are defined as retaining 2/3 of top managers if at least two of the three individuals holding the title of CEO, President, or Chairman two years prior to bankruptcy are still in office during that month. Month 0 is the month of filing for Chapter 11 in the first panel, and the month in which a reorganization plan is confirmed in the second panel. Calculations based on the number of months after filing will not coincide with calculations based on the number of months before confirmation due to firms which spend different amounts of time in bankruptcy. Calculations are based on data obtained from proxy, 10K and disclosure statements.

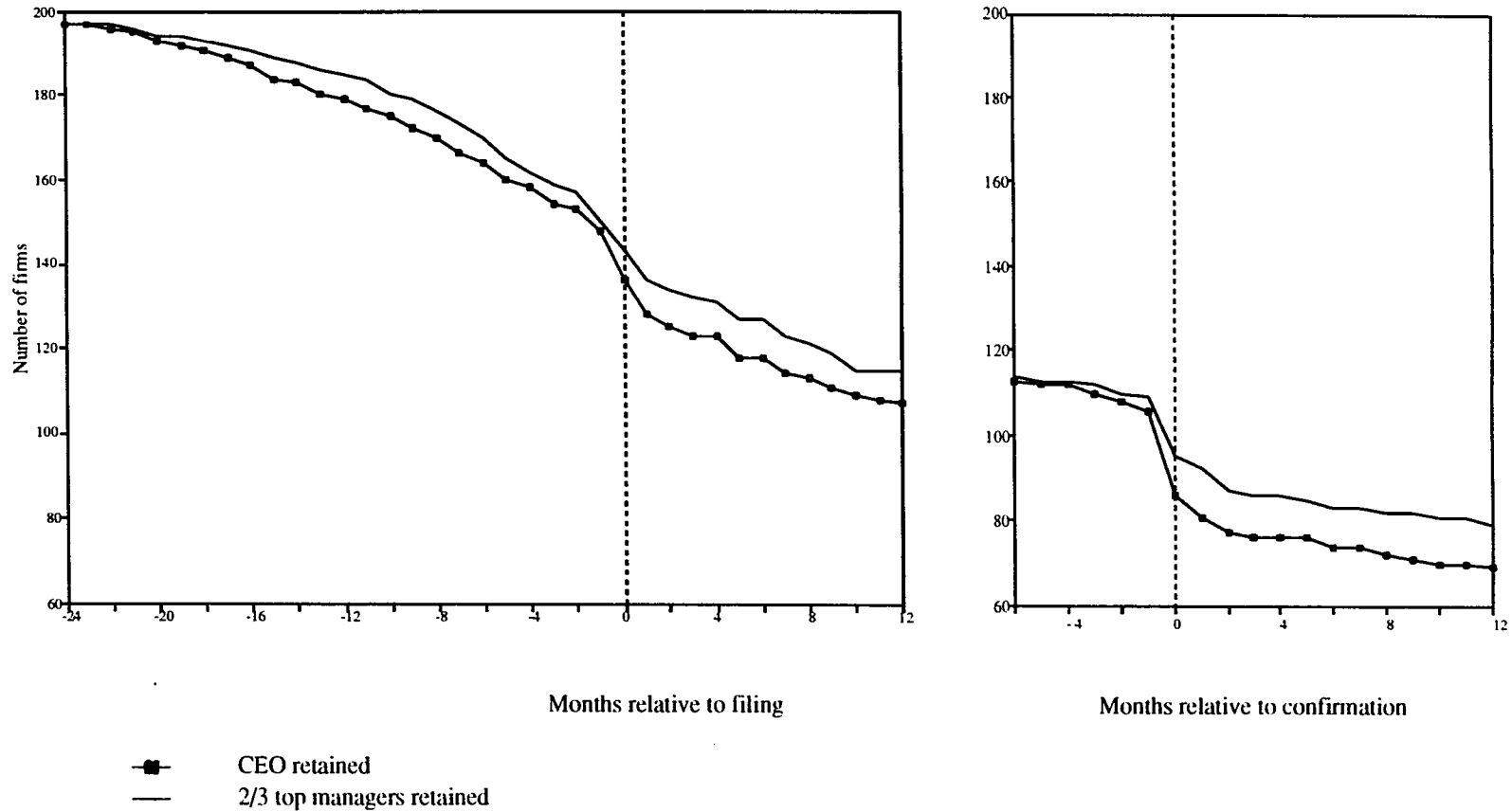


Table VI - A
Management and Board Changes Related to Post-Bankruptcy Performance Groups

Means (medians) are given for the full sample of 197 firms emerging from bankruptcy and for the sample divided by performance groups. Cash flow performance equals 0 if the firm had negative operating income in 2 of the 3 years following bankruptcy or if the firm failed again within three years after bankruptcy. Industry adjusted performance equals 0 if the firm had return on assets (EBITD/total assets) or operating margin (EBITD/sales) lower than the industry median in two of the three years following bankruptcy. Original management includes individuals holding the title of CEO, President or Chairman at least two years prior to bankruptcy. Original board consists of individuals serving at least two years prior to bankruptcy. Management and board members are considered retained throughout bankruptcy if still in office at the time the final plan of reorganization is proposed. New board members are defined as those who were not officers or directors of the company in the two years prior to bankruptcy.

	Full sample	Sample divided by cash flow performance		Sample divided by industry adjusted performance	
		1	0	1	0
Number of observations	197	102	95	88	109
Fraction of original top management:					
retained throughout bankruptcy	0.58 (0.67)	0.50 (0.50)	0.65 (1.00) b(b)	0.48 (0.50)	0.66 (1.00) a(a)
retained following confirmation	0.34 (0.00)	0.33 (0.00)	0.35 (0.00)	0.29 (0.00)	0.39 (0.00)
Fraction of original board:					
retained throughout bankruptcy	0.61 (0.67)	0.59 (0.63)	0.64 (0.67)	0.56 (0.63)	0.66 (0.67) c
retained following confirmation	0.35 (0.33)	0.35 (0.33)	0.35 (0.33)	0.33 (0.33)	0.37 (0.33)
Fraction of new board members:					
during bankruptcy	0.24 (0.10)	0.20 (0.07)	0.30 (0.20) c	0.22 (0.09)	0.26 (0.11)
following confirmation	0.64 (0.67)	0.63 (0.67)	0.61 (0.67)	0.63 (0.67)	0.61 (0.67)

a,b,c: Means significantly different based on t-test at 0.01, 0.05 and 0.10 significance levels, respectively.

(a,b,c): Medians significantly different based on Wilcoxon rank sum test at 0.01, 0.05 and 0.10 significance levels, respectively.

Table VI - B
Financial Restructuring and Ownership of the Reorganized Firm Related to Post-Bankruptcy Performance Groups

Means (medians) are given for the sample of 125 firms emerging from Chapter 11 for which bankruptcy court documents are available. Performance groups are as defined in Table VI-A. The percentage of reorganized stock issued to each class does not include convertible securities and is calculated using only firms for which that class existed. Other classes include management, financial advisors, and pre-petition preferred stock or warrant holders.

	Full sample	Sample divided by Cash flow performance		Sample divided by industry adjusted performance	
		1	0	1	0
Number of observations	125	73	52	53	72
Percentage of reorganized stock issued to:					
All creditor classes	33.48 (17.20)	32.41 (19.39)	34.96 (15.30)	31.62 (19.39)	34.86 (15.30)
Secured creditors	8.74 (0.00)	5.62 (0.00)	12.91 (0.00) c	6.84 (0.00)	10.17 (0.00)
Unsecured creditors	25.32 (10.78)	27.05 (9.41)	22.98 (11.00)	25.97 (10.89)	24.42 (10.50)
Equity class	42.61 (32.20)	44.72 (37.75)	39.82 (24.08) (c)	46.68 (38.99)	39.63 (25.00) (c)
New investors	45.97 (47.50)	44.51 (47.15)	47.75 (52.90)	40.58 (45.00)	50.11 (49.94)
Other classes	7.20 (1.50)	8.58 (1.50)	5.28 (1.56)	8.02 (1.09)	6.61 (1.70)
Writedown of unsecured creditor claims (%)	59.56 (66.19)	62.74 (72.77)	55.14 (62.40) c(c)	64.71 (73.50)	55.61 (62.40) c(b)
Deviation from absolute priority (%)	6.98 (3.90)	7.39 (3.74)	6.40 (4.39)	7.21 (4.50)	6.79 (3.69)
Pro-forma leverage of reorganized company	0.68 (0.73)	0.71 (0.76)	0.63 (0.64)	0.76 (0.78)	0.62 (0.67)

b,c(b,c): Means (medians) are significantly different based on t-test (Wilcoxon rank sum test) at 0.05 and 0.10 probability level, respectively.

Writedown of unsecured creditor claims is calculated as: (original face amount of claims - market value of securities received)/(original face amount of claims).

Deviation from absolute priority is calculated as: [(value of actual distribution to equity under plan)-(value of distribution to equity if absolute priority had been followed)]/(total value of securities distributed under plan). For further description of deviations from absolute priority, see Franks & Torous (1991).

Pro-forma leverage of the reorganized company is based on 89 companies providing sufficient information in disclosure statements and is calculated as the book value of total liabilities divided by assets, prior to accounting changes or writedowns at confirmation.

Table VI - C
Firm Characteristics and Industry Performance Related to Post-Bankruptcy Performance Groups

Means (medians) are given for the full sample of 197 firms emerging from bankruptcy and for the sample divided by performance groups. Return on assets is measured as earnings before interest, taxes and depreciation (EBITD) divided by total assets. Operating margin is calculated as EBITD divided by sales. For each firm, firm-specific performance pre-bankruptcy is calculated as the average over the two fiscal years prior to bankruptcy of industry adjusted return on assets or operating margin. Industry adjustments subtract the median of industry portfolios based on 3 digit SIC codes. Industry performance pre- (post-) bankruptcy is measured for each firm by contemporaneous median percentage change over the two years prior to (following) bankruptcy for firms in the industry portfolio. Firms size pre-bankruptcy is measured at the fiscal year end prior to filing. The number of 3 digit SIC codes is as reported by the company to the SEC prior to filing.

	Full sample		Sample divided by cash flow performance				Sample divided by industry adjusted performance					
			1		0		1		0			
Number of observations	197		102		95		88		109			
Firm-specific performance pre-bankruptcy:												
Return on assets (industry adjusted)	-0.26	(-0.13)	-0.16	(-0.10)	-0.36	(-0.15)	a(a)	-0.23	(-0.12)	-0.28	(-0.13)	
Operating margin (industry adjusted)	-0.55	(-0.10)	-0.14	(-0.08)	-1.00	(-0.19)	a(a)	-0.64	(-0.10)	-0.48	(-0.10)	
Industry performance pre-bankruptcy:												
Change in return on assets (%)	-7.63	(-5.09)	-8.69	(-5.05)	-6.50	(-5.09)		-7.93	(-4.79)	-7.39	(-5.56)	
Change in operating margin (%)	-9.31	(-4.55)	-9.07	(-6.85)	-9.56	(-2.35)		-8.05	(-6.28)	-10.33	(-3.57)	
Industry performance post-bankruptcy:												
Change in return on assets (%)	-1.97	(0.99)	2.89	(1.82)	-1.18	(-2.63)		10.00	(1.76)	-1.67	(0.00)	
Change in operating margin (%)	3.36	(1.02)	-1.20	(0.49)	8.25	(1.47)		8.08	(0.38)	-0.47	(2.59)	
Firm size pre-bankruptcy												
Book value total assets (\$ millions)	418.33	(27.89)	722.80	(41.68)	89.07	(19.40)	a(b)	193.14	(18.14)	608.70	(36.50)	b(b)
Total revenues (\$ millions)	398.20	(28.61)	675.12	(34.97)	105.38	(13.09)	a(b)	153.21	(17.97)	605.31	(37.78)	c(a)
Number of 2 digit SIC codes pre-bankruptcy	1.90	(2.00)	2.05	(2.00)	1.74	(1.00)	b(b)	1.69	(1.00)	2.07	(2.00)	a(a)

a,b,c: Means significantly different based on t-test at 0.01, 0.05 and 0.10 probability levels, respectively.

(a,b,c): Medians significantly different based on Wilcoxon rank sum test at 0.01, 0.05 and 0.10 probability levels, respectively.

Table VII
Logit Regressions Relating Firm and Restructuring Characteristics to Post-Bankruptcy Performance Group.

Sample consists of 125 firms emerging from Chapter 11 as public companies. The dependent variable cash flow performance equals 0 if the firm had negative operating income in two of the three years following bankruptcy or failed again within three years after bankruptcy, and 1 otherwise. Industry adjusted performance equals 0 if the firm had return on assets and operating margin lower than the median of its industry group in two out of three years after bankruptcy, and 1 otherwise. Asymptotic p-values are shown in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Cash flow performance			Industry adjusted performance		
Independent variables:						
Intercept	0.561 (0.41)	0.603 (0.48)	0.740 ^c (0.47)	2.530 ^a (0.01)	2.663 ^a (0.01)	1.867 (0.11)
Return on assets pre-bankruptcy, industry adjusted	1.054 (0.20)	0.397 (0.65)	1.138 (0.27)	1.610 ^c (0.07)	2.423 ^b (0.03)	2.771 ^b (0.05)
Industry change in return on assets pre-bankruptcy	0.005 (0.40)	0.010 (0.14)	0.013 (0.14)	0.003 (0.69)	0.008 (0.33)	0.011 (0.26)
Industry change in return on assets post-bankruptcy	-0.001 (0.81)	0.001 (0.62)	0.002 (0.42)	0.003 (0.11)	0.007 ^c (0.09)	0.007 ^c (0.06)
Log of total assets at year -2	0.280 ^b (0.04)	0.392 ^a (0.01)	0.283 ^c (0.10)	-0.238 ^c (0.10)	-0.205 (0.19)	-0.267 (0.19)
Number of two digit SIC codes at year -2	-0.117 (0.54)	-0.015 (0.94)	-0.237 (0.31)	-0.535 ^a (0.01)	-0.560 ^a (0.01)	-0.592 ^b (0.05)
Fraction of top management retained throughout bankruptcy	-0.782 ^c (0.07)		-0.956 ^c (0.09)	-1.357 ^a (0.01)		-1.957 ^a (0.01)
Fraction of board retained throughout bankruptcy		-0.235 (0.71)			-1.357 ^b (0.05)	
Percentage of reorganized stock distributed to creditors	-0.013 ^b (0.04)	-0.012 ^c (0.09)	-0.011 (0.12)	0.001 (0.89)	0.002 (0.80)	0.003 (0.77)
Pro-forma leverage at confirmation			0.620 (0.41)			2.086 ^b (0.04)
p value for likelihood ratio test	0.019	0.034	0.053	0.001	0.001	0.001
Number of observations	125	125	89	125	125	89
Probability dependent variable = 1:						
top management/board retained = 0.67	0.60	0.82	0.66	0.38	0.40	0.40
top management/board retained = 0.00	0.72	0.84	0.79	0.60	0.63	0.72

a,b,c: significant at 0.01, 0.05, 0.10 level, respectively.

(continued)

Table VII (continued)

Return on assets pre-bankruptcy, industry adjusted is measured as EBITD/(total assets) minus the industry portfolio median, averaged for the two fiscal years preceding bankruptcy.

Industry change in return on assets pre- (post-) bankruptcy is measured as the median change of firms in the industry portfolio, for the two years prior to (following) bankruptcy.

Number of two digit SIC codes is as reported by the company to the SEC in the year prior to bankruptcy.

Fraction of top management retained throughout bankruptcy is calculated as the fraction of top managers (CEO, Chairman or President) in office two years prior to bankruptcy remaining in office through the time the final plan of reorganization is proposed.

Fraction of board retained throughout bankruptcy is calculated as the fraction of the board in place two years prior to bankruptcy remaining in office through the time the final plan of reorganization is proposed.

Pro-forma leverage at confirmation is calculated as the book value of total liabilities/total assets measured prior to accounting changes that occur at reorganization.

Probability dependent variable = 1: the probability of being in the good cash flow or industry adjusted performance group is calculated first with all variables at their median value, and second with all variables at their median value except top management and board retained which are set to zero.

Appendix
"Second Time Around" Bankruptcies

The table describes 33 firms which emerged from Chapter 11 as public companies, but which subsequently reentered Chapter 11 or liquidated despite their plan of reorganization. Information was obtained from press releases, disclosure statements, 10Ks and Wall Street Journal reports.

	Date of filing	Date emerged	Comments	Years in first bankruptcy	Years between bankruptcies
All Seasons Resorts	Feb-87	Nov-88		1.75	1.32
All Seasons Resorts	Mar-90				
American Adventure	Jun-86	Feb-87		0.70	3.68
American Adventure	Nov-90				
Amfesco	Nov-85	Apr-88		2.40	1.42
New American Shoe	Sep-89				
Anglo Energy	Nov-83	Jul-86		2.69	1.61
Anglo Energy	Feb-88	Apr-88		0.12	
BASIX Corporation	Feb-88	Oct-89		19.99	1.24
* BASIX Corporation	Jan-91		Liquidation		
Beehive International	Oct-84	Aug-85		0.82	3.30
Beehive International	Nov-88		Liquidation		
Best Buy Drugs	Nov-87	Dec-88		1.05	3.08
Best Buy Drugs	Jan-92				
Braniff International	May-82	Sep-83		1.30	6.08
Braniff, Inc.	Sep-89		Emerged private		
Braniff, Inc.	Aug-91	Jul-92	Liquidation	0.97	
Commonwealth Oil Refining Co.	Jul-79	Jun-81		1.94	3.04
Commonwealth Oil Refining Co.	Jul-84	Feb-90		5.62	
Consolidated Packaging Corp	Jun-84	Oct-85		1.29	5.64
Consolidated Packaging Corp	May-91				
Continental Airlines Corp	Sep-83	Jul-86		2.77	4.43
Continental Airlines Corp	Dec-90				
Cook United	Oct-84	Sep-86		2.00	0.56
Cook United	Apr-87	Nov-87	Liquidation	0.59	
CS Group Inc.	Sep-82	Dec-83		1.32	0.57
CS Group Inc.	Jul-84	Dec-86		2.41	
Dean Research Corp.	Jul-86	Jan-88		1.53	
** Dean Research Corp.		Dec-90	Liquidation		
Horn & Hardart Baking Co.	Sep-81	May-86		4.66	4.02
Horn & Hardart Baking Co.	May-90			-90.41	

(continued)

Appendix (continued)
"Second Time Around" Bankruptcies

	Date of filing	Date emerged	Comments	Years in first bankruptcy	Years between bankruptcies
Kenilworth Systems	Aug-82	Jun-85		2.77	3.39
Kenilworth Systems	Oct-88	Oct-91	Case reopened	2.93	
Key Company	Jun-88	Sep-89		1.23	2.22
* Key Company	Nov-91		Liquidation		
J.F. Lawhon Furniture Co.	Feb-81	Jun-81		0.31	4.26
W&J Sloane Corp.	Sep-85	Nov-87	Liquidation	2.17	
Lionel Corp.	Feb-82	Sep-85		3.56	5.76
Lionel Corp.	Jun-91				
Michigan General Corp.	Apr-87	Apr-88		0.95	2.39
Michigan General Corp.	Aug-90		Liquidation		
Mid American Lines	Mar-82	Feb-83		0.98	8.87
Mid American Lines	Jan-92				
National Data Communications	Sep-83	Aug-84		0.97	6.37
Libra Systems Inc.	Jan-91				
Oxoco, Inc.	Sep-86	Dec-86		0.27	4.08
Ironstone Group, Inc.	Jan-91				
Robintech Inc.	Jul-83	Jul-84		0.95	7.50
General Indicator Group Inc.	Dec-91		Liquidation		
Rusco Industries	Feb-82	Jun-83		1.32	2.64
Rusco Industries	Feb-86	Feb-89	Liquidation	3.01	
R.C. Sanders Tech. Sys. Inc.	May-80	Apr-81		0.92	4.03
Santec	Apr-85				
Salant Corp.	Feb-85	May-87		2.24	3.11
Salant Corp.	Jun-90				
Sasco Cosmetics	Feb-84	Nov-84		0.73	5.25
* Sasco Products	Feb-90		Liquidation		
Tacoma Boatbuilding	Sep-85	Aug-87		1.90	4.53
Tacoma Boatbuilding	Feb-92				
Topps & Trowsers	Oct-79	Jul-81		1.74	6.87
ACA Joe, Inc.	May-88	May-89		0.93	
Towle Manufacturing Co.	Mar-86	Sep-87		1.52	1.90
Towle Manufacturing Co.	Aug-89	Feb-91		1.50	
Veta Grande Cos., Inc.	Nov-85	Jun-86		0.56	4.01
The Group, Inc.	Jun-90				
Winjak	Dec-88	May-89		0.39	1.05
* Winjak	May-90		Liquidation		

* Not a second Chapter 11, but the company is being liquidated despite its reorganization plan.

** A reorganization plan was confirmed, but later changed to liquidation.

Appendix - "2nd Time Around" Bankruptcies

For eight of the firms which failed a second time, the following cases briefly describe:

- Causes of the first filing stated by management or the press.
 - Characteristics of the first restructuring and significant events before the second filing.
 - Causes of the second filing & outcome.
-

ALL SEASONS RESORTS (membership resort campgrounds).

1st filing: Former management incurred large amounts of trade debt and secured debt. The company could not generate enough cash flow to cover "rampant" marketing expenses. The company filed after high delinquency rates on contracts and lawsuits from unpaid creditors.

Restructuring: The plan was funded by a \$3 million cash infusion. Management planned to continue "business as usual" upon confirmation.

2nd filing: Cash flow from sales, operations, and collections from membership contracts was not sufficient to fund the company's ongoing cash requirements.

ANGLO ENERGY (oil & gas exploration, equipment; construction; marine transport).

1st filing: Under new management, the firm aggressively pursued a new business strategy of diversifying into oil and gas exploration and equipment. World oil price declines eroded cash flow.

Restructuring: Unprofitable subsidiaries were divested. The remaining business provided oil field services. Feasibility of plan was based on the ability to defer payments on a substantial amount of secured debt.

2nd filing: The industry did not recover as anticipated, and the firm was burdened by substantial debt service requirements. Under new management, approval for a prepackaged restructuring was obtained. The company exchanged \$111.5 million secured obligations for a new class of equity.

COOK UNITED (discount department stores).

1st filing: The company borrowed heavily to finance acquisitions and open new stores. Sales and earnings were below levels in bank loan agreements, and vendors were reluctant to supply the company. The company was solvent but illiquid.

Restructuring: Much of the value of the company was a \$125mm net operating loss carryforward. A new investor assumed management, and planned to continue a remodeling program and remerchandising program. The company refocused its market from soft to hard goods.

2nd filing: The company suffered from a shortage of working capital. Losses were double those anticipated in reorganization plan, partly due to closing of an additional 12 stores and excessive advertising and discount costs. Critics cited mismanagement and a "misguided" merchandising strategy. Remaining stores were liquidated to pay secured creditors.

LIONEL CORP (hobby, toy & game shops; misc. retail stores).

1st filing: Poor business conditions impaired retailing generally. The company was hurt by a recessionary economy, continued high interest rates and energy costs and a disappointing 1981 Christmas season. Many stores were located outside the company's traditional market which the company was unable to market effectively. Lenders would not extend additional credit.

Restructuring: The company reduced expenses and disposed of unprofitable facilities. The plan was funded largely through the sale of one subsidiary.

2nd filing: The company suffered the negative impact of an unsolicited hostile tender offer, incurring \$1.6 million in fees. The currently depressed retail environment and "extremely tight credit conditions" led the company to file. Debtor in possession financing was needed to assure suppliers to resume shipments.

NATIONAL DATA COMMUNICATIONS [now LIBRA SYSTEMS] (markets hardware and software for patient information systems to hospitals and clinics).

1st filing: The company suffered from research and development problems; terminals ordered were delivered late and did not meet specifications. The company filed after a \$432,000 judgement from litigation related to development of new system.

Restructuring: The company restructured unprofitable hospital contracts and settled its litigation claims.

2nd filing: The company had acquired a billing & collection services business, which subsequently lost several major clients and discontinued operations 12/89. Competitive industry conditions, liquidity problems, and decreased revenues as contracts expired led the company to file.

SALANT CORP (apparel manufacturing and marketing).

1st filing: After severe business reversals beginning in 1982, attempts to offset the reduction in business were costly and unsuccessful. The firm could not repay its short term bank borrowings or renegotiate its credit facility to meet seasonal requirements.

Restructuring: The company streamlined operations and sold assets. The company acquired Clantexport 12/85 to supply equipment and chemical supplies required for one of its processes. The reorganized firm planned acquisitions.

2nd Filing: Due to weakness in retail apparel sales, the company was unable to liquidate inventory. The company could not meet payments to bank lenders or renegotiate its debt. In bankruptcy, the firm discontinued certain operations and reduced employees and inventory.

TOWLE MANUFACTURING (sterling flatware and giftware).

1st filing: The company expanded beyond its traditional sterling business in the late 1970's. The reorganization of distribution facilities and delays in the receipt of imported merchandise lead to substantial late deliveries, cancelled orders, and high returns and allowances. The company increased its secured financing, but was finally unable to obtain further financing.

Restructuring: The restructuring involved significant downsizing, divestitures of non-core assets, and consolidations. 80% of the company's shares were acquired by First Republic Corp. of America (FRCA), and the company merged into a subsidiary of FRCA (but continued to operate independently).

2nd filing: The firm was unable to achieve the projected sales volume upon which the reorganization was based. After cash flow shortages, the firm defaulted on its debt payments 6/89.

WINJAK (sale of women's sportswear through retail outlet stores).

First filing: The company suffered from a lack of working capital, unsuccessful attempts to restructure its debt, and competitive business conditions.

Restructuring: The company reduced its number of stores. An investment group acquired a controlling interest and provided funds to settle obligations and for working capital.

Subsequent liquidation: Losses continued through 5/90 due to weakness in the apparel retailing business. The company could not maintain sufficient merchandise inventory. As sales decreased, management was unable to obtain additional financing. Liquidation was begun 5/26/90.

Essay #2

"The Liquidation/Reorganization Choice of Firms Entering Chapter 11"

1. Introduction.

The Chapter 11 bankruptcy process has been designed to serve two important functions. Chapter 11 provides breathing room for economically viable firms by protecting them from creditors as they attempt to reorganize. At the same time, the process serves as a mechanism for the removal of inefficient firms. Understanding the process that determines which firms will reorganize and emerge from bankruptcy and which firms will liquidate helps us to assess whether the current system succeeds in efficiently moving resources to their most valued use. This paper studies the outcomes of attempted reorganizations for a large sample of public companies that filed under Chapter 11 of the Bankruptcy Code between October 1979 and December 1991, and tests whether the observed outcomes are consistent with a number of hypotheses about factors that influence the reorganization/liquidation choice.

The companies studied in this paper each enter Chapter 11 hoping to reach a consensual plan of reorganization that provides for the restructuring of their claims. However, not all firms in Chapter 11 reach the stage of agreement on a reorganization plan; those that do not convert their cases to a Chapter 7 liquidation or remain in Chapter 11 only to complete an orderly liquidation of all assets. These firms often blame continued deterioration in their industry or the inability to attract new investment or a buyer to the firm for their decision to liquidate.

Of the firms that do emerge from bankruptcy, the restructuring may take different forms: firms may emerge as a public or private company, or merge with another profitable firm. Based on hypotheses suggested by theoretical models of the reorganization process as well as more general models from the corporate finance literature, this paper examines the relationship of industry conditions, pre-bankruptcy capital structure, characteristics of management and pre-bankruptcy firm characteristics to the bankruptcy outcome.

The results show that industry conditions, in particular high leverage of other firms in the

industry, increase the probability of liquidation. High industry leverage may reflect poor performance of other firms in the industry and therefore poor prospects for the reorganized firm. However, other measures of industry performance are not significantly related to the probability of liquidation. High industry leverage may also reflect illiquid markets for the assets of the firm as described by Shleifer & Vishny (1992), because potential buyers in the same industry cannot borrow to purchase assets of the firm. Illiquid asset markets can lead to failed reorganization attempts if firms rely on some asset liquidations to finance their reorganization plan. The results also show that larger firms, particularly those with public debt outstanding prior to filing, have a greater probability of emergence from bankruptcy. There does not appear to be strong support for models which suggest capital structure affects the decision; the results also do not find support for theories that firms which produce specialized or unique products or that have more intangible assets avoid liquidation. Finally, there is weak support for the idea that newly appointed board members are more responsive to creditor pressures to liquidate.

Considerable prior research has used multivariate techniques to predict the likelihood of bankruptcy; the likelihood of a successful reorganization once a firm is in Chapter 11 is an important extension of this work.¹ However, previous attempts to classify bankruptcy outcomes based on accounting data for smaller samples have met with limited success. This paper adds to these results by using a substantially larger sample and variables suggested by existing theoretical models. The paper proceeds as follows. Section 2 discusses the hypotheses describing which firms will successfully complete their reorganization and emerge from

¹ Altman (1983) has done much of the work in the area of bankruptcy prediction models. Altman & Kao (1985). Casey, McGee and Stickney (1986) attempt to predict whether firms under Chapter 11 will reorganize or liquidate using a smaller sample of firms, mostly filing prior to the 1978 revisions in the Bankruptcy Code.

bankruptcy. Section 3 describes the data and variables selected to test these hypotheses. Section 4 provides the results of multinomial logit regressions estimating the effect of these variables on the probability of reorganization or of merger versus liquidation. Section 5 concludes.

2. Determinants of the firm's ability to reorganize.

This section describes the empirical implications for the reorganization/liquidation of industry conditions, pre-bankruptcy capital structure, characteristics of management, and pre-bankruptcy characteristics of the firm. Implications of the theories which may help to distinguish firms which merge from those that liquidate are also noted.

2.1. Industry conditions.

An important determinant of the value of the firm's assets in liquidation may be the state of other firms in the industry. If liquidation values are depressed or there are few potential buyers for the firm's assets, reorganization will be more attractive relative to liquidation. Shleifer and Vishny (1992) argue that the highest valuation potential buyers of the firm's assets are likely to be other firms in the same industry. Therefore, when firms in the same industry are also distressed, the market for the firm's assets will be illiquid. In addition, if potential buyers in the same industry tend to be highly leveraged, they may be unable to borrow to finance the purchase of the bankrupt firm's assets. Firms in less concentrated industries may also benefit from a greater number of potential buyers for their assets², while firms diversified across

² Lang & Stulz (1992) study the effects of bankruptcy announcements on the bankrupt firm's competitors. They find evidence of a "competitive effect" where, particularly in industries with lower leverage and competition (higher concentration), other firms may actually benefit from the difficulties of the bankrupt firm.

several industries may be less constrained by poor conditions in one particular industry. Factors that decrease the potential number of buyers, such as higher industry leverage and concentration, and lower industry profits, are hypothesized to increase the probability of reorganization versus liquidation.³

Alternatively, it can be argued that illiquid asset markets could increase the likelihood of liquidation because many firms must finance their reorganization plans with cash generated from the sale of a portion of the firm's assets. Asset sales as a source of cash may be particularly important for distressed firms, since the costs of issuing new securities will be high when firms suffer from a large debt overhang or uncertainty over the value of their assets (Myers & Majluf (1984)). Several recent studies (for example, Asquith, Gertner & Scharfstein (1992) and Brown, James & Mooradian (1993)) show that distressed firms typically sell assets as part of the restructuring process. The use of asset sales as a substitute for external financing has also been described by several authors including Shleifer & Vishny (1992), and Lang, Stulz & Poulsen (1992). Therefore, when industry performance is poor and asset markets are illiquid, reorganization attempts may fail because firms are unable to fund their reorganization and sufficiently capitalize the reorganized firm.

Finally, industry conditions may influence the reorganization versus liquidation decision simply because the health of the industry is a good indicator of the firm's prospects for returning to profitability. Firms in declining industries may have difficulty convincing creditors that reorganization is more appropriate than liquidation based on a high continuation value for the

³ These same factors may also make mergers with other operating companies in the same industry less likely. Clark & Ofek (1993) find a greater frequency of acquisitions of distressed firms by buyers in the same industry than found in earlier studies of acquisitions of healthy firms.

firm. Mergers may also be more attractive relative to liquidation for firms which have better prospects.

2.2. Pre-bankruptcy capital structure.

Models of the reorganization of distressed firms such as Bulow & Shoven (1978), White (1980,83,89), and Gertner & Scharfstein (1991) show how conflicts of interest among various claimants can lead to "uneconomic" decisions, i.e. actions to either liquidate or continue investment which are not in the interest of all groups of claimants taken as a whole. These models show how the risk shifting incentives of lower priority creditors (as described by Myers, 1977) can lead to excessive continuation of investment. Shareholders' incentives to continue investment may be greatest when the value of the firm is less than its liabilities; in this case, the only value of equity is its option value, which is lost when assets are converted to cash in liquidation.⁴ Empirically, firms with more cash available to cure defaults and reinstate their debt outstanding are more likely to engage in this type of risk shifting behavior and continue investment. Furthermore, incentives for overinvestment will be stronger with higher leverage and more long term debt.

Models of the reorganization process also describe cases of excessive liquidation because higher priority creditors, who would be paid off in a liquidation, have little incentive to continue risky investment and may prefer to liquidate assets which optimally should be retained. Firms with more high priority short term debt and more cohesive creditor groups may face greater pressure to liquidate. However, the ability to force liquidation once the firm enters Chapter 11

⁴ Furthermore, deviations from absolute priority, in which shareholders receive some distribution even though more senior claimants are not paid in full, only occur if the firm is reorganized. Shareholders generally receive no payment in liquidation.

is likely to be limited.⁵ As Gertner & Scharfstein (1991) point out, the automatic stay provisions of the Bankruptcy Code are likely to alleviate creditor pressures to liquidate and lead to increased investment.

Another way in which capital structure may influence the continuation/liquidation decision has to do with the effect of the complexity of the capital structure on the ability to restructure debt. Recent literature has described how coordination problems among claimants, particularly public debtholders, may limit the ability to reach an agreement to restructure claims without entering bankruptcy. Gilson, John & Lang (1990) find that firms with more complicated debt structures and with public debt outstanding are more likely to file for Chapter 11 than to reorganize outside of bankruptcy through a private workout with lenders or an exchange offer. Firms which file for bankruptcy primarily because of their inability to restructure out of court, for example because of difficulties renegotiating with dispersed public debtholders, may emerge quickly and with little likelihood of liquidation.⁶

The relationship between capital structure and the probability of merger versus liquidation may be quite different, and will depend on expectations of various claimants of their payoffs in merger versus liquidation. There is likely to be some chance of preserving value for shareholders in a merger and little chance in liquidation; the factors noted above associated with greater shareholder incentive to continue investment should also be helpful in distinguishing

⁵ The possible exception is for secured debt; however, it is not possible to measure the portion of the firm's debt which is secured using existing databases for a sample as large as the one studied in this paper.

⁶ Recently, "prepackaged" bankruptcies have become more commonly used, largely to take advantage of voting rules in bankruptcy in the event an initially proposed exchange offer fails. There are relatively few prepackaged bankruptcies in this study of firms filing for Chapter 11 by December 1991.

between mergers and liquidations.

2.3. Characteristics of management.

The decision to liquidate or continue a firm in bankruptcy may depend on who controls restructuring decisions, and how they personally will be affected by the outcome.⁷ Though management turnover is high even for firms that successfully emerge from bankruptcy, the possibility of retaining jobs remains only if management can avoid liquidation. Managers attempting to protect their jobs or their reputation, or attempting to preserve the value of their own shareholdings, may benefit from the firm's survival. There has been much recent criticism of the powers given to management in bankruptcy, based on the idea that management is likely to be biased toward reorganization rather than liquidation (see for example Bradley & Rosenzweig (1992)).

If management has incentives for continuation of the firm, it may be more difficult to liquidate firms whose original management is still in place once the firm is in bankruptcy. Hotchkiss (1993) shows that frequently management is not replaced until the firm leaves bankruptcy. As Gilson (1990) points out, replacement managers are often appointed in direct response to creditor pressures and may tend to be more creditor aligned. New management, whose reputation is less tied to existing assets, who has less firm-specific human capital, and who often has lower initial shareholdings, may be less likely to share the biases described above.

⁷ Though not specific to firms in bankruptcy, several models have described managements' incentives to maintain investments which do not maximize firm value or shareholder value. For example, Shleifer & Vishny (1989) show that managers' choice of projects may reflect concerns for their own survival, while Stulz (1990) shows how managements' attempts to entrench themselves leads to overinvestment in certain projects.

Management may also want to avoid a merger if this is likely to lead to a loss of their position.⁸

Monitoring by board members may limit managements' ability to make non-value maximizing decisions. However, long standing board members, particularly inside board members, may be more aligned with management and support the pre-bankruptcy management's efforts to preserve the firm. In contrast, outside board members or new board members appointed in response to creditors may be more open to pressures to liquidate or merge.

2.4. Pre-bankruptcy firm characteristics.

The pre-bankruptcy condition of the firm can indicate whether the firm is likely to return to profitability and should be reorganized. Firms with especially large operating losses, which are also likely to have become highly levered, may be more likely to liquidate. Other firms may have entered bankruptcy primarily because they had taken on too much debt, though the firms were operationally sound. These firms, with high leverage but better pre-bankruptcy operating performance, may take advantage of Chapter 11 to complete a financial restructuring and emerge with a more appropriate capital structure.

Titman (1984) argues that firms which produce unique or specialized products will face higher costs, particularly to the firm's workers, customers, and suppliers, in the event that they liquidate. If these firms are more likely to avoid liquidation, the probability of reorganization or merger will be greater for firms in certain industries, such as firms manufacturing machines and equipment which require specialized servicing and spare parts. Firms with relatively more intangible assets also may have greater incentives to avoid liquidation, since the value of intangibles will be lost in liquidation.

⁸ See McConnell & Martin (1991).

Finally, size may be an advantage to companies attempting to reorganize if fixed expenses of the reorganization process must be covered. Ang, Chua & McConnell (1982) and Warner (1977) find evidence that direct bankruptcy costs are a larger proportion of value of smaller firms, though Weiss (1990) does not find this type of scale effect. Furthermore, large firms which are diversified across several industries may be able to divest unprofitable business lines but continue their remaining operations. Firms participating in several industries may also be less constrained in their liquidation/reorganization choice by the effects of industry conditions as described above.

3. Sample Description and Variable Definitions.

3.1. Sample selection.

The initial sample used to analyze the outcomes of bankruptcy filings consists of 1,195 companies filing for Chapter 11 between October 1979 and December 1991, based on listings compiled by the SEC. 902 of these firms were included in the Compustat databases at some point in time prior to bankruptcy; much of the discussion in the following sections focuses on this subsample of firms. Table 1 describes selected characteristics of these 902 firms relative to the full sample of Chapter 11 filings. The firms included on Compustat are significantly larger based on their mean and median total assets at the time of filing and are more likely to have public debt outstanding. The median book value of leverage is similarly high for both groups, as is the time in bankruptcy.

For each firm, the status or outcome of the filing was determined from a number of sources including the Wall Street Journal, press releases, and individual 10K and 8K reports. While many of the more recent filings are still in bankruptcy, the firm's status could be determined for

almost 73% of filings for firms on Compustat before bankruptcy (outcomes could be determined for only 37.6% of those firms not on Compustat). Firms are categorized as emerged public, emerged private, merged, liquidated, or "unknown". The outcome groups are described as follows:

Emerged public: A plan of reorganization was confirmed, and the firm continued to file financial statements, often under a new name, with the SEC after bankruptcy.

Emerged private: A plan of reorganization was confirmed but the firm's securities are no longer registered with the SEC. The lack of post-bankruptcy information about these firms may cause some classification error if any firms in this group liquidated shortly after emerging or subsequently merged with another firm. However, news reports at the time a plan was confirmed typically stated that the firm intended to continue its business. It was also clear that stock in the reorganized company was distributed to shareholders or creditors for more than half of these firms, based on information provided in the Directory of Obsolete Securities.

Merged: The firm was combined with the operating assets of another firm.⁹ The number of firms in this group appears low, even if some firms in the emerged private and unknown groups were later merged.

Liquidated: A liquidating plan of reorganization was confirmed under Chapter 11, or the

⁹ Firms which experienced a change in control but continued to operate independently were included in the emerged public or private groups. For 20% of the firms emerging as public companies a new entity obtained over 50% of the reorganized stock.

Chapter 11 proceedings were converted to a Chapter 7 liquidation after reorganization attempts failed.¹⁰ These firms often claimed that reorganization attempts were abandoned because of continued deterioration in industry conditions or because they were unable to attract new investment or a buyer to the firm.

Inactive: Inactive includes firms for which no report of the confirmation of a plan could be found from any of the sources described above, and the firm's securities have been deregistered with the SEC. These firms are likely to have gone out of business before a plan was confirmed; they comprise a relatively larger portion of the smaller firms not appearing on Compustat before bankruptcy. The number of firms classified as "inactive" is substantial, but lower than findings of Flynn (1989) who reports that only 17% of all public and private firms which filed for Chapter 11 prior to 1987 actually reached a court confirmed plan. The sample studied in this paper corresponds more closely to that of LoPucki & Whitford (1993), who study the largest public companies filing for Chapter 11 and find that a plan is practically always confirmed.

Unresolved: Unresolved includes firms for which no report of a confirmed plan was found, but the firm is still active with the SEC. These firms are likely to be still in bankruptcy as of June 1993.

Table 2a shows the distribution of outcomes for firms included versus not included on Compustat, and also shows outcomes by year of filing for the 902 firms included on Compustat.

¹⁰ The delay of the ultimate liquidation of Eastern Airlines is an example of this type of behavior.

The division among outcomes appears similar over time except for the increasing number of "unresolved" firms still in bankruptcy for later filing years. Table 2b summarizes industry classifications for the firms on Compustat. Based on 2 digit SIC codes (not shown), only four groups individually comprise more than 5% of the sample. The largest group (8.8%) consists of oil and gas companies filing in the mid 1980's due to industry price declines. Industrial and commercial machinery (7.8%), electronic and other electrical equipment (5.1%), and business services (5.7%) are the next largest groups, the latter two containing a large number of computer and software service related companies.

3.2. Variable definitions.

Table 3 summarizes the hypotheses suggested in Section 2 based on industry conditions, pre-bankruptcy capital structure, management characteristics and pre-bankruptcy firm characteristics. The variables selected and predicted relationships to the probabilities of reorganization versus liquidation and of merger versus liquidation are also shown. The variables used in this analysis are defined as follows.

Industry conditions, determinants of the liquidity of markets for the firm's assets and the number of potential buyers, are described by industry leverage, profitability, concentration, and employment growth. Industry variables are based on the median of a portfolio of all other firms on Compustat Research or Industrial files having the same three digit SIC code. Variables for each firm in the industry group are calculated as a two year average, ending in the year in which the sample firm filed for bankruptcy. Industry leverage is defined as the median of book value leverage, calculated as total liabilities divided by total assets. The industry change in profitability is measured by the median industry change in ROA (return on assets, earnings

before interest, taxes and depreciation divided by total assets). Industry concentration is measured by a Herfindahl index.¹¹ Finally, the median industry employment growth is calculated as the two year average percentage change in the number of employees.

Risk shifting incentives of shareholders, which increase the likelihood of reorganizing, increase with the bankrupt firm's leverage and proportion of long term debt. The likelihood shareholders would receive no distribution in liquidation also increases with leverage. Leverage is calculated as total assets divided by total liabilities for each firm at the time of filing using data obtained from the SEC. Firms with greater liquidity, measured as the ratio of current assets to current liabilities, will be able to cure defaults and continue to operate even if this is not in the interests of debtholders. To identify firms which are likely to have filed for bankruptcy because coordination problems among debtholders made an out of court restructuring infeasible, a dummy variable is used to represent firms having public debt outstanding at the time of filing, based on data from SEC listings.¹²

All data related to characteristics of management is obtained from Duns Million Dollar Directory for a subsample of 398 firms which were listed in the directory prior to filing. Firms which retained the CEO in office two years prior to bankruptcy are expected to have a greater probability of reorganizing. Managerial stockholdings could also not be measured for this sample; however, stockholdings are likely to be highly correlated with firm size. In addition, the proportion of outside board members in the year before filing, and the fraction of the board made up of newly appointed members (those who were not officers or directors two years prior)

¹¹ The assets herfindahl is defined as follows:
$$F_{jt} = \sum_{i=1}^{N_{jt}} \left[\frac{A_{ijt}}{\sum_{i=1}^N A_{ijt}} \right]^2$$
 See Lang & Stulz (1992) for an explanation of this calculation.

¹² Bank debt and secured debt amounts are not available for the firms in this sample.

is expected to be positively related to the probability of liquidation.

Lastly, pre-bankruptcy firm characteristics use data available from Compustat. Morck, Shleifer and Vishny (1989) suggest that creditors and other non-management groups use the performance of other firms in same industry to evaluate performance of the firm or its management. If poor industry adjusted performance indicates firm-specific problems, it may be difficult to convince creditors that a reorganized firm would be viable and liquidation would be more likely. Therefore, profitability prior to bankruptcy is measured by the firm specific change in return on assets (ROA). Using Compustat data, this is calculated as the percentage change in EBITD/total assets, minus the industry median change. Higher leverage will also be associated with lower historical profitability. Tangible assets are measured by the ratio of inventory plus plant, property and equipment to total assets. As suggested by Titman & Wessels (1988), a measure of the uniqueness of the firm's products is given by a dummy variable equal to 1 if the firm's SIC code falls between 3400 and 4000.¹³ Total assets at filing is obtained from SEC listings, and the diversity of the firms businesses is measured by the number of two digit SIC codes reported in Dun's Million Dollar Directory or Compact Disclosure prior to filing.

Table 4 provides mean and median values for each variable by the outcome of the filing.¹⁴ The increases in industry return on assets and employment growth are significantly higher for firms that liquidate, consistent with the idea that firms in stronger industries have a higher

¹³ Titman & Wessels (1988) also suggest using the ratio of R&D to sales to indicate "uniqueness". However, the firms in this sample have generally greatly reduced R&D spending some time before bankruptcy.

¹⁴ Compustat variables are shown at the second fiscal year end prior to filing. Results using variables measured at the fiscal year end prior to filing are identical except for a smaller number of observations because of firms with missing data.

liquidation value. Firms that liquidate also appear to have a lower proportion of long term debt (associated with lower risk shifting incentives) than firms that emerged, and less often had public debt outstanding. Liquidated firms have a smaller number of newly appointed board members than firms that merge. Finally, firms that liquidate are smaller and less diversified (based on the number of 2 digit SIC codes) than firms in other outcome groups.

4. Multinomial logit analysis of the reorganization versus liquidation choice.

Table 5 shows the results of 4-choice multinomial logit estimates of the determinants of the filing outcome. These estimates indicate the probability of liquidation relative to emerging public, emerging private, or merging with another operating company.¹⁵ All regressions start from the sample of 657 firms (from the original 902) listed on Compustat at some point prior to filing for which the outcome was resolved as of June 1993.

The first set of results (1) uses the largest possible number of observations and does not rely on Compustat data for the year prior to filing; instead it includes a dummy variable indicating whether the firm had data available on Compustat in the year prior to and year of filing. This dummy is likely to indicate the degree of economic distress at the time of filing, since firms without data available are generally those which either delisted their stock from an exchange or failed to file 10K reports with the SEC. This dummy variable is strongly related to a lower probability of liquidation. Results are consistent across the three outcome groups.

Regression (1) also shows that higher industry leverage increases the probability of

¹⁵ Interpretation of the results do not change based on the marginal effects of the regressors on the probabilities. For an explanation of this calculation, see Greene (1993).

liquidation, while none of the other industry variables appear significant. This is consistent with the hypothesis that reorganization attempts fail because firms cannot raise funds through asset sales to other firms in the industry. High industry leverage may also reflect poor performance of other firms in the industry, leading to either a lack of buyers for the firm's assets or poor prospects for the firm itself. Of the capital structure variables, only the dummy variable indicating public debt outstanding at filing is significant and is related to a lower probability of liquidation. As described above, firms with public debt may file for Chapter 11 rather than restructure out of court because of coordination problems among claimants. Larger firms also have a lower probability of liquidation¹⁶; this finding is consistent with LoPucki & Whitford (1993) who show that the largest public companies virtually always have a reorganization plan confirmed.

The next set of results (2) uses Compustat variables for the second year prior to filing and finds similar results, which are again similar across outcome groups. Firms in industries with higher leverage have a greater probability of liquidation, while larger firms with public debt outstanding are less likely to liquidate. However, better firm specific performance, measured by the industry adjusted change in return on assets, decreases the probability of emerging as a public company or merging relative to liquidation. This result is not consistent with the idea that firms that were more economically distressed are more likely to liquidate. One possible explanation is that when filing was due to more to industry difficulties than to firm-specific problems, it may be difficult to reorganize.

The last two sets of results (3) and (4) use the subset of observations for which management

¹⁶ The variable representing diversification, measured as the number of 2 digit SIC codes before bankruptcy, was not significant and is not reported in any regressions. The liquidity variable was also not significant.

variables were obtained. Results for industry leverage are as described above. In one case, firms in industries with higher employment growth appear more likely to liquidate than emerge public, perhaps reflecting a greater liquidation value. Results for the management variables are weaker (though the number of observations is considerably lower). Firms which have retained the CEO who was in office two years prior to filing through the year of filing have a lower probability of liquidation relative to merger. Firms with more newly appointed board members, perhaps appointed in response to creditors, have a greater probability of liquidation than emerging private or merging. This is consistent with the idea that newly appointed board members will be more creditor aligned. The variable for the fraction of outside board members was not significant in any regressions.

VI. Summary and Conclusions.

This paper adds to our understanding of the processes for resolving financial distress by examining the fate of firms which file under Chapter 11. If the process is working well, firms will be liquidated because they are not viable rather than because of inefficiencies in the restructuring process. The results show strongly that larger firms with public debt outstanding are more likely to emerge from bankruptcy, though greater diversification prior to bankruptcy does not appear related to the outcome. Industry conditions also appear as an important determinant of the outcome. Though the results do not show strong support for models of the reorganization process which suggest that capital structure will influence the reorganization/liquidation decision, future research utilizing variables such as the proportion of secured debt or bank debt may provide further evidence on these issues.

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Table 1

Selected characteristics for sample of 1195 public companies filing for Chapter 11 between September 1979 and December 1991, based on listings compiled by the SEC.

		Firms on Compustat	Firms not on Compustat	Total
Number of firms		902	293	1195
Percent		75.5%	24.5%	100.0%
<hr/>				
Selected Characteristics:				
Total assets at filing (\$ millions)	Mean	199.20	111.02	182.95 *
	Median	15.90	5.50	13.2 *
Total assets / total liabilities at filing	Mean	1.67	1.49	1.64 *
	Median	1.02	0.98	1.00 *
Time in bankruptcy (months)	Mean	19.96	21.07	20.07
	Median	16.09	17.89	16.14
Firms with public debt outstanding at filing	Number of firms	255	42	297
	Percent	28.3%	14.3%	24.9%

Data for total assets, total liabilities and public debt outstanding was obtained from the SEC.

Time in bankruptcy is based on 767 firms for which a reorganization plan was confirmed or the firm was liquidated by June 1993.

* indicates mean (median) significantly different between groups based on t-test (Wilcoxon test).

Table 2a

Outcomes of filings for firms included vs. not included on Compustat:

	Emerged Public	Emerged Private	Merged	Liquidated	Inactive	Unresolved	Total
Firms on Compustat	294 32.6%	148 16.4%	63 7.0%	152 16.9%	113 12.5%	132 14.6%	902 100.0%
Firms not on Compustat	16 5.5%	45 15.4%	13 4.4%	36 12.3%	110 37.5%	73 24.9%	293 100.0%
Total	310 25.9%	193 16.2%	76 6.4%	188 15.7%	223 18.7%	205 17.2%	1195 100.0%

Outcomes of filings for firms on Compustat by year of filing:

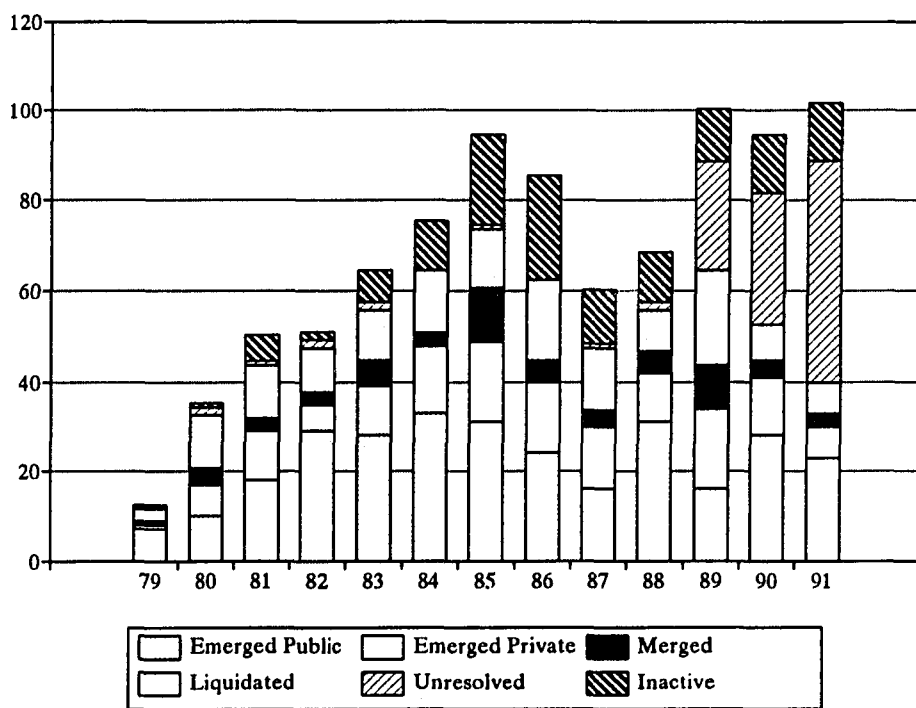


Table 2b

SIC Classification (SIC Codes)	Emerged Public	Emerged Private	Merged	Liquidated	Inactive or Unresolved	Total
Agriculture (0100-0971)	1 16.7%	1 16.7%	0 0.0%	0 0.0%	4 66.7%	6 100.0%
Mining, Oil & Gas (1000-1499)	42 44.7%	18 19.1%	7 7.4%	10 10.6%	17 18.1%	94 100.0%
Construction (1500-1799)	6 21.4%	8 28.6%	0 0.0%	2 7.1%	12 42.9%	28 100.0%
Manufacturing (2000-3999)	114 33.0%	63 18.3%	20 5.8%	63 18.3%	85 24.6%	345 100.0%
Transportation, Communication, Electric (4000-4971)	23 32.4%	9 12.7%	6 8.5%	17 23.9%	16 22.5%	71 100.0%
Wholesale Trade (5000-5199)	13 26.5%	6 12.2%	3 6.1%	13 26.5%	14 28.6%	49 100.0%
Retail Trade (5200-5999)	37 30.1%	18 14.6%	13 10.6%	23 18.7%	32 26.0%	123 100.0%
Finance, Insurance & Real Estate (6000-6799)	23 33.3%	14 20.3%	1 1.4%	7 10.1%	24 34.8%	69 100.0%
Services (7000-8999)	33 28.9%	11 9.6%	13 11.4%	17 14.9%	40 35.1%	114 100.0%
Public Administration (9100-9721)	2 66.7%	0 0.0%	0 0.0%	0 0.0%	1 33.3%	3 100.0%
Total	294	148	63	152	245	902

Table 3. Summary of hypotheses and effect on probability of reorganization or merger versus liquidation.

Variable	Effect on probability of reorganization vs. liquidation	Effect on probability of merger vs. liquidation
<i>Industry conditions</i>		
illiquid asset markets -> low liquidation values	industry leverage	+
	industry change in ROA	-
	industry concentration	+
illiquid assets markets -> firms cannot finance reorganization plans through asset sales	industry leverage	-
	industry change in ROA	+
	industry concentration	-
high industry growth -> good prospects for or profitability reorganized firm	industry employment growth	+
	industry change in ROA	+
<i>Pre-bankruptcy capital structure</i>		
shareholder risk shifting incentives lead to overinvestment OR shareholders would receive no distribution in liquidation and prefer reorganization	leverage	+
	long term / total debt	+
	liquidity	+
high priority creditors increase pressures to liquidate	* secured debt	-
	* bank debt	-
coordination problems prevented out of court restructuring	public debt	+
<i>Management characteristics</i>		
Management may be biased toward reorganization	CEO retained	+
	* managerial stock ownership	+
Monitoring of management by board members reduces overinvestment	fraction of outside board members	-
New board members are aligned with creditor interests	fraction of newly appointed board members	-
<i>Pre-bankruptcy firm characteristics</i>		
Bankruptcy was due to overleveraging rather than operating problems	change in ROA - industry median	+
value of intangible assets is lost in liquidation	tangible assets/total assets	+
	SIC between 3400 and 4000	+
size (scale effect in bankruptcy costs)	total assets at filing	+
diversity (avoiding industry constraints)	number of 2 digit SIC codes	+

* Variables not available for sample of 902 companies.

ROA: Earnings before interest, taxes & depreciation / total assets

Table 4. Means (medians) of variables used for multinomial logit analysis, shown by outcome group.

Outcome Group:	Emerged Public		Emerged Private		Merged		Liquidated	
	N	Mean (Median)	N	Mean (Median)	N	Mean (Median)	N	Mean (Median)
<i>Industry conditions:</i>								
Industry leverage [total liabilities/total assets]	294	0.56 (0.54)	148	0.57 (0.56)	63	0.58 (0.58)	151	0.57 (0.56)
Industry change in ROA [% change in EBITD/total assets]	294	0.01 4 (0.01) 4	148	0.01 4 (0.01) 4	63	0.01 (0.02)	151	0.01 1,2 (0.02) 1,2
Industry concentration [asset herfindahl]	294	0.08 (0.05)	148	0.08 (0.05)	63	0.08 (0.05)	151	0.08 (0.06)
Industry employment growth [% change in # of employees]	294	0.02 4 (0.02) 4	148	0.02 4 (0.02) 4	63	0.03 (0.03)	151	0.04 1,2 (0.04) 1,2
<i>Pre-bankruptcy capital structure:</i>								
Leverage at filing [total liabilities/total assets]	292	2.32 (1.05) 4	144	1.21 (1.02)	63	1.43 (1.11)	152	1.20 (0.99) 1
Long term debt/total debt: 2nd fiscal year end before filing	271	0.40 3,4 (0.42) 3,4	126	0.36 (0.38)	56	0.31 1 (0.29) 1	139	0.32 1 (0.30) 1
Long term debt/total debt: fiscal year end before filing	249	0.29 4 (0.25) 4	97	0.27 4 (0.22) 4	43	0.29 4 (0.23)	90	0.19 1,2,3 (0.10) 1,2
Liquidity: 2nd fiscal year end before filing	252	1.54 (1.31)	115	1.48 (1.22)	54	1.60 (1.26)	135	1.48 (1.28)
Liquidity: fiscal year end before filing	229	1.05 (0.92)	85	1.07 (0.92)	42	1.00 (0.89)	85	0.92 (0.84)
Public debt outstanding at filing [dummy]	294	0.40 2,3,4	148	0.23 1	63	0.22 1	152	0.16 1

- 1: Mean (median) significantly different from Emerged Public group based on t-test (wilcoxon test) at 0.05 lev
2: " Emerged Private "
3: " Merged "
4: " Liquidated "

Table 4 - continued

Outcome Group: Variable:	Emerged Public		Emerged Private		Merged		Liquidated	
	N	Mean (Median)	N	Mean (Median)	N	Mean (Median)	N	Mean (Median)
<i>Management characteristics</i>								
CEO retained [dummy]	129	0.71	71	0.61	38	0.61	81	0.58
Fraction of outside board members	162	0.38 (0.50)	90	0.31 (0.24)	43	0.35 (0.25)	103	0.32 (0.25)
Fraction of newly appointed board members	118	0.26 ³ (0.11) ³	50	0.35 (0.24) ³	28	0.49 ^{1,4} (0.55) ^{1,2}	55	0.33 ³ (0.27)
<i>Pre-bankruptcy firm characteristic</i>								
Change in ROA - industry median: 2nd fiscal year end before filing	255	-0.07 (-0.03)	111	-0.03 (-0.05)	51	-0.07 (-0.05)	126	-0.03 (-0.04)
Change in ROA - industry median: fiscal year end before filing	243	-0.08 (-0.05)	94	-0.08 (-0.07)	41	-0.13 (-0.06)	91	-0.07 (-0.05)
Total assets at filing	293	404.68 ^{2,3,4} (29.90)	144	122.33 ¹ (17.80)	63	55.52 ¹ (26.51)	152	70.80 ¹ (8.65)
Number of 2 digit SIC codes	223	1.98 ⁴ (2.00) ^{3,4}	98	1.91 (2.00)	47	1.72 (1.00) ¹	110	1.67 ¹ (1.00) ¹
Tangible/total assets: 2nd fiscal year end before filing	262	0.80 (0.78)	121	0.74 (0.75)	53	0.76 (0.75)	138	0.80 (0.81)
Tangible/total assets: fiscal year end before filing	240	0.94 (0.82)	89	0.86 (0.82)	38	0.85 (0.86)	89	0.84 (0.86)
SIC between 3400 & 4000 [dummy]	294	0.21 (0.00)	148	0.25 (0.00)	63	0.24 (0.00)	152	0.28 (0.00)

- 1: Mean (median) significantly different from Emerged Public group based on t-test (wilcoxon test) at 0.05 lev
2: " Emerged Private "
3: " Merged "
4: " Liquidated "

Table 5. Multinomial logit regressions for probability of liquidation.

Outcome:	(1) N = 657			(2) N = 506		
	Emerged Public	Emerged Private	Merged	Emerged Public	Emerged Private	Merged
Intercept	-0.946 2.300	-2.652 a 10.560	-0.791 1.620	-1.757 b 4.980	-3.580 a 10.260	-0.990 1.530
Industry leverage	3.868 a 12.830	4.311 a 9.890	2.916 a 7.600	3.464 a 7.810	4.612 a 8.040	3.084 a 6.280
Industry change in ROA	3.178 0.350	1.742 0.060	-3.706 0.480	1.442 0.070	2.498 0.100	-6.129 1.020
Industry concentration	-1.594 1.120	-1.801 0.790	-1.669 1.190	0.114 0.000	-0.605 0.070	-2.468 1.640
Industry employment growth	2.491 2.060	1.569 0.480	0.568 0.100	2.805 2.050	-0.379 0.020	-0.597 0.080
Long term / total debt				-0.008 0.000	-0.657 0.840	-0.233 0.190
Leverage at filing	-0.040 0.220	-0.005 0.080	-0.043 0.230	-0.066 0.400	-0.014 0.080	-0.029 0.160
Public debt outstanding at filing	-0.612 b 4.020	-0.883 b 4.720	-0.539 b 3.520	-0.575 c 3.100	-0.859 b 3.550	-0.452 1.960
Log total assets at filing	-0.243 a 13.320	-0.057 0.410	-0.164 a 6.360	-0.328 a 17.840	-0.041 0.150	-0.234 a 9.190
Tangible assets/ total assets				0.287 0.820	-0.171 0.120	-0.396 1.230
SIC between 3400 and 4000	0.191 0.510	0.243 0.440	0.212 0.650	0.212 0.520	0.527 1.690	0.143 0.220
Change in ROA - industry median				1.033 b 4.480	0.485 0.470	1.240 b 5.250
Data available on Compustat preceding filing	-1.342 a 24.570	-1.101 a 9.320	-0.938 a 11.320			

Table 5 - continued. Multinomial logit regressions for probability of liquidation.

	(3) N = 274			(4) N = 274		
	Emerged Public	Emerged Private	Merged	Emerged Public	Emerged Private	Merged
Intercept	-2.675 b 5.240	-3.134 b 4.750	-1.436 1.530	-4.276 a 9.530	-4.343 a 5.830	-4.201 a 9.070
Industry leverage	5.516 a 8.740	5.731 a 7.030	4.107 b 5.070	7.254 a 11.110	5.272 b 4.040	6.898 a 10.530
Industry change in ROA	-3.291 0.170	0.295 0.000	-8.287 0.980	-1.313 0.020	7.956 0.370	-8.342 0.750
Industry concentration	3.286 1.560	-0.105 0.000	-0.321 0.010	4.555 c 2.850	-0.594 0.020	-0.540 0.030
Industry employment growth	8.885 a 8.370	2.957 0.560	2.449 0.620	1.733 0.260	-2.957 0.380	-1.398 0.150
Long term / total debt	0.818 1.200	-0.302 0.100	0.801 1.160	1.225 2.110	-0.820 0.540	0.590 0.470
Leverage at filing	-0.292 1.560	0.036 0.050	-0.042 0.070	0.119 0.480	0.129 0.500	0.057 0.100
Public debt outstanding at filing	-0.572 1.440	-0.055 0.010	-0.084 0.030	-0.169 0.110	0.659 1.180	0.446 0.830
Log total assets at filing	-0.314 a 5.870	-0.050 0.100	-0.226 c 3.240	-0.608 a 14.600	-0.213 1.490	-0.469 a 9.580
Tangible assets/ total assets	0.277 0.310	-1.130 c 2.630	-0.564 1.160	0.674 1.260	-0.405 0.260	0.721 1.310
Change in ROA - industry median	0.933 1.140	-0.016 0.000	0.789 0.750	1.204 1.790	0.123 0.010	0.228 0.050
Retained CEO	-0.443 1.610	-0.586 1.660	-0.619 c 3.090			
Fraction of board newly appointed				0.579 0.960	1.943 a 7.580	1.069 c 3.260

Essay #3

"Asset Sales by Companies Entering Chapter 11 Bankruptcy"

Research examining how firms respond to financial distress has consistently found that asset sales are an important aspect of corporate restructuring. For example, John, Lang & Netter (1992) study responses to earnings declines and find that firms retrench quickly and, on average, increase their focus. Asquith, Gertner & Scharfstein (1991) document a high frequency of asset sales for firms experiencing problems meeting scheduled debt payments, and suggest these sales are especially important for firms which successfully avoid bankruptcy. Additional research by Ofek (1993) and by Brown, James & Ryngaert (1992) also finds that firms, particularly those that are highly leveraged, respond to distress with operational changes including asset sales.

Earlier empirical studies of asset sales by healthy firms have analyzed gains to the selling company from asset sales by documenting significantly positive announcement period abnormal returns to common stock of the seller.¹ John and Ofek (1992) summarize this research and examine the sources of these gains; they find evidence supporting common arguments that the assets sold have a better "fit" and are likely to perform better with the buyer, and also that divestitures allow the seller to focus on and improve the performance of remaining operations. However, while the empirical evidence consistently describes asset sales as value increasing transactions for healthy firms, firms in distress may have additional incentives to sell assets which may or may not lead to efficient decisions.

Jensen (1989) and Wruck (1990) describe potentially beneficial effects of financial distress; firms which cannot meet their financial obligations are forced to make corrective changes in corporate policies. Debt service obligations may induce poorly performing firms to sell assets and divest unprofitable operations, and lead to efficient downsizing of distressed companies.

¹ See for example Alexander, Benson & Kampmeyer (1984), Jain (1985) and Hite, Owers & Rogers (1987).

This scenario is consistent with the gains from asset sales described above. Assets are transferred to more productive uses, and the seller can improve remaining operations.

In contrast to these value increasing transactions, asset sales of distressed firms may result from two types of problems; informational asymmetries may be severe for distressed companies, and conflicts among creditor groups may increase as leverage increases. Firms in distress are likely to need additional cash, but given these problems, the costs of security issuance will be high. Asset sales can serve as an alternative to debt rescheduling or the sale of new securities. However, these sales may enable selling firms to keep investing in poor operations without monitoring from capital markets. Shleifer & Vishny (1992) also point out that distressed firms may sell assets at a substantial discount when potential buyers are also distressed. Conflicts among creditors can also lead to inefficient asset sales when higher priority creditors have incentives to force a sale of assets which results in wealth transfers rather than increases in value.

Recent empirical work supports the idea that assets sales of healthy firms differ from those of distressed firms. Lang, Poulsen & Stulz (1993) study a sample of non-bankrupt companies and find that the seller's financial situation and the use of proceeds to repay creditors are important determinants of the stock price reaction to announcements of asset sales. Brown, James & Mooradian (1993) study asset sales of distressed companies, some of which later filed for Chapter 11, and find that abnormal returns are lower when proceeds are used to repay creditors and for firms that eventually file for bankruptcy. They interpret their results as supportive of hypotheses that creditors influence decisions to sell assets.

This paper adds to these recent studies in several respects by considering asset sales of companies both before and during bankruptcy. The paper studies divestiture decisions of 50

large public companies which filed for Chapter 11. These companies often have several different lines of business prior to distress. For each company in sample, the analysis considers all asset sales that take place during the period three years prior to bankruptcy through the entire time in Chapter 11. This gives us an opportunity to study differences in the types of assets sold and timing of sales, and how these relate to theories about the motivations for asset sales.

The analysis of divestitures in this paper shows that restructuring these firms is often a lengthy and complicated process. 24 of the 50 firms announced 3 or more asset sales, with a maximum of 28 asset sales for Allegheny International. Prior to bankruptcy, press articles sometimes describe companies which sell their "crown jewels" to raise cash, suggesting that firms respond to creditor pressures by stripping off their most marketable assets early in the process. For the sample studied here, prior to bankruptcy, sales of non-core assets are more frequent than sales of core assets, consistent with earlier research (for example, John, Lang & Netter) showing distressed firms often increase their focus on core operations. However, the stock price reaction is positively related to the sale of core assets, suggesting that, from the stockholders' perspective, refocusing efforts are not viewed as favorably as restructuring of core businesses. Before bankruptcy there is also a relatively higher frequency of sales of profitable assets than assets responsible for losses. Results from cross sectional analysis of abnormal returns for asset sales before bankruptcy are consistent with findings of Brown, James & Mooradian (1993) that firms do seem to respond to creditor pressure. The stock price reaction is significantly positively related to the selling firm's working capital and proportion of debt which is long term, which should be associated with a less immediate need for cash and less pressure from creditors.

Once in bankruptcy, however, motivations for asset sales may change. Firms may be less

responsive to creditor pressures forcing asset sales once the automatic stay provisions of the Bankruptcy Code are in effect. Firms also have additional sources of short term financing available once they enter Chapter 11², alleviating the need to sell assets at a discount to raise cash. Proceeds from asset sales also are less likely to go immediately to pay creditors, as cash often remains in escrow until the reorganization is complete. Also, the firm's difficult financial situation is likely to be well known at this point. The cross sectional analysis of abnormal returns for asset sales during bankruptcy is consistent with hypotheses that motives for asset sales have changed; working capital is significantly negatively related to the abnormal return and the proportion of long term debt is no longer significant. Furthermore, the sale of core assets is now significantly negatively related to the abnormal return, perhaps reflecting negative information that the firm is unable to revive its core businesses.

The contrasting effects for asset sales before and during bankruptcy are consistent with the idea that, particularly prior to bankruptcy, agency conflicts may lead to asset sales which are not necessarily value enhancing. The paper proceeds as follows. The next section describes in greater detail the implications of hypotheses about motives for asset sales for the observed announcement effects. Section 3 describes the sample selection and summarizes characteristics of the divestitures and selling firms. Section 4 provides a cross sectional analysis of the stock price reactions to asset sale announcements, and section 5 concludes.

2. Hypotheses and empirical implications.

The use of asset sales as a substitute for external financing has been suggested by several authors including Hite, Owers & Rogers (1987). Lang, Poulsen & Stulz (1993) point out that

² See Rohman & Policano (1989) for a description of debtor in possession (DIP) financing.

this source of funds is likely to be important to distressed firms due to informational asymmetries and debt overhang problems. These sales may convey positive information that the firm has succeeded in selling assets, but may also convey negative information about the firm's financial condition and need for funds. Furthermore, Shleifer & Vishny (1992) show how the financing needs of distressed firms may lead them to sell assets at a substantial discount; this is because the market for firm's assets will be illiquid when potential buyers in the same industry are also distressed, which is likely when problems are industry-wide.

The ability of creditors to force the liquidation of assets when a firm has insufficient revenues to meet its current payments may also lead to transactions which are not necessarily value maximizing. Higher priority creditors have little incentive to continue risky investment if they would be paid off from the proceeds of asset sales. Creditors also are not likely to consider private benefits or the value of noncontractable control rights that would be available to management if the assets were retained, as described by Diamond (1989) and Hart & Moore (1990). Gertner & Scharfstein (1991) also show that senior lenders are influential to liquidations decisions. The sale of assets in response to creditor pressures is likely to be less beneficial or even harmful to shareholders. They will be more common when creditors have greater influence, for example the firm has defaulted or is about to default on its debt. As Brown, James & Mooradian (1993) point out, in these instances we will observe that proceeds of the sale are used to repay creditors.

Despite these potential conflicts, it is still possible that distressed firms selling assets are taking corrective actions in response to their performance decline. A stated objective at the time of sale is frequently to increase the focus of the selling firm. A growing literature suggests that increases in focus are associated with increases in value. Comment & Jarrell (1992) show that

increases in focus are associated with increases in shareholder wealth, while Lang & Stulz (1993) document a negative relationship between Tobin's Q and diversification.³ This view of value enhancing changes through the benefits of increased focus contrasts with the financing view described above; the financing motive for asset sales suggests that firms will sell whichever assets are most marketable in order to raise sufficient cash, and to allow firm to keep operating regardless of the prospects for the retained core assets.

Finally, decisions to sell assets may be related to managerial incentives.⁴ Shleifer & Vishny (1989) and Stulz (1990) develop models where managers may make suboptimal investment decisions when concerned about their own survival, while Boot (1992) suggests managers will have incentives to hold on to losing projects when divestiture of the assets would adversely affect perceptions of own abilities. Consistent with these ideas, Weisbach (1993) finds that the probability of divesting an acquisition that is sold at a loss or considered unprofitable by the press increases around a management change.

The implications of the roles for asset sales for the stock price reactions to announcements of sales are described separately for firms prior to bankruptcy and for firms subsequent to filing:

Asset sales prior to bankruptcy:

The financing hypotheses suggest that firms with more immediate liquidity needs are more likely to sell off their most marketable assets to raise cash. Stock price reactions will be lower

³ Liebeskind & Opler (1992) also discuss the potential benefits versus the costs of corporate refocusing.

⁴ Tehranian, Travlos & Waegelein (1987) find evidence consistent with the idea that sell-offs can be motivated by managerial self-interest, particularly when sell-offs increase reported profits and, hence, management compensation.

if the announcement reveals information about the firm's need for financing, and so are expected to be lower for firms with insufficient working capital and a greater proportion of short term debt coming due. If assets sold in poorly performing industries are more likely to be sold at a discount in illiquid markets, the stock price reaction will also be lower. Firms which sell assets unrelated to their primary business may benefit from increases in focus. Alternatively, it may be easiest for firms in need of financing to strip off peripheral businesses, particularly if they have been performing well and are more marketable, to enhance the likelihood the core businesses will survive regardless of their prospects.

Asset sales in response to creditor pressures, to the detriment of shareholders, are more likely when creditor influence over investment decisions is greater and when proceeds are used to repay creditors. This suggests lower stock price reactions when it is known that proceeds will go to pay creditors. Creditor influence is likely to be greater for firms with lower liquidity and relatively more short term debt.

The proximity of the asset sale to bankruptcy is also expected to affect the stock price reaction, though the direction of this effect is not clear. Early asset sales may reveal more information about the firm's financial condition and its need to raise cash, suggesting more negative responses early on. The firm's situation is likely to be well known closer to bankruptcy and after reporting losses. However, responses will be more negative closer to bankruptcy if, as difficulties continue, it becomes clear the firm will be unable to avoid bankruptcy. Furthermore, pressure from creditors will be greater closer to bankruptcy for firms which pledged their free assets to lenders as they became distressed (Asquith, Gertner & Scharfstein (1991) note this tendency). Finally, CEO changes become more likely closer to bankruptcy. The stock price reaction may be negatively related to the tenure of the CEO in office at that time

if replacement CEOs are viewed as more likely to take corrective actions.

Asset sales during bankruptcy:

As described above, once in bankruptcy, firms may be less responsive to creditor pressures to liquidate assets given the automatic stay provisions of the Bankruptcy Code. Therefore, the firm's liquidity and proportion of short term debt are no longer expected to be related to the stock price reaction. The use of proceeds from asset sales also changes in bankruptcy; proceeds are typically put into escrow to fund the reorganization (eventually reaching creditors) and not available for general use.⁵

Firms in bankruptcy are also less subject to problems obtaining short term financing given the availability of debtor in possession financing. Firms may be less subject to pressures to strip off their most marketable assets; so the sale of unrelated business may be viewed as part of productive efforts for the firm to emerge. The firm's financial situation is also well known at this point, though asset sales may reveal information about the likelihood the firm will successfully emerge from bankruptcy.

3. Sample Description.

This study focuses on divestiture decisions of large public companies that filed under Chapter 11. An initial listing of companies filing after September 1979 with total liabilities greater than \$100 million was compiled from unpublished SEC listings. 100 of these firms had completed their bankruptcy reorganization, either confirming a reorganization plan or

⁵ In some cases, proceeds are paid directly to secured creditors having a lien on those assets.

liquidating, by December 1992. From this group, 50 firms which remained listed on the CRSP tapes from the time three years prior to bankruptcy until the firm left bankruptcy are used as the sample for this paper.

Table 1A describes selected characteristics of the final sample for the three years prior to filing for bankruptcy. The median firm size, measured by total assets, decreases by the year prior to filing, while book value leverage, measured by total liabilities divided by total assets, increases closer to filing. Firms appear to underperform industry groups based on three digit SIC codes, and the number of firms experiencing operating losses increases from 13% to 40% by the fiscal year end prior to filing. Table 1B gives several measures of the extent of asset restructuring that takes place both before and during bankruptcy. The median decline in total assets from three years before filing to the final year of bankruptcy is 61%; the declines in total revenues and the number of employees are similar. The substantial downsizing that occurs for these distressed firms is consistent with findings of Asquith, Gertner & Scharfstein (1991) and Hotchkiss (1993).

For each of the 50 sample firms, 10K reports from 3 years prior to bankruptcy through the last year in bankruptcy were used to determine all asset sales during this time period. As available, bankruptcy court documents (disclosure statements) and 8K reports listed on the LEXIS database were used to supplement this information. For each divestiture, the NEXIS database was searched for the first newswire or Wall Street Journal article reporting the sale or agreement for sale. Divestitures for which there was no news story and for which the 10K and 8K filings did not report the date of agreement for sale were eliminated.

Table 2 summarizes the number of divestitures found for each firm. Six of the 50 firms had no reported divestitures. The remaining firms had an average (median) of 4.3 (3) reported

divestitures, with a maximum of 28 divestitures for Allegheny International, for a total of 191 divestiture events. The number of events for which stock return data is available from CRSP around the divestiture announcement date is also shown.⁶

Information from each of the sources described above was used to determine a number of variables characterizing the divestitures. The three digit SIC code best describing the divested asset was determined from descriptions in 10Ks and news stories. The SIC code of the divested asset was compared to the firm's primary SIC code as reported in Dun's Million Dollar Directory before bankruptcy, to determine whether the divested asset matched the core business of the firm. As shown in table 2, Of the 139 divestiture events for which stock return data is available around the announcement date, 90 events occurred prior to bankruptcy and 58 events occurred during bankruptcy. The frequency of sales of related assets, matching the firm's primary 2 digit or 3 digit SIC code, appears higher once the firm is in bankruptcy. This is consistent with previous empirical work showing that distressed firms often refocus on core operations. Restructuring of core operations through asset sales appears more common after filing for Chapter 11.

The divested asset was also characterized as successful or unsuccessful using classifications similar to Weisbach (1993); unsuccessful divested assets are those described as having operating losses or for which an accounting loss was reported on the sale. The gain or loss at sale was reported for only 79 of the 191 events, with 31 firms reporting a gain, 35 reporting a loss, and 13 reporting a sale at book value. The sale of projects classified as successful appears as a larger proportion of all events before bankruptcy than during bankruptcy. Finally, the size of

⁶ Shleifer & Vishny (1989) and Amihud & Lev (1981) suggest that firms will make diversifying acquisitions as performance declines; this type of behavior was rarely observed for firms in this sample.

the divested was calculated as the reported purchase price divided by the total market value of equity at the fiscal year end preceding the divestiture.

4. Stock price reactions to announcements of asset sales.

Stock price reactions to asset sales are measured as market model residuals. Common stock returns from -200 to -20 days before the announcement are used to estimate the model.⁷ Table 3 reports the abnormal common stock returns for the full sample and also separately for the events which occur before bankruptcy and during bankruptcy. Individual returns for the 10 day period surrounding the event, as well as cumulative returns, are shown. The announcement date is the first newswire or Wall Street Journal report of the transactions, or if earlier, the date of agreement for sale reported in an 8K or 10K statement. For the full sample, the significantly positive abnormal return of 0.85% at the announcement date and of 1.71% for days -1 to 0 are consistent with findings of previous research. Similar results, though smaller in magnitude, are found for the sample of events prior to bankruptcy.

In order to consider the hypotheses describing the motives for asset sales, a cross sectional analysis of the abnormal returns is provided in table 4. The dependent variable is the two day abnormal return for days -1 to 0 using the market model. Three regressions are shown for each set of variables, the first using the full sample, the second for events before bankruptcy and the third for events in bankruptcy. Table 4a uses all available observations. Table 4b is based on a smaller set of observations using only the first two divestitures available for each firm; this is done to provide results more comparable to Brown, James & Mooradian (1993) and also to

⁷ Particularly near an event such as bankruptcy, the parameters of the market model may not be stable. However, results based on market adjusted returns are very similar to those shown in table 3 and are not reported.

lessen problems due to dependence and the influence of individual firms such which have a larger number of divestiture events.

The first variable in each regression, operating income divided by total assets, provides a measure of the firm's financial condition which does not appear significantly related to the abnormal announcement return. Industry adjusted measures, as well as alternative measures of financial condition such as operating margin, were also not significant. This contrasts with findings of Lang, Poulsen & Stulz (1993) that the financial condition of the seller is an important determinant of the stock price reaction. The sample design may explain this difference in findings, since the firms in this sample are all quite distressed and all enter Chapter 11.

Each regression also uses a dummy variable to indicate whether the divested asset matches either the 3 digit or 2 digit SIC code of the firm's primary business before bankruptcy. For firms prior to bankruptcy, this variable is significantly positively related to the abnormal return. This result may be surprising given that distressed firms have been shown to more frequently act to refocus on their core operations, and suggests that divestitures of assets related to the firm's core business are more favorable to stockholders than divestitures of unrelated assets. This finding also contrasts with previous work (for example John & Ofek) that finds the abnormal announcement return is significantly higher when divesting an unrelated division. This finding is consistent with the idea that firms try to raise cash by selling peripheral businesses while attempting to preserve core operations, whether or not these are value enhancing transactions. For firms in bankruptcy, where these financing incentives may no longer apply, the opposite effect is observed; the dummy variable for sales of related assets is negative and significant based on 3 digit SIC codes. The sale of core businesses in bankruptcy may reflect an inability to turn around primary businesses, or convey negative news about prospects for

emerging from bankruptcy and preserving value for shareholders.

Firms' attempts to raise cash may also lead them to strip off their most marketable assets, particularly those that are performing well, early on. However, a dummy variable based on the success of the asset sold, as defined above, was not significant. Though not reported here, dummy variables for firms which announced a gain (or loss) on the sale were also not significant.

The next four variables are related to hypotheses of creditor pressures to sell assets. Prior to bankruptcy, forced sales of assets are less likely for firms with greater liquidity, measured by working capital/total assets, and a greater proportion of long term debt; these variables are related to higher abnormal returns for the events before bankruptcy. These results are also consistent with the financing hypotheses, in that announcement returns are higher for firms which do not appear to have as strong an immediate need for cash.⁸ The number of months remaining until filing does not appear significant, though as described above the expected direction of this effect was not clear. Finally, though Shleifer & Vishny (1992) suggest that asset sales in poorly performing industries are more likely to be sold at a discount, variables measuring industry profitability (including the industry change in return on assets shown in table 4) were not significant.

Different results appear for events during bankruptcy where the financing needs and creditor pressures to sell assets have changed. The liquidity variable is significant but is now negative, and the proportion of longer term debt is no longer significant. As found above for the

⁸ For the smaller sample shown in table 4B, which is more comparable to the sample of Brown, James & Mooradian (1993), the results for the liquidity variable appear weaker though the number of observations has substantially dropped. A dummy variable indicating proceeds were used directly to pay creditors was also not significant.

relatedness variable, this is consistent with differences in perceptions of asset sales before versus during bankruptcy. The number of months remaining until bankruptcy (a negative value for firms in bankruptcy) is significantly negative, i.e. abnormal returns appear higher later in bankruptcy.

Finally, the regressions also control for divestiture size, measured as the purchase price divided by the total market value of equity of the seller, as well as for firm size measured by total assets. The full sample results show announcement returns are higher for larger firms and for sales which are larger relative to the firm's equity, which would be expected to have a greater impact.

5. Conclusions.

This paper provides evidence consistent with earlier research on motivations for asset sales prior to bankruptcy. In particular, the results are consistent with models of forced asset sales by creditors, which may or may not be value maximizing transactions. The results are also consistent with descriptions of the use of asset sales as a means of financing. Abnormal returns to the seller's common stock at the announcement of asset sales are higher for firms with greater liquidity and a greater proportion of longer term debt, which suggests these firms are less subject to creditor pressures for asset sales or more immediate needs to raise cash.

The contribution of this paper comes from two other sets of results. First, abnormal returns for firms selling assets before bankruptcy are contrasted to those for firms selling assets during bankruptcy. The creditor pressures and financing needs described for firms prior to bankruptcy are not expected to hold during bankruptcy; the cross sectional analysis shows that the variables which appear as important determinants of abnormal returns before bankruptcy are no longer

significant or significant but of opposite sign for firms in bankruptcy. Second, the paper provides greater detail concerning the type of assets sold by distressed firms and the timing relative to bankruptcy. The sale of assets not related to the firm's primary business is more common prior to bankruptcy; however, abnormal announcement returns are positively related to the sale of related assets. Again, these effects differ from those found for firms in bankruptcy.

Overall, the results are supportive of theories describing the incentives of distressed firms to sell assets, and in particular that sales of assets by distressed firms may result from problems related to information asymmetries and conflicts of interests between creditors and shareholders. These motivations may offset some of the positive gains from asset sales typically observed for samples of healthy firms.

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Table 1A

Selected characteristics of sample of 50 public companies filing for Chapter 11. Data is shown for the three fiscal year ends preceding bankruptcy. All data is obtained from Compustat. Industry adjusted measures subtract the median of an industry portfolio consisting of all other Compustat firms with the same 3 digit SIC code.

		Year -3	Year -2	Year -1
Total assets (\$ millions)	Mean	668.07	652.17	573.62
	Median	391.07	432.81	302.46
Total liabilities/ total assets	Mean	0.750	0.811	0.998
	Median	0.704	0.774	0.952
Total liabilities/ total market value	Mean	0.730	0.809	0.872
	Median	0.773	0.860	0.925
EBITD/total assets	Mean	0.071	0.053	0.014
	Median	0.076	0.058	0.029
EBITD/total assets - industry	Mean	-0.037	-0.056	-0.092
	Median	-0.015	-0.063	-0.083
EBITD/sales	Mean	0.090	0.070	0.020
	Median	0.062	0.047	0.035
EBITD/sales - industry	Mean	0.008	-0.013	-0.059
	Median	-0.005	-0.029	-0.042
Percentage of firms with negative EBITD		13.0%	19.1%	40.0%

EBITD: Earnings before interest, taxes and depreciation.

Total market value is defined as the book value of debt plus market value of equity.

Table 1B

Measures of asset restructuring for sample of 50 public companies filing for Chapter 11. Year -3 is the 3rd fiscal year end prior to filing, Year of filing is the fiscal year during which the firm filed, and Year of confirmation is the fiscal year during which a plan of reorganization was confirmed. Data is obtained from Compustat & 10K reports.

		Year -3	Year of filing	Year of confirmation
Total assets (\$ millions)	Mean	668.07	483.75	359.95
	Median	391.07	267.89	134.97
	N	50	44	43
Total revenues (\$ millions)	Mean	725.57	512.06	440.08
	Median	491.04	268.02	180.27
	N	50	43	43
Number of employees (thousands)	Mean	6.65	4.24	3.40
	Median	5.25	2.70	1.70
	N	49	42	42

		Percentage change from year i to year j:		
		3 to filing	Filing to confirmation	3 to confirmation
Change in total assets	Mean	0.18	0.22	0.45
	Median	0.24	0.31	0.61
	N	44	39	41
Change in total revenues	Mean	0.25	-0.61	0.30
	Median	0.32	0.09	0.53
	N	43	39	41
Change in number of employees	Mean	0.33	-0.34	0.43
	Median	0.42	0.18	0.57
	N	42	37	40

Table 2

Summary of divestiture data.

i, number of divestitures	Number of firms reporting i divestitures	Number of firms with i events & stock returns available
0	6	17
1	10	10
2	10	6
3	7	5
4	5	3
5	2	1
6	1	1
7	1	2
8	0	1
9	2	1
10	4	2
11	1	0
28	1	1
Total number of firms:	50	50
Total number of divestiture events:	191	139

Frequency of divestitures of related assets:

2 digit SIC code of divested asset compared to firm's primary SIC code.

		3 year period prior to bankruptcy	during bankruptcy	Total
SIC of divested asset not equal to primary SIC	N	68	25	93
	%	74.7%	52.1%	
SIC of divested asset equal to primary SIC	N	23	23	46
	%	25.3%	47.9%	
Total		91	48	139
		100.0%	100.0%	

(continued)

Table 2 - continued

Frequency of divestitures of related assets:

3 digit SIC code of divested asset compared to firm's primary SIC code.

		3 year period prior to bankruptcy	during bankruptcy	Total
SIC of divested asset not equal to primary SIC	N	84	34	118
	%	92.3%	70.8%	
SIC of divested asset equal to primary SIC	N	7	14	21
	%	7.7%	29.2%	
Total		91	48	139
		100.0%	100.0%	

Frequency of divestitures of "unsuccessful" assets:

Divested assets classified as "unsuccessful" if new reports or 10Ks described operating losses or an accounting loss was reported for the sale.

		3 year period prior to bankruptcy	during bankruptcy	Total
Unsuccessful	N	38	26	64
	%	41.8%	54.2%	
Successful	N	53	22	75
	%	58.2%	45.8%	
Total		91	48	139
		100.0%	100.0%	

Table 3

Average percentage stock-price reactions to the announcement of an asset sale. The abnormal returns are the market model prediction errors. Day 0 is the announcement day. The sample consists of 140 asset sales of 44 companies.

Days relative to the event day	Full Sample		Asset sales before bankruptcy		Asset sales during bankruptcy
-5	0.04 (0.51)		-0.25 (0.51)		-0.07 (0.50)
-4	-0.63 (0.48)	c	-0.99 (0.46)		-0.35 (0.52)
-3	0.15 (0.51)		0.41 (0.48)		0.01 (0.58)
-2	0.45 (0.51)		1.25 (0.46)		0.03 (0.58)
-1	0.85 (0.56)		0.59 (0.56)	c	1.03 (0.56)
0	0.85 (0.53)	b	0.57 (0.53)	b	0.92 (0.52)
+1	0.15 (0.46)		-0.02 (0.45)		0.48 (0.50)
+2	-0.24 (0.49)		0.41 (0.48)	c	-0.74 (0.48)
+3	-0.53 (0.44)		0.08 (0.3)	b	-0.87 (0.56)
+4	-0.09 (0.50)		-0.35 (0.52)		-0.09 (0.46)
+5	-0.16 (0.49)		-0.24 (0.45)		-0.13 (0.56)

Cumulative returns:

-5 to +5	0.83 (.45)		1.47 (.48)		0.229 (.43)
-2 to +2	2.06 (.49)		2.79 (.54)		1.725 (.47)
-1 to +1	1.86 (.51)	b	1.14 (.46)	a	2.432 (.55)
-1 to 0	1.71 (.53)	b	1.16 (.50)	a	1.955 (.54)

a,b,c denote significance at the 0.10, 0.05 and 0.01 levels using t-statistics. (z for cumulative returns). The fraction of positive observations is shown in parentheses. N denotes sample size. *,**,*** denote the average (median) abnormal return is significantly different between the before bankruptcy and during bankruptcy groups at the 0.10, 0.05, and 0.01 levels respectively.

Table 4a.

Ordinary least squares regressions relating two-day abnormal return to characteristics of the divested asset and selling company. Sample consists of 139 announcements of asset sales by 44 companies.

	Full Sample	Asset sales before bankruptcy	Asset sales during bankruptcy	Full Sample	Asset sales before bankruptcy	Asset sales during bankruptcy
Adjusted R-square	0.08	0.36	0.47	0.08	0.09	0.38
N	139	91	48	139	91	48
Intercept	-0.080 (-1.521)	-0.214 a (-2.821)	-0.090 (-0.815)	-0.082 (-1.519)	-0.193 b (-2.056)	-0.134 (-1.220)
EBITD/total assets	-0.081 (-0.464)	-0.091 (-0.256)	0.103 (0.507)	0.007 (0.040)	0.101 (0.230)	-0.089 (-0.435)
Match 3-digit SIC	0.087 (1.421)	0.519 a (6.188)	-0.157 b (-2.176)			
Match 2-digit SIC				0.062 (1.332)	0.148 a (2.610)	0.110 (1.553)
Successful	-0.030 (-0.699)	-0.061 (-1.335)	-0.018 (-0.255)	-0.038 (-0.863)	-0.026 (-0.484)	0.039 (0.528)
Working capital/ total assets	-0.176 b (-2.14)	0.223 b (1.989)	-0.391 a (-3.762)	-0.208 a (-2.562)	0.039 (0.295)	-0.325 a (-3.084)
Long-term debt/ total liabilities	0.342 a (3.076)	0.233 b (2.039)	-0.051 (-0.169)	0.338 a (3.043)	0.301 b (2.220)	0.068 (0.224)
Months until filing	-0.003 c (-1.728)	0.000 (0.019)	-0.011 b (-2.377)	-0.003 b (-2.023)	-0.002 (-0.589)	-0.012 b (-2.303)
Industry change in EBITD/total assets	-0.150 (-0.989)	-0.097 (-0.494)	-0.093 (-0.427)	-0.185 (-1.232)	-0.226 (-0.971)	-0.009 (-0.041)
Purchase price/ market value of equity	0.011 b (1.923)	0.083 b (2.203)	0.003 (0.478)	0.011 b (1.916)	0.053 (1.198)	0.002 (0.306)
Total assets	0.003 (0.924)	0.008 b (2.171)	0.022 a (2.728)	0.000 (0.998)	0.005 (1.084)	0.023 a (2.666)

Table 4b.

Ordinary least squares regressions relating two-day abnormal return to characteristics of the divested asset and selling company
 Sample consists of the first 2 asset sale announcements either prior to or during bankruptcy for 44 companies entering Chapter 11

	Full Sample	Asset sales before bankruptcy	Asset sales during bankruptcy	Full Sample	Asset sales before bankruptcy	Asset sales during bankruptcy
Adjusted R-square	0.40	0.32	0.54	0.41	0.34	0.54
N	47	31	27	47	31	27
Intercept	-0.100 ^c (-1.656)	-0.097 (-1.006)	-0.180 (-1.476)	-0.109 ^c (-1.789)	-0.053 (-0.592)	0.200 ^c (1.765)
EBITD/total assets	0.099 (0.546)	-0.128 (-0.240)	-0.031 (-0.139)	0.131 (0.695)	-0.341 (-0.671)	0.165 (0.758)
Match 3-digit SIC	0.009 (0.124)	0.305 ^a (2.65)	-0.096 (-1.094)			
Match 2-digit SIC				0.032 (0.525)	0.178 ^a (2.788)	0.091 (1.090)
Successful	0.028 (0.444)	-0.019 (-0.301)	-0.077 (-0.925)	0.021 (0.337)	-0.000 (-0.003)	-0.038 (-0.428)
Months until filing	-0.008 ^a (-3.763)	0.001 (0.408)	-0.013 ^b (-2.19)	-0.008 ^a (-3.87)	0.001 (0.208)	-0.014 ^b (-2.316)
Long-term debt/ total liabilities	0.316 ^b (2.084)	0.304 (1.615)	-0.018 (-0.051)	0.319 ^b (2.127)	0.443 ^b (2.427)	0.036 (0.104)
Working capital/ total assets	-0.340 ^a (-3.422)	-0.311 (-1.539)	-0.305 ^a (-2.574)	-0.353 ^a (-3.459)	-0.345 (-1.282)	-0.262 ^b (-2.188)
Industry change in EBITD/total assets	-0.174 (-0.845)	-0.038 (-0.141)	-0.052 (-0.190)	-0.176 (-0.873)	-0.001 (-0.005)	0.009 (0.034)
Purchase price/ market value of equity	0.010 (0.833)	-0.094 (-1.332)	0.014 (1.119)	0.011 (0.882)	-0.188 ^a (-2.823)	0.012 (0.899)
Total assets	0.017 ^a (3.209)	-0.000 (-0.047)	0.036 ^a (3.634)	0.018 ^a (3.242)	-0.004 (-0.895)	0.037 ^a (3.730)