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Investing in Bankrupt Firms

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ABSTRACT

We examine the investment characteristics of firms electing to enter bankruptcy, between 1973 and 1982. Comparisons are made before and after the Bankruptcy Reform Act of 1978. Our results indicate that the 1978 Act had no significant impact on bankruptcy decisions or resolutions for actively traded firms. Trading in bankrupt firms' securities is becoming more common, but no abnormal returns appear to be available. Systematic risk does not change significantly with the filing of bankruptcy, but there is a significant increase in return variance. The financial markets also react to various announcements of stages in the reorganization process.

INVESTING IN BANKRUPT FIRMS has become a popular topic in the business press.[1] As of the beginning of 1987, there were sixteen firms trading on the New York Stock Exchange (NYSE) that were undergoing reorganization through Chapter 11 of the Bankruptcy Code. Not all of these companies will necessarily successfully reorganize, but the success stories of some past bankrupt firms (such as Toys R Us) are well known. Little is known, however, about the general investment characteristics of bankrupt firms and the effect of the Bankruptcy Reform Act of 1978.

Clark and Weinstein [7] examine stock returns following a bankruptcy filing. Their sample of bankrupt firms is drawn prior to the 1978 Bankruptcy Reform Act and falls to a sample size of ten for most of the time after the bankruptcy filing announcement. Besides the difficulty of drawing inferences from such a small sample, the investment environment may have changed since the inception of the 1978 Bankruptcy Reform Act. Under the 1978 Act, some firms (such as Manville Corp.) have apparently used bankruptcy as a method of dealing with litigation or labor contracts. In this paper, we study bankrupt firms before and after the 1978 Act. In particular, we examine the proportion of bankrupt firms that reorganize or liquidate, risk characteristics of bankrupt firms, returns associated with different legal events in the reorganization process, and investment strategies involving bankrupt firms.

The first section of the paper briefly describes bankruptcy procedures and the Bankruptcy Reform Act of 1978. The second section is a summary of related research on bankruptcy and bankrupt firms. The third section reviews the data collection and sample selection processes. The fourth section describes the tests

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[1] See *Forbes* (May 20, 1985, pp. 224–225) and *Forbes* (February 24, 1986, p. 128).

and presents our findings concerning the risk and return characteristics of bankrupt firms. The final section is a summary with conclusions.

I. Description of the Bankruptcy Process

Prior to 1898, bankruptcy laws in the United States were short-lived and debtors who were unable to repay loans often found themselves in prison.[2] The Bankruptcy Act of 1898 was the beginning of a continuous legal framework intended to relieve debtors of the burden of debt and begin anew. The 1898 Act, however, had no provisions for reorganization and was primarily concerned with orderly liquidation and distribution of the debtor's assets.

The Chandler Act of 1938 established many of the legal precepts that are used today in bankruptcy reorganizations. After the Chandler Act, bankruptcy law contained three chapters that were relevant to general business entities. Chapter VII was for straight bankruptcy and provided rules for liquidation of a debtor. Chapter X was for a reorganization in which a trustee was automatically appointed (for firms with greater than $250,000 debt). The trustee developed a reorganization plan that involved all the creditors and shareholders. Chapter XI was for reorganization that involved only unsecured creditors, with the debtor usually maintaining control of the organization. Chapter XI was intended to be shorter in duration than Chapter X. Chapters VII and X could be voluntary (initiated by the debtor) or involuntary (initiated by the creditors or others), while Chapter XI was only entered through a voluntary petition. The court could convert the case from one chapter to another. Distribution of assets in all chapters was based on an absolute priority doctrine, which states that claims with priority are paid in full before other claims receive anything.

The Bankruptcy Reform Act of 1978 is the most recent complete reworking of bankruptcy law.[3] Several administrative changes were made with the passage of the 1978 Act. An Office of U.S. Trustee has been established to handle many administrative duties. This office maintains a panel of qualified private trustees to serve in bankruptcy cases and relieves the judge of much of the administrative responsibility. This office was not established in all districts until 1986. The 1978 Act also provides for the establishment of new bankruptcy judges and bankruptcy courts.

Of primary interest to this paper, however, is how the Bankruptcy Reform Act of 1978 could have changed the investment environment of the bankrupt firm's securities. There are four primary groups related to the firm that can potentially affect the destiny of the firm while in bankruptcy: managers, shareholders, unsecured creditors, and secured creditors. Managers and shareholders are generally presumed to prefer reorganization over liquidation. Managers lose their jobs and shareholders generally lose all their investment with liquidation.[4] Unsecured creditors are also more likely to prefer reorganization over liquidation.

[2] Bankruptcy acts in the United States existed from 1800 to 1803, 1841 to 1843 and 1867 to 1878. Altman [5] provides a good summary of the legal framework of bankruptcies.

[3] Modifications to bankruptcy law have also occurred in 1984 and 1986.

[4] In our sample, only shareholders of one liquidated firm received compensation.

White [14] notes that unsecured creditors are likely to receive zero or very low returns in liquidation. Secured creditors, on the other hand, could be harmed by reorganization. Assets securing loans may depreciate and reduce the expected return on the loan. The extent to which the 1978 Act altered the power of each of these groups could affect the likelihood of reorganizing or liquidating and returns to the equity holders.

The 1978 Act still maintains a priority system for handling claims under new Chapters 7 and 11, but employees with past wages due and customers with deposits have been given priority status over other unsecured creditors. This change does not affect secured creditors or shareholders, but unsecured creditors are even more unlikely to receive anything from their investments if the firm liquidates. The 1978 Act, therefore, should cause unsecured investors to work harder for reorganization.

The 1978 Act combines Chapters X and XI from the old act into a new Chapter 11. Under this new Chapter 11, trustees are only appointed if some party can show just cause for not allowing management to continue. Under Chapter X of the old Act, trustees were automatically appointed. Therefore, managers are now more likely to continue in control of the bankrupt firm and fight for reorganization. A committee of unsecured creditors appointed by the judge, however, will oversee the firm.

Under the old Act, firms were forced to continue operating under bankruptcy in the same state as before bankruptcy. This rigidity did not allow the managers or trustees to sell or close down inefficient operations while in bankruptcy. The 1978 Act removes this constraint and allows the bankrupt firm to achieve a more profitable status, which may make reorganization more likely. This change in the law also allows management or the trustee to look for a buyer of the whole firm rather than eventually liquidating the firm in a piecemeal fashion.

The 1978 Act allows creditors to propose reorganization plans after management has had 180 days to propose their own plan. Under the previous Act, creditors had the option of accepting the plan of the management (or trustee) or forcing liquidation. With the 1978 Act, creditors have the additional opportunity of proposing their own plan of reorganization.

All of the changes in the 1978 Act that have been mentioned so far appear to favor more reorganizations. One factor that may inhibit reorganization under the 1978 Act is the voting procedure on reorganization plans. Under the previous Act only unsecured creditors voted. Under the 1978 Act each class of creditors (secured and unsecured) must be in favor of the reorganization plan. Even shareholders have a right to vote as a class if their claims are impaired. Equity, however, must be eliminated if appraisals show that the value of liabilities is greater than the value of the assets. Dissenting minorities of each class must receive at least the amount they would have received under liquidation.

Allowing secured creditors to have a veto over a reorganization plan makes reorganization potentially more difficult. White [14] argues that this is a dominant factor and provides data on smaller firms that indicate that liquidation is more common since the passage of the 1978 Act. There is the possibility of the court overriding this veto power and forcing a class of creditors to accept the

plan as long as that class receives at least the amount they would receive under liquidation. This resolution is known as a "cram down".

These changes in the bankruptcy law can have an effect on the probability of reorganizing or liquidating. Since liquidation usually means a total loss to shareholders, the investment environment could have been affected by the 1978 Act. The direction of the effect, however, is not clear from the examination of the various factors influencing the interested parties.

II. Previous Empirical Research on Bankruptcy and Bankruptcy Firms

Previous empirical research examining security returns of bankrupt firms has used data prior to the passage of the 1978 Act. Most of these studies, as exemplified by Aharony, Jones, and Swary [1], have looked at stock returns prior to and coincidental with the announcement of the filing of bankruptcy. Aharony, Jones, and Swary [1] report cumulative average residuals of −100% over the three years before the announcement.[5] Although the betas of the bankrupt firms did not rise with the approach of bankruptcy, the residual variance became significantly larger.

Clark and Weinstein [7] found a similar drop in stock prices of bankrupt firms prior to the filing. In addition, they noted average returns from the day before the filing to the day after the filing of between −22% and −47% depending on the method of calculation and aggregation.[6] The diverse return measures are due to the handling of a survivorship problem. Their sample declined from twenty-three to six during these three days. A sample of ten stocks was also examined for the six months following the filing. Returns were not significantly different from zero during this period, but the size of the sample makes inferences difficult.

Altman [3] examined a much older sample of bankrupt firms. He followed the stock of sixty-seven firms under bankruptcy from 1941 to 1965. The prices of these shares for the first five years of bankruptcy remained at approximately 75% of the price the month prior to the bankruptcy. Much of this decline could have taken place with the announcement of the filing for bankruptcy.

Bond prices surrounding bankruptcy announcements have been studied by Warner [12]. He found that prices of publicly traded bonds of railroads announcing bankruptcy dropped an average of 9.2% during the month of the announcement.[7] No studies of bond prices subsequent to the filing of bankruptcy were found.

[5] This number does not imply that investors would lose all their money with a buy-and-hold strategy. The cumulative average residuals are calculated based on a reinvestment strategy each month of one dollar in each security in the sample. We performed similar tests with similar results.

[6] We performed similar tests with a sample that began with fifty-nine firms and declined to forty-six. Our tests yielded results similar to those of Clark and Weinstein [7] both before and after the implementation of the 1978 Act.

[7] We observed as twenty-six percent decline in publicly traded bonds of ten firms with the announcement of the filing for bankruptcy. We were not able to analyze bond returns of firms in the months following bankruptcy because of a lack of trading data.

These studies seem to indicate that the announcement of the filing for bankruptcy affects stock and bond prices adversely. Once in a state of bankruptcy, however, little information is available on investment characteristics of securities of bankrupt firms. In this paper, the risk and return characteristics of the stocks of bankrupt firms are examined before and after the implementation of the 1978 Act. If the shareholders have correctly interpreted the implications of the various bankruptcy acts, risk-adjusted average returns should not be significantly different from zero throughout the test period.

III. Data Collection

The focus of this study is on firms that have been actively traded and have entered bankruptcy between 1973 and 1982. The criteria for selecting the sample followed a sequential three-step process: a) mention of the bankruptcy in the *Wall Street Journal* (*WSJ*), b) the existence of accounting data on Disclosure Microfiche prior to the bankruptcy announcement, and c) the report of some trade on any exchange or over the counter in the *WSJ* or *Commercial and Financial Chronicle* (*CFC*) during the three years before the bankruptcy announcement. The *WSJ* reported 293 bankruptcies from 1973 to 1982. We eliminated 118 firms because of lack of accounting data and another thirteen firms that had no reported trades during the three years before the bankruptcy announcement. These procedures created a sample of 162 bankrupt firms.

We used the most recent annual report prior to the bankruptcy announcement to examine accounting measures of the economic well-being of the sample of firms.[8] Median retained earnings were close to zero and median returns on assets were −3.2%. We also calculated z-scores from Altman's [2] discriminant analysis model. Approximately 68% of the firms had z-scores less than Altman's [2] cutoff point of 2.675.[9] This percentage has not significantly varied (using a binomial test) from the period before to the period after the 1978 Act. At least as measured by Altman's [2] z-score, firms entering bankruptcy more recently appear to be, on average, in a similar state of financial distress. Although cases such as Manville Corp. and Texaco, which apparently have attempted to use bankruptcy to limit legal liabilities, have been well publicized, there appears to be no trend toward using bankruptcy for purposes other than relieving financial distress as reflected in the accounting numbers of the annual report.

All of the firms in our sample initially filed under chapters of the bankruptcy code existing at the time of filing with the intent of reorganizing. Some firms, however, were forced into Chapter VII and liquidation. Table I provides a summary of the legal resolution of the firms in our sample. Of the 162 firms that

[8] We eliminated twenty banks and insurance companies from the accounting data description because of the unusual nature of their accounting systems. The remaining tests in the paper, however, include these firms.

[9] Of the ten firms that had z-scores higher than 5.0, most were wholesale or retail firms with high sales/total assets. One of the problems with the general z-score test is that prediction is not as good in certain industries. An industry-specific discriminant model for each firm, such as Altman's [4], which is estimated for railroad industry, would be preferable but is not available.

Table I

Number of Comparisons with Each Type of Bankruptcy Resolution[a]

Year	Liquidated	Merger Reorganization	Reorganized	Uncertain (Assumed Liquidated)	Uncertain (Assumed Reorganized)	Still in Chapter 11
1973	2	0	8	4	0	0
	(14%)	(0%)	(57%)	(29%)	(0%)	(0%)
1974	4	2	10	1	0	0
	(23%)	(12%)	(59%)	(6%)	(0%)	(0%)
1975	4	1	14	1	1	0
	(19%)	(5%)	(66%)	(5%)	(5%)	(0%)
1976	2	2	9	2	0	0
	(13%)	(13%)	(61%)	(13%)	(0%)	(0%)
1977	1	1	12	1	2	0
	(6%)	(6%)	(70%)	(6%)	(12%)	(0%)
1978	4	1	9	1	1	0
	(25%)	(6%)	(57%)	(6%)	(6%)	(0%)
1979	4	1	5	0	2	0
	(33%)	(8%)	(62%)	(0%)	(17%)	(0%)
1980	2	1	8	2	1	0
	(14%)	(7%)	(58%)	(14%)	(7%)	(0%)
1981	1	0	8	3	1	0
	(8%)	(0%)	(61%)	(23%)	(8%)	(0%)
1982	1	2	15	3	0	2
	(4%)	(9%)	(65%)	(13%)	(0%)	(9%)
Totals	25	11	98	18	8	2
	(15%)	(7%)	(60%)	(11%)	(5%)	(1%)

[a] Percentages are in parentheses.

initially filed for bankruptcy, twenty-five are known to have liquidated and another eighteen are assumed to have liquidated given that no further evidence of existence was found for these firms.[10] Therefore, about one of four firms fail to survive bankruptcy in any form. Only one of these firms provided anything for shareholders following liquidation.

The remaining firms have survived bankruptcy in one form or another (with the exception of two firms still in Chapter XI). There were ninety-eight firms that are known to have reorganized as independent companies, eleven firms that reorganized through a merger,[11] and eight firms that were in existence at least four years after the bankruptcy announcement but for which no verification or reorganization was found. Of the reorganized or merged firms, six firms had common shareholders that received nothing in the bankruptcy proceedings.

The Bankruptcy Reform Act of 1978 became effective in October 1979. White [13] and LoPucki [8] have suggested that the new bankruptcy laws make reorganization more difficult. Their data indicated an increased rate of liquidations under the new bankruptcy laws. Of those firms in our sample with known resolutions, twenty-one percent that entered Chapter XI before October 1979 were liquidated, compared to fifteen percent after that date. A simple binomial statistical test fails to reject the null hypothesis that the 1978 Act had no effect on the liquidation rate of bankruptcy filings for the firms in our sample. The difference between the results in this paper and the results in previous papers is presumably due to the sampling constraints used in this paper that require firms to trade on exchanges. These constraints probably make the firms in our sample larger than the firms in the samples of the other papers.

Table II provides a description of the trading of securities before, immediately after, and three years after the filing of the bankruptcy. The original sample is somewhat evenly spread among the New York Stock Exchange (NYSE = 38), the American Stock Exchange (AMEX = 67), and other markets (Other = 57) before the bankruptcy announcement.[12] In the month after the announcement,

[10] Dun and Bradstreet's *Million Dollar Directory* (which reports firms with net worth over $500,000) and Standard & Poor's *Register* were examined to determine whether the firm still existed.

These results are considerably different from those in other papers, such as White [14], which indicate that liquidations outnumber reorganizations. Their samples, however, include much smaller firms than the samples in this paper.

The number of months from filing to confirmation of the reorganization plan is higher than the number of months from filing to liquidation. The reorganization (including mergers) sample had a mean of twenty-two months (median of eighteen months) in a state of bankruptcy. The liquidation decision was reached, on average, ten months (median of eight months) after the filing date. Liquidation becomes much less likely after the first year in bankruptcy. The Bankruptcy Reform Act of 1978 had no significant impact on the length of the bankruptcy proceedings based on a binomial statistical test.

[11] Even though only eleven firms were merged as part of the bankruptcy resolution, twenty more of the reorganized firms have since merged. In addition, twenty-eight of the remaining reorganized firms have changed their names. Therefore, almost fifty percent of the firms that are known to have successfully reorganized as separate companies have attempted to change their image through a name change or sale of the firm to another company.

[12] Prices for bankrupt firms were obtained from the *WSJ* and *CFC*. The CRSP tapes were of little use since most of the firms that continued trading after filing for bankruptcy transferred to the OTC market or regional exchanges.

Table II

Exchange Listing of Companies Filing Bankruptcy[a]

		Before Filing Bankruptcy			Month after Filing Bankruptcy				Three Years after Filing Bankruptcy			
Year	Sample	NYSE	AMEX	Other	NYSE	AMEX	Other	None	NYSE	AMEX	Other	None
1973	14	4	6	4	0	0	0	14	0	0	1	13
		(29%)	(43%)	(29%)	(0%)	(0%)	(0%)	(100%)	(0%)	(0%)	(7%)	(93%)
1974	17	1	10	6	0	0	2	15	0	2	1	14
		(6%)	(59%)	(35%)	(0%)	(0%)	(12%)	(88%)	(0%)	(12%)	(6%)	(82%)
1975	21	5	9	7	0	0	4	17	0	0	3	18
		(24%)	(43%)	(33%)	(0%)	(0%)	(19%)	(81%)	(0%)	(0%)	(14%)	(86%)
1976	15	3	7	5	0	0	4	11	0	0	2	13
		(20%)	(47%)	(33%)	(0%)	(0%)	(27%)	(73%)	(0%)	(0%)	(13%)	(87%)
1977	17	1	8	8	0	0	6	11	1	0	2	14
		(6%)	(47%)	(47%)	(0%)	(0%)	(35%)	(65%)	(6%)	(0%)	(12%)	(82%)
1978	16	5	9	2	0	0	3	13	0	0	5	11
		(31%)	(56%)	(13%)	(0%)	(0%)	(19%)	(81%)	(0%)	(0%)	(31%)	(69%)
1979	12	1	6	5	0	0	6	6	0	0	4	8
		(8%)	(50%)	(42%)	(0%)	(0%)	(50%)	(50%)	(0%)	(0%)	(33%)	(67%)
1980	14	3	5	6	0	1	6	7	0	0	6	8
		(21%)	(36%)	(43%)	(0%)	(7%)	(43%)	(50%)	(0%)	(0%)	(43%)	(57%)
1981	13	2	4	7	0	0	9	4	0	0	5	8
		(15%)	(31%)	(54%)	(0%)	(0%)	(62%)	(38%)	(0%)	(0%)	(38%)	(62%)
1982	23	13	3	7	3	1	11	8	2	0	9	12
		(57%)	(13%)	(30%)	(13%)	(4%)	(48%)	(35%)	(9%)	(0%)	(39%)	(52%)
Totals	162	38	67	57	3	2	51	106	3	2	38	119
		(23%)	(41%)	(35%)	(2%)	(1%)	(31%)	(65%)	(2%)	(1%)	(23%)	(73%)

[a] Percentages are in parentheses.

however, only three firms traded on the NYSE, two on the AMEX, and fifty-one in other markets.[13] Of major interest in Table II is the positive trend toward increased trading of bankrupt securities after the bankruptcy filing. This trend has continued beyond the sample period, with many bankrupt firms being traded on the NYSE today. Trading was halted on 106 firms in our sample either before or immediately following the bankruptcy announcement. In some cases these firms resumed trading at a later date, while some of the firms that traded the month after the bankruptcy stopped trading during the three-year period following the bankruptcy announcement. By the end of three years, only forty-three of the original 162 firms were still having their securities reported by the national financial press.

Permanent trading stoppages were a primary problem in the analysis of the return data. Whenever trading on a particular security was stopped, various sources were investigated to determine the cause of the trading halt. We used information from the *WSJ, Journal of Mergers and Acquisitions, CCH Capital Changes Reporter,* and LEXIS (a computer-based retrieval system for legal cases) to determine the appropriate stopping price for a security. When these sources were not sufficient, we checked Dun and Bradstreet's *Million Dollar Directory* (which reports firms with net worth over $500,000) and Standard & Poor's *Register* to determine whether the business was still in operation following the bankruptcy. If still in operation, we called the firm to determine an appropriate stopping price.

Another problem with the lack of trading data involves the case when a firm begins trading again at a later date. Interim nontrading periods have no available prices. The return from the first available price after the nontrading period could be used to arbitrarily allocate returns to the nontrading period. Since we examine long-term returns from a buy-and-hold strategy, we are not particularly concerned about returns during these nontrading periods and chose to apply all of the returns during the nontrading period to the period when the security begins trading again.

Another problem with firms that go bankrupt is the low prices of many of their securities. Bid-ask spreads tend to become a larger proportion of the price and introduce measurement error into the return series.[14] Also, the discrete nature of prices often makes returns for small firms much more volatile. A movement from 1/8 to 1/4 is a return of a hundred percent yet is only a jump in price of 1/8. Therefore, when using returns on low-priced securities, a much higher variance of returns is expected.

[13] Morrison [9] describes the delisting process of bankrupt firms. Exchanges give the bankruptcy-filing firm twenty days to request a hearing with the board of directors of the exchange to discuss maintaining the listing. If the firm does not respond, the exchange applies to the SEC to delist the security.

[14] Stoll [11] provides an example of the negative relationship between the proportional bid-ask spread $\left(\frac{\text{ask price} - \text{bid price}}{\text{ask price} + \text{bid price}/2}\right)$ and price. This problem is not too great for the firms in our sample trading over the counter because the average between the bid and ask prices is used. In exchanges the closing price is used, which could be at the upper or lower end of the bid-ask spread.

For stock trading the month after the announcement of bankruptcy, the following price distribution occurred for our sample: fifty percent had prices less than one dollar per share, forty-five percent had prices between one dollar per share and five dollars per share, and only five percent had prices five dollars per share or greater.

IV. Tests and Results on the Risk and Return Characteristics of Bankrupt Firms

The capital asset pricing model (CAPM) suggests that nondiversifiable risk in the form of a security's beta is the risk that should be used for pricing purposes.[15] To test for shifts in nondiversifiable risk, we reduced our sample to the fifty-one firms that had at least ten monthly returns in both the three years before and the three years after the announcement of bankruptcy. We used the market model with a value-weighted market return to estimate betas before and after the announcement. The average beta increased from 1.08 to 1.35, but a pairwise t-test provided no statistical significance.[16] There was, however, a significant increase in the total variance of returns after the bankruptcy announcement. This higher variance could be due to the impact of large bid-ask spreads and discrete prices on relatively smaller prices per share.

Tests of an investment strategy with bankrupt firms are difficult because of trading halts. We decided to include only firms that were trading the first day of the month following the bankruptcy announcement and hypothesize that investments are made at that time. This procedure avoids survivor bias by starting with firms at a particular point in event time and following their progress for the next three years.[17] This procedure yielded a sample of fifty-six firms. Each firm was carefully examined to determine the appropriate final value if trading was halted at a later date.[18]

As mentioned earlier, a buy-and-hold strategy is employed to avoid the problems of accumulating returns. The cumulative return for any particular month represents the return from investing a dollar in each security the month after the bankruptcy announcement and holding that investment until the month in

[15] See Sharpe [10].

[16] We also split the sample into groups that filed under the old and new bankruptcy acts. The before-and-after bankruptcy filing comparisons of beta were similar in each period.

[17] In many cases, the firm will have left bankruptcy during this period. See footnote 11 for a description of the distribution of the number of months in the bankruptcy state for the sample studied in this paper.

[18] For six of the fifty-six firms, confirmation of the final value at the time of a trading halt could not be made. Two of these firms disappeared from all of the sources we examined and reorganization was never determined. For these two securities, we set the price to zero the month following the month of the last known price. The other four firms were known to reorganize but are not operating today. The last known price of the four firms that did reorganize is used in the "best case" scenario as the value of the security in the remaining nontrading periods. The "worst case" scenario sets the value of the shares of these four securities to zero in the subsequent periods. Only the "best case" scenario is reported in this paper. The "worst case" scenario yielded three-year portfolio returns that were approximately twelve percent less than the "best case" scenario. This difference was not sufficient to influence any of the conclusions from the following tests.

question. If a firm is not trading in a particular month, the last previously traded price (which may be zero if liquidation occurred) is used.

Since sufficient data to estimate betas for all fifty-six firms in our sample are unavailable, we examine the trading strategy using a beta of one for each security.[19] Using a beta of one is identical to subtracting the return of the value-weighted market portfolio.

Figure 1 presents the buy-and-hold residual returns over the thirty-six months following the first day of the month after the bankruptcy announcement. The 125 percent three-year average residual return before the 1978 Act appears to be large. The cross-sectional variance of residual returns, however, was very large due to a number of firms liquidating during the three-year period and having minus one hundred percent raw returns. Therefore, a *t*-test using this cross-sectional variance indicates that the average residual return is not significantly different from zero. After the 1978 Act, bankrupt firms had residual returns very close to zero. The total sample had an average three-year residual return of fifty-five percent, which was also not statistically different from zero. During the three-year period approximately half the securities had price increases and half the securities had price decreases.[20]

There are several important events that occur in successfully reorganizing a company that is in bankruptcy. These events include: a) the development of a plan of reorganization to present to the creditors, b) the creditors' agreement to the plan, and c) confirmation of the plan by the court. The *WSJ Index* was examined for announcements of each of these three events. Daily prices were gathered for the six days before, the day of, and five days after the announcement.

The average returns for each of these events are reported in Table III. If days −1 and 0 are used to represent the announcement effect, the development of the plan increases the value of the stock 8.8 percent and the acceptance of the plan by creditors causes a 10.7 percent return. Confirmation by the court has little impact on the stock price. Presumably, investors perceive the confirmation as a foregone conclusion following the acceptance of the plan by the creditors.

[19] To test whether our arbitrary choice of a beta equal to one affected the results, we also performed the same tests with beta equal to 1.5. With a beta of 1.5, we used the Treasury bill rate times one minus the beta to represent the constant. The three-year residual returns for the total sample were reduced eleven percent with a beta of 1.5. The before-and-after three-year residual returns were reduced seven percent and fourteen percent, respectively, with a beta of 1.5.

[20] Investing in bankrupt firms could be very lucrative if there were some way of partitioning the firms to reflect subsequent success in the bankruptcy proceedings in terms of the shareholder. Many bankrupt firms return nothing to their shareholders, while others multiply the market value of their equity many times. To test whether accounting data available to shareholders at the time of the filing for bankruptcy are useful in identifying investment opportunities among bankrupt firms, financial data representing size, working capital, retained earnings, return on assets, total debt to equity, and the audit opinion were collected from the annual reports prior to the filing. These independent variables were used in a multiple-regression model to explain the three-year return following the filing for bankruptcy. Also, the same independent variables were used in a LOGIT model, with the dependent variable dichotomized on whether the bankrupt firm's stock went up or down during that three-year period. None of these tests provided any indication that publicly available accounting data are useful in discriminating among bankrupt firms for investment purposes. These tests are different from those of LoPucki [8] [9] and Casey, McGee, and Stickney [6], who attempt to predict the legal resolution (reorganization or liquidation) rather than stockholder returns.

Table III

Daily Returns (%) Surrounding Events Related to Resolution of Bankruptcy

	Plan to Creditors[a] (Sample Size = 14)		Creditor Agreement[a] (Sample Size = 20)		Court Confirmation[a] (Sample Size = 13)	
Days	Mean	t-Test[b]	Mean	t-Test[b]	Mean	t-Test[b]
−5	−0.008	−0.46	0.026	1.32	−0.001	−0.05
−4	0.017	0.76	−0.013	−0.69	0.014	1.24
−3	−0.014	−1.01	0.031	1.20	−0.003	−0.10
−2	0.008	0.34	0.011	0.47	0.009	0.74
−1	0.080	2.75	0.064	1.63	0.007	0.46
0	0.008	0.29	0.043	1.30	0.011	0.39
1	0.008	0.26	−0.010	−0.30	−0.008	−0.26
2	0.003	0.36	−0.012	−0.78	−0.008	−0.30
3	−0.015	−0.94	0.023	0.92	−0.011	−0.96
4	0.017	1.27	0.050	1.05	0.018	1.36
5	−0.012	−1.74	0.006	0.19	−0.011	−0.58
−1 & 0	0.088	2.59	0.107	2.06	0.018	0.68

[a] Includes all firms with a *WSJ* announcement of the relevant event.

[b] The t-test is based on a daily expected return of zero and a variance calculated cross-sectionally.

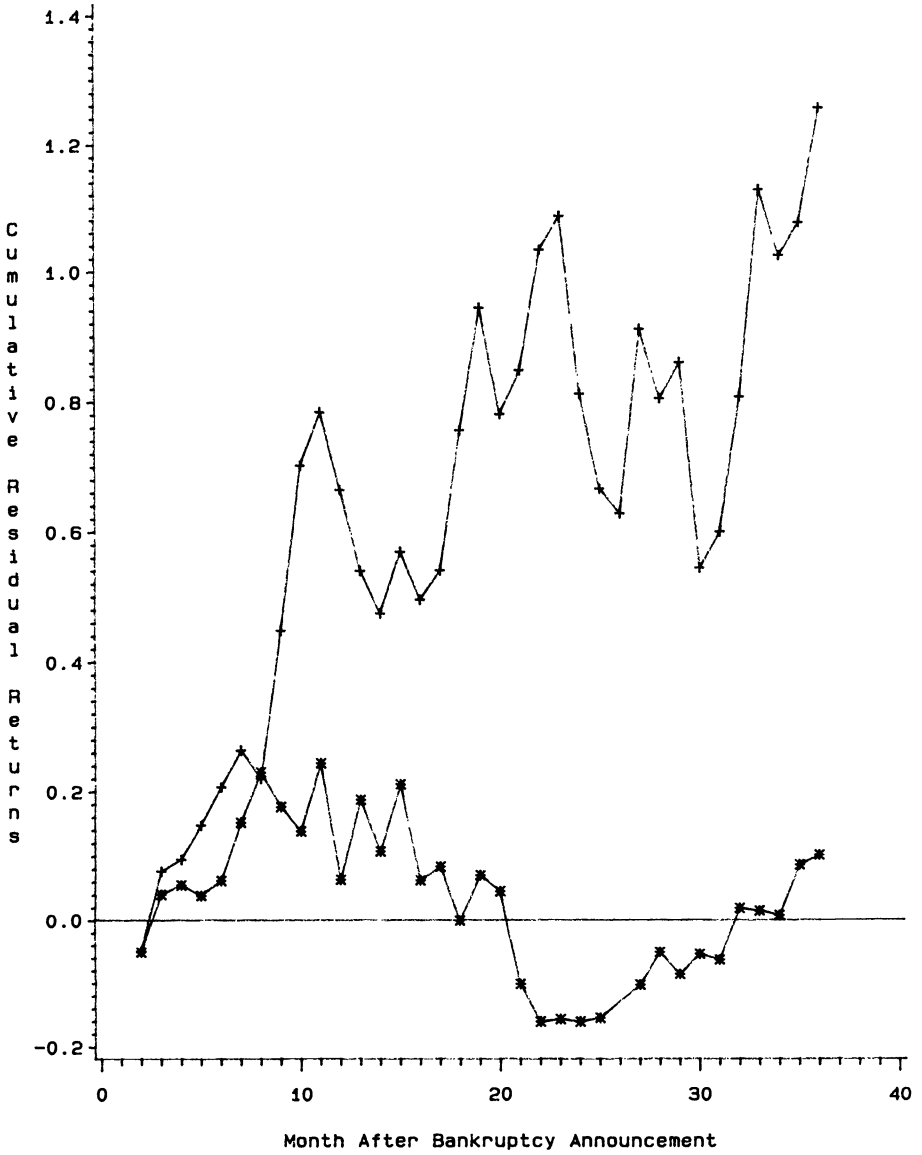

Figure 1. Monthly Stock Returns (%) for Stocks Trading after the Chapter 11 Announcement before the 1978 Act (+) and after the 1978 Act (*)

Unfortunately, the samples are small because of infrequent reporting of these events by the *WSJ* and trading not occurring for some securities. Therefore, no partitioning was performed before and after the 1978 Act.

V. Summary and Conclusions

Although trading in bankrupt firms has become much more common and accepted, little is known about the investment characteristics of these firms,

especially since the inception of the Bankruptcy Reform Act of 1978. The following is a summary of the empirical results in this paper

1. In spite of some celebrated cases of firms using bankruptcy to contain litigation and labor costs, firms entering bankruptcy since the 1978 Act are, on average, in a state of financial distress similar to that of firms entering bankruptcy before the 1978 Act.
2. About one fourth of the firms entering bankruptcy disappear and/or liquidate. This rate did not change significantly with the inception of the 1978 Act. This liquidation rate is much lower than rates reported in papers that have samples which contain smaller firms.
3. Trading in bankrupt firms is becoming much more common. In 1973, our first sample year, none of the bankrupt firms had quotes in the national press the month after the filing. By 1982, our last sample year, quotes were found for sixty-five percent of the bankrupt firm.
4. The systematic risk of firms is not significantly affected by the bankruptcy announcement. The standard deviation of monthly raw returns, however, increases during the bankruptcy period.
5. Three-year average returns for firms that have entered bankruptcy are large but not significant. Most of these large returns occurred prior to the 1978 Act. Since the implementation of the 1978 Act, average residual returns are very close to zero.
6. Completion of various stages toward reorganization is viewed positively by the shareholders.

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