

### BANKRUPTCY AND THE CAPITAL STRUCTURE OF THE FIRM

Let's assume that an entrepreneur wants to build a production facility but does not have or does not wish to invest personal wealth in the capital project. The entrepreneur goes to a bank and tries to borrow the money. The entrepreneur presents an argument to the banker that can be described by the figure labeled "Fixed Cost." This is not the way that the entrepreneur would present a capital request to a banker, but it is illustrative of the underlying issues.

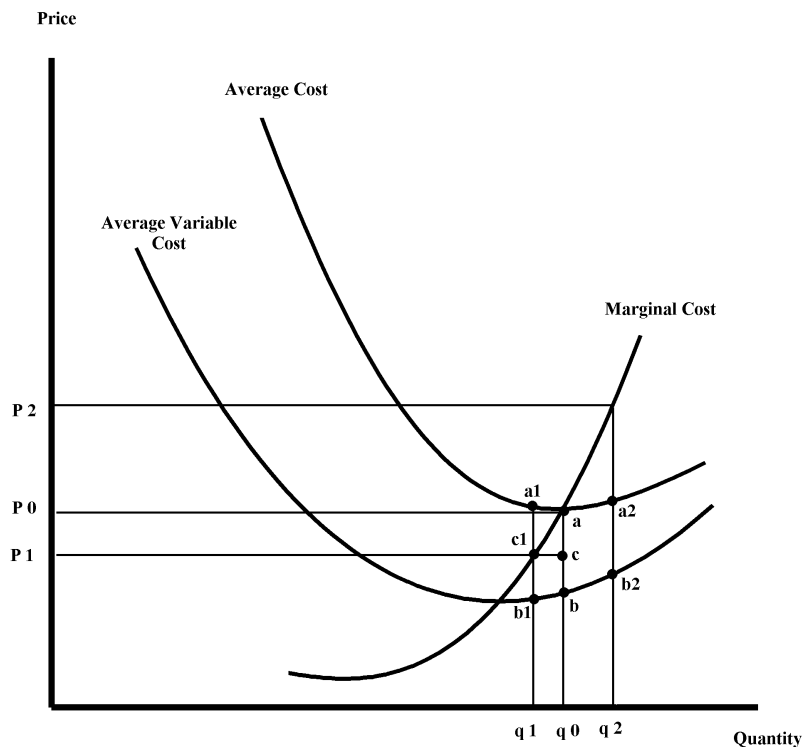


Fig: Fixed Cost

The figure Fixed Cost shows the operating cost of the firm in terms of an average variable cost function (AVC), a marginal cost function (MC), and an average cost function (AC). The picture assumes that the entrepreneur has decided on a particular plant size. Implied by the difference between AC and AVC is the fixed cost necessary to get the business going. That is, the fixed cost of the project are the measured at each output level ( $Q$ ) by the distance between AC and AVC times  $Q$ .

The AVC is everywhere upward sloping; MC rises above AVC at twice the rate; and AC is U-shaped as the fixed costs are amortized across a large number of units. Importantly, MC cuts AC at the minimum of AC.

The entrepreneur presents the bright scenario to the banker. He says that he is sure that the product can be sold for  $P_2$  dollars and at this price his proposed plant can reasonably (optimally) produce  $q_2$  units. Since at this output level, variable costs would be  $b_2$ , the capital costs of  $[a_2 - b_2]$  per unit could be easily covered, and, therefore the banker should lend him the entire amount of the capital costs.

The banker is not so sanguine. The banker says that he thinks that the more likely price the product will fetch is  $P_0$ . While the full cost of the capital in the project can be recovered at that the price, the banker feels that it would be imprudent to lend the entire amount. “What incentive would you have to pay me back,” he asks. The banker decides that he will lend half the amount necessary to construct the plant. That is, the banker lends an amount equal to  $[c-b]$  times the output level  $q_0$  on the condition that the entrepreneur use his own money to cover the difference  $[a-c]$  times  $q_0$ . The entrepreneur reluctantly accepts the banker’s terms. He takes the money, builds the plant, and spins the wheel of fortune. Competition settles on a price for his product and expectations turn into reality.

Our interest in the destinies of the entrepreneur and banker are keenly focused on the fateful prices between  $P_0$  and  $P_1$ . If the entrepreneur’s wild-eyed dreams are correct and price is above  $P_0$ , then everyone is happy. If price is  $P_0$  then, at least, no one is terribly sad. However, for prices below  $P_0$  the storm starts to blow.

At any price below  $P_0$ , the first thing that happens is that the entrepreneur doesn’t get his money back. (At least not all his money plus a fair, risk adjusted return on it.) Moreover, as price is increasingly below  $P_0$ , the banker in addition to the entrepreneur is threatened.

### Contracting Costs

Assume that the contract between the banker and the entrepreneur is perfectly enforceable. Then the banker is ok unless price falls below  $P_1$ . For instance, if price is equal to  $P_1$ , then the firm optimally produces  $q_1$  units. Revenues are exactly sufficient to cover variable costs,  $b_1$ , and leave enough left over for the banker’s contribution to fixed costs. At  $q_1$  units of output,  $c_1$  is half way between  $a_1$  and  $b_1$ .  $P_1$  is a reference point because of that fact. Fixed costs at that output level are  $[a_1-b_1]$  times  $q_1$ . The banker’s share is one-half or  $[c_1-b_1]$  per unit. The price  $P_1$  is just sufficient to repay the banker—assuming that the contract is perfectly enforceable.

However, contracting costs are not perfect. That is exactly why the banker did not lend the entrepreneur the full capital costs to begin with. If price falls to  $P_1$ , the entrepreneur has no incentive to continue to operate the plant just to pay the banker back. In this situation, the banker is fearful, and probably correctly so, that the entrepreneur will try to pull a fast one and try to redirect production into some other line of business.

For an example, the entrepreneur may have had an idea about favored beverages. The entrepreneur thought that chocolate water would sell dearly. The entrepreneur tries the project with the help of the banker, but alas, he is wrong. Instead of fetching  $P_2$ , chocolate water only gets  $P_1$ . At this point the banker wants the entrepreneur to continue to produce chocolate water, but the entrepreneur’s incentives are to switch into persimmon tea. (Such a dichotomy of choice is a simultaneous example of bankruptcy behavior and the under-investment problem.)

It is important to recognize that the mal-incentives conjured up in the entrepreneur at  $P_1$  are present in lesser form at any price below  $P_0$ .

### Corporations

The problem is not altered grossly if we assume that the firm is a large corporation. In this case, the investment  $[c-b]$  times  $q_0$  is made by debtholders and the investment  $[a-c]$  per expected unit of output is made by stock holders. In the good times, stock holders are treated to excess returns. If bad luck bites, the stock holders lose their investment.

Even so, the same behavior is predicted. At all prices below  $P_0$ , the stockholders are predicted to increasingly attempt to redirect the production of firm away from the unfortunate project and toward anything that might possibly get their money back.

Some points deserve attention. The investment of the entrepreneur in the first scenario acts as collateral on the bank's loan. Similar the equity contribution by stock holders in the second case is collateral for the debt holders. In the first case, the bank will always ask for some security for their loan. That is, the entrepreneur will have to lien the tangible property of the business to the bank. The notion of unsecured debt only exists in corporations. Some debentures issued by large corporation are unsecured; i.e., there are no specific assets pledged to these debt holders.

Loans are made and debt is issued with conditions. On debt, these conditions are called covenants. Covenants define restrictions on the behavior of stockholders as a contractual attempt to reduce asset substitution. Covenants include conditions on net worth, restriction on the sale of assets, restrictions on mergers, restrictions on the paying of dividends. As one might expect, the covenants on unsecured debt are more restrictive than those on secured debt.

### **Bankruptcy**

Finally, let's attempt to define *bankruptcy*. Bankruptcy is the legal action of debt holders (banks or corporate debenture holders) to take over the management of a business when financial distress causes the business to fail to make the interest payments on the debt or to appear to be likely not to be able to make those payments. Bankruptcy does not mean that the business is not viable. Bankruptcy does mean that there was a shortfall in the revenues projected by the financial investors when they originally capitalized the project. Bankruptcy is the legal process of recapitalizing the ownership of the assets.

The paper by Daigle and myself reports some facts concerning the practice of bankruptcy in the U.S.<sup>1</sup> Fifty-six bankruptcies from 1979-1990 were examined where the final bankruptcy order could be found. Of these 56, 7 resulted in liquidation, 2 merged, 1 became private, and 46 continued as on-going concerns. In 40 of the 46 cases, the original stockholders were allowed to retain an equity interest in the firm. In fact, the average equity retained by the original stockholders was 35.4%.

Daigle developed a model that described the nature of why old stockholders would be allowed to keep something in the new firm. Her model focused on malleable assets, that is, the ability of the stockholders to substitute assets. The measure of malleability that we employed was the ratio of current assets to total assets. Current assets include cash, inventories, and receivables. We found that this measure did predict the amount of equity retained by the old stockholders. In hindsight, modified working capital might have been a better measure—current assets plus accounts payable from the liabilities side of the ledger.

It is interesting to note that we search out reports of bankruptcy behavior on the part of these firms during the period of financial distress. We found information on 41 of the 56 firms. In 33 cases there were reports of behavior that would be considered asset substitution. That is, the firm paid cash out to the stockholders or started new lines of business.

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<sup>1</sup> Daigle, Katherine, and M.T. Maloney. "Residual Claims in Bankruptcy: An Agency Theory Explanation," *Journal of Law & Economics*, April 1994.

## **RESIDUAL CLAIMS IN BANKRUPTCY: AN AGENCY THEORY EXPLANATION**

**Katherine H. Daigle and Michael T. Maloney**

*Journal of Law & Economics*

April 1994

**The fundamental conflict between bondholder and shareholder interests has been recognized at least since Adam Smith.**

*In the classic example, shareholders engage in riskier projects than those sanctioned by the creditors when the debt was issued.*

*This problem is particularly acute when the firm is in financial distress.*

*We examine bankruptcy in the context of this agency-cost aspect of the shareholder-debtholder relationship.*

**We focus on the outcome of the default proceeding because that is where a great policy enigma is found.**

*To the consternation of many commentators, it now seems to be the rule that shareholders can retain residual-claimant status in the post-bankruptcy firm while debtholder claims, even secured ones, go unsatisfied.*

*To shed light on this issue, we formulate a positive theory of the bankruptcy process that predicts the amount of the company retained by the pre-bankruptcy shareholders.*

**The Bankruptcy Reform Act of 1978 (BRA) allows shareholders to retain residual claims even when bondholders are not fully compensated.**

*Meckling, White, and Baird, among others, argue that this feature of the bankruptcy law is inefficient because it allows waiver of the right of absolute priority.*

*They see the law as a mechanism whereby stockholders expropriate bondholders' wealth.*

**Our view is different. We argue that it is financial distress, not the law, that negatively affects the wealth of bondholders, and financial distress can be due to nothing other than bad luck.**

*In fact, the law is a way for the agency problems that come into play because of financial distress to be resolved.*

*Contracts written when the future appears bright and distress is a remote prospect are not likely to be efficient when hard times come.*

**At the outset, bondholders do not often find it efficient to structure bond covenants in ways that fully account for all states of nature.**

*The set of efficient constraints for a healthy, growing enterprise typically diverge from the proper restrictions placed on a distressed company.*

*The flexibility given stockholders to operate profitably in the good times causes them to have an increased incentive to "bet the ranch" when misfortune occurs and the firm is faced with a high probability of default.*

*At the same time, they become more likely to eschew projects with positive net present value but low variance.*

**Rather than create overly restrictive bond covenants that attempt to cover all future states of the world, creditors write a set of rules to cover the most likely set of outcomes.**

*And hence, for companies that have a run of bad luck, the existing bond covenants and restrictions are not likely to properly motivate managers.*

**When this unexpected event ensues, bondholders are willing to share in the financial misfortune.**

*Rather than making stockholders carry the primary share of the business setback, bondholders actively accept part of the burden.*

*They are willing to pay shareholders to realign their mutual interests and maximize the value of the firm.<sup>2</sup>*

*In this sense, bankruptcy law is a stop-loss mechanism.*

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<sup>2</sup> One way restructuring checks the agency problem is simply by decreasing the debt-equity ratio. Debtholders are given an equity interest in the reorganized firm.

**In our model, when a firm experiences financial distress, creditors and shareholders negotiate a restructuring of the debt prior to filing a bankruptcy petition.**

*Sometimes these negotiations can be successfully concluded outside of bankruptcy. Other times the firm is forced to file.*

*Our theory explains the terms that result from these negotiations, that is, how much the bondholders share in the misfortune.*

**Our predictions apply both inside and outside of the bankruptcy proceeding.**

*However, we focus empirically only on those firms that use the court to ratify the agreement.*

*We do this because bankruptcy offers a convenient test-tube for distilling out the product of these negotiations.*

**Our main result is that the outcome of the bankruptcy proceeding is determined by the underlying financial characteristics of the firm that are in place before the onset of financial distress.**

*Where shareholders have greater flexibility in their control of the firm's assets prior to financial distress, the agency costs of bankruptcy are more severe and debtholders are willing to pay more to renegotiate the contracts.*

*Our empirical evidence strongly supports the view that the more malleable are the assets of the firm before financial distress, the higher the share of residual claims retained by the stockholders after bankruptcy.*

## **56 Firms Filing Chapter 11 from 1979 thru 1990**

*Seven liquidated, Two merged with another firm, One became closely held  
46 reorganized as ongoing concerns.*

*In the case of liquidation, shareholders received nothing.*

*For the companies that merged, the shareholders of the bankrupt firm received common stock in the acquiring firm.*

**Of the 46 firms that reorganized as ongoing concerns shareholders retained equity in 40.**

*The average amount of equity retained was 25.3% for the entire sample and 35.4% for those firms that reorganized.*

*The average time between the petition and confirmation for the 56 firms was 21.3 months.*

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Table 1 Sample of Bankruptcies

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Firm Name	Industry Classification	Filing Date	Retained Share*	Months in:	
				Bankruptcy	Negotiation
AM International	Office Machines Not Elsewhere Classified	4/14/82	33.52	9.0	6.7
American Monitor	Surgical,Medical Instrument Apparatus	12/19/85	17.0	8.3	38.6
Anglo Energy,Inc.	Drilling Oil and Gas Wells	11/7/83	25.0	33.8	3.0
Auto Train	Switching Terminal Establishments	9/2/80	0.0 <sup>l</sup>	13.9	25.8
Beehive International	Computer Terminals	10/4/84	7.0	14.1	0.6
Bennet Petroleum Corp.	Crude Oil Petroleum and Natural Gas	9/16/82	36.0	17.0	.
Berry Industries Corp.	Oil and Gas Well Exploration Services	10/5/84	0.0 <sup>l</sup>	.	5.7
Bobbie Brooks	Women's Blouses and Skirts	1/15/82	87.0	13.0	58.6
Branch Industries, Inc.	Trucking Local and Long Distance	8/17/84	0.0 <sup>l</sup>	.	30.3
Cache, Inc.	Women's Ready to Wear Stores	11/12/86	49.0	1.0	1.4
Charter Co.	Petroleum and Petroleum Products, Whls	4/20/84	34.0	32.0	.
Colonial Commercial Corp.	Mortgage Bankers	11/30/81	48.0	13.2	7.7
Commodore Corp.	Wood Buildings, Mobile Homes	6/10/85	0.0	10.9	5.9
Commodore Resources Corp.	Crude Oil Petroleum and Natural Gas	11/12/82	13.7	8.4	.
Computer Devices, Inc.	Computer Terminals	10/31/83	47.0	27.6	1.7
Computone Systems, Inc.	Computer Stores	12/./86	10.0	7.5	.
Dalco Petroleum	Petroleum and Petroleum Products, Whls	7/29/83	0.0 <sup>l</sup>	29.0	29.6
Data Access	Computer Terminals	1/21/83	4.6	19.3	10.2
Evans Products	Lumber and Other Building Material, Retail	3/11/85	0.0	15.7	19.9
Flame Industries, Inc.	Oil and Gas Field Machinery	5/27/83	49.4	23.6	8.8
Gamex	Misc. Manufacturing Industries	3/9/82	18.0	20.7	.
Gateway Sporting Goods	Apparel and Other Finished Products	9/24/81	10.0	16.8	12.3
HRT Industries, Inc.	Variety Stores	11/23/82	10.0	15.6	17.3
Itel	Equipment Rental and Leasing Service	1/19/81	7.2	26.1	18.5
Kennilworth Systems Corp.	Misc. Manufacturing Industries	8/31/82	69.0	33.2	.
K-Tel International, Inc.	Phono Records, Magnetic Tape	10/8/84	0.2	12.9	.
Lafayette Radio Electronics	Radio and TV Stores	1/4/80	14.0 <sup>m</sup>	17.7	19.5
Leisure Dynamics	Toys, Amusements, Sporting Goods	1/11/83	26.3 <sup>m</sup>	11.9	.
Lionel	Misc. Retail Stores	2/22/82	53.0	42.6	0.2
Magic Circle Energy	Crude Oil Petroleum and Natural Gas	4/16/85	100.0	9.8	0.4
Manville	Abrasive, Asbestos and Misc Minerals	2/26/82	6.2	51.9	3.6
Marion	Crude Oil Petroleum and Natural Gas	3/18/83	0.0 <sup>p</sup>	.	0.5

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Mego  
 MGF Oil  
 National Data Communications  
 Omni Exploration, Inc.  
 Partners Oil  
 Phoenix Steel  
 Poloron Products, Inc.  
 Revere  
 Robintech Incorporated  
 RPS Products, Inc.  
 Salant  
 Sasco  
 Sea Train Lines, Inc.  
 Shelter Resources  
 Steelmet Export Metals  
 Storage Technology  
 Tacoma Boatbuilding Co.  
 Texscan  
 Transcontinental Energy  
 UNR Industries, Inc.  
 Vector Graphics, Inc.  
 Whippany Paper Board Co., Inc.  
 Wickes Companies, Inc.  
 Wilson Foods

Toys, Amusements, Sporting Goods  
 Crude Oil Petroleum and Natural Gas  
 Computer Program and Software Services  
 Oil and Gas Well Exploration Services  
 Crude Oil Petroleum and Natural Gas  
 Blast Furnaces and Steel Works  
 Prefab Wood Bldgs and Components  
 Rolling and Drawing Nonferrous Metal  
 Misc. Plastic Products  
 Motor Vehicle Supplies and New Parts, Whls  
 Apparel and Other Finished Products  
 Perfume, Cosmetics, Toilet Preparations  
 Water Transportation  
 Wood Buildings, Mobile Homes  
 Scrap and Waste Materials, Whls  
 Computer Disk and Tape Drives  
 Ship and Boat Building and Repairing  
 Radio, TV Communication Equipment  
 Drilling Oil and Gas Wells  
 Steel Pipe and Tubes  
 Computers Micro Mini  
 Paper and Allied Products  
 Lumber and Other Blding Material, Retail  
 Meat Products

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6/14/82	4.0	16.9	17.6
12/14/84	0.0	36.6	19.3
9/9/83	15.0	11.7	.
11/1/83	33.0	11.0	0.5
4/12/83	41.0	17.8	.
8/12/83	0.0	23.6	66.3
4/13/81	40.0	25.8	48.5
10/27/82	76.0	33.1	51.9
7/11/83	20.0	12.6	55.5
3/23/82	91.6	12.0	4.7
2/22/85	93.0	27.4	0.1
2/8/84	84.0	9.0	.
2/11/81	0.0	73.6	14.7
9/9/82	2.0	34.6	8.3
2/23/83	0.0	18.6	0.3
10/30/84	15.0	32.0	.
9/23/85	4.1	22.8	12.3
11/22/85	0.0	24.1	13.6
10/3/84	0.0	10.4	29.4
7/29/82	8.0	.	4.8
10/14/85	0.0 <sup>1</sup>	.	25.9
2/8/80	0.0 <sup>1</sup>	13.6	0.2
4/24/82	15.0	28.9	16.3
4/22/83	100.0	11.2	12.1

\*Bankruptcy outcomes: l — liquidation; m — merger; p — private.



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Table 2 Firm and Industry Averages for Selected Data Items Five Years Before Filing (levels in millions)

Data Item	N	Min	<u>Firm Statistics:</u>				Industry Mean
			Max	Mean	Median	Std. Dev.	
Cash	47	0.077	246.57	17.31	4.97	41.55	19.09
Total Receivables	47	0.216	423.22	53.62	19.45	90.20	27.56
Inventories	45	0.361	442.41	63.99	13.31	105.64	51.55
Current Assets	47	0.478	1008.71	136.70	46.77	226.09	87.82
Current Liabilities	47	0.806	636.99	75.86	28.77	119.23	49.62
Total Assets	47	0.487	2196.56	274.96	92.85	472.77	208.71
PP & E, Gross	47	0.012	1494.60	150.00	37.98	261.42	149.51
PP & E, Net	47	0.003	975.88	100.68	25.11	178.58	87.27
Long Term Debt	44	0.002	635.96	92.40	17.57	148.30	79.07
Sales	46	5.024	5399.86	486.50	151.70	992.36	249.10
Advertising	23	0.064	56.55	10.80	2.60	17.17	10.14
R & D	18	0.054	42.00	5.14	1.61	10.15	7.31
Equity	42	2.667	1082.10	117.47	37.84	213.69	87.62
Current Assets/Equity	42	0.052	8.30	1.94	1.49	1.87	1.76
Debt/Equity	40	<0.001	3.46	0.94	0.97	.73	1.10
Current Assets/Liab.	47	0.452	3.87	1.84	.84	1.37	4.43
Current Assets/PP&E(net)	47	0.174	155.00	6.02	22.37	2.29	9.37

Table 3. Regression of Daily Firm Returns on Yearly Dummies and Market Return Interacted with Yearly Dummies in Each of Eight Years Prior to Filing\*

Independent Variables	Coefficients	t-statistics
<hr/>		
Dummy for		
First Year	-0.0024	-3.11
Second Year	-0.0022	-2.80
Third Year	-0.0019	-2.38
Fourth Year	-0.0011	-1.37
Fifth Year	-0.0002	-0.25
Sixth Year	-0.0006	-0.69
Seventh Year	-0.0004	-0.48
Eighth Year	0.0005	0.84
Dummy Interacted with		
Market Return in		
First Year	1.160	16.55
Second Year	1.227	19.49
Third Year	1.544	24.10
Fourth Year	1.431	21.06
Fifth Year	1.464	20.07
Sixth Year	1.403	18.67
Seventh Year	1.308	18.83
Eighth Year	1.201	18.98
$R^2$	0.052	
No. of Obs.	58272	
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\*Market return is equally weighted, dividend adjusted.

Table 4 Deviations from Industry Means for  $gL/R$  and Debt/Equity Five Years Before Filing

Firm Name	$\frac{gL}{R}$		$\frac{D}{E}$	
	Mean Deviations	$t$ 's	Mean Deviations	$t$ 's
AM International	0.784	0.434	0.388	1.327
American Monitor	-0.194	-0.396	0.023	0.116
Anglo Energy	-0.755	-0.552	-0.075	-0.099
Beehive International	-0.483	-0.119	0.368	0.304
Berry Industries Corp	-0.887	-0.742	-1.383	-0.956
Bobbie Brooks	0.492	0.273	-0.162	-0.139
Branch Industries, Inc.	1.449	2.574	1.634	1.319
Cache, Inc.	-0.445	-0.275	-0.214	-0.820
Charter Co.	0.055	0.056	-0.857	-0.526
Commodore Corp.	1.573	1.549	1.976	3.017
Computone Systems, Inc.	-1.256	-4.417	-0.187	-0.649
Data Access	-2.069	-0.509	-0.049	-0.041
Evans Products	-0.763	-0.499	0.688	1.287
HRT Industries, Inc.	0.037	-0.019	1.299	1.545
Itel	-1.541	-0.351	2.249	5.009
K-Tel International, Inc.	1.324	1.094	-0.387	-0.756
Lafayette Radio Electronics	0.676	0.295	...	...
Leisure Dynamics	0.223	0.185	-0.418	-0.182
Lionel	-0.354	-0.196	-0.348	-0.571
Magic Circle Energy	-1.201	-0.878	-0.482	-0.642
Manville Corp	-3.660	-0.826	-2.471	-0.831
Marion Corp	-0.414	-0.077	-0.513	-0.109
Mego International	-0.902	-0.747	-1.159	-0.504
MGF Oil	-1.056	-0.197	-1.298	-0.277
National Data Com.	-0.677	-0.651	-0.161	-0.323
Phoenix Steel Corp	-1.204	-0.639	-2.043	2.077
Poloron	-1.957	-0.212	-0.169	-0.085
Revere Copper & Brass	-1.358	-0.415	0.27	0.009
Robintech Incorporated	0.425	0.184	0.712	0.325
RPS Products, Inc.	3.095	0.976	-1.458	-1.302
Salant Corp	3.906	2.082	0.817	1.359
Sea Train Lines, Inc.	-0.987	-0.599	-0.872	-0.206
Steelmet Export Metals	3.609	0.689	0.320	8.205
Storage Technology	-0.809	-0.944	0.091	0.529
Tacoma Boatbuilding Co.	-0.671	-0.422	-0.147	-0.421
Texscan	-1.715	-0.754	-0.358	-0.784
Transcontinental Energy	-0.781	-0.571	0.551	0.733
UNR Industries, Inc.	-5.877	-0.458	-1.786	-0.504
Vector Graphics, Inc.	-1.178	-1.023	-0.377	-0.650
Whippany Paper Board	0.159	0.210	...	...
Wickes Co's Inc.	1.103	1.108	0.341	0.784
Average $t$		-0.140		0.425
Average Prob( $t > 0$ )		(0.453)		(0.493)
Average $ t $		0.712		1.008
Average Prob( $ t  > 0$ )		(0.289)		(0.265)

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 Table 5 Regression of Retained Share ( $\delta$ ) on  $gL/R$  and Sales from Five Years to One Year Prior to Filing\*

Independent Variables	<u>Coefficients for Year:</u>				
	Five	Four	Three	Two	One
$gL/R$	0.06722 (2.943)	0.06538 (2.200)	0.03876 (1.479)	0.01517 (0.663)	-0.00331 (-0.150)
Sales	0.00001 (0.312)	-0.00001 (-0.165)	-0.00002 (-0.607)	0.00001 (0.130)	-0.00001 (-0.103)
Intercept	0.06906 (1.072)	0.11317 (1.681)	0.19096 (3.025)	0.22807 (3.563)	0.28936 (4.225)
$R^2$	0.1831	0.1012	0.0477	0.0108	0.0006
$F$	4.371	2.420	1.177	0.268	0.013
No. of Obs.	42	46	50	52	47
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Mean Values (Standard Deviations)					
$gL/R$	1.945 (0.286)	1.680 (0.208)	1.706 (0.227)	2.049 (0.277)	2.309 (0.330)
Current Assets	136.70 (32.98)	131.23 (29.46)	124.89 (26.85)	125.85 (30.07)	124.03 (30.54)
Equity	114.47 (32.39)	116.47 (27.24)	102.87 (24.69)	88.12 (21.33)	63.20 (16.57)

\* $t$ -statistics shown in parentheses below regression coefficients.

Table 6. Maximum Likelihood Estimates of Retained Share ( $\delta$ ) on Various Measures of Asset Malleability Five Years Before Filing\*

Independent Variables	Specification:		
	1	2	3
<u>Current Assets</u>	0.0817	.1018	...
Equity	(.032)	(.030)	...
	[.011]	[.001]	...
<u>PP&amp;E</u>	...	-.2078	...
Equity	...	(.075)	...
	...	[.005]	...
<u>Current Assets</u>	...	...	.1612
PP&E	...	...	(.054)
	...	...	[.003]
Intercept	-.0384	.1364	.0296
	(.090)	(.095)	(.079)
	[.670]	[.152]	[.707]
Normal Scale Parameter	.3638	.3280	.3993
	(.053)	(.047)	(.079)
Observations:			
Noncensored	27	27	30
Right Censored	1	1	2
Left Censored	14	14	15
Log Likelihood for Normal	-23.698	-18.615	-28.558
$R^2$	.181	.238	.130

\*Standard errors shown in parentheses; significance levels based on  $\chi^2$  test in brackets. Current assets divided by PP&E measured in logs.

Table 7. Maximum Likelihood Estimates of Distributions to Shareholders Taken from Eberhart, et al., sample on Various Measures of Asset Malleability Five Years Before Filing\*

Independent Variables	Specification	
	1	2
<u>Current Assets</u>	.0034	...
Equity	(.001)	...
	[.018]	...
<u>PP&amp;E</u>	-.0155	...
Equity	(.020)	...
	[.432]	...
<u>Current Assets</u>	...	.0872
PP&E	...	(.025)
	...	[.001]
Intercept	.1904	.1340
	(.060)	(.040)
	[.002]	.001]
Normal Scale Parameter	.2005	.1907
	(.027)	(.025)
Observations:		
Noncensored	27	28
Right Censored	0	0
Left Censored	1	1
Log Likelihood for Normal	4.031	5.625
$R^2$	.241	.301

\*Standard errors shown in parentheses; significance levels based on  $\chi^2$  test in brackets. Current assets divided by PP&E measured in logs.

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Table 8. Evidence on Bankruptcy Behavior (Asset Shifting) Prior to Filing

Firm Name	Stock Repurch.	Divi- dends	<u>Asset Shifting:</u>		Fraud	No Shifting	No Info
			New Lines	Inside Deals			
AM International		✓	✓				
American Monitor							?
Anglo Energy, Inc.							?
Auto Train							?
Beehive International							?
Bennet Petroleum Corp.							?
Berry Industries Corp.	✓		✓				
Bobbie Brooks	✓						
Branch Industries, Inc.							?
Cache, Inc.						o	
Charter Co.	✓	✓	✓				
Colonial Commercial Corp.			✓				
Commodore Corp.			✓				
Commodore Resources Corp.							?
Computer Devices, Inc.					✓		
Computone Systems, Inc.	✓						
Dalco Petroleum					✓		
Data Access	✓	✓	✓	✓	✓		
Evans Products		✓					
Flame Industries, Inc.							?
Gamex						o	
Gateway Sporting Goods			✓				
HRT Industries, Inc.						o	
Istel		✓	✓				
Kennilworth Systems Corp.			✓				
K-Tel International, Inc.		✓	✓				
Lafayette Radio Electronics						o	
Leisure Dynamics		✓					
Lionel		✓	✓				
Magic Circle Energy				✓			
Manville		✓					
Marion		✓					
Mego		✓		✓	✓		
MGF Oil							?
National Data Communications							?
Omni Exploration, Inc.							?
Partners Oil							?
Phoenix Steel						o	
Poloron Products, Inc.			✓				
Revere						o	
Robintech Incorporated			✓				
RPS Products, Inc.							?
Salant		✓					
Sasco							?
Sea Train Lines, Inc.							?
Shelter Resources			✓				
Steelmet Export Metals		✓	✓				
Storage Technology			✓				
Tacoma Boatbuilding Co.			✓				
Texscan			✓	✓			
Transcontinental Energy						o	
UNR Industries, Inc.		✓					
Vector Graphics, Inc.				✓	✓		
Whippany Paper Board Co., Inc.		✓					

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Wickes Companies, Inc.  
Wilson Foods

✓

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**TOTALS:**

Asset Shifting (33 firms):	5	15	19	5	5	8	
No Shifting:							
No information on business operations:							15

Likelihood of asset shifting by 33 out of 41 firms when true probability is .5: .0001



Table 9. Maximum Likelihood Estimates of Retained Share ( $\delta$ ) on the Percentage Change in the Standard Deviation of the Rate of Return during the Five Years Before Filing and on the Length of Restructuring Negotiations outside of Bankruptcy.\*

Independent Variables	Specification:			
	1	2	3	4
% $\Delta$ in Standard Deviation of Rate of Return	-0.2060 (.083) [.013]	-0.2086 (.087) [.016]	-0.1659 (.089) [.062]	-0.1931 (.096) [.043]
Months in Negotiation	...	...	.0046 (.003) [.074]	.0028 (.003) [.307]
<u>Current Assets</u> Equity	.0971 (.025) [.001]	...	.1049 (.026) [.001]	...
<u>PP&amp;E</u> Equity	-.1581 (.060) [.008]	...	-.1803 (.067) [.007]	...
<u>Current Assets</u> PP&E	...	.2511 (.058) [.001]	...	.2558 (.059) [.001]
Intercept	.2342 (.110) [.033]	.1117 (.084) [.180]	.1360 (.140) [.330]	.0527 (.113) [.639]
Normal Scale Parameter	.2443 (.039)	.2550 (.040)	.2385 (.040)	.2610 (.043)
Observations:				
Noncensored	21	21	19	19
Right Censored	0	0	0	0
Left Censored	10	10	10	10
Log Likelihood for Normal	-6.267	-6.613	-5.650	-6.904
$R^2$	.502	.463	.522	.488

\*Standard errors shown in parentheses; significance levels based on  $\chi^2$  test in brackets. Current assets divided by PP&E measured in logs.