

# A comparison of financial recontracting in distressed exchanges and Chapter 11 reorganizations\*

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We investigate the financial recontracting of firms completing distressed exchanges and those reorganizing under Chapter 11. We find that recovery rates for creditors, on average, are higher in distressed exchanges than in Chapter 11 reorganizations, as are equity deviations from absolute priority. The difference in deviations potentially provides valuable information on the higher costs of formal reorganization. Also, cash is used more extensively to redeem creditors' claims in Chapter 11 than in distressed exchanges. The greater use of cash can be attributed to provisions of the Bankruptcy Code that permit conservation of cash and facilitate asset sales.

*Key words:* Distressed exchanges; Chapter 11; Equity deviations; Bankruptcy costs  
*JEL classification:* G33

## 1. Introduction

This paper investigates the financial recontracting of firms in financial distress. We sample 82 firms that have either entered bankruptcy through Chapter 11

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of the Bankruptcy Reform Act of 1978 or informally completed a distressed exchange of publicly traded debt. The terms of restructuring include the medium of exchange, the recovery rates for creditor claims, and deviations from absolute priority for different creditor classes as well as equity.

We find that many firms entering Chapter 11 do so only after attempting to resolve their financial difficulties informally. These firms may have a greater need for the particular provisions of Chapter 11 because they are less solvent or less liquid. As a result, recovery rates for creditors' claims are substantially lower in Chapter 11 reorganizations than in distressed exchanges, 51 cents compared with 80 cents on the dollar.

There is also evidence that creditors are willing to provide incentives to equity holders to complete distressed exchanges by offering them a greater share of the value of the reorganized firm: deviations in favor of equity holders average 2.3% of the value of the Chapter 11 reorganized firm, compared with 9.5% in informal reorganizations. Whereas in distressed exchanges only equity holders gain, in Chapter 11 reorganizations junior debt and preferred stock also gain. The difference in deviations between informal and formal reorganizations can be interpreted as a lower-bound estimate of the higher costs of formal reorganization, since it represents what certain creditors are willing to give up to avoid Chapter 11. The patterns of recovery rates and deviations from absolute priority are consistent with the debtor-in-possession owning a valuable option to delay repayment to creditors by threatening entry into Chapter 11.

The evidence on equity deviations contributes to the debate on the costliness of bankruptcy. For example, Aghion, Hart, and Moore (1991) argue that Chapter 11 (and other formal procedures) create 'serious theoretical and practical problems'. Jensen (1989) believes that the costs of formal reorganization are high enough to explain the greater incidence of workouts. He regards deviations from absolute priority as a violation of debt contracts, arising from the provisions of the formal reorganization process, for example, the exclusivity rights given to the debtor-in-possession to control reorganization. In contrast, Gertner and Scharfstein (1991) argue that deviations are integral to the restructuring process enabling a firm to undertake profitable projects that would otherwise be lost [see Myers (1977)].

We also find that cash is used more extensively to redeem creditors' claims in Chapter 11 than in distressed exchanges. Under the Bankruptcy Code, cash can be conserved by postponing interest and capital repayments, and raised through debtor-in-possession financing and asset sales.

The plan of this paper is as follows. The next section describes our sample. Section 3 analyzes the medium of exchange used to redeem defaulted securities. Section 4 examines the recovery rates for different classes of creditor claims and compares them across different forms of reorganization. Section 5 compares deviations from absolute priority for equity holders with those for various creditor classes, and explores why equity deviations are larger in distressed

exchanges than in Chapter 11 reorganizations. Section 6 provides a summary and conclusions.

## 2. Data and sample description

### 2.1. *The choice and size of sample*

Over the period 1983 to 1988, we identify a sample of financially distressed firms from Standard and Poor's Credit Watch, which reports changes in the ratings of publicly traded debt issues. We consider a firm for inclusion in our sample if it had a debt issue downgraded to CCC or worse, including D and NR. Debt issues rated CCC are identified by Standard and Poor's as being 'vulnerable to default'. A rating of D indicates a payment default on one debt issue or more, and a rating of NR is assigned when the firm's debt issues are no longer rated.

In the sample period 222 firms were downgraded to CCC or D, and the debt issues of slightly over 900 firms were no longer rated. In most cases an NR rating was unrelated to financial distress. For example, before being classified as NR, 164 debt issues were rated between A and AAA, and 443 were rated between B and BBB.

We used the Wall Street Journal Index to determine whether the firms identified attempted to restructure their debt informally, through a distressed exchange offer, or formally, by entering Chapter 11. This procedure identified an initial sample of 161 financially distressed firms.

A total of 78 financially distressed firms entered Chapter 11. Of these 17 emerged and have sufficient data for our analysis, 20 were still in reorganization, and we have insufficient data for 41. We use the Bankruptcy DataSource to supplement our sample with 24 additional firms that have emerged from Chapter 11 since 1988. To ensure the comparability of our sampled Chapter 11 firms, we excluded two strategic bankruptcies (Texaco and Manville). These firms entered Chapter 11 for reasons other than financial distress. We also excluded two prepackaged bankruptcies (Crystal Oil and Resorts International). Prepackaged bankruptcies more closely resemble workouts than formal reorganizations. As a result, our subsequent analysis examines a total of 37 completed Chapter 11 cases.

The remainder of our sample worked out their financial difficulties. In particular, we identified 76 successful distressed exchange offers.<sup>1</sup> Of these 29

<sup>1</sup>If the same firm exchanged different bonds at distinct times, we treat each exchange offer as a separate transaction. In our sample, five firms (Delmed, International Harvester, Massey-Ferguson, Oak Industries, and Tosco) each completed two such distinct exchange offers. In comparison, Gilson, John, and Lang (1991) treat a series of restructurings separated by less than a calendar year as a single transaction.

Table 1

Time series of distressed exchanges and Chapter 11 reorganizations by completion date. The sample consists of 45 distressed exchanges and 37 Chapter 11 reorganizations. The sample period is 1983–1990. A distressed exchange is an exchange of publicly listed securities, conditional on the firm being in financial distress. Financial distress requires downgrading of one or more of the firm's debt securities by Standard and Poor to CCC or worse, including NR, together with subsequent evidence of restructuring activity in the Wall Street Journal Index.

Year	Number of distressed exchanges	Number of Chapter 11 reorganizations
1983	6	—
1984	7	—
1985	3	1
1986	10	2
1987	8	6
1988	5	5
1989	6	14
1990	—	9
Total	45	37

cases have insufficient data, and two commercial bank workouts (Continental Illinois Bank and First City Bankcorp of Texas) are excluded because financial institutions cannot seek protection under the Bankruptcy Code [Section 109(b)]. Our subsequent analysis examines the remaining 45 distressed exchange offers.

Table 1 describes the time-series distribution by completion date of our distressed exchanges and bankruptcies. In comparison with the Chapter 11 reorganizations, the distressed exchanges tend to be completed earlier in the sample period. This difference is consistent with the fact that Chapter 11 reorganizations take longer to resolve. Also, in comparison with Gilson, John, and Lang's (1991) (hereafter referred to as GJL) sample, which is representative of debt restructuring activity in the early 1980s, we investigate more recent instances of financial distress.

An examination of the industry distribution by two-digit SIC code of our distressed exchanges and bankruptcies does not suggest a systematic difference in the industry classification of the informal and formal reorganizations. Both samples are dominated by petroleum (SIC code = 10) and capital goods (SIC code = 33) firms, which together account for 50% of distressed exchanges and 45% of Chapter 11 reorganizations.

Our sample is more representative of the restructuring of relatively larger firms, since every included firm has publicly traded debt. In contrast, GJL's sampling method requires only that a firm be listed on the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX) and a majority of firms in their sample (54%) have no publicly traded debt. We later discuss how these sampling differences may differentiate our results from GJL's.

## *2.2. Capital structure and solvency characteristics*

We obtain information on a restructuring from the firms' 8K and 10K reports and for Chapter 11 reorganizations from the formal plan of reorganization. We use the Capital Changes Reporter to corroborate the type of securities issued as part of the reorganization plan. We obtain security price data from the Center for Research in Security Prices (CRSP) daily returns file, the Wall Street Journal, and the Bankruptcy DataSource. We use market prices for preferred stock, equity, and warrants. We rely on the face value of debt securities, however, since market prices are seldom available for debt issued by a reorganized firm.

In table 2 various financial characteristics, measured at the accounting year end prior to default, are reported for the two samples. We include the number and face value of long-term debt securities outstanding as well as the proportion of long-term debt held by banks and insurance companies. We also compare the firms' solvency as measured by their market leverage ratio (book value of debt divided by the sum of the book value of debt plus the market value of equity) as well as their liquidity using the current ratio (current assets divided by current liabilities). In addition, we contrast the time spent in informal as opposed to formal reorganization.

Consistent with GJL, we see from table 2 that successful exchange offers are characterized by fewer long-term debt securities and involve a smaller face value. Under the Trust Indenture Act of 1939, an exchange offer typically requires the unanimous consent of all creditors whose claims are in default. If some creditors hold out for more generous terms, the offer may fail. This holdout problem becomes more severe as the number of creditors increases, suggesting that the smaller the number of debt securities involved and the smaller their face value, the more likely an exchange offer is to succeed. Although this prediction is on average consistent with our data, the differences in the number of debt securities and their face values between informal and formal reorganizations are not statistically significant. In the light of this evidence, the potential recontracting problems in informal reorganizations may be exaggerated.

Unlike GJL's firms, firms in our sample that successfully complete exchange offers do not owe more of their long-term debt to banks. Table 2 reveals no statistically significant difference between informal and formal reorganizations in the proportion of long-term debt held by banks and insurance companies. A number of factors may explain this result. First, firms must have publicly traded debt to be included in our sample. As a result, these firms may rely less on bank debt. For example, from table 2 we see that the median workout firm in our sample has no long-term bank debt. This suggests that our sampling procedure, by excluding firms without publicly traded debt, may also be excluding workout firms that rely heavily on bank debt. Second, we sample relatively larger firms than GJL, and bank loans to these larger firms are more likely to be

Table 2

Selected financial characteristics measured at year end prior to default for 45 firms that restructured their debt informally and 37 firms that formally reorganized under Chapter 11. The sample period is 1983–1990.

	Number of long-term debt securities <sup>a</sup>	Face value of long-term debt securities (millions of \$s)	Proportion of long-term debt held by banks & insurance companies	Market solvency ratio <sup>b</sup>	Current ratio <sup>c</sup>	Time in reorganization <sup>d</sup> (months)
Distressed exchanges						
Median	5	135.7	0.00	0.76	1.39	17
Mean	6.07	388.9	0.29	0.78	1.38	17.68
Std. dev.	3.56	559.1	0.38	0.15	0.62	11.84
Chapter 11 reorganizations						
Median	6	154.4	0.28	0.87	0.99	27
Mean	6.64	326.2	0.29	0.81	1.06	29.57
Std. dev.	4.04	441.9	0.3	0.18	0.88	13.89
<i>p</i> -value for Mann–Whitney test for difference in medians	0.79	0.5	0.27	0.04	< 0.01	< 0.01

<sup>a</sup>Number of long-term debt securities is the number of entries in the long-term debt section of the Moody's manuals.

<sup>b</sup>The market solvency ratio is the face value of all debt divided by the market value of equity plus the face value of all debt.

<sup>c</sup>The current ratio is the value of current assets divided by the value of current liabilities.

<sup>d</sup>The time in reorganization is the number of months from the date of default to the date when the distressed exchange is completed or a formal plan of reorganization is approved by the bankruptcy court.

syndicated. Disputes between members of a bank lending syndicate are common and may make it more difficult to resolve a firm's financial difficulties informally. Also, banks may force firms into Chapter 11 for reasons of reputation. Banks repeatedly find themselves in negotiations with financially distressed firms, and this costly action may prove to be beneficial in future such negotiations [Giammarino (1987)].

Table 2 indicates that firms in our sample that successfully complete exchange offers are significantly more solvent and more liquid at the accounting year end before their default than firms entering Chapter 11.<sup>2</sup> As suggested by GJL, firms that enter Chapter 11 may experience unexpectedly worse operating performance than firms that restructure their debt privately. To investigate this possibility, we compare the common stock price performance of the workout and Chapter 11 firms over the two-year period preceding default. Like GJL, we find that raw returns are significantly lower for Chapter 11 firms, a median cumulative return of  $-76\%$ , than for the firms involved in distressed exchanges, a median cumulative return of  $-59\%$  ( $p = 0.026$  for a Mann–Whitney test of the difference in medians).<sup>3</sup>

Alternatively, firms that successfully work out their financial difficulties may be better monitored by their creditors, and therefore are forced to reorganize when they are more solvent and liquid. Consistent with this idea, as we shall see, recovery rates for creditors' claims are higher in distressed exchanges than in Chapter 11 reorganizations.

### 2.3. Time spent in reorganization

The time spent in reorganization for our sample firms is also compared in table 2. The period in informal reorganization is measured from the default date to the date of exchange, and for a formal reorganization it is measured from the default date to the date that the formal plan of reorganization is confirmed by the bankruptcy court. Distressed exchanges require significantly less time than Chapter 11 reorganizations: a median workout period of 17 months, compared with a median of 27 months for Chapter 11 reorganizations.

<sup>2</sup>Firms that have experienced financial distress will usually have incurred significant tax losses. For our two samples, median tax losses expressed as a percentage of the value of the reorganized firm are 54% for distressed exchanges and 48% for Chapter 11 reorganizations. Valuing such tax shields is important in the pricing of risky debt [see Leland (1993)].

<sup>3</sup>When these raw returns are adjusted for movements in the CRSP equal-weighted index to form market-adjusted returns, we find no statistically significant difference: a median cumulative market-adjusted return of  $-102\%$  for distressed exchanges compared with  $-99\%$  for Chapter 11 firms ( $p = 0.77$  for a Mann–Whitney test of the difference in medians). However, according to Betker (1991), there is great variability in betas around default dates and, as a result, we do not adjust the returns for risk. The evidence on the raw returns is more relevant to our comparison, since changes in the value of assets are related to raw returns rather than to their market-adjusted counterparts.

Table 3

Percentage of creditors' total payments received in the form of a particular security, cash, or property. Figures are based on a sample of 45 firms that restructured their debt informally and 37 firms that formally reorganize under Chapter 11 in the period 1983–1990.

<i>Panel A: Distressed exchanges<sup>a</sup></i>							
Creditors							
Payments received	Bank & insurance debt	Senior debt	Junior debt	Preferred stock	Trade debt	Total	
Cash	10.46%	29.23%	2.25%	1.73%	87.86%	13.08%	
Bank debt	55.55%					35.39%	
Senior debt	10.57%	38.32%	11.30%		9.69%	15.19%	
Junior debt	0.53%	1.70%	13.15%			2.43%	
Preferred stock	20.28%	15.88%	3.21%	71.48%		18.97%	
Equity	1.81%	13.25%	66.92%	26.79%	2.45%	13.70%	
Warrants	0.32%	1.62%	0.11%			0.51%	
Property	0.48%		3.05%			0.72%	

<i>Panel B: Chapter 11 reorganizations</i>							
Creditors							
Payments received	Bank & insurance debt	Secured debt	Senior debt	Junior debt	Preferred stock	Trade debt	Total
Cash	27.00%	31.38%	32.03%	10.54%	27.61%	98.57%	29.33%
Bank debt	6.74%						1.80%
Secured debt	2.02%	5.00%	4.30%	10.88%			4.19%
Senior debt	49.70%	41.34%	34.26%	15.40%		0.86%	38.71%
Junior debt	3.92%		1.20%				1.57%
Preferred stock	0.31%	1.84%	5.30%	2.57%			2.97%
Equity	7.64%	20.43%	22.28%	56.45%	42.45%	0.57%	20.00%
Warrants	0.11%		0.63%	4.16%	29.94%		0.74%
Property	2.55%						0.68%

<sup>a</sup>See table 1 for the definition of distressed exchange. For a particular creditor, we provide the percentage of total payments received in the form of a particular security, cash, or property. The total column provides the percentage of total proceeds received in the form of a given security, cash, or property.

Since we measure the time spent in formal reorganization from the date of default, we explicitly take account of the period before Chapter 11 entry when the firm may have attempted a workout. Using the Wall Street Journal Index, we determine that firms attempted to work out their financial difficulties in 19 of our 37 Chapter 11 cases. Therefore, about one-half of our Chapter 11 cases follow the abandonment of publicly announced workout attempts. For these 19 firms the median time between the first public announcement of an attempted workout and the subsequent date of entry into Chapter 11 is six months.



### **3. The medium of exchange in distressed exchanges and Chapter 11 reorganizations**

Regardless of the reorganization form, a bundle of securities is typically distributed to each creditor class in a distressed restructuring. The nature of this bundle, however, varies across creditor classes. More senior creditors tend to receive more of the value of their payments in cash and senior securities.

Table 3 sets out for each class of creditor in both distressed exchanges (panel A) and Chapter 11 reorganizations (panel B) the percentage of total payments received in the form of a particular security, property, or cash. A firm's creditors are divided into six categories: (i) bank debt and debt owed to insurance companies, both secured and unsecured, (ii) nonbank secured debt, (iii) senior debt, including senior subordinated debt, (iv) junior debt, including senior and junior convertible debt, (v) preferred stock, and (vi) trade debt.

In Chapter 11 reorganizations all creditors' securities are exchanged. In contrast, only a subset of securities outstanding are exchanged in workouts. If a particular security is not exchanged it is not included in the calculations. For example, nonbank secured debt is not restructured in any of our sample of distressed exchanges.<sup>4</sup>

From panel A of table 3, the majority of payments in the distressed exchange of senior debt are in the form of cash (29%) and new senior debt (38%), whereas in the distressed exchange of junior debt, common stock (67%) constitutes the majority of the payments.<sup>5</sup>

Similarly, in the Chapter 11 reorganizations (panel B), senior debt is again paid primarily in either cash (32%) or new senior debt (39%), and the majority of payments to junior debt are in common stock (56%). Trade debt is paid overwhelmingly in cash regardless of the form of reorganization, primarily because such claims are often small and heterogeneous.

The aggregate cash used in exchanges of securities is more in Chapter 11 (29%) than in distressed exchanges (13%). The greater use of cash in Chapter 11 may be surprising in light of the lower solvency and liquidity ratios of these firms before default. Three provisions of the Bankruptcy Code, however, contribute to this result. They allow the firm (i) to conserve cash through a moratorium on interest payments on undersecured and nonsecured claims during the formal reorganization period [section 362(a)], (ii) to raise cash through debtor-in-possession financing [section 364], and (iii) to sell assets more easily in

<sup>4</sup>Calculations relating to distressed exchanges include only that portion of a security issue that is tendered back to the issuing firm in an exchange offer. In addition, administrative priority claims were classified separately and were paid off entirely in cash.

<sup>5</sup>Brown, James, and Mooradian (1993) examine the information content of the medium of exchange and its effect on the share price performance of firms undertaking distressed exchanges.

reorganization [section 363(3)].<sup>6</sup> Consistent with this last provision, asset sales averaged over the period of reorganization and expressed as a proportion of the value of the reorganized firm are higher in Chapter 11, a median of 44%, than in distressed exchanges, a median of 28% ( $p = 0.10$  for a Mann–Whitney test of the difference in medians).<sup>7</sup> Furthermore, the use of cash is not only positively correlated with the percentage of asset sales for both reorganization forms, but is more closely related to asset sales in Chapter 11 than in distressed exchanges (a correlation of 0.582, compared with 0.306).

Slightly more equity is used in Chapter 11 reorganizations (20%) than in distressed exchanges (14%), and new equity securities are distributed to banks in both formal and informal reorganizations, notwithstanding various regulatory constraints on banks' holding equity. According to GJL, banks are granted temporary exceptions when equity is obtained in a restructuring of a firm indebted to the bank. New bank debt is seldom issued to satisfy bank claims in Chapter 11 reorganizations (7%).

In 32 of the 37 Chapter 11 cases, either new stock (89%) or warrants (11%) are issued to existing equity holders. In contrast, in distressed exchanges equity is exchanged in only 2 of the 41 cases, with shareholders of Petro Lewis receiving cash and shareholders of Gearhart Industries receiving equity of another company. The greater incidence of equity claims being restructured in Chapter 11 reflects the earlier evidence that these firms are less solvent before their default.

#### 4. Recovery rates for creditor claims

Recovery rates represent the proportion of the face value of a creditor's claim that is repaid. Recovery rates are influenced by the value of the firm at reorganization, the claim's seniority, and the value of any underlying collateral.

##### 4.1. *The size of firm recovery rates*

Table 4 compares recovery rates for distressed exchanges and Chapter 11 reorganizations for different classes of creditors' claims and for each firm's aggregate claims. These firm recovery rates are significantly smaller in Chapter 11 reorganizations, a median of 50.9%, than in distressed exchanges, with a median of 80.1% ( $p < 0.01$  for a Mann–Whitney test of the difference in medians), indicating that Chapter 11 firms are far less solvent at the end of reorganization than firms which restructure their debt privately.

<sup>6</sup>Under section 363(e), encumbered property can be sold free and clear in the firm's ordinary course of business.

<sup>7</sup>Data on assets sales are obtained from firms' 10K statements. Unfortunately, these data were not available for every firm in our Chapter 11 and distressed exchange samples. As a result, we have data on asset sales for 35 distressed exchanges and 18 Chapter 11 reorganizations.

Table 4

Percentage recovery rates for each creditor class. Figures are based on a sample of 45 firms that restructure their debt informally and 37 firms that formally reorganize under Chapter 11. The sample period is 1983–1990.

	Recovery rates <sup>b</sup>					Firm
	Secured debt	Bank debt	Senior debt	Junior debt	Preferred stock	
Distressed exchanges <sup>a</sup>	—	86.6%	78.5%	79.6%	41.1%	80.1%
Chapter 11 reorganizations	80.1%	86.4%	47.0%	28.9%	42.5%	50.9%

<sup>a</sup>See table 1 for the definition of distressed exchange.

<sup>b</sup>A percentage recovery rate for a particular creditor class is the amount received by all creditors in a class divided by the amount (face value) owed that class. A firm recovery rate is the amount received by all creditors of the firm divided by the amount (face value) owed to all creditors.

#### 4.2. Market versus book values

In table 4, we use the market values for securities received by creditors if available; otherwise book, i.e., face, values are used. Market values are available for approximately 47% of the value of securities exchanged in informal reorganizations, including cash (16%), preferred stock (15%), and common stock (16%). In formal reorganizations approximately 53% of the value of securities received have market values, including cash (29%), preferred stock (3%), common stock (20%), and warrants (1%). To investigate whether the use of book values has the potential to systematically bias the estimate of recovery rates, we compare firm recovery rates for the 12 distressed exchanges and 10 Chapter 11 reorganizations for which market values are available for all securities received in reorganization. We again find that recovery rates are smaller in Chapter 11 reorganizations, a median of 41.1%, compared with a median of 73.8% in distressed exchanges.<sup>8</sup>

#### 4.3. Explanations for recovery rates

The smaller recovery rates in Chapter 11 may be due to (i) lower solvency rates for firms entering Chapter 11, as described in table 2, (ii) higher direct costs of Chapter 11 (see GJL), and (iii) higher indirect costs, for example, arising from distressed sales of assets. Shleifer and Vishny (1993) suggest that when firms are forced to sell assets, and other firms in the industry are themselves near distress, the assets may be sold at prices below their values in best use.

<sup>8</sup>Since these recovery rates are below the rates for the full sample, market values are probably lower than book values.

Table 5

Logistic regressions of firm recovery rates against asset sales, stock price performance, petroleum industry membership, and percentage cash used in the terms of reorganization. Results are based on a sample of 35 firms that restructure their debt informally and 18 firms that formally reorganize under Chapter 11 with available asset sale data. The sample period is 1983–1990. (Asymptotic *t*-statistics are in parentheses.)

Regression	Constant	% asset sales <sup>a</sup>	% asset sales × bankruptcy dummy <sup>b</sup>	Firm's cumulative raw returns <sup>c</sup>	Cumulative market returns <sup>c</sup>	Petroleum dummy <sup>d</sup>	% cash <sup>e</sup>
(1)	0.2776 (2.82) <sup>f</sup>	-0.6237 (2.04) <sup>f</sup>		-0.4177 (0.66)			
(2)	0.3289 (0.37)	-0.5210 (1.65) <sup>g</sup>			2.7795 (2.79) <sup>f</sup>		0.9794 (0.52)
(3)	0.4745 (0.82)	-0.2379 (0.68)	-0.9313 (1.83) <sup>g</sup>		2.583 (2.55) <sup>f</sup>	-0.5719 (1.21)	0.9127 (0.98)

<sup>a</sup>Percentage asset sales are the average annual asset sales measured over the reorganization period divided by the firm's value at reorganization.

<sup>b</sup>The bankruptcy dummy equals 1 if the firm is formally reorganized.

<sup>c</sup>Returns are calculated over the two years preceding default. The CRSP equal-weighted index is used as a proxy for the market.

<sup>d</sup>The petroleum dummy variable equals 1 if the firm is in the petroleum industry.

<sup>e</sup>% cash is the amount of cash received by creditors as a proportion of the total value of all securities issued including cash.

<sup>f</sup>Significant at the 5% level.

<sup>g</sup>Significant at the 10% level.

Table 5 reports logistic regression results investigating the determinants of firm recovery rates. We use the performance of the firm's common stock over the two-year period preceding default as a proxy for deteriorating operating performance. We also use the returns to the CRSP equal-weighted (EW) index to determine whether recovery rates are related to the general performance of the economy. Asset sales data are used to investigate whether the attendant indirect costs of bankruptcy significantly affect the size of firm recovery rates. Asset sales are measured by the average annual dollar amount of assets sold during a firm's reorganization period, expressed as a proportion of the firm's value at reorganization. To determine whether asset sales are more highly correlated with firm recovery rates in Chapter 11 than in distressed exchanges, we include an interaction term of percentage assets sales times a bankruptcy dummy variable that equals 1 if the firm is reorganized in Chapter 11 and 0 otherwise. Also, given the sizeable number of petroleum firms in our sample and the widespread financial distress in the petroleum industry over our sample period, we include a petroleum dummy variable, which equals 1 if the firm is in the petroleum industry and 0 otherwise, to determine whether recovery rates vary systematically with this industry classification. Finally, we introduce the percentage of cash used in the reorganization to determine whether the medium of exchange is related to recovery rates.

From table 5 we see that a firm's recovery rate does not appear to be statistically related to its common stock's past performance. This result may reflect the noisiness of the returns to financially distressed firms. In contrast, the performance of the CRSP EW index is significantly and positively related to firm recovery rates, suggesting that the worse the economy's performance, the smaller the proceeds for creditors. As Shleifer and Vishny predict, percentage asset sales are negatively correlated with firm recovery rates, although the level of significance depends on the particular regression specification. Furthermore, the significance of the interaction term suggests that asset sales reduce a firm's value significantly more in Chapter 11 than in distressed exchanges. The lack of significance of the petroleum dummy, however, provides no evidence that recovery rates are related to industry concentration, as implied by Shleifer and Vishny's model. Finally, the percentage of cash used has no incremental explanatory power in any of our regression specifications.

#### *4.4. Recovery rates by creditor classes*

A comparison by individual creditor classes in table 4 suggests considerable variation in recovery rates across the two forms of reorganization. In distressed exchanges, only preferred stock has recovery rates much lower than senior debt. In contrast, in Chapter 11 reorganizations, senior and junior debt and preferred stock all have much lower recovery rates than bank debt and secured debt. These differences may reflect variations in capital structure across firms, as well as differences in particular creditors' bargaining power.

## 5. Deviations from absolute priority

Absolute priority requires that more junior creditors, including equity, receive financial consideration in a distressed restructuring only if more senior creditors are paid in full. If more senior creditors are not paid in full but more junior creditors do receive some financial consideration, a deviation from absolute priority obtains. A positive deviation from absolute priority indicates that the creditor receives more in reorganization than is due under absolute priority, and a negative deviation indicates that the creditor receives less.

Deviations from absolute priority provide evidence on the bargaining inherent in the reorganization of financially distressed firms. To investigate recontracting between creditors, we compare deviations by creditor classes in distressed exchanges and Chapter 11 reorganizations. We also compare equity deviations for the two reorganization forms to explore equity's bargaining role.

### 5.1. *Deviations from absolute priority by creditor class*

Unlike Chapter 11 reorganizations, distressed exchanges do not necessarily involve all creditors. If a particular security is not exchanged in a workout, we assume that these creditors do not experience a deviation from absolute priority. A significant majority of creditors in our sampled workouts, however, are involved in the distressed exchanges: the face value of securities exchanged amounts to 78.09% of the face value of the workout firms' liabilities as measured at the year end prior to default.

Table 6 reports deviations from absolute priority by creditor class for both distressed exchanges and Chapter 11 reorganizations. We provide the total positive dollar deviations as well as the total negative dollar deviations incurred by creditors in a particular class. For comparison purposes, we also express the resulting net (positive less negative) dollar deviations as a percentage of the total value of the firms' securities restructured. By doing so we focus on wealth transfers between the various creditor classes and equity.<sup>9</sup>

In distressed exchanges, all creditor classes relinquish some financial consideration to equity (+ 9.51%). Senior claimholders, bank debt (− 3.54%) and senior debt (− 3.44%), relinquish more than junior claimholders, preferred stock (− 1.39%) and junior debt (− 0.95%).

In Chapter 11 reorganizations, equity obtains the largest percentage deviations (+ 2.28%), although this is much less than equity's gain in workouts. Senior claimholders, including bank debt (− 0.96%), secured debt (− 1.67%), and senior debt (− 1.44%), forego some financial consideration. Unlike in

<sup>9</sup>Alternatively, we could have averaged equity deviations across firms, thereby giving equal weight to each observation, rather than weighting each observation by the firm's value. The equal-weighted calculations give a median equity deviation of 8.1% for distressed exchanges and 0.9% for Chapter 11 reorganizations (the means are 9.2% and 2.8%, respectively).

Table 6

Deviations from absolute priority by creditor class. Figures are based on a sample of 45 firms that restructure their debt informally and 37 firms that formally reorganize under Chapter 11. The sample period is 1983–1990.

Creditors	Positive deviations (millions of \$)	Negative deviations (millions of \$)	Percentage deviations <sup>b</sup>
<i>Panel A: Distressed exchanges<sup>a</sup></i>			
Bank debt	0.00	– 483.00	– 3.54%
Senior debt	28.37	– 498.37	– 3.44%
Junior debt	114.21	– 244.21	– 0.95%
Preferred stock	166.51	– 356.51	– 1.39%
Equity	1273.00		9.51%
<i>Panel B: Chapter 11 reorganizations</i>			
Bank debt	0.00	– 123.00	– 0.96%
Secured debt	0.00	– 215.00	– 1.67%
Senior debt	70.23	– 255.23	– 1.44%
Junior debt	150.93	– 30.33	0.94%
Preferred stock	103.10	0.00	0.80%
Equity	299.30		2.28%

<sup>a</sup>See table 1 for the definition of distressed exchange.

<sup>b</sup>Positive deviations are the dollar amounts creditors receive in excess of those due under absolute priority. Negative deviations are the dollar amounts by which payments fall short of what was due under absolute priority. Percentage deviations measure the net dollar deviations in relation to the total value of the firm's securities restructured.

distressed exchanges, however, junior debt (+ 0.94%) and preferred stock (+ 0.80%) in aggregate gain in the reorganization.<sup>10</sup> The gains to creditors as well as equity may reflect the power of these classes to impede the approval of the reorganization plan and waste other creditors' assets.

### 5.2. Determinants of equity deviations from absolute priority

This section examines the determinants of equity deviations and investigates why deviations may be larger in distressed exchanges than in Chapter 11

<sup>10</sup>Deviations from absolute priority are based on the face value of debt owed, but this may not provide an accurate measure of the gains or losses to the security holder resulting from default. For example, changes in default-free interest rates since origination may give a security value that is less than or more than its face value. Consider International Harvester's exchange of one of its debentures that resulted in a deviation based on face value of – \$3.12 million. In contrast, if the principal and interest are discounted at default-free rates prevailing at the time of exchange, the bondholders would gain + \$0.11 million. Thus, if quasi market values without any default premium are used as a basis, security holders did not lose as a result of default.

reorganizations.<sup>11</sup> Although the proportion of firms experiencing equity deviations in Chapter 11 (80%) is similar to those reported in earlier studies, the equity deviations are much smaller. For example, Eberhart, Moore, and Roenfeldt (1990) report average equity deviations of 7.8% for their sample of Chapter 11 firms. The smaller deviations reported here may reflect the more recent nature of our sample. With the growth in the market for distressed debt securities and the greater involvement of institutional investors such as 'vulture funds', debtholders may have increased their bargaining power at the expense of equity holders.

### 5.2.1. *The option to delay*

Franks and Torous (1989) argue that equity deviations from absolute priority arise when creditors write down their claims in exchange for equity's relinquishing its option to delay repayment of creditors' claims. The option to delay may take the form of threatening to enter Chapter 11 or, once in Chapter 11, delaying the firm's emergence from reorganization. Deviations from absolute priority reflect the time value of this option, which measures by how much more creditors actually write down their claims than they would using the rule of absolute priority.

All else being equal, the time value of the option to delay is larger the closer the face value of creditors' claims ( $D$ ) is to the value of the firm at reorganization ( $V$ ). Hence we expect creditors to offer equity holders more when the option to delay is closer to or at-the-money. In fig. 1 we plot percentage equity deviations against  $\ln(D/V)$ . The deviations appear to be substantial when the option is at-the-money, but minimal when the option is either deep in-the-money or deep out-of-the-money.

This argument also explains why we obtain larger equity deviations from absolute priority in distressed exchanges, since our workout firms have larger recovery rates, and as a result, the time value of equity's option to delay is larger.<sup>12</sup>

<sup>11</sup>The use of book values instead of market values may potentially bias equity deviations. For example, if market values of securities received are discounted below book value, true deviations may be underestimated. Furthermore, if these discounts are greater in Chapter 11 than in distressed exchanges, the higher estimated equity deviations in distressed exchanges may be spurious. However, for the 12 distressed exchanges and the 10 Chapter 11 reorganizations where market values are available for all securities received in reorganization, equity deviations are comparable to those reported for the full sample and again, on average, larger in distressed exchanges (11.5%) than in Chapter 11 reorganizations (3.1%).

<sup>12</sup>Firm recovery rates are closely related to  $D/V$ , since recovery rates can be defined as  $(V - E)/D = (D/V)^{-1} - (E/D)$ , where  $E$  represents the value of equity. As predicted by the option argument, equity deviations are correlated with firm recovery rates, the correlation coefficient for distressed exchanges is positive (0.243), and the hypothesis that firm recovery rates are linearly unrelated to equity deviations can be rejected at the 5% level. The correlation coefficient for Chapter 11 reorganizations is insignificant.



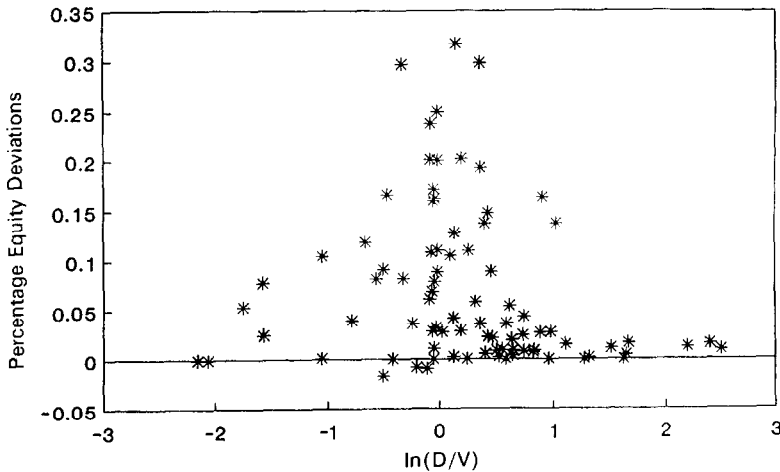


Fig. 1. Percentage equity deviations related to the moneyness of the equity holder's option to delay reorganization, proxied by the natural logarithm of  $D/V$ , where  $D$  is the face value of securities restructured and  $V$  is the value of the firm at reorganization. Results are based on a sample of 45 distressed exchanges and 37 Chapter 11 reorganizations. The sample period is 1983–1990.

### 5.2.2. *Management turnover*

Gilson (1989) reports that in financial distress management changes are often initiated by creditors, especially bank lenders. He also reports that management turnover is lower when financial distress is resolved outside Chapter 11, reflecting the various provisions of the Bankruptcy Code that facilitate creditors' removal of prebankruptcy management. For example, under Section 1104, a trustee is appointed in Chapter 11 upon evidence of prebankruptcy management's fraud, dishonesty, mismanagement, or incompetence.

If creditors initiate a management change, we would expect new management to be more creditor-oriented. Equity's bargaining power would then be diminished, resulting in smaller equity deviations from absolute priority. If management turnover is higher in formal reorganizations, then equity deviations should also be smaller.<sup>13</sup>

### 5.2.3. *Complexity of bargaining*

Weiss (1990) suggests that equity deviations in formal reorganizations are positively related to the size of the distressed firm. Size may be an important determinant of equity deviations because it is correlated with bargaining

<sup>13</sup>See Betker (1992) for a more detailed analysis of management's role in the resolution of financial distress in Chapter 11.

complexity. Larger firm size implies that, on average, more parties are involved in negotiations, making it more difficult for creditors to form workable coalitions, resulting in larger equity deviations. But if the various provisions of the Bankruptcy Code result in more equitable bargaining between parties, then, all else being equal, we would expect these equity deviations to be smaller in Chapter 11.

Factors other than firm size may also provide information on bargaining complexity, for example, the number of long-term debt issues. But the greater the percentage of the long-term debt held by banks and insurance companies, the easier it is for these relatively sophisticated claimholders to renegotiate their claims and minimize equity deviations. Similarly, institutional investors such as 'vulture funds', which have been active in purchasing original issue high-yield debt,<sup>14</sup> are informed negotiators whose aggressive bargaining can result in smaller equity deviations. In contrast, trade creditors are relatively unsophisticated and there are more of them. This suggests that the greater the proportion of the firm's claims in the form of accounts payable, the more diffuse creditor claims and, as a result, the larger the equity deviations.

### *5.3. Regression results*

Table 7 reports regression results investigating the determinants of equity deviations. The option to delay's at-the-moneyness is measured by  $\ln(D/V)$  and  $(\ln(D/V))^2$ , where  $D$  is the face value of nonequity claims and  $V$  is the value of the firm at reorganization. To capture bargaining complexity, we include the firm's size measured by the logarithm of value of its liabilities at year end prior to default. We also include an interaction term given by the firm's size times a reorganization form dummy variable that equals 1 if the firm is formally reorganized and 0 otherwise. If the formal reorganization process results in more equitable bargaining between parties then, controlling for firm size, we expect smaller equity deviations in Chapter 11. Bargaining complexity is also approximated by a firm's number of long-term debt issues at year end prior to default, obtained from the long-term debt section of the Moody's manual, the proportion of a firm's long-term debt held by banks and insurance companies, and the proportion of a firm's liabilities in accounts payable at the accounting year end prior to default, also taken from the Moody's manual. To investigate the role of junk debt, we include a dummy variable that equals 1 if, according to the Salomon Brothers' 1990 Original High Yield Debt Study, the firm issued original-issue high-yield debt and 0 otherwise. Management changes are represented by a CEO dummy variable that equals 1 if, according to Standard and

<sup>14</sup>For example, Los Angeles-based firms such as Appollo Advisors and Canyon Partners, established by former Drexel employees, have played an active role in the purchase and management of high-yield debt originally issued by Drexel and other investment banks.

Table 7

Regressions of percentage equity deviations against the moneyness of the equity holder's option to delay reorganization, proxied by  $\ln(D/V)$  and  $\ln(D/V)^2$ , firm size, accounts payable, institutional debt ownership, number of long-term debt issues, whether the firm issued original-issue high-yield debt, and whether the firm's CEO resigned during the reorganization period. Results are based on a sample of 45 firms that restructure their debt informally and 37 firms that formally reorganize under Chapter 11. The sample period is 1983–1990. (Asymptotic *t*-statistics are in parentheses.)

Regression	$\ln(D/V)^a$	$(\ln(D/V))^2$ <sup>a</sup>	Size <sup>b</sup>	Size $\times$ Bankruptcy dummy <sup>c</sup>	% accounts payable <sup>d</sup>	% inst. debt <sup>e</sup>	# of debt issues <sup>f</sup>	Junk dummy <sup>g</sup>	CEO dummy <sup>h</sup>
(1)	-0.003 (-0.27)	-0.01 (-1.50)	0.012 (1.95) <sup>j</sup>		0.062 (1.09)	-0.013 (-0.43)	-0.001 (-0.56)	-0.028 (-1.32)	0.01 (0.57)
(2)	-0.004 (-0.35)	-0.01 (-1.58)	0.009 (1.94) <sup>j</sup>		0.068 (1.26)			-0.027 (-1.40)	0.01 (0.56)
(3)	-0.002 (-0.15)	-0.011 (-1.75) <sup>j</sup>	0.012 (3.61) <sup>j</sup>		0.071 (1.36)			-0.025 (-1.40)	
(4)	0.01 (0.91)	-0.009 (-1.55)	0.015 (4.27) <sup>j</sup>	-0.009 (-2.28) <sup>i</sup>	0.058 (1.15)			-0.014 (-0.78)	
(5)	0.012 (1.09)	-0.01 (-1.72) <sup>j</sup>	0.019 (7.58) <sup>j</sup>	-0.011 (-2.92) <sup>j</sup>				-0.02 (-1.13)	
(6)	0.011 (1.01)	-0.009 (-1.58)	0.017 (7.93) <sup>j</sup>	-0.012 (-3.27) <sup>j</sup>					

<sup>a</sup>*D* is the face value of securities restructured and *V* is the value of the firm at reorganization.

<sup>b</sup>The firm's size is measured by the logarithm of the value of its liabilities at year end prior to default.

<sup>c</sup>The bankruptcy dummy equals 1 if the firm is formally reorganized.

<sup>d</sup>Percentage accounts payable is the percentage of the firm's liabilities at year end prior to default in the form of accounts payable, from the Moody's manual.

<sup>e</sup>Percentage institutional debt is the percentage of the firm's long-term debt held by commercial banks and insurance companies.

<sup>f</sup>The number of debt issues is the number of entries in the long-term debt section of Moody's manual.

<sup>g</sup>The junk dummy variable equals 1 if the firm issued high-yield debt according to Salomon Brothers' 1990 Original High Yield Debt Study.

<sup>h</sup>The CEO dummy variable equals 1 if the firm's CEO was replaced during the reorganization period according to Standard and Poor's Register of Corporations, Directors, and Executives.

<sup>i</sup>Significant at the 5% level.

<sup>j</sup>Significant at the 10% level.

Poor's Register of Corporations, Directors, and Executives, a firm's CEO was replaced during the reorganization period and 0 otherwise.

The empirical results are consistent with the option to delay's affecting equity deviations, as evidenced by the mildly significant negative coefficient for the quadratic term  $(\ln(D/V))^2$ . In other words, the more out-of-the-money or the more in-the-money equity's option to delay is, the smaller are the equity deviations.

More importantly, the size variable's significant positive coefficient indicates that the larger the firm, the larger are the equity deviations, consistent with the greater complexity of bargaining. Furthermore, the significance of the interaction term suggests more equitable bargaining between parties under the formal framework of Chapter 11, since smaller equity deviations are obtained in Chapter 11 than in distressed exchanges when size is held constant. Of the remaining complexity variables, table 7 provides mild evidence that the greater the proportion of the firm's liabilities in the form of accounts payable, the larger the equity deviations. There is no evidence, however, that the proportion of long-term debt held by banks and insurance companies, the number of long-term debt issues, or managerial changes influence equity deviations.

Finally, we find that the junk dummy variable is mildly significant, indicating that smaller equity deviations are associated with the presence of original-issue high-yield debt. To the extent that this debt is purchased by 'vulture funds', this result is consistent with their aggressive bargaining resulting in smaller gains by equity holders.

#### *5.4. Incremental costs of Chapter 11 reorganizations over distressed exchanges*

The difference in equity deviations between Chapter 11 reorganizations and distressed exchanges potentially provides important information on the higher costs of formal reorganization. These larger equity deviations may be viewed as representing what creditors are willing to give up to equity to avoid entry into Chapter 11.

But this comparison ignores the fact that junior debt and preferred stock also gain in formal reorganizations. To measure the incremental costs of Chapter 11 proceedings, we refer to table 6 and compare what creditors forgo in informal and formal reorganizations. In distressed exchanges, equity is the sole beneficiary of deviations of 9.51%, whereas in Chapter 11 reorganizations, equity gains 2.28%, junior debt 0.94% and preferred stock 0.80%, for a total of 4.02%. The resulting difference of 4.49% represents an estimate of the incremental costs of Chapter 11 reorganizations over distressed exchanges.

The difference in these deviations represents a lower bound for the incremental costs of bankruptcy since it assumes that all the savings accrue to the creditors bearing the deviations. An important assumption underlying these calculations is that firms reorganizing in Chapter 11 and those successfully completing distressed exchanges do not systematically differ in, for example, size.

In addition, these calculations ignore the fact that there may be strategic reasons why some creditors may be forced by others to give up part of their claims to equity as, for example, in Bulow and Shoven's (1978) coalition model of bankruptcy. In this case, equity deviations would not accurately reflect the relative costs of recontracting.

## **6. Summary and conclusions**

This paper describes the terms of recontracting between equity holders and creditors in Chapter 11 reorganizations and distressed exchanges. The terms are summarized by the medium of exchange used to redeem defaulted securities, recovery rates for creditor claims, and deviations from absolute priority for different creditor classes.

Regardless of the reorganization form, creditors typically receive a bundle of securities, with less senior creditors receiving more of the total value of their payments in equity securities. Although firms reorganizing in Chapter 11 are less solvent and liquid before reorganization than those undertaking distressed exchanges, more cash is used in Chapter 11 reorganizations, mainly because more assets are sold.

Creditor claims are recovered at lower rates in Chapter 11 reorganizations than in distressed exchanges. The cross-sectional variation in recovery rates is negatively related to the size of asset sales, but positively related to the performance of the CRSP EW index.

Equity deviations from absolute priority are significantly larger in distressed exchanges than in Chapter 11 reorganizations. Furthermore, deviations in Chapter 11 reorganizations are smaller than reported in previous studies, reflecting the more recent nature of our sample. Some junior creditors also benefit from deviations, although these creditors appear to gain more in formal reorganizations, suggesting more equitable bargaining under the Bankruptcy Code. The difference in deviations between Chapter 11 reorganizations and distressed exchanges gives an estimate of the incremental costs of formal over informal reorganizations of at least 4.5% of firm value.

Since all firms in financial distress have the option to enter Chapter 11, the costs of formal reorganization affect the terms of distressed exchanges. Any attempts to reform and make the formal reorganization process less costly will therefore [see, for example, Jensen (1989)] also affect the informal reorganization process.

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