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Debt-reducing exchange offers

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Abstract

Announcements of debt-reducing exchange offers are associated with a negative average stock price reaction. We address two questions: Why do firms undertake debt-reducing exchange offers? And, what is the information conveyed by such offers? The answers are interrelated: Debt-reducing exchange offers are undertaken by financially weak firms in an effort to stave off further financial distress and, thereby, preserve value for shareholders. A successfully completed exchange offer significantly reduces the likelihood that a firm will enter Chapter 11. Announcements of debt-reducing exchange offers apparently contain two pieces of information: (1) the firm is financially weaker than would have been apparent from other publicly available information, and (2) management is attempting to preserve value for shareholders.

Keywords: Debt-reducing exchange offers; Financial distress; Chapter 11

1. Introduction

Firms occasionally offer to exchange common or preferred stock for outstanding debt. In such debt-reducing exchange offers (DREOs), little or no cash changes hands and the asset structure of the firm is essentially unchanged. A commonality among studies of DREOs is the finding that announcements of such events are, on average, associated with a negative common stock price reaction

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(Masulis, 1980, 1983; Cornett and Travlos, 1989; Copeland and Lee, 1991; Brown et al., 1993; Shah, 1994; Chatterjee et al., 1995).

Masulis (1980, 1983) uses leverage-reducing exchange offers (EOs)[1] as a laboratory to study the effect of "pure" capital structure changes on the value of the firm and to test various theories of optimal capital structure. He interprets his results as being consistent with a tax shield effect and a wealth transfer effect, but finds no support for a bankruptcy effect.

Subsequent studies of leverage-reducing EOs have interpreted the negative average stock price reaction at the announcement of such offers to signal managers' expectations that future cash flows or earnings will be unexpectedly poor, consistent with signaling models such as Ross (1977) and Myers and Majluf (1984). Several empirical studies, including Choe et al. (1993) and Loughran and Ritter (1997), provide evidence consistent with this notion in the context of equity offerings, which are related to leverage-reducing EOs. However, the evidence in the context of leverage-reducing EOs is tenuous. Cornett and Travlos (1989) conduct a cross-sectional regression analysis in which announcement period excess stock returns are regressed against unexpected earnings per share following DREOs. They identify a positive and significant correlation between excess stock returns and unexpected earnings per share following the DREOs. They conclude that "... stock price reactions to pure capital structure changes reflect information effects..." (p. 467). However, they do not address whether earnings are, unexpectedly low following leverage-reducing EOs. Shah (1994) finds that, prior to leverage-reducing EOs, firms typically have below industry-average earnings that continue following the EOs, but he does not find that earnings decline after the EOs. Still, he interprets the negative average stock price reaction to mean that "... leverage-decreasing offers appear to lower investors' expected cash flows..." (p. 89).

As a by-product of his analysis, Shah (1994) reports that a majority of the firms in his sample experienced some form of financial distress prior to the EO. On that basis, he concludes that leverage-reducing EOs "... are most likely undertaken in response to financial distress resulting from prolonged underperformance, and they signal retrenchment" (p. 119). But if this retrenchment is designed to stave off further financial distress for the firm with the hope of preserving value for shareholders, why do stock prices decline upon the announcement of EOs?

In this study, we focus on the role of financial distress as the key to answering two fundamental questions about DREOs. Specifically, we investigate why firms undertake DREOs and what information is conveyed by announcements of such offers.

[1] Leverage-reducing exchange offers include debt-for-equity and preferred-for-common EOs, whereas DREOs include only debt-for-equity EOs.

We consider two possibilities: First, DREOs may have less to do with preserving value for shareholders than with managers attempting to protect their jobs in the face of financial distress for the firm. One potential way for managers to do so is to reduce outstanding debt, even if that means giving up shareholder value. In contrast to managers, shareholders may very well prefer that firms continue to operate with their current capital structures, even if that means that a financially distressed firm is more likely to fail. Perhaps had managers stayed the course, the firm would have survived intact and the benefits of that perseverance would have redounded to shareholders. Thus, the average negative stock price reaction at the announcement of DREOs may indicate that managers are capitulating to creditors to save their own perks and positions at the expense of shareholders. A second possibility is that while DREOs generate value for shareholders, they also convey negative information regarding the severity of financial distress. If so, the negative average stock price reaction may represent the net effect of a positive managerial action to preserve or enhance shareholder value coupled with negative news about the firm's current financial position.

To sort out these issues, we analyze 126 DREOs that were announced over the period 1980 through 1994. As with earlier studies, announcements of DREOs in this period are accompanied by a statistically significant negative average stock price reaction. As a starting point for our analysis of what information is contained in DREOs, and for comparability with prior studies, we compare realized earnings with various benchmarks of expected earnings. We find no evidence that earnings performance is poorer following announcements of DREOs than would have been expected prior to the announcement. Thus, the negative average stock price reaction does not appear to be attributable to a conventional earnings signal.

Consistent with Shah (1994), firms undertaking DREOs are typically financially distressed. Thus, if the interests of managers and shareholders are not well aligned, managers may undertake DREOs to protect their own jobs rather than to benefit shareholders. However, on average, managers and the boards of directors own in excess of 20% of the shares of the firms in our sample. On a prima facie basis, this statistic indicates that managers are unlikely to have interests that are strongly in conflict with those of other shareholders. Further examination shows that the insider ownership of DREO firms is marginally lower than that for firms of the same size from the same industries, and significantly smaller than that for firms that appear to be as equally financially distressed, but do not undertake DREOs. On that basis, the data might be interpreted to indicate that managers undertake DREOs in financially distressed firms when their interests do not coincide closely with those of other shareholders.

As a further determination of whether DREOs are undertaken primarily to entrench managers, we examine the turnover rate of the senior managers of the firms in our sample for the period beginning 1 year before and ending 2 years after the DREO. We find that 47% of the senior managers of these firms depart their positions over that period. This rate of attrition compares with an attrition rate of

21% for the industry- and size-matched sample and with an attrition rate of 34% for the sample of financially distressed firms that do not undertake DREOs. Thus, DREOs do not appear to enhance managerial job security.

Next, we determine that, of the 126 firms that announce DREOs, 25% enter Chapter 11 within 3 years of the announcement. This compares with a rate of 6% for the financial-condition matching firms that do not undertake DREOs. These results are consistent with the idea that the information conveyed by an announcement of a DREO is that a firm's future prospects are even more bleak than would have been anticipated on the basis of public information prior to the announcement. In that regard, it is possible to interpret the negative average stock price reaction that accompanies DREOs as a response to information about the poor future prospects of the firm, even though these poor prospects do not show up directly in an analysis of post-announcement earnings.

Further testimony to this interpretation is the fact that, of the 19 firms with failed DREOs, 79% enter Chapter 11 within 3 years, whereas, of the 107 firms whose DREOs are successfully completed, only 15% enter Chapter 11 within 3 years. Distressed firms whose DREOs succeed appear to have a significantly greater chance of avoiding Chapter 11 than those whose offers fail. Given that prior studies document a loss in stock value on the order of 15% to 20% when firms file for Chapter 11, avoidance of Chapter 11 is presumably valuable to shareholders (Gilson, 1990; Lang and Stulz, 1992; Betker, 1995; Hotchkiss, 1995; Tashjian et al., 1996).

We also determine that news accounts reporting that DREOs have failed are accompanied by a further negative average stock price reaction that is several times greater than the negative average stock price reaction associated with their initial announcements. Failure to complete a DREO clearly is not good news for shareholders. This result is also consistent with the conjecture that the negative average stock price reaction that accompanies announcements of DREOs is in response to implicit negative information about the future prospects of the firm, even though the DREO itself is a positive step for shareholders. A potentially parallel circumstance has been documented by Blackwell et al. (1990) who document that plant closings are associated with average negative stock price reactions. Presumably, the plant closing is a positive NPV project that leads to a negative stock price reaction because it signals unanticipated bad news about the future of the firm.[2]

The following section describes our procedure for identifying the sample of DREOs and gives descriptive statistics for the firms and DREOs in the sample along with descriptive statistics for the samples of matching firms. Section 3 presents the results of our statistical analysis. Section 4 concludes.

[2] The same analysis may be applied to reverse stock splits as documented by Hwang (1995).

2. Sample selection and descriptive statistics

We identify an initial sample of DREOs from a search of the *Wall Street Journal Index* (*WSJI*), *Prentice-Hall's Capital Adjustments*, and the *Dow Jones News Retrieval Database* (*DJNRD*) for the 15-year interval 1980 through 1994. To enter the initial sample, one of these three data sources must have indicated that the transaction involved at least two classes of securities, one of which must have been debt (either nonconvertible or convertible) and the other of which must have been common or preferred stock, and that the proposed EO represented an unambiguous reduction in debt financing. Further, we require that the cash portion of the offer must not comprise more than 30% of the face amount of the debt to be exchanged (so as to preserve the "pure" nature of the capital structure change). These criteria yield an initial set of 153 DREOs.

Because we are interested in the financial health of the firms involved in the DREOs, we require that data be available to calculate Altman's (1993) modified *Z*-score 1 year prior to the announcement of the DREO. These data include net working capital, total assets, total liabilities, accumulated retained earnings, book value of equity, and earnings before interest and taxes. For most firms, the data are taken from the *Compustat* tapes; if not available on *Compustat*, the data are hand-collected from various *Moody's Manuals*. Thirty-one observations were deleted because data are not available to calculate *Z*-scores. Of these 31, 22 are financial institutions. The final sample consists of 126 DREOs undertaken by 113 firms. The time series of DREOs is given in panel A of Table 1. The offers are spread throughout the 15-year interval with some clustering of offers in the mid-1980s. The fewest observations (1) occurred in 1980, and the most (18) occurred in each of the years 1985 and 1986. Panel B presents the distribution of the sample observations across two-digit SIC codes. As in Shah (1994), the most common industry group is oil and gas extraction (22 observations), with the remainder spread across a diverse set of industries.

Panel C of Table 1 presents certain financial statistics for the firms in the sample along with their industry means and medians for these statistics. To calculate industry means and medians for each DREO firm, we identify all firms on the *Compustat* tape with the same three-digit SIC code as each DREO firm. We then extract relevant financial data for each of these firms. To calculate industry means and medians for each DREO firm, we identify all firms on the *Compustat* tape with the same three-digit SIC code as each DREO firm. We define the industry norm as the median of the financial data for these industry peers. The industry median for the entire sample is the median of the industry norms. The industry mean for the full sample is the equal-weighted average of the industry norms.

According to panel B of Table 1, the firms in the sample have significantly larger book value of assets than their industry peers in the year of the DREO (median of $187 million vs. industry median of $35 million), have significantly

Table 1
Descriptive statistics for 126 exchange offers, 1980–1994
The sample consists of 126 debt-reducing exchange offers by U.S. firms over the period 1980–1994. To enter the sample, financial data must be available to calculate Altman's (1993) modified *Z*-score as $Z = 6.56(\text{Net working capital})/(\text{Total assets}) + 3.26(\text{Accumulated retained earnings})/(\text{Total assets}) + 6.72(\text{EBIT})/(\text{Total assets}) + 1.05(\text{Book value of equity})/(\text{Total liabilities})$. The financial data are taken from *Compustat* or from the *Moody's Manuals*. Industry means and medians are calculated for firms with the same three-digit SIC code as the exchange offer firms. *p*-values for differences in means and medians are based on *t*-tests and median tests, respectively.

Panel A: Year-by-year distribution of exchange offers in the sample

Year	Number of exchange offers	Year	Number of exchange offers
1980	1	1988	9
1981	5	1989	5
1982	3	1990	12
1983	11	1991	8
1984	12	1992	9
1985	18	1993	5
1986	18	1994	4
1987	8		

Panel B: Industry distribution of exchange offers in the sample

Two-digit SIC code	Industry name	Number of exchange offers
13	Oil and gas extraction	22
35	Machinery, except electrical	8
33	Primary metal	6
38	Measuring and analyzing instruments	6
50	Wholesale of durable goods	6
28	Chemicals and allied products	5
45	Transportation by air	5
36	Electrical and electronic machinery	4
58	Eating and drinking places	4

73	Business services	4
79	Amusement and recreation services	4
20	Food and kindred products	3
37	Transportation equipment	3
39	Miscellaneous manufacturing industries	3
48	Communications	3
51	Wholesale of nondurable goods	3
59	Miscellaneous retail	3
70	Hotels and lodging places	3
Other		31

Panel C: Sample statistics

	Exchange offer firms		Industry firms		*p*-values for differences	
	Mean	Median	Mean	Median	Mean	Median
Book value of assets ($ millions)	$722	$187	$187	$35	0.00	0.00
Total debt/Book value of assets	0.955	0.850	0.556	0.548	0.00	0.00
Long-term debt/Book value of assets	0.474	0.457	0.160	0.132	0.00	0.00
EBIT/Book value of assets	−0.043	−0.016	0.036	0.053	0.00	0.00
Retained earnings/Book value of assets	−0.399	−0.151	0.040	0.097	0.00	0.00
Net working capital/Book value of assets	−0.011	0.046	0.196	0.191	0.00	0.00
Altman's (1993) modified *Z*-score	−1.525	0.101	2.697	3.081	0.00	0.00

lower EBIT divided by assets over the year prior to the DREO than their peers (median of −1.6% vs. industry median of 5.3%), make significantly greater use of debt financing than their industry peers (median book value of debt divided by the book value of total assets of 85.0% vs. 54.8%), and have significantly lower net working capital divided by assets than their peers (median of 4.6% vs. 19.1%). Because Altman's (1993) modified *Z*-scores are widely used for determining the relative financial health of firms, we calculate Altman's modified *Z*-score for each firm.[3] The mean and median *Z*-scores for the firms in the DREO sample are −1.525 and 0.101, respectively. These compare with a mean of 2.697 and a median of 3.081 for the industry peers. Relative to their industry peers, the typical firm that undertakes a DREO is much less financially sound.

3. Empirical analysis

3.1. Stock returns

As a first step in our analysis, we conduct an event study using the common stocks of the DREO firms. To do so, we identify an initial announcement date from either the *WSJI* or the *DJNRD*.[4] To calculate announcement period returns, we use the one-factor market model procedure with parameters estimated over the 250 trading days ending 10 days prior to the initial announcement date. We calculate cumulative excess returns over the 3 days surrounding the initial announcement of the DREOs (days −1 through +1). Henceforth, we refer to these as the announcement period excess returns. Three of the firms in our sample lack price data during the announcement period. We delete these firms from this analysis.

Consistent with the results of prior studies, announcements of the DREOs in our sample are accompanied by a statistically significant negative average stock price reaction. The mean and median 3-day announcement period returns (i.e., days −1 through +1) are −2.2% (p-value < 0.01) and −3.0% (p-value $= 0.01$), respectively. Seventy-four of the 123 individual 3-day excess returns are negative.

[3] Altman (1968) uses discriminant analysis employing various financial ratios to estimate a formula for measuring the likelihood of corporate bankruptcy. This original *Z*-score model only pertains to publicly traded manufacturing firms. Altman (1993) presents a modified *Z*-score that is applicable to all firms. We use the modified *Z*-score in this study.

[4] In one case, Barringer Resources, we are unable to find an initial announcement date in the *WSJ* or the *DJNRD*. We, thus, use the announcement date listed in *Prentice-Hall's Capital Adjustments*. It is further important to realize that the capital market may have partially expected some DREOs, as there is some evidence that companies negotiate with certain debtholders before they decide to undertake a DREO. Consequently, the information content of the DREO may not be limited to the day of the DREO announcement. This may explain the negative abnormal stock returns during the weeks before the announcement as reported in Shah (1994).

Similarly, the mean and median five-day announcement period returns (days −2 through +2) are −2.6% (p-value < 0.01) and −2.8% (p-value = 0.01) and the mean and median 3-day net-of-market returns are −3.1% (p-value = 0.01) and −2.7% (p-value < 0.01).

3.2. Earnings

To consider what information is contained in the announcements of DREOs, we begin with an analysis of earnings. We analyze annual earnings for our sample beginning 3 years before and ending 3 years after their DREOs. We analyze earnings before depreciation, interest and taxes (EBDIT) divided by the average of the book value of assets at the beginning and ending of the year, hereafter referred to as ROA. Earnings and asset data are taken from *Compustat* or hand-collected from *Moody's Manuals*.

Following Lie and McConnell (1998), we use three procedures to establish benchmarks for expected ROA. With the first procedure, we compare each year's ROA with the prior year's ROA. In this test, the prior year's ROA is the benchmark for the current year's expected ROA.

In our second procedure, we calculate the industry-adjusted ROA for each firm in each year by subtracting the industry median ROA from the ROA of the DREO firm in the same year. In this test, the prior year's industry-adjusted ROA is the benchmark for the current year's expected industry-adjusted ROA.

Our third procedure is a refinement of the proxy of expected earnings proposed by Barber and Lyon (1996). Barber and Lyon demonstrate that corporate earnings exhibit mean reversion. Thus, if earnings are abnormal prior to an event, the benchmark for the expected earnings should be composed of firms with similarly abnormal earnings performance. To construct such a performance-adjusted benchmark of expected earnings, we identify firms with the same two-digit SIC code and with sufficient data to calculate the ROA from year −3 to year 0. Among these firms, we identify all those whose ROA in year −1 falls within an "ROA filter" *and* whose change in ROA from year −3 to year −1 falls within an "ROA-change filter." These filters are based on the ROA of the relevant DREO firm in year 1 ($\mathrm{ROA}_{\mathrm{EO}}$) and the change in ROA for the relevant DREO firm from year −3 to year −1 ($\Delta\mathrm{ROA}_{\mathrm{EO}}$). In particular, the ROA filter is defined as the wider of the range $[0.7 \times \mathrm{ROA}_{\mathrm{EO}},\ 1.3 \times \mathrm{ROA}_{\mathrm{EO}}]$ and the range $[\mathrm{ROA}_{\mathrm{EO}} - 0.01,\ \mathrm{ROA}_{\mathrm{EO}} + 0.01]$. Similarly, the ROA-change filter is defined as the wider of the range $[0.7 \times \Delta\mathrm{ROA}_{\mathrm{EO}},\ 1.3 \times \Delta\mathrm{ROA}_{\mathrm{EO}}]$ and the range $[\Delta\mathrm{ROA}_{\mathrm{EO}} - 0.01,\ \Delta\mathrm{ROA}_{\mathrm{EO}} + 0.01]$. Finally, among all comparable firms that satisfy these criteria, we choose the single firm with the least sum of differences defined as

$$\left|\mathrm{ROA}_{\mathrm{EO}} - \mathrm{ROA}_{\mathrm{Control\ firm}}\right| + \left|\Delta\mathrm{ROA}_{\mathrm{EO}} - \Delta\mathrm{ROA}_{\mathrm{Control\ firm}}\right|.$$

Fifty-five firms are performance-matched in this way. If no matching firms meet these criteria, we repeat the process first for firms with the same one-digit SIC

code (34 matching firms chosen), and then for all firms without regard to SIC code (18 matching firms chosen). If still no firms have an ROA within the requisite band, we choose the firm with lowest sum of differences (eight matching firms chosen). Nine of the DREO firms with earnings data in year -1 do not have earnings data for year -3. For these firms, we modify our matching procedure to ignore historical changes in ROA. In particular, the filter based on the change in ROA from year -3 to year -1 is ignored and the difference is calculated as

$$\left|\mathrm{ROA}_{\mathrm{EO}} - \mathrm{ROA}_{\mathrm{Control\,firm}}\right|.$$

Constructing this benchmark required decisions about whether to use three-digit, two-digit, one-digit, or no SIC code match and about the width of the filters for comparable pre-event performance. Each involves subjective judgment. Replication of the tests with various filters and SIC code matches shows that the results are insensitive to variations in the selection criteria.

The results of our earnings analysis are presented in Table 2. According to panel A, mean and median ROAs for the DREO firms decline over the 3 years preceding the DREOs and then rebound afterward. For example, the median ROA is 5.5% during the year of the DREO, but is 7.8%, 8.2%, and 9.6% in the subsequent 3 years.

According to panel B, the mean and median ROAs of DREO firms are significantly less than their industry peers during each of the 3 years prior to the DREO and during the year of the DREO. During the subsequent 3 years, however, the DREO firms show an improvement in ROA relative to their industry benchmarks. For example, during the year of the DREO, the median industry-adjusted ROA is -4.2%. During the subsequent 3 years, the median industry-adjusted ROAs are -2.7%, -1.2% and -1.5%. Thus, the DREO firms perform worse than their respective industry peers following the DREOs (as they had been before the offers), but their relative performance actually improves.

Panel C presents the performance-adjusted mean and median ROA. As designed, over the 3 years prior to the DREOs, mean and median performance-adjusted ROAs are close to zero. During the year of the DREOs and over the subsequent years, mean and median performance-adjusted ROAs are close to zero as well. For example, in year 0, the mean performance-adjusted ROA is -0.2% with a p-value of 0.91 and the median is -1.5% with a p-value of 0.74. In year 1, the mean performance-adjusted return is 2.4% with a p-value of 0.24 and the median is 0.9% with a p-value of 0.36. In short, regardless of the benchmark used, firms that undertake DREOs do not demonstrate deterioration in earnings following their DREOs.

One disconcerting aspect of our earnings analysis is the decline in the size of the sample in the years immediately following the DREOs. According to CRSP, 24 of our sample firms are delisted from their respective exchanges within 2 years of the announcement date and 38 firms are delisted within 3 years, though accounting data may still be available after the delisting date. In panel A, between

Table 2
Earnings analysis for 126 exchange offer firms, 1980–1994

Mean and median levels and changes in levels of ROA, where ROA is calculated as earnings before depreciation, interest and taxes scaled by the average of the book value of assets at the beginning and ending of the fiscal year. Year 0 is defined as the fiscal year of the announcement. Industry-adjusted ROAs are the paired differences between the ROAs of the exchange offer firms and median ROAs of firms with the same three-digit SIC code. Performance-adjusted ROAs are the paired differences between the ROAs of the exchange offer firms and the ROAs of their respective performance-matched firms. The performance matched firms are based on the level of ROA in year −1 and the change in ROA from year −3 to year −1, if available. *t*-tests and Wilcoxon signed rank tests are used to test the hypotheses that the means and medians are equal to zero, respectively. [a] and [b] indicate that the level or change in the level is significantly different from zero at the 0.01 and 0.05 levels, respectively.

Year	Levels							Changes		
	−3	−2	−1	0	1	2	3	−3 to −1	−1 to 1	1 to 3
Panel A: Unadjusted ROA										
Mean	0.080[a]	0.057[a]	0.030[b]	0.017	0.034[b]	0.047	0.060[a]	−0.046[a]	0.005	0.020
Median	0.100[a]	0.089[a]	0.046[a]	0.055[a]	0.078[a]	0.082[a]	0.096[a]	−0.032[a]	0.015	0.010
Sample size	115	121	124	123	118	112	100	115	117	100
Panel B: Industry-adjusted ROA										
Mean	−0.037[a]	−0.050[a]	−0.068[a]	−0.073[a]	−0.057[a]	−0.047	−0.031	−0.027[b]	0.012	0.016
Median	−0.032[b]	−0.027[a]	−0.051[a]	−0.042[a]	−0.027[a]	−0.012	−0.015	−0.017[b]	0.029[b]	0.002
Sample size	115	121	124	123	118	112	100	115	117	100
Panel C: Performance-adjusted ROA										
Mean	−0.001	−0.007	−0.001	−0.002	0.024	0.034	−0.001	0.001	0.024	−0.024
Median	−0.001	0.000	−0.001	−0.015	0.009	−0.001	−0.010	0.001	0.006	−0.024
Sample size	115	121	124	122	111	90	73	115	111	73
Panel D: Performance-adjusted ROA for firms with data from year −1 through year 2										
Mean	−0.002	−0.015	−0.001	0.002	0.004	0.022	−0.002	0.001	0.006	−0.008
Median	−0.002	−0.006	−0.001	−0.016	0.004	0.000	−0.006	0.001	0.001	−0.012
Sample size	102	108	111	111	111	111	89	102	111	89

year 0 and year +2, the sample size declines from 123 to 112. To the extent that it is the worst performing firms that drop out of the sample (for example, because the firms file for bankruptcy), the performance of the remaining firms could embed an upward bias to the mean and median ROAs. In fact, six of the 11 firms that depart from the sample in the 2 years following their DREOs file for Chapter 11 and five are acquired. In panel C, which shows the performance-adjusted ROA, the sample shrinks even more seriously because observations drop out when either the DREO firm or the matching firm does not have earnings and asset data.

One way to control, at least partially, for any survivorship bias in the data is to require that both the DREO firms and their matching firms have earnings and asset data for at least 1 year prior to the DREO and 2 years after the offer. (We reassemble the matching firm sample with these criteria.) Thus, we impose a similar survivorship bias for the two samples. These criteria reduce the sample to 111 DREO firms and 111 matching firms. The results of the earnings analysis for these 111 firms are given in panel D of Table 2 and, again, do not provide evidence to support the hypothesis that the information contained in DREOs is that future earnings will be worse than might otherwise have been expected.

3.3. Managerial share ownership and board composition

Perhaps the information contained in the announcements is that the managers of financially weak firms have decided to capitulate to creditors to preserve their positions regardless of the consequences for shareholders. Agency problems of this type are thought to be especially severe when managers have little or no ownership position in the firm's equity (Jensen and Meckling, 1976; Morck et al., 1988) and when managers dominate the firm's board of directors (Weisbach, 1988; Rosenstein and Wyatt, 1990; Byrd and Hickman, 1992; Brickley et al., 1994; Denis et al., 1997a,b).

To determine the extent to which managers own stock in the DREO firms, we gather data on share ownership by "directors and officers as a group" from each firm's proxy statement as of the year prior to the DREO. For comparison purposes, we compile two peer groups. First, for each sample firm, we select the single firm with the same three-digit SIC code that is closest in terms of total book value of assets to the DREO firm. Second, for each sample firm, we identify a firm with the same one-digit SIC code whose financial condition appears to be similar to that of the DREO firm, but which does not undertake a DREO. To identify firms whose financial conditions are similar to those of the DREO firms, we identify all firms with the same one-digit SIC code as the firms in the DREO sample whose modified *Z*-scores fall within a "*Z*-score filter" and whose debt ratios fall within a "debt filter." The *Z*-score filter is defined as the wider of the range $[0.8 \times Z_{EO},\ 1.2 \times Z_{EO}]$ and the range $[Z_{EO} - 0.1,\ Z_{EO} + 0.1]$, and the debt filter is defined as the range $[\text{Debt}_{EO} - 0.1,\ \text{Debt}_{EO} + 0.1]$, where Z_{EO} and Debt_{EO} are, respectively, the modified *Z*-score and the ratio of total debt to book value of

assets for the relevant DREO firm immediately before the announcement. Of the firms that meet these criteria, we choose as the matching firm the one whose book value of total assets is closest to that of the DREO firm. With this procedure, we are able to identify matches for 82 of the 126 DREO firms. Hereafter, we refer to these as financial-condition matching firms. (In most cases where a financial-condition matching firm is not available, it is because no firm with the same one-digit SIC code had a *Z*-score that fell within the requisite band.)

We compile the first sample because insider share ownership may depend upon the firm's industry and size. We compile the second sample to address the question of whether managers' interests are more closely aligned with those of shareholders in distressed firms that do not undertake DREOs than in those that do undertake DREOs. For each of these size- and financial-condition matching firms, we gather data on share ownership by management and the board from their proxy statements immediately prior to the announcement. We display these share ownership data along with firm size, debt ratios, and Altman's *Z*-scores in Table 3. Panel A presents the DREO firms and the industry and size matching firms. For the DREO firms, insider share ownership is not trivial. The mean and median percentage of shares owned by management and the board are 20.3% and 16.6%, respectively. These fractions are less than the corresponding fractions of 23.0% and 17.8% for industry and size matching firms, but neither the means nor the medians are statistically different (*p*-values are 0.25 and 0.49). Panel B displays the same data for the sample of DREO firms *without* financial-condition matching firms, DREO firms *with* financial-condition matching firms, and the sample of financial-condition matching firms. DREO firms have lower insider share ownership (mean = 17.2%; median = 10.7%) than their financial condition-matching firms (mean = 27.3%; median = 22.7%), with *p*-values for the differences of 0.00 for means and 0.17 for medians. These data are consistent with the conjecture that insiders' interests are less aligned with those of shareholders in DREO firms than in equally distressed firms that do not undertake DREOs. However, even in the DREO firms, managers have substantial ownership interest.

To analyze the extent to which management dominates the firms' boards of directors, we gather data to determine whether each member of the board is a member of management (i.e., an insider) or not (i.e., an outsider). As shown in Table 3, for each sample, on average, outsiders comprise more than 50% of the boards, and the split between insiders and outsiders is quite similar across the various samples. These data, coupled with the data on share ownership, do not indicate that DREO firms are more susceptible to conflicts of interest between managers and shareholders than are other similar firms.

As a further examination of the question of whether managers' and shareholders' interests are in conflict in DREOs, we consider announcement period returns by classifying the sample according to share ownership by management and members of the board and by whether the board is dominated by inside or outside directors. If agency problems explain the negative average stock price change that

Table 3
Financial data for 126 exchange offer firms and matching firms, 1980–1994
Descriptive statistics for exchange offer firms and financial-condition matching firms. The industry and size matching firms are firms with the same three-digit SIC code as the exchange offer firms whose book value of assets is closest to that of the exchange offer firms. The financial-condition matching firms are firms with the same one-digit SIC code, a total debt ratio within ±0.1 of that of the exchange offer firm, and modified *Z*-score within ±20% or within ±0.1 of that of the exchange offer firm. Of the firms that meet these requirements, we choose as the financial-condition matching firm the one with total assets most similar to that of the exchange offer firm. Stock ownership by management and the board of directors (i.e., insiders) is taken from the most recent annual proxy statements prior to the exchange offer. Outside board members are board members who are not part of the firm's management at the date of the proxy statement. Financial data are taken from *Compustat*. *p*-values for differences in means and medians are based on *t*-tests and median tests, respectively.

Panel A: Exchange offer firms and control firms matched on industry and size

	Exchange offer firms		Industry and size matching firms		*p*-values for differences	
	Mean	Median	Mean	Median	Mean	Median
Book value of assets ($ millions)	$722	$187	$593	$160	0.57	0.57
Total debt/Book value of assets	0.955	0.850	0.597	0.613	0.00	0.00
Long-term debt/Book value of assets	0.474	0.457	0.253	0.238	0.00	0.00
Altman's (1993) modified *Z*-score	−1.525	0.101	2.859	3.127	0.00	0.00
Insider stock ownership	0.203	0.166	0.230	0.178	0.25	0.49
Fraction of outsiders on the board	0.611	0.600	0.648	0.700	0.11	0.01

Panel B: Exchange offer firms and control firms matched on financial condition

	Exchange offer firms without financial-condition matching firms (sample size = 44)		Exchange offer firms with financial-condition matching firms (sample size = 82)		Financial-condition matching firms (sample size = 82)		*p*-values for differences (sample size = 82)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Book value of assets ($ millions)	$202	$94	$1,001	$209	$586	$135	0.18	0.12
Total debt/Book value of assets	1.226	1.158	0.809	0.765	0.810	0.779	0.99	0.76
Long-term debt/Book value of assets	0.478	0.448	0.472	0.462	0.363	0.352	0.00	0.00
Altman's (1993) modified *Z*-score	−5.771	−4.378	0.753	0.912	0.747	0.843	0.99	0.75
Insider stock ownership	0.251	0.222	0.172	0.107	0.273	0.227	0.00	0.17
Fraction of outsiders on the board	0.581	0.586	0.622	0.625	0.542	0.571	0.01	0.13

accompanies DREO announcements, the announcement period returns are likely to be most negative when the managers have the strongest incentives to maximize shareholders' wealth. That is, an announcement that managers are not acting in shareholders' interests is likely to be most surprising when managers own a significant fraction of the company's shares or when insiders comprise a minority of the board.

Panel A of Table 4 presents the announcement period returns for firms with insider holdings below and above 5%, and below and above 10%. There is no clear evidence that the returns are higher for firms with higher (or lower) insider holdings. The mean announcement period returns are similar for firms with insider holdings below and above 5%, while the medians are more negative for firms with insider holdings above 5%. In contrast, the means and medians are more negative for firms with insider holdings below 10% than for firms with insider holdings above 10%. Panel B of Table 4 presents the announcement period excess returns

Table 4
Announcement returns classified by stock ownership by insiders and board composition for 126 exchange offers, 1980–1994
Announcement period returns during the 3-day period around exchange offer announcements for different classifications of firms. Stock ownership by management and the board of directors (i.e., insiders) is taken from the most recent annual proxy statements prior to the exchange offer. Outside board members are board members who are not part of the firm's management at the date of the proxy statement. Announcement period excess returns are calculated over the 3 days surrounding the exchange offer announcement with the one-factor market model. *t*-Tests and Wilcoxon signed rank tests are used to test the hypotheses that the means and medians are equal to zero, respectively. (*p*-values for tests of whether means and medians are equal to zero are given in parentheses.)

	Sample size	Mean	Median	Number [percent] positive
Panel A: Three-day announcement period excess returns for exchange offer firms classified by insider stock ownership				
Insider stock ownership $< 5\%$	29	-0.024 (0.29)	-0.004(0.37)	14 [48%]
Insider stock ownership $\geq 5\%$	94	-0.027 (0.00)	-0.038(0.00)	31 [33%]
p-value for differences		0.90	0.27	
Insider stock ownership $< 10\%$	49	-0.049 (0.00)	-0.041 (0.01)	19 [39%]
Insider stock ownership $\geq 10\%$	74	-0.012 (0.01)	-0.029 (0.08)	26 [36%]
p-value for differences		0.14	0.63	
Panel B: Three-day announcement period excess returns for exchange offer firms classified by board composition				
Fraction of outsiders on the board > 0.5	82	-0.034 (0.00)	-0.039 (0.01)	31 [38%]
Fraction of outsiders on the board ≤ 0.5	40	-0.011 (0.03)	-0.029 (0.17)	14 [35%]
p-value for differences		0.37	0.53	

for firms with the fraction of outsiders on the board of directors below and above 50%. The median announcement period returns are similar for these groups, while the mean returns are more negative for firms with boards dominated by outsiders (*p*-values are given in Table 4). Overall, the stock price reaction is not strongly tied to either insider holdings or board composition.

3.4. Senior management turnover

The fact that managers own substantial equity and, therefore, share in the loss in value associated with DREOs, does not mean that the loss in equity value to managers is not offset by gains elsewhere. For example, managers might be willing to experience some loss in equity value to increase their job security and their perquisites. One way to examine that possibility is by consideration of senior management turnover.

We define the CEO, president, and chairman of the board to be senior managers (in the tradition of Warner et al. (1988) and Gilson (1989)). We gather the names of the individuals who held these positions at each year-end from 1 year before to 2 years after the year of the DREOs from Standard and Poor's *Register of Corporations, Directors and Executives*.[5]

Table 5 gives the fraction of incumbent senior managers who remain in their positions at each year-end and the fraction of managers who are replaced each year. For comparison, the table also shows analogous statistics for the industry- and size-matched firms (panel A) or the financial-condition matching firms (panel B) described in Section 3.3. The data indicate that the turnover rate among senior managers is higher for DREO firms than for either set of matching firms. For example, 47% of the senior managers of all DREO firms have departed their positions within 2 years of the announcement of the DREO. In comparison, only 21% of the senior managers of the industry- and size-matched firms have departed their positions over the same interval. Similarly, 48% of the senior managers of DREO firms with financial-condition matching firms have departed their positions within 2 years of the DREO, whereas only 38% of the senior managers of the financial-condition matching firms have departed their positions over the same interval. Thus, if managers undertake DREOs primarily to protect their jobs, that

[5] To verify the validity of these turnover measures, we randomly selected 15 sample firms and recalculated management turnover rates based on annual report and proxy statement data. In 13 cases, the management turnover was the same. Further investigation of the two instances where differences were found shows that both sources of data were accurate. The discrepancies arose because of slight differences in the timing of the reported data. Specifically, data for S&P is self-reported with an annual October deadline, while much of the data from annual reports and proxies is taken from December. For the two cases mentioned above, management turnover occurred between October and December. Thus, the rates of turnover for the 12-month intervals are identical, but the 12-month intervals are not synchronous across the two sources.

Table 5
Turnover of senior management following 126 exchange offers, 1980–1994

Turnover of senior managers (CEO, president, and chairman of the board) following 126 debt-reducing exchange offers during 1980–1994. Data on management turnover are taken from Standard and Poor's *Register of Corporations, Directors and Executives*. Year 0 is the year of the initial exchange offer announcement. The industry and size matching firms are firms with the same three-digit SIC code as the exchange offer firms whose book value of assets is closest to that of the exchange offer firms. The financial-condition matching firms are firms with the same one-digit SIC code, a total debt ratio within ± 0.1 of that of the exchange offer firm, and modified *Z*-score within $\pm 20\%$ or within ± 0.1 of that of the exchange offer firm. Of the firms that meet these requirements, we choose as the financial-condition matching firm the one with total assets most similar to that of the exchange offer firm. Note that the fraction of senior managers remaining at year-end and the fraction of senior managers that is replaced only sum to one for year 0. For years thereafter, the fraction of senior managers remaining is a cumulative figure relative to year -1, while the fraction of managers that is replaced is not a cumulative figure (i.e., it is the fraction of the remaining managers in place at the beginning of the year that is replaced during the year.) Chi-square tests are used to test the hypotheses that the proportions are identical. [a] and [b] indicate that the fraction is significantly different from that for the control sample at the 0.01 and 0.05 levels, respectively.

Panel A: Exchange offer firms and control firms matched on industry and size

	Exchange offer firms		Industry and size matching firms	
	Fraction of senior managers remaining at year-end	Fraction of senior managers that is replaced	Fraction of senior managers remaining at year-end	Fraction of senior managers that is replaced
Year -1	1.00		1.00	
Year 0	0.76[a]	0.24[a]	0.94	0.06
Year $+1$	0.65[a]	0.15[b]	0.87	0.07
Year $+2$	0.53[a]	0.19[b]	0.79	0.09

Panel B: Exchange offer firms and control firms matched on financial condition

	Exchange offer firms with financial-condition matching firms		Financial-condition matching firms	
	Fraction of senior managers remaining at year-end	Fraction of senior managers that is replaced	Fraction of senior managers remaining at year-end	Fraction of senior managers that is replaced
Year -1	1.00		1.00	
Year 0	0.77	0.23	0.86	0.14
Year $+1$	0.64	0.16[b]	0.73	0.05
Year $+2$	0.52	0.20[b]	0.66	0.09

effort is unsuccessful and, thus, seems an unlikely motive to undertake the DREOs.

3.5. Exchange offer outcomes

The data on managerial stock ownership, board composition, and management turnover do not support the hypothesis that DREOs are undertaken by managers who are seeking to enrich themselves or enhance their tenures at the expense of shareholders. That is, DREOs do not appear to arise from an agency problem in which managers' and shareholders' interests are in conflict. Thus, the data are not consistent with the hypothesis that the negative average stock price reaction associated with announcements of DREOs comes about because the managers are trying to feather their own nests at the expense of shareholders. One further way to consider this issue is to examine the stock price reaction when the outcome of the DREO is announced.

A DREO is merely a proposal to bondholders. Bondholders may choose to accept or reject the proposal. If the negative average stock price reaction associated with the initial announcement of the DREO arises because managers are protecting their positions and if the ultimate success of the DREO is in doubt, then an announcement that the DREO has been accepted by bondholders should be accompanied by a further negative stock price reaction. Similarly, an announcement that bondholders have rejected the proposal should be associated with a positive stock price reaction. (We refer to DREOs that are accepted by bondholders as "successful" and offers that are rejected by bondholders as "failed.")

We search the *DJNRD* for announcements regarding the outcomes of the DREOs. In many cases, the expiration date of the offer is extended following the initial offer or the terms of the offer are adjusted in other ways. We bypass these interim events to identify an announcement that the DREO has been accepted or that efforts to complete the DREO have failed. We determine that 107 of the DREOs were successful and 19 failed. We are able to identify announcements of ultimate outcomes for all of the successful DREOs and for 17 of the failed offers. (For two of the failed offers we could not identify announcement dates.) Stock price data around the outcome announcements are available for 101 of the successful offers and for 14 of the failed offers. Five of the firms were delisted from their respective exchanges before the outcome dates, while four firms were not traded around the outcome dates or had missing prices, according to *CRSP*.

An example of the announcement of a successfully completed DREO is that of the Alpine Group on October 31, 1989:

> The Alpine Group Inc. announced Tuesday that it successfully concluded its exchange offer for its 13-1/2 percent Senior Subordinated Debentures due October 1996. The exchange offer expired at 5 p.m. on Monday, Oct. 30. The company stated that a total of $29,511,000 in aggregate principal amount of

> debentures (approximately 68 percent of the outstanding debentures) had been tendered in the exchange offer, in excess of the 51 percent minimum required by the company.

Announcements that DREOs have failed are a bit murkier. For five of the failed offers, the announcement that the DREO has failed coincides with an announcement that the firm has filed for Chapter 11. For seven of the failed offers, we find no direct announcement that the offer has failed. For these seven, we use as a proxy an announcement that the firm has filed for Chapter 11. The use of a Chapter 11 filing as a proxy for identifying the termination of a failed DREO is equivalent to the procedure used by Gilson et al. (1990) to identify announcements that out-of-court restructuring attempts have failed. Nonetheless, we recognize that these announcements may contain information beyond the fact that the DREO has failed. The final five announcements relate only to the failure of the proposed DREO. An example of such an announcement is that of Texfi Industries on March 16, 1988:

> The exchange offer was conditioned upon a minimum of $1,500,000 in outstanding principal amount of debentures being duly tendered prior to the expiration date and not withdrawn. Since only $1,176,000 in aggregate principal amount of debentures were tendered, this condition was not met. Accordingly, no shares of the 1988A preferred stock will be issued and the tendered debentures will be promptly returned.

Some data describing the firms with successful and failed offers are given in Table 6. Firms with failed offers are slightly larger (as measured by book value of total assets) than firms with successful offers, but the mean and median leverage ratios of the two sets of firms are nearly identical. Where the two sets of firms clearly differ is with respect to their *Z*-scores. Firms with failed DREOs have *Z*-scores that are lower than those of firms with successful offers, but neither the means nor the medians are significantly different (p-values > 0.10).

Given the small sample sizes in certain cases, care must be taken with interpreting announcement period returns. Nevertheless, Table 6 gives the outcome announcement period excess returns for the two samples. For successful DREOs, the mean (median) outcome announcement period excess return is -0.3% with a p-value of 0.74 (-0.3% with a p-value of 0.47) and 54.5% of the excess returns are negative. For failed DREOs, the mean (median) outcome announcement period excess return is -12.5% with a p-value < 0.01 (-12.9% with a p-value of 0.01) and 85.7% of the excess returns are negative. For the five announcements that occur independent of a Chapter 11 filing, the mean (median) announcement period excess return is -6.2% with a p-value of 0.19 (-4.2% with a p-value of 0.15) and 80% of the excess returns are negative. Clearly, failure by a firm to complete a DREO is not good news for shareholders. The stock price reactions around terminations of DREOs are non-positive and are, thus, not consistent with the notion that DREOs are adverse to shareholders' interests.

Table 6
Financial data for 126 exchange offer firms classified by success/failure of attempted exchange offer, 1980–1994
Descriptive statistics for firms that announced exchange offers. The sample is partitioned into firms with successful and failed exchange offers. Financial data are taken from *Compustat*. Announcement period excess returns are calculated over the 3 days surrounding the exchange offer announcement with the one-factor market model. *p*-values for differences in means and medians are based on *t*-tests and median tests, respectively. (*p*-Values for announcement period returns based on *t*-tests and Wilcoxon signed rank tests are given in parentheses.) [The number of observations with positive announcement period returns and the number of observations are given in brackets.]

	Exchange offer firms with successful exchange offers (sample size = 107)		Exchange offer firms with failed exchange offers (sample size = 19)		*p*-values for differences	
	Mean	Median	Mean	Median	Mean	Median
Book value of assets ($ millions)	$699	$160	$854	$341	0.75	0.03
Total debt/Book value of assets	0.938	0.844	1.048	0.861	0.19	0.46
Long-term debt/Book value of assets	0.470	0.459	0.500	0.456	0.68	0.80
Altman's (1993) modified *Z*-score	−1.316	0.120	−2.700	−0.319	0.26	0.80
Three-day announcement period return around original announcement of exchange offer	−0.021 (0.00)	−0.031 (0.01)	−0.059 (0.01)	−0.069 (0.11)	0.25	0.83
	[39:104]		[6:19]			
Three-day announcement period return around announcement of outcome of exchange offer	−0.003 (0.74)	−0.003 (0.47)	−0.125 (0.00)	−0.129 (0.01)	0.00	0.01
	[46:101]		[2:14]			

3.6. Bankruptcy

So far, the evidence indicates that firms that undertake DREOs are in relatively poor financial condition and that managers' interests are unlikely to be incompatible with those of other shareholders. Consequently, it is very possible that DREOs are undertaken by managers of financially shaky firms in an effort to stave off further financial distress. Given that various studies have demonstrated that Chapter 11 filings are associated with a statistically significant and economically large negative average stock price reaction, avoidance of bankruptcy is likely to preserve value for shareholders (Gilson, 1990; Lang and Stulz, 1992; Betker, 1995; Hotchkiss, 1995; Tashjian et al., 1996).[6] If that is the case, however, the news in DREOs should be good for shareholders. That is, news that managers are attempting to salvage value for shareholders should give rise to a positive stock price reaction. Clearly, such an interpretation is not consistent with the observed negative average announcement period excess stock return. Thus, we conclude that DREO announcements contain other information as well. We posit that DREOs signal that the firm is in even worse financial condition than had been previously recognized (even though that information does not show up in a direct analysis of post-DREO earnings).

One way in which that poorer financial condition might show up is in a high rate of bankruptcy. Of course, determination of a "high" rate of bankruptcy requires a benchmark of what might be considered the expected rate of bankruptcy for our sample. We use the bankruptcy rate of our financial-condition matching sample as this benchmark. Comparing DREO firms with their financial-condition matching firms shows that, as designed, the *Z*-scores and debt ratios prior to the DREOs are very similar for these two groups (Table 3). If the *Z*-scores are good predictors of bankruptcy and if they capture publicly available information about the likelihood of bankruptcy, then investors' perceptions of bankruptcy for the two groups should be similar (absent any information conveyed by the DREO).

We trace Chapter 11 filings of sample firms for which we can identify financial-condition matching firms and for the matching firms for 3 years following the year of the DREOs. The incidence of bankruptcy for the full set of DREO firms is given in panel A of Table 7. The incidence of bankruptcy for the 82 DREO firms with financial-condition matching firms is given in panel B of Table 7 along with the incidence of bankruptcy for the financial-condition matching firms.

[6] Numerous papers also provide evidence on direct and indirect costs of bankruptcy and financial distress that could be the source of the observed decline in stock price (Andrade and Kaplan, 1998; Franks and Torous, 1994; Opler and Titman, 1994; Pulvino, 1998; Warner, 1977; Weiss, 1990). Of course, operational restructuring rather than financial restructuring is much more likely to be important for the ultimate success of the firm.

Table 7
Bankruptcy rates for 126 exchange offer firms and financial-condition matching firms, 1980–1994
Bankruptcy rates for exchange offer firms and financial-condition matching firms during the 3 years following the initial exchange offer announcements. The financial-condition matching firms are firms with the same one-digit SIC code, a total debt ratio within ±0.1 of that of the exchange offer firm, and modified *Z*-score within ±20% or within ±0.1 of that of the exchange offer firm. Of the firms that meet these requirements, we choose as the financial-condition matching firm the one with total assets most similar to that of the exchange offer firm. Chi-square tests are used to test the hypotheses that the proportions are identical. In panel A, [a] and [b] indicate that the bankruptcy rate for firms with successful exchange offers is statistically different from the rate for firms with failed exchange offers at the 0.01 and 0.05 levels, respectively. In panel B, [a] and [b] indicate that the bankruptcy rate for exchange offer firms is statistically different from the rate for control firms at the 0.01 and 0.05 levels, respectively.

Sample	Years after initial exchange offer announcement		
	1	2	3
Panel A: All exchange offer firms			
All exchange offer firms (sample size = 126)			
Number of firms filing for bankruptcy	13	8	10
Cumulative number of firms filing for bankruptcy	13	21	31
Cumulative fraction of firms filing for bankruptcy	10.3%	16.7%	24.6%
Exchange offer firms with successful exchange offers (sample size = 107)			
Number of firms filing for bankruptcy	4[a]	4[b]	8
Cumulative number of firms filing for bankruptcy	4[a]	8[a]	16[a]
Cumulative fraction of firms filing for bankruptcy	3.7%	7.5%	15.0%
Exchange offer firms with failed exchange offers (sample size = 19)			
Number of firms filing for bankruptcy	9	4	2
Cumulative number of firms filing for bankruptcy	9	13	15
Cumulative fraction of firms filing for bankruptcy	47.4%	68.4%	78.9%
Panel B: Exchange offer firms with financial-condition matching firms			
All exchange offer firms with financial-condition matching firms (Sample size = 82)			
Number of firms filing for bankruptcy	7[b]	6	5[b]
Cumulative number of firms filing for bankruptcy	7[b]	13[b]	18[a]
Cumulative fraction of firms filing for bankruptcy	8.5%	15.9%	22.0%
Financial-condition matching firms (sample size = 82)			
Number of firms filing for bankruptcy	1	4	0
Cumulative number of firms filing for bankruptcy	1	5	5
Cumulative fraction of firms filing for bankruptcy	1.2%	6.1%	6.1%
Exchange offer firms with financial-condition matching firms and successful exchange offers (sample size = 69)			
Number of firms filing for bankruptcy	1	3	4[b]
Cumulative number of firms filing for bankruptcy	1	4	8[b]
Cumulative fraction of firms filing for bankruptcy	1.4%	5.8%	11.6%

Table 7 (*continued*)

Sample	Years after initial exchange offer announcement		
	1	2	3
Panel B: (continued)			
Financial-condition matching firms (sample size = 69)			
Number of firms filing for bankruptcy	1	1	0
Cumulative number of firms filing for bankruptcy	1	2	2
Cumulative fraction of firms filing for bankruptcy	1.4%	2.9%	2.9%
Exchange offer firms with financial-condition matching firms and failed exchange offers (sample size = 13)			
Number of firms filing for bankruptcy	6[a]	3	1
Cumulative number of firms filing for bankruptcy	6[a]	9[b]	10[a]
Cumulative fraction of firms filing for bankruptcy	46.2%	69.2%	76.9%
Financial-condition matching firms (sample size = 13)			
Number of firms filing for bankruptcy	0	3	0
Cumulative number of firms filing for bankruptcy	0	3	3
Cumulative fraction of firms filing for bankruptcy	0.0%	23.1%	23.1%

According to panel A, 24.6% of the DREO firms file Chapter 11 within 3 years of their DREOs. Of the DREO firms with financial-condition matches, 22.0% file Chapter 11 within 3 years of the DREO. In comparison, of the 82 financial-condition matching firms, only 6.1% file Chapter 11 over the same time interval. Apparently, firms that undertake DREOs are more financially distressed than are firms that otherwise appear to be in equally perilous financial condition. These results are consistent with the idea that announcements of a DREOs reveal negative information about the firms that is not currently in the public domain.

The important related question is whether DREOs—when they are successful—do, in fact, reduce the likelihood of bankruptcy. To consider this question, panel A of Table 7 further classifies the DREO firms according to whether the DREO was or was not successful. Of those firms with successful DREOs, 15.0% entered Chapter 11 within 3 years of the announcement of the DREO, whereas, of those firms with failed DREOs, 78.9% entered Chapter 11 within 3 years. The difference is statistically significant at the 0.01 level. A successful DREO significantly reduces the likelihood that a firm will file for bankruptcy.

In panel B, the 82 DREO firms with financial-condition matches are classified according to whether their DREOs were successful. Of those with successful DREOs, 11.6% filed for Chapter 11. Of those with failed DREOs, 76.9% filed for Chapter 11. These rates of bankruptcy are significantly greater than the rates of their matching firms, which are 2.9% and 23.1%, respectively (p-values for differences are 0.05 and 0.01, respectively).

We also estimate a logistic regression with the full sample of DREO firms along with the set of financial-condition matching firms. In this regression, the dependent variable is an indicator variable that equals one if the firm filed Chapter 11 within 3 years after the DREO and zero otherwise. The independent variables are the firms' *Z*-scores, an indicator variable that equals one if the firm announced a DREO and zero otherwise, and an indicator variable that equals one if the DREO was successful and zero otherwise.

As shown in Table 8, the coefficient of the *Z*-score is negative with a *p*-value of 0.047. Thus, as expected, the lower the *Z*-score, the more likely the firm is to file for Chapter 11. The coefficient of the indicator for whether the firm attempted a DREO is positive with a *p*-value < 0.001. Thus, after controlling for the firm's *Z*-score, firms that attempt a DREO are significantly more likely to enter Chapter 11 than are other firms. Thus, if the *Z*-score is assumed to capture available public information about the firm's likelihood of filing for Chapter 11, an announcement of a DREO contains information about the likelihood that the firm will file for Chapter 11 that is not currently in the public domain. The coefficient of the indicator for whether the DREO is successful is negative with a *p*-value < 0.001. Thus, even after controlling for financial condition, a successful DREO reduces the likelihood that the firm will file for Chapter 11.

We also estimate the regression with only the DREO firms, except that the only independent variables are the *Z*-score and the indicator for whether the DREO is successful. The results are given in the second column of Table 8. The coefficient of the indicator for success is negative with a *p*-value < 0.001. Thus, after

Table 8
Logistic regressions of the bankruptcy probability for 126 exchange offer firms and financial-condition matching firms, 1980–1994
Logistic regressions of the probability that a firm files for Chapter 11 within 3 years following the announcement of an exchange offer. The financial-condition matching firms are firms with the same one-digit SIC code, a total debt ratio within ± 0.1 of that of the exchange offer firm, and modified *Z*-score within $\pm 20\%$ or within ± 0.1 of that of the exchange offer firm. Of the firms that meet these requirements, we choose as the financial-condition matching firm the one with total assets most similar to that of the exchange offer firm. (*p*-values are given in parentheses.)

	Exchange offer firms and financial-condition matching firms	Exchange offer firms only
Intercept	−2.690 (0.000)	1.198 (0.000)
Exchange offer is announced	3.855 (0.000)	
Exchange offer is successful	−3.308 (0.000)	−3.045 (0.000)
Z-score	−0.089 (0.047)	−0.061 (0.192)
Pseudo R^2	0.208	0.231
Sample size	208	126

controlling for financial condition (as reflected in the modified *Z*-score), a successful DREO significantly reduces the likelihood that the firm will file for bankruptcy.

The results of our various logistic regressions are consistent with the joint hypothesis that the announcement of a DREO contains information about the firm's financial condition that is not already in the public domain and that the DREO represents an attempt by management to stave off bankruptcy and, thereby, preserve value for shareholders.

4. Conclusion

In this study, we examine why firms undertake DREOs and what information announcements of such offers convey to the capital market. These questions are especially intriguing because DREO announcements are associated with a negative average stock price reaction, which might be taken to imply that shareholders are affected adversely—perhaps to entrench or enrich management at shareholders' expense. The evidence is not consistent with this notion. Rather, the evidence indicates that managers undertake DREOs in an attempt to avoid bankruptcy and, thereby, preserve value for shareholders. Further, a successfully completed DREO substantially reduces the likelihood that the firm will file for Chapter 11. Despite these efforts to preserve value for shareholders, the average stock price reaction to DREO announcements is negative, apparently because the announcements also convey information that the firms' financial situation is more fragile than publicly available information would otherwise indicate. Thus, the decision to undertake a DREO can present management with a dilemma: if management is intent upon maximizing shareholder wealth, then a DREO may be the best alternative available to a financially weakened firm. But the decision to undertake such a transaction is likely to show up as an immediate reduction in share value—which might otherwise have been deferred to a later date or, with luck, might not occur at all. That is, if economic prospects for the firm were to improve, the restructuring might eventually be avoided. Presumably, management evaluates those possibilities before undertaking the DREO and concludes that the ultimate benefits outweigh the ultimate costs.

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Appendix A. Debt-reducing exchange offers and their announcement dates

Company Name	Announcement Date	Company Name	Announcement Date
Goodrich B F	19801223	Communications Corp of America	19860714
Lockheed	19810205	Clabir	19860909
Zayre	19810611	Days Inns	19861022
Instrument Systems	19810831	Tipperary	19861103
Q One	19811231	Consul Restaurant	19870316
Electro Audio Dynamics	19820719	Chapman Energy	19870324
International Harvester	19821012	Oak Electro Netics	19870325
Talley Industries	19821117	International Banknote	19870428
Genesco	19830127	Patient Technology	19870514
LSB Industries	19830317	Webb (Del E)	19870818
MGF Oil	19830527	Athlone Industries	19870826
Tiger International	19830628	Occidental Petroleum	19870923
Caesars World	19830718	Texfi Industries	19880119
Golden Nugget	19830916	Savin Business Machines	19880216
Heldor Industries	19830928	Coleco Industries	19880315
Transcontinental Energy	19831003	Pope Evans & Robbins	19880405
Energy Management	19831014	TPA of America	19880429
Michigan General	19831017	Carolyn Bean Publishing Ltd	19880502
Allis-Chalmers	19831220	ICO	19880504
Anacomp	19840111	Crystal Oil	19880803
Blocker Energy	19840215	Reading & Bates	19881111
Page Petroleum Ltd	19840222	Thortec International	19890209
World Airways	19840419	Nationwide Cellular Service	19890405
American Medical Buildings	19840601	Bio Technology General	19890718
MGF Oil	19840705	Alpine Group	19890913
Kenai	19840905	Data Switch	19891222
Mattel	19840917	NeoRx	19900122
Macrodyne Industries	19840928	National Convenience Stores	19900207

Coradian	19841001	Newport Pharmaceuticals Int'l	19900319
DelMed	19841019	Divi Hotels N V	19900427
Custom Energy Services	19841029	Western Union	19900430
American Quasar Petroleum	19850115	Interco	19900510
Electro Audio Dynamics	19850117	Bally Manufacturing	19900530
Oak Industries	19850201	American Mobile Systems	19900608
Tipperary	19850314	National Patent Dev	19900620
Trans World Airlines	19850314	Santa Fe Pacific	19900731
Sharon Steel	19850401	Enercap	19900924
Quanex	19850426	Barringer Resources	19901004
Oxoco	19850516	USG	19910114
Texas International	19850610	McCaw Cellular Communications	19910220
Crystal Oil	19850611	General Devices	19910416
Texfi Industries	19850614	Forest Oil	19910506
Beker Industries	19850628	Michaels Stores	19910610
Brock Hotel	19850628	Gaylord Container	19910718
Western Co of North America	19850910	Concurrent Computer	19910913
Lear Petroleum	19851004	Executone Information Sys	19911220
Consul Restaurant	19851016	Edisto Resources	19920207
Petro Lewis	19851104	Skolniks	19920313
Preway	19851227	Bally Manufacturing	19920604
Savin Business Machines	19860131	Town & Country	19920722
Lorimar Telepictures	19860227	Horn & Hardart	19920730
Blair John & Co	19860313	Bowmar Instrument	19920731
Consolidated Oil & Gas	19860415	LIVE Entertainment	19920902
DelMed	19860428	Rymer Foods	19920915
Wilson Foods	19860501	Autotote	19921002
LTV	19860502	Robertson Ceco	19930521
Damson Oil	19860515	National Patent Development	19930712
Digicon	19860516	CCAir	19930714

Custom Energy Services	19860530	Kaman	19930916
Lehigh Valley Industries	19860530	International Fast Food	19940114
Horn & Hardart	19860612	O'Brien Environmental Energy	19940412
Southwest Forest Industries	19860617	Mirror Technologies	19940414
Pengo Industries	19860702	Trans World Airlines	19941011

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