

EFFICIENCY IN FINANCIAL CONTRACTING: BOND COVENANTS AND CORPORATE BANKRUPTCY†

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This study examines the wealth loss that occurs for both stockholders and bondholders in the period surrounding the announcement of a bankruptcy. Examining a sample of 161 bonds issued by firms that subsequently went bankrupt during 1979-1990, we find that the covenant structure contained in the indenture is an important determinant of cross-sectional variability in the magnitude of the creditors' wealth loss. Covenant sets addressing the disposition of assets and control of dilution of bondholder influence were found to be statistically significant determinants of bond returns surrounding the period of bankruptcy announcement. We also document a direct relation between creditor wealth loss and the frequency of issue downgrade by professional rating agencies. Since ratings reflect an issue's covenant structure, this suggests that financial markets respond both to the presence of specific covenants as well as the evaluation of these covenants by external monitors.

Recent research on corporate bankruptcy reveals that the priority of claims is often violated in bankruptcy proceedings¹. For example,

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Weiss (1990) finds that the strict priority of claims in is violated for 29 of 37 firms filing for bankruptcy between 1980 and 1986. It is also generally recognized that the provisions of the Bankruptcy Reform Act of 1978 provide shareholders with a valuable option to delay reorganization. Once the firm declares bankruptcy, its management possesses a 120 day exclusivity in proposing a plan of reorganization. Moreover, the courts have shown a willingness to extend this period. The bankruptcy code also grants shareholders the right to vote on a plan, which can result in wealth transfers from bondholders to shareholders.

This paper argues that shareholders' ability to retain residual claims in violation of absolute priority is likely to be a function of the structure of its debt contracts. Thus, a bond contract which provides more protection to bondholders is likely to result in less impairment of bondholders' claims during the bankruptcy process. Secured creditors, for instance, generally suffer relatively little from attempts at wealth transfer and are typically paid their contractual amount. Within the class of unsecured creditors, however, restrictive covenants can mitigate agency conflicts and hence potential wealth transfers from bondholders to shareholders.

We examine the extent to which the structure of debt contracts influences the expropriation of bondholder wealth by shareholders during the course of a bankruptcy. We document the existence of a wealth loss for both debt and equity over the period surrounding the announcement of bankruptcy. The significant losses to creditors are consistent with violations of absolute priority. If the restrictive covenants present in debt contracts mitigate wealth transfer, then one would expect bondholders in firms that issued more restrictive debt to experience smaller wealth losses. Consistent with our predictions, we find a direct relation between the abnormal bond price reaction to the announcement of bankruptcy and the restrictiveness of debt contracts. These results indicate an efficiency in the contracting process whereby the least protective bonds suffer the largest losses when firms file for bankruptcy.

This study is organized into four sections. In the following section we describe our sample construction procedure as well as the methodologies employed to calculate both bondholder and stockholder excess returns. Section III contains our empirical findings for both an analysis of the ability of covenants to control wealth transfers from creditors as well as the information content of bond rating changes prior to bankruptcy. We present a brief summary and conclusion in section IV.

II. DATA AND METHODOLOGY

A. *Data Description and Sample Selection*

Our sample period begins in November 1979 and extends through December 1990.² Using the *Dow Jones News Retrieval Service*, we obtain an initial listing of 841 firms announcing bankruptcies over this period. Firms are then excluded from further analysis if they (a) are not listed on New York Stock Exchange, American Stock Exchange or the Over-the-Counter Market, (b) have announcements of bankruptcies following delisting from any of these three exchanges, (c) either have no common stock returns the day of the bankruptcy announcement (day 0) or have less than 50 common stock returns during the estimation period, day -250 to day -21, (d) file for Chapter 7, or (e) do not have details regarding their bond covenants are unavailable from either prospectuses or *Moody's Industrial Manual*. Our final sample consist of 161 bonds, issued by 87 different companies. Table 1 contains a description of our sample in terms of industry distribution, timing and firm issue multiplicity.

For our sample of 87 bankrupt firms we obtain from monthly issues of *Moody's Bond Guide* a listing of those bonds outstanding at the time of bankruptcy. For 52 of the outstanding issues we are able to obtain copies of the prospectus from Moody's Investor Services, New York, NY. From these prospectuses we are able to tabulate the set of covenants contained in each bond indenture. For the remaining 109 bonds, we employ various

editions of *Moody's Annual Industrial Manual* to determine which covenants are contained in each issue.³

"These findings are consistent with the argument that the market capitalizes the costs of the reorganization process in the prices of both sets of securities."

B. Methodology For Measuring Security Abnormal Returns

Both daily abnormal returns and cumulative abnormal returns are estimated for a number of cumulation periods surrounding the announcement of Chapter 11 filings, based upon the market model described in Dodd and Warner (1983). The market model parameters are estimated using days -251 through day -21 as the estimation period. Returns on the *Center for Research in Security Prices* (CRSP) value-weighted index are used to proxy market returns.

The reaction of our sample 161 bonds to the filing for Chapter 11 is examined using the methodology described by Handjinicolaou and Kalay (1984). This methodology involves the use of mean-adjusted returns, as in Brown and Warner (1980), and addresses two issues that are especially relevant for an analysis of daily bond reactions. The first is that bonds trade infrequently relative to the behavior of common shares. Secondly, bond returns are effected by changes in their term structure. In response to the first problem, our use of the Handjinicolaou and Kalay method incorporates consideration of daily and multi-day returns based on observed trades. With respect to the second issue, bond returns are adjusted for the yield on matching treasury bonds with the closest maturity and coupon.

These adjustments allow the analysis of daily risk-adjusted returns, with less probability of contamination by any possible announcement effect. Closing bond prices are collected for 60 days prior to the bankruptcy announcement to 15 days following the announcement. Our estimation period extends from day -60 through day -16, while various examination windows are constructed over days -15 to day 15.⁴

III. EMPIRICAL RESULTS

A. Evidence on Wealth Impact of Bankruptcy

In Table 2 we present evidence on the wealth effects of Chapter 11 bankruptcy filings for both stockholders and bondholders. We report results for a number of different cumulative abnormal return windows surrounding the filing. Our findings indicate that both equity and creditors suffer wealth losses in the period surrounding the bankruptcy announcement. In the three day period immediately surrounding the filing (i.e., day -1 through day +1), equityholders experience a -16.3% abnormal return while the corresponding abnormal return for bondholders is -6.3%. Similar results occur for other cumulation periods, with the two-day (0, +1) return significant at the 1% level. These findings are consistent with the argument that the market capitalizes the costs of the reorganization process in the prices of both sets of securities

One of the costs of a bankruptcy reflected in bond prices is the violation of the absolute priority rule (APR). The Bankruptcy Reform Act of 1978 allows shareholder to retain a residual claim even in the absence of full compensation to other claimholders. Deviations from the APR are well documented in the extant literature. Frank and Torous (1989) found that 21 of 27 firms exhibited deviations from the APR. In addition, Weiss (1990) examined 37 firms that filed for bankruptcy and found that 27 of these firms violated the APR. More recently, Eberhart, Moore and Roenfeldt (1990) estimate that shareholders receive on average 7.6% in excess of that due under strict adherence to the APR. This empirical

evidence is consistent with the argument that the bankruptcy process results in a wealth transfer from bondholders to shareholders.

“By combining covenants together, we can better assess the extent to which bondholders have been able to protect themselves from future anticipated wealth reducing actions by management.”

One possible explanation for these APR violations and the wealth transfer they indicate is the right of incumbent management to possess a period of exclusivity in proposing a plan of reorganization. Management often uses this time to renegotiate with creditors and to mark down the value of creditor claims.⁵ Frank and Torous (1989) argue that the option to delay reorganization is a call option that the Bankruptcy Reform Act of 1978 provides shareholders. Thus with greater time to reorganization, the call option becomes valuable with correspondingly greater losses to bondholders. Consequently, we argue that security price reactions upon the announcement of bankruptcy reflect unbiased expectations of time to reorganization. This implies a negative relation between the time to reorganization and bond price reaction. Similarly, we predict a positive relation between time to reorganization and stock price reaction.

To examine the above hypotheses, we separately regress the excess returns to bondholders and stockholders against the time to reorganization. The time to reorganization is defined as the number of days that elapse between the announcement of bankruptcy and the court's acceptance of a plan of reorganization.⁶ Although we do not report the results separately, our findings indicate a weakly significant inverse relation between bond

excess returns and the time to reorganization.⁷ Longer delays in reorganization appear to result in more negative excess returns for creditors. An examination of shareholder's excess returns and the reorganization time indicates a positive relationship, though not statistically significant.

Viewed collectively, the evidence in the extant literature and results presented above suggest that documented violations of absolute priority result in wealth transfers between bondholders and stockholders. In the following section, we document evidence suggesting the effectiveness of indenture covenants to mitigate these wealth transfers.

B. Bond Covenant Analysis

In Table 3 we provide a frequency distribution of the various covenants contained in our sample of bonds. We observe thirteen different covenants included in the bond indentures. In addition to an individual covenant analysis, we also consolidate them into three categories following the scheme described by Ross, Westerfield and Jaffe (1990). These categories represent financial statement covenants, restrictions on asset disposition and restrictions on claim dilution. This first set of covenants addresses the firm's financial position through the monitoring of working capital requirements, interest coverage and minimum net worth. These covenants attempt to prevent distortions in the firm's investment policy which may lead to increases in bond risk. The second set of covenants restrict the disposition of assets. They represent the bondholders' efforts to limit the ability of shareholders to transfer assets to equity and consequently underinvest in the firm. The third set of covenants limits the leasing and borrowing ability of firm's management. This prevents the dilution of existing creditor claims by shareholders attempting to issue new debt of equal or greater priority.

To determine the protection provided to creditors by the various bond covenants, we examine the impact of these covenants on bond excess

returns surrounding the announcement of bankruptcy. Existing financial theory however, provides little guidance on how debt covenants are selected for packaging in a debt contract. Smith and Warner (1979) state,

[W]e have not developed a theory which is capable of explaining how for a given debt issue, the total 'package' of covenants is determined. Further work on the substitutability or complementarity of the specific contractual provisions is necessary before it is possible to predict, for any set of firm-specific characteristics, the form which the debt contract will take.

Not only is an optimal debt contract difficult to design, but a covenant may not necessarily provide bondholders with the protection that it implies. For example, if debt contracts impose restrictions on the issuance of additional debt, shareholders could engage in leverage or risk increasing mergers or asset sales and thereby transfer wealth away from bondholders.

By grouping related covenants together, however, we can address a particular area of bondholder-shareholder conflict. For instance, the collection of financial statement covenants which focus on minimum net worth and sinking fund issues is designed to control the distortion of investment decisions by management.⁸ Since shareholders are residual owners of the firm, they possess an inherent preference towards more risky assets. By combining covenants together, we can better assess the extent to which bondholders have been able to protect themselves from future anticipated wealth reducing actions by management. A combination of covenants addresses a greater number of contingencies and is more likely to describe the prohibitions and applicable remedies when standards are violated. Thus in the presence of efficient contracting we should expect that these sets of covenants will control shareholder expropriation of bondholder wealth better than any singular covenant.⁹ Yet, since our understanding of potential complementarities and substitutabilities among covenants is not sufficiently well developed, it is important to examine individual covenants as well as groups of covenants to examine their

impact on the wealth loss suffered by bondholders in the period surrounding a Chapter 11 filing.

Table 4 presents the estimated coefficients from regressions of the bond excess returns against a binary dummy variable, which denotes the presence or absence of a particular covenant. The results suggest that the presence of restrictions on issuing additional debt is the only covenant that significantly influences bond price reaction around the announcement of bankruptcy.

In an alternative specification, we regress the excess returns on dummy variables representing the three categories of covenants described previously. To the extent that a bond has any of the corresponding covenants in place, the dummy variable assumes a value of one. Table 5 presents the estimated coefficients from regressions of bond and stock excess returns on dummy variables for these three categories of covenants. Panel A reports the findings from an analysis of bond excess returns. The results reveal that the coefficients on the dummy variables are uniformly positive, indicating that the presence of these covenants serves to restrict the transfer of wealth to shareholders. Two of the coefficients are statistically significant, suggesting that covenants on the disposition of assets and the dilution of bondholder control are important safeguards for creditors.

Covenants regarding asset disposition serve to protect creditors in several ways. First, they prevent shareholders from selling assets piecemeal, which is generally less effective than selling the entire firm as a going concern. They also prevent shareholders from substituting variance increasing assets for those currently owned by the firm. Lastly, many of the asset disposition covenants require that some portion of the proceeds from the sale of assets be used to retire debt. Such an arrangement has the effect of increasing debt coverage and hence reduces bondholder risk.

Dilution control covenants attempt to prevent the reduction of bondholder influence by restricting the issuance of additional debt, by limiting the generation of other debt-like obligations and by resisting unfavorable changes in voting rules. These covenants also define the rights of creditors in the event of a default or if the issue is called.

“A change in a bond’s rating can be viewed as an evaluation by an external monitor of the impact that the changing financial conditions of the firm will have upon promised cashflows to creditors, given the issue’s covenant structure.”

The insignificance of the financial statement covenants in explaining the cross-sectional variation bond excess returns may be due to the limited number of covenants that are actually present for the bonds in our sample. Only two covenants are included in this set: minimum net worth and a sinking fund provision.¹⁰ Only 5% of our sample have provisions for minimum net worth standards, although the sinking fund provision is more widely represented in our sample (77.6%). Table 4 shows that the sinking fund covenant in isolation is ineffective. Thus it should not be surprising that this covenant in combination with a sparsely used minimum net worth provision is insignificant as well.

In panel B we report our findings for the corresponding impact of these covenants upon equity holders. We note that all three dummy variables are negatively related to shareholder excess returns, indicating that these covenants restrict the amount of wealth expropriation by shareholders

during bankruptcy. The asset and bond dilution sets of covenants are statistically significant and indicate an ability of these provisions to restrain transfers of wealth to equity. These covenants, however, are significantly positive in an analysis of creditor returns. This symmetry in results is strong evidence regarding the efficacy of certain covenants to control the violations of claimant priority that often occur during the course of a bankruptcy.

C. Bond Rating Changes and Market Anticipation of Bankruptcy

Covenants are also an important determinant of a bond's rating as assigned by professional rating agencies such as *Moody's* or *Standard and Poor's*. A change in a bond's rating can be viewed as an evaluation by an external monitor of the impact that the changing financial conditions of the firm will have upon promised cashflows to creditors, given the issue's covenant structure. Thus, if bond rating changes reflect information about the likely effectiveness of an issue's covenant structure, we should expect to observe a direct relation between creditor wealth losses at the time of bankruptcy announcement and the extent of a rating reevaluation.

In this section we examine if an issue's rating history provides additional explanation for the cross-sectional variability in security returns surrounding a bankruptcy. One concern is that an examination of bond covenants, either separately or in groups, will not be especially insightful if bond ratings already subsume the information contained in those covenants.¹¹ We argue that the time series of bond ratings represent a periodic reinterpretation of the bond's covenants and their impact on creditors' wealth in the event of a bankruptcy.

In order to examine this possibility, we analyze the time series of rating changes by *Moody's* for two years prior to the firm's announcement of bankruptcy. Specifically, we obtain an issue's rating history from the monthly editions of *Moody's Bond Guide*. The average bond in our sample had 1.67 downgrades in the two year period preceding the

announcement of bankruptcy, ranging from a minimum of only one down grade to a maximum of four. The average magnitude of the downgrade was 1.5 grades. The last downgrade for the average bond in our sample occurred 2 months prior to bankruptcy, although when the magnitude of the downgrade was incorporated with the timing of the downgrade as a weighted average, this value dropped to 1.53 months.¹²

In Table 6 we report our results from an analysis of the relation between a bond's rating history and creditors' returns at the time of bankruptcy. In panel A we examine the impact of the number of downgrades in the preceding two years on bondholders' returns at the time of bankruptcy announcement. As the bonds are downgraded, there is a corresponding decrease in the quality of the creditors' position regarding the certainty of payment of the promised cashflows. As the expected value of the payment to creditors continues to decline with additional downgrades, it is likely that creditors are more vulnerable to wealth expropriation by shareholders. Two possible sets of circumstances may explain this. First is the observation that those bonds which experience a greater frequency in downgrades represent issues of greater risk. The rating itself is after all an assessment of default probability. Second, as creditors observe the value of their claim decrease with additional downgrades, there is an incentive to reach an agreement with management and thereby stabilize bond values. In this negotiation process, creditors will likely be required to surrender some value to shareholders.

The results of Table 6 provide limited evidence of such an occurrence. In panel A we observe a significantly inverse relation between the number of downgrades a bond experiences in the two years preceding a bankruptcy and the magnitude of creditors' excess returns surrounding the bankruptcy. This relationship holds for both a long 31 day cumulation period (i.e. days -15 through day 15) and for a shorter, pre-event period (i.e. days -15 through day -1).

In panel B we incorporate both the relative timing and the magnitude of the downgrade into our independent variable. The significance of the

relationship increases with this added information, indicating that creditors do experience a greater wealth transfer as their claims are more severely downgraded by the rating agencies.

"Although individual covenants were found ineffective, sets of related covenants were better able to explain the cross-sectional variation in the wealth loss suffered by creditors upon the announcement of a bankruptcy."

IV. CONCLUSION

This study attempts to explain the cross-sectional variability in the wealth transfer occurring at bankruptcy between bondholders and shareholders. The law provides the incumbent management with certain advantages in its negotiation with creditors. This is an essential characteristic of reorganization. Perhaps chief among these advantages is management's initial monopoly in proposing a plan of reorganization. The voting majority requirements among creditor classes only further serves to strengthen management's position. Previously cited studies indicate that management is able to exploit these advantages by expropriating wealth from bondholders and transferring it to equity. Estimates of the magnitude of this wealth transfer are reported at 7.5% of the total awarded to all claimants.¹³

In this study we first confirm the existence of a wealth loss for both debt and equity over the period surrounding the announcement of

bankruptcy. These significant losses to creditors are consistent with earlier documented violations of absolute priority and is suggestive of a wealth transfer. We then analyze the extent to which various covenants contained in the bond indenture can be effective in protecting creditors from this wealth loss. Although individual covenants were found ineffective, sets of related covenants were better able to explain the cross-sectional variation in the wealth loss suffered by creditors upon the announcement of a bankruptcy.

We next examine the time series of rating changes for our sample of defaulted issues since bond ratings reflect an evaluation of an issue's covenant structure. We find a weakly significant inverse relation between the frequency and magnitude of a downgrade and excess returns to creditors in the period surrounding a bankruptcy announcement. This is consistent with the hypothesis that external evaluation of the covenants plays an important role in explaining the cross-sectional variation in creditors' losses at the time of bankruptcy.

The results from this study indicate that the wealth transfer from bondholders at bankruptcy is not uniformly distributed. Bondholder loss is at least partially determined by the extent to which protective covenants are included in an indenture and the evaluation of the effectiveness of those covenants by external rating agencies. Thus violations of the absolute priority rule demonstrate a greater cross-sectional variability than earlier research has suggested.

NOTES

1. Application of the absolute priority rule of bankruptcy requires that creditors must be fully satisfied before shareholders receive any distribution of firm value.
2. This selection of the sample period corresponds to the passage of the Bankruptcy Reform Act in 1979 which replaced the existing Chandler Act of 1938 and represented the first major revision of U.S. bankruptcy procedures in 40 years. Consequently, by beginning our study in 1979 we avoid those bankruptcies that span legal regimes and potentially contaminate the interpretation of results.
3. Asquith and Wizman (1990) report a 21% inaccuracy rate when comparing the covenant reporting contained in *Moody's Industrial Manual* to that of the original prospectuses. In order to verify the accuracy of our sample, we compared the list of bond covenants based upon original prospectuses with those described in *Moody's Industrial Manual*. We were however, unable to identify any reporting inconsistencies in our sample based upon this comparative examination.
4. The statistical significance of the abnormal return (Mean Excess Premium Bond Return), is assessed through the z-statistic for the corresponding standardized excess premium bond return (Handjinicolaou and Kalay, 1984).
5. Creditors will often agree to a diminution of their claims in an effort to hasten the normally slow process of bankruptcy as well as to avoid an unfavorable reevaluation of their priority standing by management.
6. The time to reorganization ranged from a minimum of 33 days to a maximum of 1,598 days. The mean time in reorganization for our sample of firms was 446 days.

7. Specifically, the two day excess bond return for days 0, +1 were inversely related to the time to reorganization and statistically significant at the 10% level. Other cumulation periods revealed the same negative relation with time to reorganization, but were not statistically significant.
8. Other covenants that are often included to monitor the investment policy of management are working capital requirements and interest coverage standards.
9. See Lehn and Poulsen (1991) for a description of the historical evolution of bond covenants and their ability to provide contract resolution to creditor-equity conflicts.
10. Other covenants generally included in the category of financial statement signals are working capital requirements and interest coverage standards. As with financial statement related covenants, these provisions require the firm to invest in specified assets and serve as an early indicator of financial distress.
11. The primary focus of bond rating activity is whether the firm can service the debt in the amount and according to the schedule specified in the bond indenture. Accordingly, the rating agencies must consider all covenants of the indenture that will influence the ultimate payment stream to creditors in the event of a default.
12. The number of months prior to bankruptcy for each issue was weighted by the magnitude of the downgrade. Thus a downgrade in a given month relative to bankruptcy was assigned a greater weight if the rating dropped a full grade than if the rating declined by only half a grade. The value scale for a rating change was assumed to be linear, with a change from Aaa to Aa assigned the same weight as a change from Baa to Ba.

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13. Eberhart, Moore and Roenfeldt (1990) document a wealth transfer of 7.6% of the total award to all claimants for a sample of 30 bankruptcy filings spanning the years 1979-1986.

REFERENCES

- Asquith, P. & Wizman, T. (1990). "Event Risk, Covenants, and Bondholder Returns in Leveraged Buyouts." *Journal of Financial Economics*, 27(1), 195-214.
- Brown, S.J. & Warner, J.B. (1980). "Measuring Security Price Performance." *Journal of Financial Economics*, 8(3), 205-258.
- Dodd, P. & Warner, J.B. (1993, April). "On Corporate Governance." *Journal of Financial Economics*, 11(1), 401-438.
- Eberhart, A.C., W.T. Moore, & Roenfeldt, R.L. (1990). "Security Pricing and Deviations From the Absolute Priority Rule During Bankruptcy Proceedings." *Journal of Finance*, 45(5), 1457-1470.
- Franks, J.R. & Torous, W.N. (1989). "An Empirical Investigation of U.S. Firms In Reorganization." *Journal of Finance*, 44(3), 747-770.
- Handjinicolaou, F. & Kalay, A. (1984). "Wealth Redistributions or Changes in Firm Value: An Analysis of Returns to Bondholders and Stockholders Around Dividend Announcements." *Journal of Financial Economics*, 13(1), 35-63.
- Lehn, K. & Poulsen, A. (1991). "Contractual Resolution of Bondholder-Stockholder Conflict in Leveraged Buyouts." *Journal of Law and Economics*, 34(2), 645-673.
- Ross, S.A., Westerfield, R.W. & Jaffe, J.J. (1990). *Corporate Finance*. Boston, MA: Irwin.
- Smith, C.W. & Warner, J.B. (1979). "On Financial Contracting: An Analysis of Bond Covenants." *Journal of Financial Economics*, 7(2), 117-162.

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Weiss, L.A. (1990, October). "Bankruptcy Resolution: Direct Costs and Violations of Priority of Claims." *Journal of Financial Economics*, 27(2), 285-314.

TABLE 1
SAMPLE DESCRIPTIVE CHARACTERISTICS

A. DISTRIBUTION OF SAMPLE ACROSS INDUSTRIES

<u>Two Digit SIC</u>	<u>Nature of Industry</u>	<u>Number</u>
00-09	Agriculture, Forestry, Fishing	2
10-19	Mining and Construction	21
20-29	Lumber & Chemicals	19
30-39	Machinery, misc. manufacturing	56
40-49	Transportation	9
50-59	Wholesale Trade	25
60-69	Finance, Insurance & Real Estate	13
70-79	Entertainment	13
80-89	Services	3

B. DISTRIBUTION OF SAMPLE OVER TIME

<u>Year</u>	<u>Number of Sample Bankrupt Firms</u>
1979	4
1980	3
1981	5
1982	21
1983	10
1984	6
1985	10
1986	21
1987	16
1988	9
1989	30
1990	26

C. MULTIPLICITY OF ISSUES BY FIRM

<u>Number of Firms</u>	<u>Number of Bonds Outstanding Per Firm</u>
53	1
17	2
5	3
7	4
1	5
2	6
2	7

TABLE 2

SECURITY ABNORMAL RETURNS SURROUNDING
THE ANNOUNCEMENT OF BANKRUPTCY

A. ABNORMAL EQUITY RETURNS

<u>Event Period</u>	<u>Mean Abnormal Return</u>
-15, 15	-0.105 (-2.389**)
-5, 5	-0.127 (-2.523**)
-2, 2	-0.136 (-2.498**)
-1, 1	-0.163 (-2.843**)
0, 1	-0.127 (-2.981***)
-15, -1	-0.057 (-2.536**)
1, 15	-0.136 (-2.343**)

B. ABNORMAL BOND RETURNS

<u>Event Period</u>	<u>Mean Abnormal Return</u>
-15, 15	-0.047 (-2.433**)
-5, 5	-0.045 (-2.222**)
-2, 2	-0.035 (-2.497**)
-1, 1	-0.063 (-2.888***)
0, 1	-0.071 (-2.914***)
-15, -1	-0.049 (-2.512**)
1, 15	-0.058 (-2.476**)

** indicates statistical significance at the 5% level.

*** indicates statistical significance at the 1% level.

TABLE 3

FREQUENCY OF SPECIFIC COVENANTS PRESENT
IN THE SAMPLE

COVENANT TYPE	ABSOLUTE FREQUENCY	PERCENT FREQUENCY
<i>Financial Statement Signals</i>		
Minimum Net Worth	8	5.0
Sinking Fund	125	77.6
<i>Restrictions of Asset Disposition</i>		
Dividend Policy	93	57.8
Limit On Asset Sales	28	17.4
Collateral and Mortgage	16	9.9
Merger Restrictions	20	12.4
<i>Dilution Control</i>		
Limit on Leasing	13	8.1
Limit on Additional Borrowing	37	23.0
Voting Modifications	149	92.5
Acceleration Clause	129	80.1
Callability	145	90.1
Limit on Lien	16	9.9
Defeasance	6	3.7

TABLE 4

BOND EXCESS RETURNS AND PROTECTIVE COVENANTS

$$CAR_{b,-15,15} = \beta_0 + \beta_1 COVEN + \epsilon$$

<u>BOND COVENANT</u>	$\hat{\beta}_0$	$\hat{\beta}_1$	\underline{R}^2	\underline{F}
Financial Statement Covenants				
Minimum Net Worth	0.050 (1.418)	-0.034 (-0.276)	0.001	0.076
Sinking Fund	0.085 (1.354)	-0.053 (-0.710)	0.008	0.504
Asset Disposition Covenants				
Dividend Policy	0.080 (1.463)	0.063 (0.939)	0.014	0.882
Limit On Asset Sales	0.044 (1.187)	0.016 (0.190)	0.001	0.036
Collateral and Mortgage	0.050 (1.414)	0.033 (0.262)	0.001	0.069
Merger Restrictions	0.048 (1.396)	-0.162 (-1.179)	0.022	1.389
Dilution Control Covenants				
Limit on Leasing	0.051 (1.476)	0.079 (0.502)	0.004	0.252
Limit on Additional Borrowing	0.081 (1.259)	0.204** (2.302)	0.080	5.300
Voting Modifications	0.107 (0.694)	0.062 (0.396)	0.002	0.157
Acceleration Clause	0.183 (1.233)	0.152 (1.440)	0.033	2.073
Callability	-0.036 (-0.381)	0.096 (0.950)	0.015	0.902
Limit on Lien	0.047 (1.365)	0.002 (0.011)	0.001	0.001
Defeasance	0.486 (1.415)	0.063 (0.233)	0.001	0.054

** indicates statistical significance at the 5% level.

(1) COVEN is a dummy variable denoting the presence or absence of a particular covenant in a bond contract.

(2) $CAR_{b,-15,15}$ represents the cumulative excess bond returns over event days -15 through 15.

TABLE 5
SECURITY EXCESS RETURNS AND COVENANT GROUPS

A. BOND ANALYSIS

$$CAR_{b,-15,15} = \beta_0 + \beta_1 FINST + \beta_2 ASSET + \beta_3 DILUT$$

<u>Variable</u>	<u>Definition</u>	β	<u>t</u> <u>Statistic</u>
INTERCEPT	—	0.0032	0.849
FINST	Financial Statement Related Covenants	0.0497	1.512
ASSET	Disposition of Assets Covenants	0.0121	2.071**
DILUT	Control of Dilution of Bondholder Influence Covenants	0.1562	1.862*

Adjusted R² = 0.10

F = 1.463

B. EQUITY ANALYSIS

$$CAR_{e,-15,15} = \beta_0 + \beta_1 FINST + \beta_2 ASSET + \beta_3 DILUT$$

<u>Variable</u>	<u>Definition</u>	β	<u>t</u> <u>Statistic</u>
INTERCEPT	—	0.0107	1.043
FINST	Financial Statement Related Covenants	-0.1162	0.193
ASSET	Disposition of Assets Covenants	-0.1169	-2.260**
DILUT	Control of Dilution of Bondholder Influence Covenants	-0.1805	-2.460**

Adjusted R² = 0.08

F = 1.262

** indicates statistical significance at the 10% level.

*** indicates statistical significance at the 5% level.

- (1) $CAR_{b,-15,15}$ represents the cumulative excess bond returns over event days -15 through 15. $CAR_{e,-15,15}$ represents cumulative excess stock returns over event days -15 through 15.
- (2) FINST is a dummy variable indicating the presence or absence of financial statement related covenants.
- (3) ASSET is a dummy variable indicating the presence or absence of asset disposition related covenants.
- (4) DILUT is a dummy variable indicating the presence or absence of bondholder control related covenants.

TABLE 6

BOND EXCESS RETURNS SURROUNDING BANKRUPTCY AND THEIR RATING HISTORY

A. Number of Downgrades in the Two Years Preceding Announcement of Bankruptcy

$$CAR_{b,t,t+n} = \beta_0 + \beta_1 NUMDG + \epsilon$$

<u>Event Period</u>	β_0	β_1	<u>Adj. R²</u>	<u>F</u>
-15, 15	-0.016 (-0.192)	-0.022* (-1.63)	0.07	9.42
-15, 1	-0.019 (0.003)	-0.003* (-1.65)	0.04	8.73

B. Value Weighted Downgrades in the Two Years Preceding Announcement of Bankruptcy

$$CAR_{b,t,t+n} = \beta_0 + \beta_1 VALUEDG + \epsilon$$

<u>Event Period</u>	β_0	β_1	<u>Adj. R²</u>	<u>F</u>
-15, 15	0.040 (0.514)	-0.012** (-2.08)	0.12	10.42
-15, -1	-0.012 (-0.267)	-0.068** (-2.07)	0.11	12.71

* indicates statistical significance at the 10% level.

** indicates statistical significance at the 5% level.

- (1) $CAR_{b,t,t+n}$ = cumulative excess bond return over day t through t + n.
- (2) NUMDG is the number of downgrades for a given bond issue in the 24 month period preceding the announcement of bankruptcy.
- (3) VALUEDG represents the value weighted downgrades of each bond issue in the 24 month period preceding the announcement of bankruptcy.
- (4) t statistics are provided in parentheses.