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Event Risk: An Analysis of Losses to Bondholders and “Super Poison Put” Bond Covenants

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ABSTRACT

Ten percent of the investment-grade industrial bonds that were associated with major capital restructurings between 1983 and 1988 had already been downgraded to speculative grade as of August 1989. In response to these downgrades, and the corresponding wealth losses for bondholders, over 40 percent of recently issued investment-grade industrial bonds are protected from this type of “event risk” by virtue of specialized covenants. These event-risk covenants may have initially reduced interest costs for borrowers by roughly 20 to 30 basis points. However, the magnitude of the effect appears to have declined along with the general decline in corporate restructurings.

THE WAVE OF CORPORATE restructurings in the 1980s' and the accompanying expansion of debt gave rise to a marked deterioration in credit quality in the corporate bond market. The financing of the restructurings typically included new debt with a priority equal to or higher than that of the firm's outstanding bonds. As a result of the increase in risk, billions of dollars in outstanding bonds were downgraded from investment grade to speculative grade.¹ In the process, investors became increasingly concerned with event risk—the risk of a substantial decline in the market price of a firm's outstanding bonds arising from an unforeseen and major change in its capital structure. Since late 1988, several corporate bond offerings have included event-risk covenants as a safeguard against leverage-induced losses. Most of the covenants are “super poison puts,” which give investors the right to sell their bonds back to the issuer at par in the event of a leveraged restructuring and subsequent downgrading to speculative grade.

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¹Moody's Investors Service downgraded \$30.79 billion in investment-grade debt to speculative grade because of leveraged restructurings between 1984 and 1988. See Watson and Mahoney (1989).

This paper presents estimates of bondholder losses due to downgrades following major restructurings, and it evaluates the effect of event-risk covenants on bond yields. As of August 1989, 56 out of 555 industrial bonds issued with investment-grade ratings between 1983 and 1988 had become speculative-grade "fallen angels" as a result of a leveraged buyout (LBO), a merger, or a defensive restructuring. In contrast, only 7 out of these 555 industrial issues were downgraded to speculative grade for reasons other than a leveraged restructuring. Estimates of losses to bondholders associated with restructurings ranged from 7.77 percent in the 6 months preceding the downgrade date to 11.83 percent from the re-offering date to the downgrade date.²

The super poison put bond covenants were included in 31 of 72 long-term bonds offered by industrial firms from November 1988 through December 1989. The covenants were designed to afford explicit protection against leverage-induced losses. Regression results indicate that this form of protection against event risk reduced required yields 24 basis points on the re-offering date and 32 basis points in the secondary market as of year-end 1989. The yield differential between bonds with and without covenants narrowed somewhat in the first half of 1990 as concern about event risk subsided, but the market valuation of event-risk covenants remains significant.

The paper is organized as follows. Section I presents evidence of the negative abnormal returns to bondholders arising from restructurings associated with downgradings. Section II describes the structure of the event-risk covenants and provides an anatomy of the market. Section III presents empirical estimates of the market valuation of the event-risk covenants. The final section briefly summarizes the findings.

I. Wealth Effects to Bondholders

This section examines the returns to holders of investment-grade bonds that were downgraded to speculative grade after a leveraged restructuring. The investigation establishes the empirical importance of event risk and provides an understanding regarding the motivation of bondholders to demand covenants to reduce this risk. The findings do not provide a general assessment of the cost to bondholders of restructurings because not all restructurings result in downgradings.³

²The re-offering date is the date the bonds were originally sold to the public through the underwriter.

³Over the past decade, some bonds were upgraded after takeovers by more creditworthy issuers; others were downgraded only modestly, remaining investment grade or speculative grade. For example, in 1986, the bonds of RCA Corporation were upgraded by Standard & Poor's from A- to AAA after the merger with General Electric Corporation; in 1987, the bonds of Chesebrough-Pond's, Inc. were upgraded from BBB to AAA after the merger with Unilever Group. In 1988, the bonds of Kraft, Inc. were downgraded within investment grade, from AA to A, after the merger with Philip Morris Companies, Inc.; and the bonds of Foodmaker, Inc. were downgraded within speculative grade, from B to CCC + after an LBO.

Previous research has come to differing conclusions regarding the effect of restructurings on bondholder wealth. In an analysis of 106 LBO's between 1980 and 1984, Lehn and Poulsen (1988) found that, for a sample of nine nonconvertible bonds, price declines averaged only 2.46 percent over a 20-day period centered on the announcement date. Marais, Schipper, and Smith (1989) likewise found that holders of nonconvertible bonds experienced no abnormal returns in their study of announcements effects of going-private proposals between 1974 and 1985.

More recent studies have found evidence of negative wealth effects to bondholders. In a study of 16 successful LBO's between 1985 and 1988 by Warga and Welch (1990), risk-adjusted prices of 43 publicly traded nonconvertible bonds fell an average of 7.7 percent in the period from 2 months before to one month after the LBO announcement date. Studying 214 bonds associated with 65 LBO proposals between 1980 and 1988, Asquith and Wizman (1990) also found that bondholders suffered statistically significant losses. Interestingly, bonds with strong protective covenants experienced smaller losses than bonds with weak covenants or none at all; in the latter, successful buyouts gave rise to average losses of 5.7 percent. Asquith and Wizman did not examine super poison put bond covenants because their sample period ended in 1988, just when the covenants were being introduced.

These differences among findings in previous studies about the effect of restructurings on bond prices arise from differences in method, in sample period, and in sample type. Because this paper focuses on downgradings from investment grade to speculative grade, the losses reported here are, *a priori*, likely to be larger than those from previous studies that may include bonds that were upgraded or that were not downgraded to speculative grade. They are likely to be large also because the sample includes only leveraged restructurings that were actually consummated.

A. The Sample

The sample includes all of the long-term, straight debt issued in the U.S. public market between 1983 and 1988 that satisfied the following criteria: (1) the issuer was a U.S. company with an industrial SIC code;⁴ (2) the issue had a stated maturity of 7 years or longer; (3) the issue was rated Baa or higher by Moody's Investors Service and BBB or higher by Standard & Poor's; and (4) the issue had a face value of \$25 million or more. The sample excludes (1) convertible bonds and bonds issued with warrants; (2) puttable bonds; (3) bonds with variable coupon rates; (4) medium-term notes; (5) asset-backed bonds; and (6) bonds issued at a significant discount to face value.⁵ Table I

⁴The sample excludes financial, insurance, and real estate companies that have SIC codes from 6000 to 6999, and utility and transportation companies that have SIC codes from 4000 to 4999.

⁵For tax purposes bonds are considered to be issued with original-issue discount if they do not pay periodic interest or if the discount from par (face value less gross proceeds) is more than $\frac{1}{4}$ percent per annum times the number of years to maturity.

Table I
Statistics for Offerings of Long-Term Bonds with
Investment-Grade Ratings by U.S. Firms, 1983-1988

The total sample includes all publicly issued straight bonds of U.S. industrial firms from 1983 through 1988 subject to the following conditions: a face value of \$25 million or more; a maturity of 7 years or longer; and an original rating of Baa or higher by Moody's Investor Service and BBB or higher by Standard and Poor's. Ratings on the downgraded issues fell to Ba or lower by Moody's and BB or lower by Standard and Poor's between 1983 and August 1989 after a leveraged buyout, a merger, a large dividend, or a large stock repurchase. Source: *Moody's Bond Survey*, *Standard and Poor's Credit Week*, U.S. Securities and Exchange Commission ROS Tape.

Panel A. Characteristics				
	Total Sample		Issues Downgraded to Speculative Grade after a Restructuring	
Number of issues	555		56	
Number of issuers	251		28	
Mean face value (\$millions)	157		147	
(standard deviation)	(125)		(96)	
Median face value (\$millions)	100		125	
Mean maturity in years	17.55		17.70	
(standard deviation)	(9.68)		(9.96)	
Median maturity in years	10		10	
Mean yield to maturity	9.95		9.90	
(standard deviation)	(1.47)		(1.43)	
Callable before maturity (%)	77.70		80.36	

Panel B. Standard and Poor's Bond Rating				
	Total Sample		Issues Downgraded	
	Number of Issues	Percent of Issues	Number of Issues	Percent of Issues
AAA	12	2.2	0	0
AA	127	22.9	5	8.9
A	269	48.5	27	48.2
BBB	147	26.5	24	42.9

presents statistics for the resulting sample of 555 bonds, issued by 251 firms. This sample corresponds roughly to the "event-risk sector" of the corporate bond market.⁶

⁶The following factors underlay the criteria for the sample: utility and financial firms generally are less likely than industrial firms to be targets for leveraged takeovers because they often face regulatory constraints on leverage, asset sales, and dividend payments; compared with straight debt, bonds with equity features are not as susceptible to losses arising from event risk because they may benefit from corporate restructurings that give rise to positive wealth effects for the firm's equityholders; corporate notes with short maturities, which are frequently issued as part of swap transactions, are not so likely as long-term bonds to suffer large price declines as a result of the realization of event risk. See Michels (1989) and Weintraub et al. (1990).

The sample has an aggregate face value of \$87 billion.⁷ Between January 1983 and August 1989, Moody's and S&P downgraded 63 of these issues to speculative grade. According to the *Moody's Bond Survey* and *Standard & Poor's Credit Week*, seven of the rating changes were induced mainly by a deterioration in the issuers competitive position, as in the case of Storage Technology, or by litigation, as in the case of Texaco. For the other 56 bonds, issued by 28 firms, the rating agencies cited a LBO, a large merger or acquisition, or a defensive restructuring such as a major stock repurchase or a sizable cash dividend as the principle reason for the downgrading. The characteristics of the 56 bonds, which had \$8.35 billion in face value, were broadly similar to those of other investment-grade industrial bonds issued between 1983 and 1988 (Table I). Compared with the total sample, however, the downgraded bonds tended to have lower credit quality at original-issue.

B. A Method for Estimating Changes in Bondholder Wealth

This study uses a benchmark yield on corporate bonds to estimate the change in the market value of a bond after a downgrading. Consider an A – rated industrial bond issued with a yield spread of 10 basis points above the Moody's Composite of A-rated corporate bonds. Next, suppose the bond has been subsequently downgraded to Ba1/BB + or lower after a major restructuring. The market price of the bond after the downgrading may be compared with a hypothetical price calculated under the assumption that the bond maintained a spread of 10 basis points above the Moody's A-rated Composite on the downgrade date. The difference between the hypothetical price and the actual market price measures the loss in bondholder wealth.

The chief shortcoming of using a long event window is that doing so disregards changes in credit quality between the offering date and the restructuring announcement. To address this concern, changes in market value were also estimated for shorter event windows: from 6 months before the downgrade date to the downgrade date, and from one year before the downgrade to the downgrade date.⁸ Estimated changes in market value based on these shorter event windows are, however, imperfect because many companies are "in play" for a significant period (more than 6 months) before they are downgraded to speculative grade. To the extent that investors discount the possibility of a major restructuring, estimates based on market

⁷The sample represents about 80 percent of the \$109 billion of industrial bonds issued between 1983 and 1988 with investment-grade ratings and maturities of 7 years or longer. Issuance of investment-grade industrial bonds with maturities of less than 7 years totaled \$26 billion.

⁸Sixteen of the 56 bonds in the sample of downgraded bonds were downgraded within the investment-grade category at least 6 months before they were subsequently downgraded to speculative grade, and three of the 56 bonds were upgraded within the investment-grade category before the major restructuring and downgrading to speculative grade. One bond was downgraded to speculative grade less than 6 months after it was issued, and seven bonds were downgraded less than one year after they were issued. Hence, the sample for the period 6 months before the downgrading has 55 observations, and the sample for the period one year before the downgrading has 49 observations.

prices obtained too near the downgrade date will understate bondholder losses.⁹

The method of estimating changes in bondholder wealth does have a potential bias in that 80 percent of the bonds in the sample are callable. In a period of declining interest rates, yields on callable bonds will not fall as much as yields on noncallable bonds. Consequently, if the yield on the corporate benchmark falls between the offering date and the date the hypothetical price is calculated, the method will tend to overestimate the hypothetical price and the losses to bondholders. To remedy this problem, for those cases in which the hypothetical price calculated on a yield to maturity basis exceeded the call price, the estimates of the hypothetical prices were based on the yield to first call, rather than yield to maturity.

C. Empirical Findings

Table II presents sample statistics of the estimated changes in the market value and yield on the 56 bonds that were downgraded after leveraged restructurings. Month-end market prices for the downgraded bonds were obtained from *Standard & Poor's Bond Guide* for the nearest observation after the downgrading. Prices of the downgraded bonds fell an average 11.83 percent when measured from the re-offering date to the downgrade date (Panel A). Negative abnormal returns were somewhat smaller for the period 6 months before the downgrading (7.77 percent), and for the period one year before the downgrading (9.01 percent).¹⁰ When the Kolmogorov-Smirnov test for normality is applied, the hypothesis that the abnormal returns for each of the three estimation intervals were drawn from a normal distribution could not be rejected at the 10 percent significance level. For each of the three intervals of estimation, *t*-statistics indicate that the average negative abnormal returns were significantly different from zero at the 1 percent level. Yields on the downgraded bonds increased, on average, 136 to 224 basis points, a statistically significant increase at the one percent level (Panel B).

Though the sample consists of 56 downgraded bonds, it covers a smaller number of independent events because it includes only 28 firms. Multiple observations of one or a few issuers could produced biased inferences about

⁹This method for estimating changes in bondholder wealth approximately mimics a trading pattern followed by some institutions. Banks and some mutual funds, for example, are prohibited from holding speculative-grade bonds. These institutions would be forced to sell their holdings of original-issue investment-grade bonds and realize capital gains or losses if the bonds were downgraded to speculative-grade.

¹⁰For 19 bonds, the hypothetical price would have exceeded the call price of the bond if the hypothetical price had been calculated under the assumption that the bond would not be called before maturity. For these bonds, the hypothetical price was calculated using the call date as the final maturity and the call price as the terminal price of the bond, rather than by using the bond's stated maturity and face value. Without making this adjustment for the call option, the estimated average losses were 12.97 percent from the re-offering date to the downgrade date, 7.90 percent from 6 months before the downgrade to the downgrade date, and 9.51 percent from one year before the downgrade to the downgrade date.

Table II
Wealth Effects on Bonds Downgraded to Speculative Grade after Capital Restructuring

Estimates of abnormal returns (yield changes) represent the percentage difference between a hypothetical price (yield) of the issue one month after the downgrade and the secondary market price (yield) of the issue one month after the downgrade. The hypothetical prices were calculated under the assumption that the issue's spread over a comparably rated Moody's Corporate Index did not change at the downgrade date relative to the spread at the re-offering date, 6 months before the downgrade date, or one year before the downgrade date. The hypothetical prices and yields were based on the first call date of the issue for those cases in which the hypothetical price calculated on a yield to maturity basis exceeded the call price. In Panel C, the returns are calculated using the total market value of the issuing firm's outstanding bonds on the downgrade date and the total hypothetical value of the issuing firm's bonds on the downgrade date. Secondary market prices were obtained from various issues of *Standard and Poor's Bond Guide*. The sample includes U.S. industrial bonds issued in the public market between 1983 and 1988 with a face value of \$25 million or more, and a maturity of 7 years or longer that were downgraded from investment grade to speculative grade following a leveraged buyout, a merger, or a defensive restructuring, as of August 1989.

	Number of Issues Downgraded	Mean	Standard Error	Median	Range	Quartiles		
						0.25	0.75	Number < 0
Panel A. Abnormal Percentage Return from Selected Dates to Downgrade Date								
Re-offering date	56	-11.83*	0.89	-11.34	-25.59	7.72	-7.61	-15.77
6 Months before downgrade	55	-7.77*	0.98	-8.07	-24.71	10.22	-1.79	-13.27
One Year before downgrade	49	-9.01*	1.09	-10.18	-26.35	13.91	-4.07	-14.58
Number > 0								
Panel B. Abnormal Yield Change from Selected Dates to Downgrade Date (Basis Points)								
Re-offering date	56	224*	16	231	-93	585	155	301
6 Months before downgrade	55	136*	16	147	-122	430	29	218
One Year before downgrade	49	167*	19	191	-165	445	78	256
Number < 0								
Panel C. Abnormal Percentage Return for Issuing Firms from Selected Dates to Downgrade Date								
Re-offering date	28	-11.12*	1.25	-11.34	-25.59	0.10	-5.06	-15.60
6 Months before downgrade	28	-7.32*	1.50	-7.89	-24.71	5.08	-0.66	-12.79
One Year before downgrade	26	-8.62*	1.58	-9.18	-26.36	6.04	-2.84	-13.47
Number < 0								

*Significant at the 1 percent level.

the effect that leveraged restructurings coupled with downgradings have had on bondholder wealth. In Panel C, the abnormal returns are presented on an issuer basis: the percentage changes are calculated using the total market value of the firm's outstanding bonds on the downgrade date and the total hypothetical value of the bonds on the downgrade date. On balance, bondholder losses calculated from an issuer basis were roughly the same as those calculated on an issue basis, averaging 11.12 percent from the re-offering date, 7.32 percent from 6 months before the downgrade date, and 8.62 percent one year before the downgrade date to the downgrade date.¹¹

II. Event-Risk Covenants

A. Background

The rising tide of leveraged restructurings in the mid-1980's and the consequent leverage-induced losses stirred bondholders to address event risk mainly in two ways. First, from 1984 through 1988, yields on investment-grade industrial bonds rose about 30 basis points relative to yields on other investment-grade bonds, such as utility bonds of similar credit quality. Although many factors may explain the relative movement of industrial and utility yields, the increase in the relative yield on industrial bonds is consistent with the notion that investors factored an event-risk premium into bond yields as compensation for the possibility of leverage-induced losses. (See Bensman (1988), D'Amico (1990) and Zimmer (1990)). Second, in 1986, several bond offerings by industrial firms included bond covenants, called "poison puts," that held a promise of allaying investors' concern about event risk. These covenants allowed investors to sell their holdings back to the issuer at par in the event of a hostile takeover. Unfortunately for investors who bought these bonds, most restructurings, even those that began on hostile terms, were eventually consummated without opposition from the target firms' boards of directors. Because poison puts could not be exercised in the case of a friendly takeover, they failed to protect investors against most types of event risk.¹²

RJR-Nabisco was neither the first nor the last investment-grade industrial firm whose bond rating fell to speculative grade as a result of a leveraged restructuring. But, its buyout was a watershed event, shattering the notion that some bonds were free from event risk because their issuing companies were too large to be taken over. As a result of the RJR buyout announcement, a standoff emerged between investors and issuers in the corporate bond market. As investors stepped up their demands for protection against the downgrade risk associated with corporate restructurings, no investment-grade

¹¹Bondholder losses also were estimated according to the principal cause of the downgrading. For each of the estimation intervals, however, an *F*-test of the joint hypothesis that the abnormal returns were the same for LBO's, mergers, and defensive restructurings could not be rejected at the 10 percent significance level. Results of this estimation are available from the author upon request.

¹²See Inquisitor (1989), and Hessol and Samson (1989).

industrial firm issued bonds in the U.S. public market for 5 weeks after the RJR announcement. By contrast, in the year before the RJR announcement there were an average of 8 issues per month. Amid this concern about event risk in the industrial sector, the yield spread between industrials and utilities of similar credit quality jumped 40 basis points. Eventually, new covenants, called "super poison puts," were adopted in response to investors' concern.

B. Description of Event-Risk Covenant Structures

Most event-risk covenants written after the RJR buyout have the same broad structure which specifies that bondholders can sell their bonds back to the issuer at par if two designated events are triggered: (1) a major change in the issuing firm's capital structure, and (2) a downgrading of the bond by the rating agencies from investment grade to speculate grade.¹³ This structure aims to protect bondholders against leverage-induced losses such as those that were realized by the holders of the 56 bonds analyzed in Section I.

In regard to the types of restructuring events covered, most covenants protect against takeovers resulting in mergers into less creditworthy entities, major changes in the firm's board of directors, and large share purchases by outside parties. Most of the covenants also protect against defensive strategies, such as large share repurchases by the firm itself and large cash dividends; but most do not protect against defensive acquisitions.

To meet the definition of a restructuring event, the restructuring activity must exceed a threshold value, which is specified in the bond indenture. For example, a covenant may specify that a restructuring event has occurred if an outside party purchases 30 percent or more of the firm's outstanding stock. Under these terms, an outside party could purchase 29 percent of the stock without triggering the super poison put, even if the purchase resulted in a downgrading to speculative grade. Threshold values for restructuring events vary from issue to issue. For example, some covenants specify that a restructuring event has occurred if the firm repurchases 30 percent of its outstanding stock; other covenants have 20 or 25 percent thresholds. Furthermore, most of the covenants would be triggered by a downgrading combined with a series of restructuring events, such as a repurchase of 19 percent of the company's shares in successive years. Similarly, most of the covenants protect against a combination of events such as a repurchase of 19 percent of the outstanding shares and a cash dividend of 19 percent.

The specific terms of the downgrading event also vary from issue to issue. Most covenants become effective only if the bond rating falls from investment grade to speculative grade, but a few can be triggered by a downgrading within the investment-grade category, such as from AA to BBB; a few others provide protection against downgradings within speculative grade, say from

¹³Material in this subsection was gathered mainly from various issues of *Standard & Poor's Credit Week* in 1989 and early 1990, from Hessol (1989) and Samson (1990), and from Standard & Poor's seminar on rankings of event-risk covenants held on January 16, 1990.

BB to B. Moreover, some covenants state that the put option may be triggered when either agency downgrades the issue, while others require that both S&P and Moody's downgrade the issue to speculative grade.

Finally, event-risk covenants differ in the remedies they offer to bondholders. Most covenants give the right to put the bond back to the issuer at par as the remedy, but some specify that the coupon will be reset to make the bonds trade at par if the issue is downgraded to speculative grade after a restructuring event. Another covenant that protects bondholders against event risk, known as a "credit-sensitive note," uses a prescribed formula to link the coupon of the issue directly to the issue's credit rating: if the issue is downgraded for any reason, the coupon rises; if the issue is upgraded for any reason, the coupon falls.

In the summer of 1989, Standard and Poor's helped to alleviate the problems posed by a lack of standardization by developing a rating system for event-risk covenants. Under the new system, event-risk covenants are assigned a rating, E-1 through E-5; a rating of E-1 indicates that the covenant provides "strong protection against event risk;" an E-5 covenant provides "insignificant or no protection against event risk." Since the RJR announcement, the "super poison put" has been the most popular type of event-risk covenant. Bonds with super poison puts generally have been rated E-3, an indication of "some protection" against event risk.¹⁴

C. Anatomy of the Event-Risk Covenant Market

In the 14 months from November 1988 to December 1989, U.S. industrial firms issued 109 straight bonds with investment-grade ratings; 72 of the issues, with a total face value of \$14 billion, had maturities of 7 years or longer. Because none of the bonds issued with maturities of less than 7 years contained event-risk covenants, the remainder of this study focuses on the sample of 72 long-term issues.¹⁵ Standard and Poor's assigned event-risk

¹⁴According to Standard & Poor's, the E-ratings primarily evaluate the degree of protection from events that would induce a downgrading from investment grade to speculative grade, but the rating system also rewards covenants that provide protection for downgradings within investment grade and within speculative grade. E-ratings are assigned according to the type of events that are covered in the covenants: higher ratings are assigned to covenants that cover more restructuring events and to covenants with low thresholds for the financial parameters. In assigning ratings, S&P gives some attention to the historical patterns, growth strategies, and opportunities for acquisitions by the issuer. Rather than rate event-risk covenants, Moody's Investors Service factors an event-risk component directly into the bond ratings it assigns to corporate issues; that is, Moody's assigns lower bond ratings to bonds issued by companies that Moody's considers prone to event risk. Moody's removes this downward adjustment in ratings from issues that include strong event-risk covenants.

¹⁵The criteria for selecting bonds in this sample were the same as the criteria used for the bonds in Section I. In short, the sample includes straight debt issued by U.S. industrial firms in the U.S. public market with a maturity 7 years or longer and an investment-grade rating. Most of the shorter-term bonds were sold in the winter of 1989 when issuers were attracted by unusually favorable spreads in the swap market. The sample does not include a credit-sensitive note issued by an employee stock ownership plan because of the favorable tax treatment for this issue; it also excludes one issue with an event-risk covenant that was on review for a rating by S&P at the time of this study.

ratings to 31 of the 72 issues: 4 issues were rated E-4, 26 were rated E-3, one issue was rated E-1; the remaining 41 issues had no event-risk covenant. Twenty-nine of the 31 bonds with event-risk covenants had a par put as the remedy; one issue provided a par reset; and one bond was a credit-sensitive note, issued by Potlatch Corporation and rated E-1 by S&P. Panel A of Table III provides a distribution of the bonds in the sample by the maturity of the issue and by the S&P covenant rating.¹⁶

Panel B of Table III breaks down the event-risk covenant ratings and the bond ratings for the sample of 72 issues. Event-risk covenants have not appeared in the high-quality industrial issues (rated AA and above). All four of the E-4 ratings were assigned to issues with credit ratings of BBB + or lower. The covenant on a bond issued by Grumman Corporation was rated E-4 because the covenant allowed outside parties to gain up to 50 percent of the voting control before triggering the bondholders' right to put the notes back to the company; for the other bonds in the sample, the voting control thresholds were much lower, ranging from 20 to 30 percent. The event-risk covenant of Figgie International, Inc. received an E-4 mainly because it did not protect against a combination of events or against a series of events. Standard and Poor's assigned E-4's to the other two issues mainly because "credit quality can easily deteriorate to speculative grade without triggering the put, especially since the rating on this issue, at 'BBB -,' already is so close to speculative grade."¹⁷ However, rather than following hard and fast rules, S&P employs some judgmental factors in assigning covenant ratings; other bonds rated BBB - and BBB with similar trigger thresholds were assigned E-3 ratings.

Firms with the largest total capitalization, which tend to receive higher bond ratings, also have not included event-risk covenants on new bond offerings (see Panel C). This finding is consistent with the notion that some firms may not be prone to event risk because they are too large to be taken over. Large bond offerings, which tend to be issued by the largest firms, have not included event-risk covenants (Panel D). Panel E shows that 74 percent of the bonds with covenants and 58 percent of the bonds without covenants were noncallable before maturity. In contrast, most of the investment-grade debt issued by industrial firms between 1983 and 1988 was callable (see Table I).

¹⁶As of January 29, 1990, Standard & Poor's had assigned event-risk ratings to about 90 securities. About a third of these ratings were assigned to bonds issued before October 1988, when the language of the covenants was weaker; these covenants received ratings of E-4 and E-5. Ratings also had been assigned to about 15 issues of utility and transportation companies. These issues fall outside of this study because it focuses on bonds of companies with industrial SIC codes. S&P also had assigned ratings to about 14 medium-term note programs, for which pricing data are not readily available.

¹⁷This is an excerpt of the rationale for the E-4 rating assigned to a covenant on a bond of Penn Central Corporation; see *Standard & Poor's Credit Week*, August 14, 1989, p. 18. A similar rationale appeared for the E-4 rating of AAR Corporation's covenant in *Credit Week*, November 6, 1989, p.22.

Table III
Distribution of Standard and Poor's Event-Risk Covenant Ratings

The sample includes all publicly issued straight bonds of U.S. industrial firms from November 1988 through December 1989 subject to the following conditions: a face value of \$25 million or more; a maturity of 7 years or longer; and an original rating of BBB – or higher by Standard and Poor's. Event-risk covenant ratings are from the January 22, 1990 issue of *Standard and Poor's Credit Week*, where E-1 = strong protection, E-2 = significant protection, E-3 = some protection, E-4 = weak protection, and E-5 = insignificant or no protection to bondholders against event risk.

	Covenant Rating					No Covenant	Total
	E-1	E-2	E-3	E-4	E-5		
Panel A. Years to Maturity							
7			-2			8	10
10			11	3		16	30
12 to 15				1		6	7
20	1		6			4	11
30			7			7	14
Panel B. S&P Bond Rating							
AAA						2	2
AA +						1	1
AA						5	5
AA –			4			5	9
A +			4			3	7
A			9			10	19
A –	1		3			5	9
BBB +			2	1		4	7
BBB			2	2		4	8
BBB –			2	1		2	5
Panel C. Total Capitalization of Issuer (\$ Billion)							
Less than 1			3	2		2	7
1 to 2	1		10	1		3	15
2 to 5			8	1		10	19
5 to 10			5			7	12
more than 10						19	19
Panel D. Face Value of Bond (\$ Million)							
50 to 99			1	1		3	5
100 to 149	1		9			13	23
150 to 199			7	1		4	12
200 to 299			3	2		10	15
300 to 399			6			5	11
400 to 750						6	6
Panel E. Callability							
Callable			7	1		17	25
Noncallable	1		19	3		24	47
Total	1	0	26	4	0	41	72

III. Estimates of the Market Valuation of Event-Risk Covenants

Several cross-sectional regression models were estimated to test the null hypothesis that event-risk covenants are not being priced in the market.¹⁸ Table IV/ presents results of regressions that used the sample of 72 issues that came to market between November 1988 and December 1989. The dependent variable in these regressions is the spread in basis points between the yield to maturity on the bond and the yield on a Treasury bond of comparable maturity. The regressions reported in columns 1 and 2 use the re-offering yield spread from the date of the offering as the dependent variable, while those in columns 3 and 4 use the secondary market yield spread at year-end 1989, obtained from *Standard & Poor's Bond Guide*. In general, the parameter estimates for the standard explanatory variables concur with expectations: the coefficients on bond-rating dummy variables tend to rise as the ratings decline; the estimates on the maturity and maturity-squared variables are consistent with a concave yield curve; bonds with longer call protection had lower yields, *ceteris paribus*; and firms with large capitalization issued at lower yield spreads than smaller firms did. The positive coefficient estimate for the face value of the issue suggests that large issues faced a congestion problem in 1989. White's (1980) method was used to correct the standard errors for heteroskedasticity.

The variable COVENANT in the regressions is an indicator variable taking on a value of one for 31 issues that have event-risk covenants and zero otherwise. Estimates for COVENANT provide a basis for determining whether event-risk covenants were priced in the market, in general. Under the null hypothesis that investors place no value on event-risk covenants, the estimate for the coefficient on COVENANT would not be significantly different from zero. Negative and statistically significant estimates for the coefficient would suggest that investors were willing to pay more for bonds with protective covenants. As shown in columns 1 and 3, the parameter estimates for COVENANT are negative and statistically significant at the one percent level. These results indicate that investment-grade industrial issuers saved about 24 basis points by including event-risk covenants in new offerings. Estimates from the secondary market (column 3) indicate that investors were valuing event-risk covenants at 32 basis points at year-end 1989.

¹⁸It may be years before sufficient data are available to evaluate the effectiveness of event-risk covenants in leverage-increasing transactions. However, in 1990, in the first market test of the structure, the super poison put covenant provided bondholders with the promised measure of protection. This test involved the \$88.5 million in outstanding medium-term notes issued by Xtra, Inc. that were downgraded to speculative grade by Moody's after a proxy battle that resulted in the election of a new board of directors. The restructuring and rating change triggered the event-risk covenant which required Xtra either to redeem the notes at par or to reset the coupon to make the notes trade at par. In July 1990, Xtra chose to redeem the notes with the proceeds from a term loan provided by commercial banks.

Table IV
Event-Risk Covenant Regressions

Re-offering yield spread is the difference in basis points between the re-offering yield for a new issue and the yield for a Treasury bond of comparable maturity on the same day. End-of-year spread is the difference between the secondary market yield for the issue and a Treasury bond of comparable maturity at the end of 1989. Secondary market quotes were taken from the January 1990 *Standard and Poor's Bond Guide*. When a Treasury rate with a matching maturity was not available, the comparable Treasury rate was calculated by interpolating the yield between two Treasury issues with maturities bounding that of the new bond issue. COVENANT takes on a value of one for issues that receive an event-risk covenant rating by Standard and Poor's and zero otherwise; E-1, E-3, E-4 are zero-one dummy variables for the covenant rating, where bonds with an E-4 rating have the least protection against event risk. The variables AA + through BBB - are zero-one dummy variables for the debt rating assigned by Standard and Poor's; MATURITY is the years to maturity of the issue; CALL is the number of years of call protection; CAP is the log of the issuer's total capitalization; FACE is the log of the face value of the issue. White's method was used to correct the standard errors for heteroskedasticity. The sample includes U.S. industrial bonds issued in the public market from November 1988 through December 1989 with a face value of \$25 million or more, a maturity of 7 years or longer, and a rating of BBB - or higher by Standard and Poor's.

Independent Variables	Dependent Variable			
	Re-Offering Yield Spread		End of Year Yield Spread	
	1	2	3	4
Intercept	-126.29 (-2.51)** ^a	-124.24 (-2.48) ^{aa}	-133.10 (-2.94)*	-127.32 (-2.75)*
COVENANT	-24.01 (-3.44)*	—	-31.54 (-4.58)*	—
E-1	—	-46.18 (-3.07)*	—	-54.83 (-4.13)*
E-3	—	-23.09 (-3.31)*	—	-29.45 (-4.36)*
E-4	—	-24.52 (-2.12)**	—	-41.96 (-2.61)**
AA +	-7.82 (-0.95)	-8.82 (-1.07)	10.94 (1.41)	9.14 (1.13)
AA	22.36 (2.40)**	22.46 (2.39)**	28.03 (2.57)**	27.15 (2.45)**
AA -	48.26 (5.06)*	47.71 (4.84)*	62.65 (7.48)*	60.67 (6.83)*
A +	57.52 (5.08)*	56.85 (4.82)*	65.05 (6.30)*	62.34 (5.76)*
A	67.43 (6.75)*	66.95 (6.39)*	72.62 (8.38)*	70.42 (7.67)*
A -	78.94 (5.47)*	80.92 (5.25)*	90.99 (7.31)*	91.61 (6.90)*
BBB +	74.44 (5.54)*	73.93 (5.51)*	95.91 (8.73)*	93.24 (8.08)*
BBB	120.38 (7.70)*	120.38 (7.70)*	139.63 (10.65)*	141.50 (10.65)*
BBB -	150.56 (7.32)*	150.40 (7.37)*	153.80 (7.78)*	153.47 (7.35)*
MATURITY	15.00 (4.60)*	15.17 (4.62)*	18.76 (6.29)*	18.95 (6.19)*
MATURITY ²	-0.33 (-4.09)*	-0.33 (-4.12)*	-0.41 (-5.59)*	-0.41 (-5.55)*
CALL	-1.86 (-2.69)*	-1.82 (-2.54)**	-3.11 (-5.24)*	-3.08 (-5.21)*
CAP	-8.04 (-1.69)	-7.89 (-1.60)	-5.45 (-1.49)	-5.52 (-1.46)
FACE	18.39 (2.11)**	17.65 (2.01)**	16.09 (2.30)**	14.98 (2.16)**
Adjusted R ²	0.69	0.68	0.77	0.76
Standard Error	26.01	26.33	23.44	23.52
Sample Size	72	72	72	72
F-statistic	11.63	10.05	16.49	14.54
Mean of	126.33	126.33	138.41	138.41
Dependent Variable				

^a *t*-statistics in parentheses.

* significant at the 1 percent level.

** significant at the 5 percent level.

The regression estimates in columns 2 and 4 provide a means of determining whether the market distinguished between types of covenant structures. In these regression, E-1, E-3, and E-4 are zero-one indicator variables representing the S&P rating of event-risk covenants. For the credit-sensitive note with an E-1 rating, the coefficient estimate was 46 basis points on the re-offering and 55 basis points at year-end 1989, results that are in line with the expectation that the market places a higher value on issues with stronger event-risk covenants, as classified by S&P. However, the estimates indicate that the four bonds with E-4 ratings were valued at 25 basis points on the re-offering and 42 basis points at year-end 1989, a surprising finding because the 26 bonds with E-3 ratings were valued at only 23 basis points on the re-offering and 29 basis points at year-end. The differences across rating categories are not statistically significant, however, as an *F*-test of the joint hypothesis that the coefficients on E-1, E-3, and E-4 were equal to each other could not be rejected at the 10 percent level in either the re-offering spread regression or the year-end spread regression.

The regression results reveal that the event-risk covenants were being priced in the market in 1989. In 1990, however, several reports in the trade press suggested that event risk had become a "dead issue."¹⁹ These reports noted that restructuring activity had slowed markedly as creditors became more cautious toward leverage in the wake of a few highly publicized defaults. In addition, with the collapse in junk bond prices after September 1989, an important source of funding for leveraged restructurings had been all but eliminated.

Figure 1 offers a perspective on the change in the market's valuation of event-risk covenants. This figure displays results from a pooled cross-sectional regression that used yields from the secondary market for each month beginning with December 1989 and ending with June 1990. The dependent variable in the regression is the 7-month time series of the yield spreads above comparable Treasury bonds for the 72 investment-grade industrial bonds. The regression includes as explanatory variables the log of the total capitalization of the issuing firm, the years to maturity of the issue, the maturity squared, the years to first call, the log of the face value of the issue, zero-one dummy variables for the credit rating of the issue, and the zero-one dummy variable COVENANT. The figure displays the point estimates for the variable COVENANT from a regression in which all coefficients for the explanatory variables were allowed to vary in all 7 months. The results indicate that the yield advantage of bonds with covenants had declined, on balance, through the first half of 1990; this finding is consistent with the idea that investors' concern about event risk has subsided. However, an *F*-test failed to reject the joint hypothesis that the coefficient on COVENANT is the same in all 7 months (p - value = 0.16). The 95 percent confidence interval

¹⁹See, for example, D'Amico (1990), Fortune (1990), Liebowitz (1990), Star (1990), and Weintraub et. al. (1990). The Federal Reserve's estimate of net equity retirements, a measure of restructuring activity, slowed to an annual rate of \$53 billion in the first half of 1990, compared with retirements of \$130 billion in 1988 and \$125 billion in 1989.

ESTIMATES OF THE MARKET VALUATION OF EVENT-RISK CONVENANTS

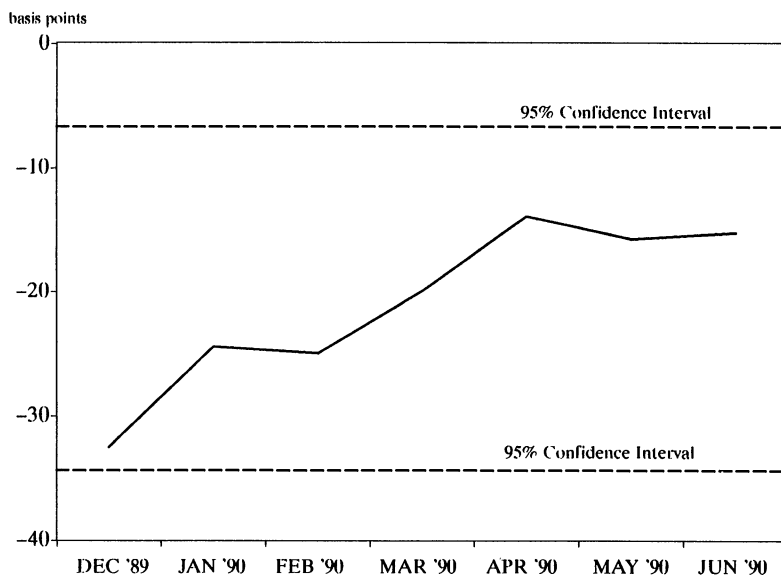


Figure 1. Estimates of the market valuation of event-risk covenants. Estimates are generated from a pooled cross-sectional regression that used secondary market yields given in *Standard & Poor's Bond Guide* from each month beginning with December 1989 and ending with June 1990. The dependent variable in the regression is the 7-month time series of the end-of-month yield spreads above comparable Treasury bonds for the sample of 72 investment-grade industrial bonds that were issued between November 1988 and December 1989. The pooled cross-sectional regression includes as explanatory variables the log of the total capitalization of the issuing firm, the years to maturity of the issue, the maturity squared, the years to first call, the log of the face value of the issue, zero-one dummy variables for the S&P credit rating of the issue, and the variable COVENANT, which takes on a value of one for the 31 bonds with event-risk covenants and zero otherwise. The solid line represents the point estimates for the variable COVENANT from a regression in which all coefficients for the explanatory variables were allowed to vary in all 7 months. The 95 percent confidence interval was obtained from a pooled cross-sectional regression in which the coefficient estimates on COVENANT were restricted to be the same in all 7 months, but in which the coefficients on the other explanatory variable were allowed to vary.

in Figure 1 was obtained from a pooled cross-sectional regression in which the coefficient estimates for COVENANT were restricted to be the same in all 7 months, but in which the coefficients on the other explanatory variables were allowed to vary. Thus, in spite of a slowdown in restructuring activity, bondholders apparently have continued to value the protection afforded by event-risk covenants.

IV. Summary

This paper has shown that holders of long-term bonds issued by industrial firms with investment-grade ratings experienced sizable losses in the 1980's

when those bonds were downgraded to speculative grade as a result of leveraged restructurings. Between January 1983 and August 1989, prices of bonds affected by major restructurings fell an estimated 7.77 to 11.83 percent. As an alternative way of viewing these losses, the yields on the downgraded bonds are estimated to have increased 136 to 224 basis points.

The corporate bond market responded to investors' concern about event risk by introducing covenants that protect bondholders against losses related to leveraged restructurings. These covenants allow bondholders to sell their bonds back to the issuing firms at par, or in some cases to receive a higher coupon on their bonds, in the event of a leveraged restructuring followed by a downgrading to speculative grade. From November 1988 through December 1989, slightly fewer than half the offerings of long-term bonds sold by industrial firms with investment-grade ratings included these event-risk covenants. This paper has shown that issuers lowered their financing costs by about 24 basis points by including event-risk covenants in new bond offerings in 1989. Estimates from the secondary market indicated that investors continued to value event-risk covenants through the first half of 1990.

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