

## **EVENT RISK COVENANT RATING ANNOUNCEMENTS AND STOCK RETURNS**

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### **Abstract**

We study the effect on equity prices of the announcements by Standard and Poor's concerning the strength of super poison put provisions. We find that these announcements have a significant impact on equity prices. We interpret this result to suggest some degree of equity market inefficiency as investors revised their expectations based on expert interpretation of previously available information. We find that the strength of the impact diminishes over time which is consistent with the market becoming more efficient with added experience in interpreting super poison put provisions. Finally, unlike previous studies, our results suggest that equity investors viewed the put provisions as a loss of expected restructuring premiums because of management entrenchment.

### **INTRODUCTION**

In October of 1988 the bond investment community was shocked by the leveraged buyout of RJR Nabisco. Credit agencies lowered the credit ratings of RJR Nabisco bonds and the price of these bonds dropped 17% (Herman 1988). The impact of the leveraged buyout was not limited to RJR Nabisco bonds. The size of the buyout caused bond investors to fear that other high-grade industrial bonds might suffer a similar fate. As a consequence, prices on high-grade industrial bonds, in general, fell relative to utility and government bonds (Herman 1989). Herman further reported that many investment managers were willing to invest in industrial bonds only if bond covenants provided protection "against the perils of RJR-style buy-outs." Such covenants came to be known as super poison put provisions.<sup>1</sup>

Super poison put provisions gained prominence in bonds issued in late 1988, following the RJR Nabisco buyout, and during 1989 and 1990. In general, super poison put provisions allow bondholders to put their bonds to the corporation at par value or at a premium after the occurrence of both a "designated event" and a "qualifying downgrade." A designated event is one in which the firm's shareholders generally benefit, to the detriment of the bondholders. Such events include a merger, takeover, buyout, a major stock repurchase plan, or a major distribution of assets to shareholders. If, after such an event, Moody's and Standard and Poor's downgrade the bonds to below investment grade, the put option can be exercised. The exact provisions varied from issue to issue providing uncertainty concerning the strength of the protection offered in a particular bond issue (for a discussion of super poison put issues, see Bae, Klein, and Padmaraj 1994; Crabbe 1991; Fields, Kidwell and Klein 1994; Norton 1992). In response to this uncertainty, Standard and Poor's (S&P) Corporation began rating the event risk protection of bonds with put provisions in July 1989. These event risk covenant rating (ERCR) announcements appeared in the S&P publication *Creditweek* and are the major focus of our analysis.

Prior research has examined the impact of super poison put bonds on bond and stock market investors. Crabbe (1991) studies the effect of super poison puts on bond yields. He finds that inclusion of super poison put provisions reduced required yields by 32 basis points in 1989. In the time frame immediately following the RJR Nabisco takeover, investors were willing to pay to obtain protection against events such as LBOs and takeovers. But the yield differential was reduced in 1990 "as concern about event risk subsided" (Crabbe, p. 690).

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Bae, Klein, and Padmaraj (1994) study the equity holder wealth effect when a super poison put bond issue initially is announced by a firm. They find significantly higher two-day stock returns around the super poison put announcement day than that experienced by firms which issue debt without poison put provisions. They argue that these positive returns reflect a reduction in agency costs. By themselves, however, the stock price reactions around the one-day and two-day event window following a new issue announcement of a super poison put bond were statistically insignificant from zero. This result is in agreement with other studies examining the announcement effect of bond issues on shareholder wealth (e.g., Eckbo (1986) and James (1987)).

We extend this prior work on the shareholder wealth effects of super poison put bonds in two ways. First, rather than examining the new issue announcement, we examine the common stock price impact of announcements by Standard and Poor's concerning the strength of the super poison put provisions. This announcement occurs subsequent to the new issue announcement, sometimes by several years. Second, we examine if the size of the S&P announcement effect has declined over time. This will allow us to examine the efficiency of the equity market in response to a major financial innovation. Use of Standard and Poor's announcements also allows us to examine the extent to which the effect on equity holders varies with the strength of the put protection.

In the next section we describe Standard and Poor's rating system for super poison put protection and develop hypotheses concerning market reaction to these announcements. In Section III we describe our sample and methodology. Section IV details our empirical findings. A final section summarizes our results.

## THE STANDARD AND POOR'S EVENT RISK RATINGS AND HYPOTHESES

In response to the proliferation of super poison put issues following the RJR-Nabisco buyout, Standard and Poor's announced an event risk covenant rating (ERCR) system in July 1989. A five-point ratings scale judges the event risk protection afforded the bondholder. The highest protection rating, E-1, indicates that the bondholder is provided protection against "virtually all anticipated events." The lowest protection rating, E-5, is assigned to bonds with "insignificant or no protection against event risk." The ERCR only depends upon the protection afforded by the put provision and is not affected by the credit quality rating.<sup>2</sup> Table 1 provides the definitions for the five event risk covenant ratings.

**TABLE 1**  
**Explanation of Standard and Poor's**  
**Event Risk Covenant Ratings**

E-1:	Strong protection against event risk. Protection is provided against virtually all anticipated events and the effectiveness of protective provisions appears sound.
E-2:	Significant protection against event risk. Protection is provided against most anticipated events. The effectiveness of protective provisions appears sound.
E-3:	Some protection against event risk. Protection may not be provided against some anticipated events, or the effectiveness of protective provisions is questionable, or the benefits of protection are modest.
E-4:	Weak protection against event risk. Protection is provided only against some anticipated events, or the effectiveness of protective provisions is questionable, or the benefits of protection are modest.
E-5:	Insignificant or no protection against event risk.

Source: Standard and Poor's *CreditWeek*, December 24, 1990, page 29

The language of the super poison put covenant is publicly known when the bonds are announced at time A, as shown in Figure 1. The S&P ERCR announcement, at time B, discloses the result of S&P's interpretation of this public information. S&P's announcement at time B should have no discernible impact on shareholder value if the market were perfectly efficient in interpreting the impact of the super poison put innovation. Prior studies, such as Bae, Klein, and Padmaraj (1994), focus on market reaction at time A. We examine the market's reaction at time B.

**FIGURE 1**  
**Super Poison Put Bond Issue Time Line**



There is an *a priori* basis to suspect the existence of market inefficiency or uncertainty relative to the stock valuation between times A and B. The ERCR made judgements on bond provisions which, at the time, represented fairly new financial innovations; as such, investors may have had to undergo a learning process to properly gauge the level of protection of covenant language. As evidence of the market's sophistication of the event risk covenant (or as evidence of investor fears about event risk), shortly after the RJR Nabisco LBO news reports went so far as to proclaim forthcoming bonds as "takeover proof," enabling "bondholders to get back their initial investment," and offering "investors significantly more protection than any previously employed in the high grade market." (Winkler 1988a, 1988b). A year after the RJR Nabisco buyout, Herman (1989) argued that "Many investors pay close attention to these "E" ratings because it's tough even for experts to analyze complex bond covenants."

Based on these market uncertainties, it is reasonable to assume that the market may have been influenced by ERCR announcements. Over time, as learning increased and uncertainty regarding the interpretation of the covenant language decreased, the announcements may no longer impact stock valuations. This interpretation is consistent with the bond market evidence showing lower yield differentials over time for super poison put bonds (Crabbe 1991).

Crabbe's study of the effect of event risk covenants on the bond market and bond yields found that super poison put bonds had lower yields than comparable bonds. But Crabbe's study included an anomalous finding: although there are obvious investor protection differences among the event risk covenant ratings, there was no statistical difference between the yield given to bonds with strong, moderate, or weak event risk protection.

We posit the stock market may have been similarly confused regarding the appropriate price impact of super poison put bonds. The market's price reaction to the super poison put announcement at time A may have reflected inaccurate prior probabilities and understanding of the strength of the ERCR and the possibility of firm takeover. After the S&P event risk covenant rating announcement at time B, investors revised their perceptions so that the posterior probabilities were a better reflection of economic reality and the specific covenant language.

Several previous studies have investigated the market response to announcements which allegedly are based upon reinterpretations (at a time such as B) of previously publicly available information (i.e., information that is known at time A). One example is the well-known *Value Line* anomaly. *Value Line* provides weekly rankings of a stock's near-term prospects for price appreciation and price stability based upon publicly available information. Most studies conclude that *Value Line* rankings have predictive ability (e.g. Stickel 1985, Huberman and Kandel 1990).

Ho and Michaely (1988) study an event which involves a repackaging of previous information rather than the release of new information. The event they study is the publication in *The Wall Street Journal* or *Barron's* of a negative commentary on the prospects of a company. They argue the commentaries merely repackage previously available information, rather than report new information (Ho and Michaely 1988, p. 63). If these negative commentaries affect security prices, then the market had not fully discounted public information. Indeed, this is what Ho and Michaely discover; they find significantly negative abnormal returns for the securities on the date of the commentary and on adjacent trading days.

Studying the event risk covenant rating announcement avoids the possible shortcomings inherent in the studies cited above. First, unlike *Value Line*, the analysis by S&P of covenants does not involve access to proprietary valuation model information. Second, unlike news commentaries, there is no possibility that the discovery of new information will affect the S&P announcement<sup>3</sup>; the ERCR rating merely announces S&P's evaluation of the language appearing in a section of the bond prospectus. All the information considered by S&P in assigning an event-risk covenant rating is publicly available.

Thus, our analysis brings a new perspective to the information discovered by Bae, Klein, and Padmaraj (1994) when they examined the stock market reaction to the issue announcement, at time A in Figure 1. Approximately three-quarters of their sample involves bond issue announcements occurring before S&P started to analyze and report on event risk rating covenants in July 1989. There is an average time lag of over two months between the

issue announcement dates used by Bae, et. al and the publication dates of the ERCR in our sample for those bonds which were issued on or after July 1989.<sup>4</sup> For bonds in the Bae, et. al. sample that were announced prior to the initial July 1989 publication of ERCR ratings, there is an average time lag of about two years between when the issue was announced (time A) and when S&P announced the event risk covenant rating (time B).

If the ERCR announcements themselves affect stock prices, the direction of the stock price reaction should depend upon the relationship between the announced event risk covenant rating and previous market judgement. For example, an event risk covenant rating of E-1 (strong protection against event risk) conveys the information most feared by shareholders, namely that the expected value of their stock's takeover or other premium has been substantially reduced. But if the market had perceived a weaker degree of protection than that associated with an E-1 rating, the ERCR announcement would cause a negative stock price reaction at time B as stock investors revise their expectation of lost premia.

Similarly, an actual rating of E-5 (insignificant or no protection against event risk) could be anticipated by the market or could be a surprise to investors who thought the covenant provided bondholders with a stronger level of protection. If the latter is the case, the E-5 rating may cause common shareholders to recognize that their potential takeover premia have not disappeared. The firm's stock price can then be expected to rise after the ERCR announcement as the price re-incorporates the restructuring or buyout premia. If the market had correctly anticipated the E-5 rating, no stock price reaction should occur. Thus, an announcement of an E-5 rating would be greeted by either no stock price reaction or a positive stock price reaction, depending on the market's prior interpretation of the rating.

For both E-1 and E-5 rankings the market surprise can only be in one direction. For actual ratings of E-2, E-3, and E-4, the market's view prior to the S&P announcement can be the same as, higher than, or lower than the assigned S&P ERCR. Thus, if some market inefficiency exists in the interpretation of the effect of super poison put provisions, the stock market reaction at time B to an ERCR announcement of E-2, E-3, or E-4 could be either positive or negative as the market revises its estimate of the strength of the put protection. In addition, there may also be a tendency for uncertainty resolution to increase stock prices. This could either supplement or counteract the impact on stock returns of the market's perception of the estimated strength of the put protection following the S&P announcement.

Based on this discussion, we test the following hypotheses:

- $H_0$ : There is no reaction to S&P's ERCR announcements because the market on average correctly interprets the language of event risk covenant language before the S&P announcement.
- $H_1(E-1)$ : Investors on average do not correctly anticipate the strength of the covenant language; thus, the announcement by S&P of an E-1 rating results in a *decline* in shareholder value.
- $H_1(E-5)$ : Investors on average do not correctly anticipate the strength of the covenant language; thus, the announcement by S&P of an E-5 rating results in an *increase* in shareholder value.

If both  $H_1(E-1)$  and  $H_1(E-5)$  hold, the agency cost reduction cited by Bae, Klein, and Padmaraj (1994) would not appear to provide a complete description of the reaction of equity holders to the issuance of super poison put debt.

Crabbe (1991) found that yield differentials between bonds with super poison put provisions and other bonds decreased over time. He attributes the smaller differential to a reduction in investor fear as the RJR Nabisco buyout became less of a current event and other mega-mergers and buyouts did not materialize. S&P's *Creditweek* featured an article in late 1992 discussing the small number of new issues with event risk covenants and the bond market's apparent inattention to event risk.<sup>5</sup> Pfeil (1992) notes that the secondary market for bonds was also not concerned about event risk, as no price premium existed for bonds with even the strongest covenant protection. Crabbe reports that several market analysts were declaring in early 1990 that a slowdown in corporate restructuring had made event risk protection a "dead issue."<sup>6</sup> Thus, we anticipate S&P's ERCR announcements to have a smaller stock price impact over time for the reason cited by Crabbe and also because investors, through learning, should become more proficient over time at predicting the ERCR rating. Thus, we test the following hypotheses:

- $H_0$ : There is no change in the average impact of S&P's ERCR announcement on stock returns over time. More recent ERCR announcements will have the same average impact on stock returns as earlier ERCR announcements.
- $H_1(\text{time})$ : There is a diminished average impact of the ERCR announcement on stock returns over time. More recent ERCR announcements will have a smaller average impact on stock returns than earlier ERCR announcements.

## SAMPLE AND METHODOLOGY

One hundred and forty-five bond issues, distributed by 88 firms, received S&P ratings for super poison put provisions from July 1989 through December 1990. Several firms have more than one super poison put bond issue; in such cases only the first super poison put bond issue was included in our sample. Issuer's stock return data were obtained from the NYSE-AMEX CRSP tapes. To be in our sample, data for a 301-day sample period were required. Data availability and screening for confounding events (such as capital structure or dividend changes) reduced our sample to 65 firms that have sufficient estimation and event window data for the *CreditWeek* announcement day.

Table 2 details the distribution of event risk covenant ratings as of December 1990 for all 145 bond issues reported in *CreditWeek*. Based on the percentage of issues in each ERCR category, our sample slightly under-represents E-2 rated bonds and slightly over-represents E-3 rated bonds.

**TABLE 2**  
**Distribution of ERCR**

	All 145 issues	Sample Issues (65 firms)
E-1	9 (6.2%)	6 (9.2%)
E-2	14 (9.7%)	2 (3.1%)
E-3	57 (39.3%)	33 (50.8%)
E-4	37 (25.5%)	13 (20.0%)
E-5	28 (19.3%)	11 (16.9%)

We gather equity returns for the issuing firm for each of the 65 bonds included in our sample. Abnormal stock returns are determined for the event day and for 25 days prior to and following the announcement. Abnormal returns or residuals are determined as actual return minus expected return where expected return is determined from the market model with the CRSP equally-weighted index used as the market proxy.<sup>7</sup> We employ Karafiath's<sup>8</sup> (1988) methodology to calculate the coefficients for the market model and residuals. Finally we standardize the residuals by dividing each abnormal return by the appropriate standard error estimate.

The hypotheses  $H_1(E-1)$  and  $H_1(E-5)$  can be tested using simple t-tests on the standardized average residuals (SAR). These hypotheses can also be tested, along with  $H_1(\text{time})$ , using multiple regression analysis.

Let  $SAR_i$  be the standardized average residual of the  $i^{\text{th}}$  firm for a one- or two-day period about the ERCR announcement day; let  $E1_i$  and  $E5_i$  be dummy variables that take on the value of one if the ERCR rating of the  $i^{\text{th}}$  firm is E-1 or E-5, respectively. We then estimate the equation:

Equation 1

$$SAR_i = a_0 + a_1E1_i + a_2E5_i + a_3E1_iCW_i + a_4E5_iCW_i + \varepsilon_i$$

If super poison put provisions have no impact on stockholders wealth or if equity investors are accurate in their interpretation of the effect of the event risk covenant language, the regression coefficients should not be significantly different from zero. If  $H_1(E-1)$  is true, the estimated coefficient for  $a_1$  should be statistically significant and negative. This would indicate a loss in shareholder value following their realization that bondholders have appropriated more of the expected restructuring premium than had previously been expected. If  $H_1(E-5)$  is true, the estimated coefficient for  $a_2$  should be statistically significant and positive, indicating a gain in shareholder value following the announcement that the covenant was not as restrictive as first feared.

The interaction terms in equation 1 measure the effect of time on the stock price reactions to E-1 and E-5 announcements. The term  $CW_i$  measures the passage of time (in years) between the initial publication by S&P of event risk covenant ratings (July 1989) and the date when the S&P announced the ERCR for the  $i^{\text{th}}$  bond. Thus,  $E1_iCW_i$  equals  $CW_i$ , the time in years since July 1989, if the  $i^{\text{th}}$  bond received an E-1 rating; if the  $i^{\text{th}}$  bond did not receive an E-1 rating,  $E1_iCW_i$  is equal to zero. The interaction term  $E5_iCW_i$  has a corresponding interpretation.

Over time, if investors become less fearful of a leveraged buyout or learn to interpret super poison put provisions more accurately, the estimate for  $a_3$  should be positive (showing a less negative stock price reaction for E-1 rated bonds for later bond issues) and statistically significant. Similarly, the estimate for  $a_4$  should be negative (showing a less positive stock price reaction for E-5 rated bonds for later bond issues) and statistically significant.

## EMPIRICAL RESULTS

Table 3 reports the standardized average residuals (SAR) for the bond issues in our sample, both on an aggregate basis and categorized by event risk covenant rating. SAR for the S&P ERCR announcement day (day 0) and a two-day window (days 0 and +1) are shown. If the announced rating is either “strong” (E-1) or “significant” (E-2), the 2-day standardized residual is negative, which is consistent with investors on average revising equity prices downward in accordance with the ERCR announcement. In both cases, however, the results are not statistically significant.

If the bond protection rating in the ERCR announcement is characterized as either “insignificant,” “weak,” or only “questionable,” holders of equity securities on average revised their prices upward, although the SAR is statistically significant for only bonds receiving the E-3 rating. Despite the somewhat nebulous nature of this rating, equity holders appear to return some of the takeover premium to the price of their equity holdings following this announcement. The revisions following announcements of E-3 ratings are positive for both the 1-day and 2-day period, and are statistically significant at the 1% level. These positive returns for E-3 announcements may reflect a reduction in uncertainty following the ERCR announcement.

**TABLE 3**  
Standardized Average Residuals for Different Event Windows and Different ERCR Categories

Event Window	Average Residual	Standard Deviation	t-ratio
<b>All issues</b>			
Day 0	0.255	1.287	1.597
Day (0,+1)	0.335	1.569	1.721
<b>E-1 rated issues</b>			
Day 0	-0.791	1.601	-1.210
Day (0,+1)	-0.679	2.404	-0.692
<b>E-2 rated issues</b>			
Day 0	0.709	1.198	0.838
Day (0,+1)	-0.219	1.290	-0.240
<b>E-3 rated issues</b>			
Day 0	0.470	1.093	2.509
Day (0,+1)	0.695	1.258	3.219
<b>E-4 rated issues</b>			
Day 0	0.218	0.900	0.873
Day (0,+1)	0.145	1.383	0.379
<b>E-5 rated issues</b>			
Day 0	0.225	1.882	0.396
Day (0,+1)	0.131	1.727	0.251

The statistically insignificant SARs in Table 3 for the E1 and E5 variables may imply investors on average correctly anticipated these ratings. But it may also reflect the averaging of significant and insignificant price reactions over time as investors learned how to interpret the language of event risk covenants or became less concerned about leveraged buyouts, as hypothesized in  $H_1(\text{time})$ .

Table 4 presents the results from estimating equation 1 in an effort to control for averaging price reactions over time. Over both the one-day and two-day event window, the coefficient of E1 is negative and statistically significant. Similarly, over both event windows the coefficient of E5 is positive and significant. These results imply that equity investors did not correctly anticipate these extreme S&P event risk covenant ratings.

**TABLE 4**  
**Regression Results**  
**(t-statistics are in parentheses)**

<b>Regression Equation:</b>		
	<b>Dependent variable is SAR over day 0</b>	<b>Dependent variable is SAR over day (0,+1)</b>
Constant	0.413 (2.417)a	0.512 ( 2.583)a
E1	-2.273 (-2.284)b	-3.135 (-2.719)a
E5	0.930 (1.992)b	0.945 ( 1.748)c
E1CW	2.575 (1.709)c	4.268 (2.444)a
E5CW	-2.655 (-2.380)a	-3.070 (-2.375)b
R-squared	0.187	0.206

a = 1% level of significance

b = 2.5% level of significance

c = 5% level of significance

It also appears, contrary to the agency cost reduction arguments of Bae, Klein, and Padmaraj (1994), that the market interpreted the super poison put provisions as adversely affecting shareholder wealth. When the S&P ERRCR announced an E-1 rating, the strongest event risk protection, investors on average adjusted the stock price downward. If the announcement was an E-5, the weakest protection for bondholders, equity investors were willing to pay more for the stock whose potential buyout premium had been, on average, underestimated.

The coefficients of the interaction terms in Table 4 are consistent with  $H_1(\text{time})$ . This implies that either investors learned over time to anticipate the ERRCR announcement or grew less concerned about the existence of super poison put provisions. The positive and statistically significant coefficient on E1CW indicates that over time the investor reaction to E-1 announcements became less negative. Comparing the magnitude of the E1 and E1CW coefficients, on average the stock market showed very little reaction to the announcement of an E-1 ERRCR to bonds rated some ten-to-eleven months after the initial event risk covenant rating publication in July 1989. This is also consistent with Crabbe's analysis showing that the difference in bond yields between super poison put and other bonds narrowed over time.

The coefficient of E5CW is statistically significant and is negative, as hypothesized. Similar to the above discussion, this shows the market, after some time, learned to properly evaluate the super poison put covenant language.

Several studies (Crabbe 1991, Bae, Klein, and Padmaraj 1994, among others) control for possible firm or issue characteristics which may affect the significance of the results. Equation 1 can be expanded to determine the impact

of various control variables on the stock price reaction to the ERCR announcement. We did regression analyses which included independent control variables to measure the effects of the duration of the put provision, the size of the bond relative to the issuer's total indebtedness, and the bond's credit rating on the stock price reaction to the ERCR announcement. When they were added to equation 1, these variables did not prove to be statistically significant, either individually or as a subset.

## CONCLUSION

Prior studies of event risk covenants have primarily examined their effect on bond pricing or the effect of the firm's bond issue announcement on stock prices. This study differs from this earlier research in two ways. First, we examine the impact of the subsequent S&P announcement of the event risk covenant rating on the stock prices of the issuing firms. Second, we examine the effect of passage of time on the reaction by stock investors to the ERCR.

We find evidence that initially stock prices rose following an S&P rating announcement that a bond has poor event risk protection. We also find evidence of a stock price decline following an announcement that a bond offers good event risk protection. These results together suggest that equity investors reacted to super poison put provisions by surrendering restructuring premia rather than enjoying the benefits of reduced bondholder-shareholder agency costs.

From these results, we may also infer that investors were uncertain concerning the strength of the put provision in any particular covenant. On average, equity investors restored some of the risk premia when S&P ratings indicated weak protection for bondholders. Likewise, equity investors surrendered premia when these ratings indicated the strongest protection existed. The market appears to have been less than perfectly efficient in determining the impact of the super poison put innovation.

The analysis shows that the magnitude of the stock price reaction to both E-1 and E-5 rated bonds declined over time following the initial S&P announcements of event risk covenant ratings in July 1989. This indicates that either stock investors learned to anticipate the S&P ranking or that stock investors became less concerned with super poison put provisions. This finding validates stories of such in the financial press (e.g., Star 1990), brokerage house analyses (Weintraub, et. al. 1990), and Crabbe's (1991) findings in the bond market.

## ENDNOTES

1. Some prior bond issues contained provisions which allowed bondholders to put their bonds at par in the case of a hostile takeover. Such provisions, however, are worthless in cases such as the RJR Nabisco takeover in which the merger is accomplished with agreement of the board of directors. Super poison puts protect the bondholder in the case of both friendly and hostile mergers.
2. One exception to this is if the credit rating of a bond falls to below investment grade without the occurrence of a designated event. In such cases, unless the covenant language maintains investors' put protection, the put option may become worthless and the ERCR rating may subsequently be changed by S&P.
3. Reporters may have special skills in uncovering information. It is difficult to determine if a given news item merely repackages old information or if it contains new information.
4. Information on issue dates was obtained from one of the co-authors of the Bae, Klein, and Padmaraj study.
5. By the end of 1989, 79 bond issues, sold by 55 different firms, had poison put provisions; in 1990, an additional 66 issues were issued by 33 different firms. In 1991, there were 18 new issues, sold by 13 firms; in 1992, only 2 issues, sold by two firms, were issued.
6. The quote is from Crabbe (1991), page 703. Sources arguing that event risk protection lost importance include Fortune (1990), Star (1990), and Weintraub, et. al. (1990).
7. Residuals were also calculated using the CRSP value-weighted index with no material difference in results.
8. Karafiath's methodology combines data for the estimation period and the event window. An OLS regression is estimated with dummy variables to identify each date in the event window (day -25 through +25). The regression coefficients for the market model depend entirely on data from the estimation period (day -250 through -26); the coefficients for the dummy variables are equal to the abnormal returns. Details are in an appendix.



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## APPENDIX

Following Karafiath's method (1988), for each firm in the sample, the following regression equation is estimated:

Equation 1a

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \sum_{n=T+1}^{T+N} \tau_{jn} D_n + e_{jt}; \quad t = 1, 2, \dots, T$$

where:

$R_{jt}$  = return to the  $j^{\text{th}}$  firm on day  $t$ ;

$\alpha_j$  = the intercept;

$\beta_j$  = the systematic risk of firm  $j$ 's stock;

$R_{mt}$  = market return on day  $t$ ;

$\tau_{jn}$  = coefficient of the dummy variable  $D_n$ ; it represents the excess return ("residual") to security  $j$  on day  $n$ ;

$D_n$  = a dummy variable that equals one on day  $n$  and is zero otherwise;

$e_{jt}$  = random error term; note that, for days  $T+1$  through  $T+N$ , the residual will be zero

Using this technique, residuals during the time  $T+1$  through  $T+N$  event window are measured by the  $\tau$  coefficients. As discussed by Karafiath (1988), appropriate calculations on the regression estimates of the  $\tau$  coefficients can determine average residuals, standardized average residuals, and cumulative residual measures. To examine the impact of the ERCR announcement, a 250 day estimation period is used with a 51 day event window using daily CRSP return data. This means that in equation 1,  $T$  equals 250 and  $T+N$  equals 301. The 51-day event window is centered on day 26 (referred in the tables as day 0), the S&P ERCR announcement day, based upon the publication date of S&P *CreditWeek*; estimates of excess returns ( $\tau$ ) will be available for 25 days preceding and 25 days succeeding the event day. Karafiath's method allows researchers to determine the appropriate residuals in one step, rather than in two steps using traditional procedures. We did check and confirm our results using both Karafiath's method and the traditional two-step method. The results were identical.