РАЗДЕЛ 1
НАУЧНЫЕ ИССЛЕДОВАНИЯ
И КОНЦЕПЦИИ

SECTION 1
ACADEMIC
INVESTIGATIONS
& CONCEPTS

CORPORATE GOVERNANCE AND FINANCIAL CONTRACTING: BONDHOLDER TAKEOVER DEFENSES IN POISON PUTS

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Abstract

Bondholder governance through the use of bond covenants and the interactions between shareholder and bondholder governance mechanisms has been recently highlighted in the corporate governance literature. In this paper, we study bondholder governance mechanisms through takeover-related bond covenants (i.e., poison puts), confirm with agency theory on the characteristics of firms that are more likely to use these covenants, and emphasize the importance of bondholder governance in the overall structure of corporate governance. We find that poison puts are often bundled with asset sale, payout, and financing restrictions, which is consistent with agency theory. We also find that high growth firms, large, profitable, low-leverage firms are more likely to use poison puts. In addition, our results on free cash flow, insider and institutional ownership provide support for agency explanation. Lastly, we find that poor bond market performance and good equity market performance are likely to motivate the incidence of poison put bond issuance. Volatility of interest rate and volatility of bond index returns motivate more issues of poison put debt. Finally, greater market term and default premiums promote the use of poison puts.

Keywords: Corporate Governance, Bondholder Takeover Defense, Poison Put

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I. Introduction

For the past several decades, corporate governance has been a field that attracts many academic researchers, practitioners, and policymakers. In the survey paper by Shleifer and Vishny (1997), corporate governance is broadly defined as the structure through which capital suppliers make certain to obtain a fair return on their investment. From this perspective, corporate governance consists of mechanisms and structure through which investors can align the incentives of managers with their own goals. Current literature suggests the following categories of governance controls: (1) corporate governance mechanisms include external bonding and monitoring by regulatory and enforcement environment at the country/market

level (Albuquerue and Wang (2008)) and internal controls such as independent directors on the board, corporate charters and by-laws, and bank monitors (Dow, Gorton, and Krishnamurthy (2005)); and (2) financial contracting such as debt in capital structure, executive compensation, and incentive contracts. On the theoretical front, Albuquerue and Wang (2008) and Dow, Gorton, and Krishnamurthy (2005) present theoretical models on how imperfect corporate control and agency conflicts affect asset pricing. On the other hand, there has been an extensive strand of literature on various governance controls on equity and bond prices. For example, Gompers, Ishii and Metrick (2003) create a governance index of anti-takeover defenses and other provisions and find that firms with a stronger shareholder protection (a lower governance index) have higher equity and firm values.

In a recent paper, Cremers, Nair, and Wei (2007) highlight the importance of bondholder governance through the use of bond covenants and present the interactions between shareholder and bondholder governance mechanisms. More specifically, they focus on three bond covenants that are closely related to takeover defenses: net worth restrictions, leverage restrictions, and poison puts. Their study is among the first to show that bondholder governance is an important element in corporate governance. Cremers, Nair, and Wei (2007) suggest that bondholder governance helps mitigates potential conflicts between shareholders and bondholders and interactions between shareholder and bondholder governance affect bond prices. Thus, the net impact of the overall governance structure (rather than a single element) consisting of shareholder and bondholder governance on management decisions and asset prices is an important issue (King and Wen (2009)). In this paper, we study bondholder governance mechanisms through the takeover-related bond covenants and the characteristics of firms that are more likely to include these covenants in their bonds. In particular we focus on poison puts and the triggers associated with the puts, which are the covenants that are closely related to takeover defenses. Our goal is to explore bondholder governance through the use of takeover-related defenses and to highlight the importance of bondholder governance in the overall structure of corporate governance.

Poison puts were introduced as a result of the waves of corporate restructuring in the mid 1980s. Poison put is designed to guard the bondholders against takeovers, buyouts, and other events. Poison put gives bondholders a right to redeem a bond, usually at par value, when the takeover provision is triggered. Triggers are clearly defined in the covenant and often include leverage and net worth triggers. In this study, we empirically examine poison puts and their embedded triggers in U.S. corporate bonds. In particular, we explore the following issues. First, Billett, King, and Mauer (2007) show that there exists evidence of correlation among covenants. We examine if bonds with poison puts are more likely to be bundled with certain types of covenants for governance purposes. Due the option to exit, fewer other covenants may be needed on a bond with a poison put so as to design an efficient and effective bondholder governance structure. Studies on convertible bonds indicate that there are fewer covenants in convertibles than in straight debt since conversion option makes the convertible bond a hybrid investment consisting of a debt and an equity component. Due to the equity component, fewer covenants are required to address the agency conflicts between bondholders and equityholders. Kahan and Yermack (1998) find that convertible debt issues have virtually no covenants, suggesting that for high growth firms the conversion feature is a more effective contracting mechanism than restrictive covenants in addressing stockholder–bondholder conflicts. Anderson (1999) finds consistent evidence for Brazilian debt. Therefore, design of bondholder governance is an important issue to examine. We find that poison puts are often bundled with asset sale, payout, and financing restrictions, which is consistent with agency theory. Firms with greater free cash flows (Jensen (1986)) are more likely to over-invest in negative NPV projects and therefore have higher agency costs. In addition, firms with a higher credit risk are more likely to have higher agency costs. Therefore, to design an effective debt contract, controls for agency conflicts should be strengthened for firms with high agency costs that stem from over-investment, credit risk, and takeover possibilities.

Second, we examine the characteristics of firms that are more likely to issue bonds with poison puts. Based on a comprehensive sample, we perform a cross-sectional analysis of firm characteristics that lead to the use of poison puts in bondholder governance. We find that high growth firms, large, profitable, low-leverage firms are more likely to use poison puts. In addition, firms with a higher percentage of fixed assets have a greater probability to issue poison put bonds. Free cash flow has a positive impact on the inclusion of poison puts, which is consistent with the agency prediction. Our findings on insider and institutional ownership provide support for agency explanation.

Third, we examine time series factors that affect the use of poison puts. We find that bond market and equity market performance has a significant impact on the inclusion of poison puts. In particular, poor bond market performance and good equity market performance are likely to motivate the incidence of poison put bond issuance. The better the performance of bond market is, the less motivated the investors demand poison put to protect them. On the other hand, the better the equity market performance, the more motivated the investors to demand for poison puts. We also find that the volatility of interest rate and volatility of bond index returns motivate more issues of poison put debt. Finally, greater market term and default premiums promote the use of poison puts.

Several recent studies link bondholder takeover

defenses, e.g., poison puts, to corporate governance. For example, Cremers, Nair, and Wei (2007) examine the effects of shareholder governance mechanisms on bondholders. They find that ***bondholder takeover defenses*** reduce the credit ***risk*** associated with strong shareholder governance. They suggest that, without bond covenants, shareholder governance and bondholder interests diverge. Hartley and Kendall (2005) indicate that bondholder demands for poison puts have increased after buyout deals showing losses on covenant-free bonds. This trend has recently extended to the sterling and euro corporate bond markets. King and Wen (2009) examine how the overall corporate governance structure consisting of shareholder governance (measured by anti-takeover provisions) and bondholder governance (measured by bond covenants) affect management risk-taking behavior.

Earlier studies on poison puts focus on the pricing of these covenants by examining the yield differentials between bonds with and without poison puts (Crabbe (1991), Field, Kidwell, and Klein (1994), and Torabzadeh, Roufagalas, and Woodruff (2000)). Another strand of studies focus on the effects of poison puts on shareholder and/or bondholder wealth. Cook and Easterwood (1994) show that issuance of poison put bonds affects existing stockholders negatively and bondholders positively, whereas the issuance of bonds without such covenants has no effects. Bae, Klein, and Padmaraj (1994) on the other hand show that the announcement effects on shareholders are significantly higher for poison put debt issuance than for straight debt issuance. They suggest that firms with greater agency costs of debt and smaller size would benefit most from poison put debt issuance and therefore experience higher abnormal returns at issuance.[1] Roth and McDonald (1999) find that poison puts have a negative impact on shareholder wealth when management ownership is low, and that firms with higher free cash flow are more likely to issue debt containing poison puts.

This study makes the following significant contributions to the literature. First, we explore an important, but less-studied, internal controls in corporate governance, namely, takeover-related debt covenants. We examine the design of covenants by showing that poison puts are often bundled with payout and financing restrictions. Second, we show the unique set of firm characteristics that motivates the probability of including a poison put. We use a large sample over a long time period and find very interesting implications, which are mostly consistent with the agency theory. Third, we show how macroeconomic factors play a role in determining the decision for an issuer to include a poison put in the covenant structure.

The rest of the paper is structured as follows. Section II describes the data sample. Section III presents the empirical results. Section IV concludes.

II. Data

In this study, we obtain the sample of bonds from the Fixed Income Securities Database (FISD). FISD is the most comprehensive and publicly available collection of bond data on publicly offered U.S. Treasury, agency, and corporate bonds. FISD reports detailed information on debt issue characteristics, documents over 50 different types of covenants, and includes 134,755 public issues from 1894 to 2003. Of the 134,755 issues, 5,113 bonds issues have poison puts. We collect information on the issue and issuer, including coupon, maturity, credit rating, put schedule, industry codes, covenant information, and other characteristics. In addition, we construct an overall sample of corporate debt representing the population of the corporate debt issues. To provide a complete analysis on bonds with poison puts, we present the poison put sample from the following aspects: bond basic features, options and seniority, industry groups, and frequency of issues. Table 1 reports the descriptive statistics for the sample of 5,113 poison put bonds issued from 1980 to 2003. In particular, we present the descriptive statistics of the offering amount, coupon, and original maturity on the bonds. Table 1 shows that the median offering amount is $160.00 million and median coupon rate is 9.63%. In general, the debt issues are of intermediate maturity with an average maturity of 10.00 years. Table 2 shows the poison put by convertibility, seniority, industry, and decade respectively. Panel A shows that the vast majority (81.03%) of poison put bonds are nonconvertible. In addition, poison put debt is evenly distributed between senior (45.77%) and senior secured (44.26%) levels, indicating that most poison put bonds have the highest seniority level. This finding provides evidence for the considerations in the design of debt contracts and bondholder governance.

Panel B of Table 2 presents poison put bonds by industry. The results show that 89.15% of the poison put bonds are issued by industrial firms, the most dominant industry group in the sample. Poison puts are much less popular in the financial (7.35%) and utility (3.03%) sectors. The reason may be that agency conflicts is higher for industries that are not subject to extensive regulations (industrial group) than for industries that are (utility and finance). Consequently, the need for bondholders of industrial firms to include poison puts in bondholder governance to guard against such risks is great. Panel C of Table 2 presents the sample by decade. The panel shows that poison put is a much recent invention with the issues starting in 1985. As discussed earlier, the creation of

[1] Bae, Klein, and Padmaraj (1997) examine the relationship between firm characteristics and the likelihood of event risk covenants in bond indentures. They suggest that the likelihood of event risk covenants in bond indentures is related to the agency costs of debt and the potential for takeover. However, their results do not support the financial distress costs hypothesis.

poison puts is motivated by the RJR Nabisco buyout event and other buyouts in the merger wave at the end of the 1980s. It is interesting to see that a significant portion (70.35%) of the poison put bonds is issued in the 1990s. There also has been a quite active market (24.83%) for poison debt issues in the early 2000s.

Based on all corporate debt issues from FISD over the period from 1980 to 2003, we collect firm characteristics on these corporate issuers from Compustat. The resulting sample for our cross-sectional analysis of firm characteristics contains 12,486 valid firm-year observations.[2] If an issuer issues more than one bonds in a given year, we summarize across the issues the decision to include a poison put. If the issuer offers at least one poison put bond in a given year, we classify this issuer in that year as issuing poison debt. For the time series analysis, we use 60,694 bond-year observations, i.e., each observation is on a bond-year basis rather than a firm-year basis. We collect information on interest rates from the Federal Reserve Bank in St. Louis FRED database.

III. Empirical Results

A. Bondholder Governance Structure: Poison Put and Other Covenants

Based on the agency theory of debt, there are potential conflicts of interests between bondholders and stockholders. Jensen and Meckling (1976) and Myers (1977) provide the pioneering work in this area. In particular, there are four major sources of conflicts: dividend payment, claim dilution, asset substitution, and underinvestment. If the firm consistently pays an unreasonably large dividend to stockholders, it might dampen the firm's ability to meet its debt payments and consequently negatively affect the bondholders' wealth. If the firm issues additional debt, it would dilute the claim of the current bondholders. If the management takes on projects of extremely high risk after debt issuance, the value of the bonds decreases. As the inherent risk of the assets increases, the coupon rate on the debt set prior to the risk-taking behavior is insufficient to compensate for the risk. In the case of underinvestment, if accepting certain projects benefits the bondholders, management may be motivated to pass up positive net present value projects.

Based on the conflicts of interests between shareholders and bondholders, and if we assume that management acts in stockholders' interests, bondholders would require protection against potential events or actions by the management/shareholders. Bond covenants in debt contracts are a way to control these conflicts and reduce agency costs. A bond covenant is a clause which restricts an issuer from performing certain actions. Billett, King, and Mauer (2007) show there exists certain amount of correlation among various covenants. In addition, Cremers, Nair, and Wei (2007) suggest that the effects of shareholder governance mechanisms on bond prices are related to bondholder takeover defenses such as poison puts. Thus, one can view bond covenants as an important internal control. It is interesting to examine if the poison put covenant is related to other covenants, from a control design point of view. Covenant bundling may exist due to firm characteristics for the purpose of reducing agency costs. In other words, an effective design of internal controls (i.e., takeover defenses and other covenants) should include takeover defenses and other covenants that are mostly related to agency conflicts. We explore the relation between poison puts (takeover defenses) and other covenants and provide explanations from agency theory.

To examine the pattern of covenant bundling, we perform two analyses. First, we examine the frequency and percentage of various covenants in the poison put bond sample. Table 3 presents the results. In particular, we examine a total of 12 covenants to see if the inclusion of the covenants relates to poison puts. Negative pledge is a covenant that limits the issuer to issue secured debt unless it secures the current issue on a pari passu basis. Cross default is designed to activate default in the issue if an event of default has occurred in any other debt by the same issuer. Dividends restriction limits payments (and subsidiaries' payments) to shareholders or other entities. Share repurchase restriction prohibits the issuer from making payments (other than dividend payments) to shareholders and other claimholders using share repurchases or other cash distribution methods. Indebtedness limits the total indebtedness of the issuer and subsidiaries. Funded debt prohibits the issuer and subsidiaries from issuing additional funded debt. Senior debt issuance limits issuer's ability to issue senior debt. Subordinated debt issuance limits the issuer's ability to issue junior or subordinated debt. Investments clause prohibits the issuer from making risky investments. Asset sale restricts the issuer's ability to sell assets or requires the issuer to use proceeds to redeem the bonds. Sale and leaseback restricts the issuer and subsidiaries to the type or amount of property used on a sale leaseback transaction. Stock issuance limits the issuer's ability to issue additional common stock.

The results show that poison put bonds tend to have the asset sale clause. In particular, 94.17% of poison put bonds have an asset sale clause. According to Billett, King, and Mauer (2007), asset sale clause is one of the most frequently included covenants in bonds with 64.50% of their sample containing such a covenant. The much higher occurrence of asset sale clause in the poison put sample (94.17%) than that in the general corporate bond sample (64.50%) indicates that there is possible linkage between poison puts and asset sale. We also observe that poison put debt tend to include covenants related to indebtedness. Specifically, 71.68% of bonds

[2] We exclude 296 firm-year observations for issue in the 1970s from the sample used in earlier versions of this study. The sample of 12,486 firm-year observations is an updated sample used in this version.

with a poison put have the total indebtedness limit on the issuer and it subsidiaries, which is much higher than the percentage in the overall corporate bond sample (30.4%). In addition, 70.58% of the bonds with a poison put contain a clause limiting share repurchases and 67.01% contains a clause limiting dividends. For comparison, Billett, King, and Mauer report that the general corporate bond sample has 22.60% with a share repurchase restriction and 27.00% with a dividend restriction. The significantly higher percentage of poison put bonds containing indebtedness, share repurchase restriction, and dividend restriction relative to the general corporate bond sample suggest that there is an efficient design of covenants based on characteristics of issuers that require takeover defenses like poison puts.

Table 3 also shows the Pearson correlation of poison put and other covenants. The results provide further confirmation to the results on the frequency and percentage of covenants in the poison put sample discussed above. In particular, we find that the correlation coefficient between poison put and asset sale is 0.53362. The indebtedness covenant is highly correlated with poison puts with a correlation coefficient 0.73093. Poison put is also highly correlated with the share repurchase restriction (correlation of 0.77322) and with the dividend restriction (correlation of 0.76272). The correlation between poison put and the remaining covenants is relatively low, with most of the correlation coefficients well below 0.50.

Overall, the result indicates that a majority of poison put bonds are issued with an asset sale clause, indebtedness, share repurchase restriction, and dividend restriction. The results are consistent with the agency theory that takeover defenses are bundled with other covenants to prevent asset substitution. In addition, takeover defenses are also more likely to be combined with financing and cash payouts restrictions. Firms with more growth opportunities (which require more frequent financing) and/or greater free cash flows have higher agency costs. Therefore, firms with higher agency costs tend to issue debt containing covenants that are designed in an efficient way to reduce agency costs by including covenants on financing and payout restrictions. Below we explore firm characteristics of issuers of poison put bonds to examine if the issuers have significant agency costs compared to the other issuers in the corporate sector.

B. Firm Characteristics and Poison Puts

In this section, we explore the characteristics of issuers that are more likely issue bonds with a poison put. Following Bae, Klein, and Padmaraj (1997), we examine the firm characteristics that are related to growth opportunity, firm size, and agency cost. As the growth opportunity increases, the firm is more likely to take on riskier projects. Therefore, bondholders require more protection in bond contracts to guard such against risk-shifting events. We use R&D expenditure and market to book ratio to measure growth opportunity. We expect a positive relation between R&D expense (or market to book ratio) and the probability of including a poison put. We also examine if firm size has an impact on the probability of including a poison put. Finally, we test if the inclusion of poison puts is related to the agency costs. When the agency cost is high, the need to issue bonds with poison puts in hopes to reduce the agency cost is greater. We employ free cash flow, insider and institutional ownership measure the level of agency costs. In particular, we predict that the higher the free cash flow, the higher the agency cost. In addition, we expect that the lower percentage ownership of insider, the greater the agency cost. Institutional ownership is considered because institutional investors, who are major players in the bond markets, usually provide active monitoring of the issuers. This monitoring activity is generally considered effective in reducing agency cost. We expect a negative relation between institutional ownership and agency cost.

Therefore, we employ the following model to examine the characteristics of issuers that are more likely to issue bonds with a poison put,

$$\begin{aligned}\text{POISONPUT} = \alpha + \beta_1 \text{RD} \ (\text{or} \ \beta_1 \text{MV\_BV}) + \beta_2 \text{SIZE} + \beta_3 \text{LEVERAGE} + \beta_4 \text{FIXA} \\ + \beta_5 \text{PROFIT} + \beta_6 \text{RATE} + \beta_7 \text{FCF} + \beta_8 \text{INSIDER} + \beta_9 \text{INSTITUTION} + \varepsilon\end{aligned} \quad (1)$$

The dependent variable (POISONPUT), a dummy variable for the poison put covenant, equals one if the bond includes a poison put covenant and zero otherwise. As discussed above, we include the following independent variables. Research and development expense (RD) is measured by the research and development expenses dividing by total sales. Market to book value ratio (MV_BV) is measured by market value of assets divided by the book value of assets, where market value of assets equals the book value of assets minus book value of equity plus market value of equity. Market value of equity equals stock price per share times the number of shares. Firm size (SIZE) is measured by the total value of assets in million of dollars. We include several firm characteristics that are related to capital structure, fixed assets, and profitability as control variables. First we include leverage (LEVERAGE) measured by the book value of total debt divided by market value of assets, where total debt equals total long term debt plus debt in current liabilities. Second, we use the percentage of fixed assets to total assets (FIXA) and it is calculated by net plant and property equipment divided by book value of assets. Lastly, we measure profitability (PROFIT) by the ratio of EBITA to book value of assets. For time series effects, we use the level of interest rate to measure the interest rate environment. Interest rate (RATE) is measured by the yield on 6-month Treasury bills in percent. Finally, we include three explanatory variables to proxy for the level of agency costs as discussed above. Free cash flow (FCF) is measured

by the operating income before depreciation adjusted for income taxes, change in deferred taxed, interest expense, preferred dividends, and common stock dividends. Insider ownership (INSIDER) is measured by the percentage ownership of insiders including top management and directors. Institution ownership (INSTITUTION) is measured by the percentage ownership of institutional investors. We use the 12,486 firm-year observations to perform the cross-sectional analysis.

Table 4 presents the results of the logistic regressions linking the inclusion of poison puts to explanatory variables. We use four models that consist of various combinations of explanatory variables. In model 1, we find that R&D expense has a positive but insignificant effect on the decision to add a poison put. However, in model 2 through 4, we find that growth opportunities measured by market to book ratio (MV_BV) has a negative and significant effect on the probability of including a poison put option in a bond. Firms with more growth opportunities are more likely to issue bonds with poison puts. This is consistent with the previous prediction: firms with greater growth opportunities are more likely to face riskier projects and consequently bondholders would require protection. Furthermore, across all models the results suggest that issuers with a larger size (SIZE), lower leverage (LEVERAGE), higher percentage of fixed assets (FIXA), and more profitable (PROFIT) are more likely to include a poison put. Contrary to our expectations, firms that are considered "safer" as depicted by the characteristics of firm size, leverage, fixed assets, and profitability are more likely to issue poison put debt. This may be due to that large and reputable firms are more likely to attract demands by institutional investors to include the takeover defense covenant. Empirical evidence suggests that large and profitable firms tend to choose low financial leverage, which is inconsistent with traditional capital structure theories. The result on interest rate (RATE) shown in model 3 and 4 suggests that the level of interest rate has a negative and significant impact on the decision to include a poison put. In other words, the lower the interest rate, the higher the probability of including a poison put. Lower interest rates can lead to more debt issues in general and also controls for the buyout waves. For agency considerations, we find interest results that are generally consistent with agency theory. Across all models, we find that free cash flow has a positive and significant impact on the probability of poison puts. This finding is consistent with the agency theory prediction: agency conflicts stemming from more free cash flows may lead to a greater need to include a poison put. In addition, the model 4 result on insider and institutional ownership provides support for the agency explanation. In particular, insider or institutional ownership is negatively and significantly related to the probability of poison puts. In other words, the lower the insider (or institutional) ownership, the greater the agency cost and therefore the higher the probability to include a poison put. Therefore, the result suggests that issuers with greater agency cost are more likely to use poison puts to help reduce the costs.

The analysis suggests several issuer characteristics that are related to the probability of poison puts on a bond. We find that high growth firms are more likely to issue bonds with a poison put. On the other hand, the results suggest that large, profitable, and low leverage firms are more likely to include poison puts. In addition, firms with a higher percentage of fixed assets have a greater probability to issue bonds embedded with poison puts. Finally, and most importantly, we find evidence supporting agency theory for the type of firms that are more likely to include takeover defenses in their debt. In particular, firms with a high free cash flow are more likely to include poison puts in debt issues, which is consistent with the prediction of agency theory. The negative relation between inside (or institutional) ownership and the inclusion of poison puts provides strong and further support for the agency explanation.

C. Time Series Factors on the Decision to Issue Poison Put Bonds

In this section, we study the time series factors on the decision to issue poison put bonds. We use macroeconomic factors including bond market index and volatility, equity market index and volatility, interest rate level and volatility, slope of the term structure, and market default risk premium. We use the level and volatility of broad market indices of debt and equity to proxy for the performance of these security markets. For example, bond market index provide market participants a benchmark for the performance of the bond market. If the bond market is performing well, investors have less desire to require poison puts for protection against the drop in bond value due to unfavorable events. We also include the three main variables to describe the term structure of interest rates: level and volatility of interest rate, and the slope of yield curve. The structure of interest rates is an important benchmark for economic conditions. If the economy is going into a recession, we would expect that bondholders are more likely to prefer bonds with poison puts to bonds without. On the other hand, if the economy is in a boom, bondholders have less of an incentive demand poison puts. Furthermore, if the volatility of interest rate is relatively high, investors are motivated to buy bond with poison puts to get better protection from market uncertainty. The slope of the interest rates is included as a control variable. It may be that future expectations of interest rates reflected in the slope have an impact on the decision to include poison puts. Lastly, we examine if the general level of default risk and the compensation demanded by the market have an impact on the inclusion of poison puts. If default risk premium is high, that means investors in general are concerned about defaults and consequently are asking for a higher compensation. Therefore, investors

have a greater incentive to buy bond with poison puts to guard against unfavorable credit events (e.g., rating downgrades). To examine the time series factors that motivate the issuance of poison put bonds, we use following model.

$$\begin{aligned} POISONPUT = {} & \alpha + \beta_1 BONDINDX + \beta_2 VOL\_BINDX + \beta_3 EQUITYINDX \\ & + \beta_4 VOL\_EINDX + \beta_5 RATE + \beta_6 VOL\_RATE \\ & + \beta_7 TERMPREM + \beta_8 DEFAPREM + \varepsilon \end{aligned} \quad (2)$$

The dependent variable (POISONPUT), a dummy variable for poison put covenant, equals one if the bond contains a poison put covenant and zero otherwise. We include the following macroeconomic factors as independent variables. Bond index return (BONDINDX) is measured by the total monthly return of the Lehman Brothers Aggregate Bond Index. Volatility of the bond index return (VOL_BINDX) is measured by the standard deviation of BONDINDX during the 12-month period immediately prior to bond issuance. Equity index return (EQUITYINDX) is measured by the monthly returns of various equity indices. We use eight different equity indices including the S&P500 (value- and equal-weighted), NASDAQ (value- and equal-weighted), NYSE (value- and equal-weighted), and Amex (value- and equal-weighted) index. Volatility of equity index return (VOL_EINDX) is measured by the volatility of EQUITYINDX during the 12-month period prior to the issue date. Interest rate (RATE) is measured by yield on the 6-month Treasury bill. Volatility of interest rate (VOL_RATE) is measured by the volatility of RATE during the 12-month period prior to the issue date. Term premium (TERMPREM) is measured by difference between the yield on the 10-year Treasury note and the yield on the 6-month Treasury bill. Finally, default risk premium (DEFAPREM) is measured by the yield differential between AAA and BBB corporate bonds. We use the 60,694 bond-year observations to perform the time series analysis.

We obtain similar results when different equity indices are used to measure the return on equity index (EQUITYINDX) and to calculate the volatility of equity return (VOL_EINDX). Table 5 reports the result based on the return on the S&P500 value-weighted index. The results suggest several interesting implications. First, the incidence of poison puts is negatively and significantly related to bond index returns (BONDINDX). This result suggests that issuers tend to include a poison put on its debt issues when the bond market is performing poorly. Poor performance of the bond market may convey a higher risk inherent in bond investments, triggering a greater demand to protection. To further strengthen our argument, we find that the incidence of poison puts is positively and significantly related to volatility of bond index returns (VOL_BINDX). The more volatile the bond market performance, the greater the need for the bondholders to demand protection on the bonds.

For equity market variables, we find that the equity index return (EQUITYINDX) has a positive impact on the incidence of poison puts. The volatility of equity index returns (VOL_EINDX), on the other hand, does not have a significant effect. These findings suggest that issuers are more likely to issue poison put debt when the equity market is performing well. The activities in the equity market may link to the likely events in the market for corporate control and therefore the inclusion of a poison put on debt issues.

For term structure variables, we find that the level of interest rate (RATE) has a negative effect on the inclusion of poison puts. However, the parameter estimate is not significantly different from zero. The level of interest rate has been declining from the mid-1980s where the buyout wave started to the late 1990s. Using the Treasury 5-year constant maturity rates as a benchmark, the rate averages from 8.47% during 1985-1989 to 6.75% in 1990-1994.[3] It may be that during the higher interest rate environment, the need to include a poison put is less due to the higher borrowing cost in the market for corporate control. It is interesting to note that the volatility of interest rates (VOL_RATE) has a significant and positive impact on the incidence of poison puts. The term premium (TERMPREM), on the other hand, has a positive and significant effect. The results suggest that the volatility of interest rates may motivate the demand to include poison puts whereas the term premium has a similar, but weaker, effect on the inclusion of poison puts. Lastly, consistent with our expectation, default premium (DEFAPREM) has a positive and significant impact on the inclusion of poison puts. This result suggests that general market sentiments toward default risk, which is reflected in default risk premium, promote the incentives for the use of poison puts.

Overall, we find that bond market and equity market performance has a significant impact on the inclusion of poison puts. In particular, poor bond market performance and good equity market performance are likely to motivate the incidence of poison put bond issuance. The better the performance of bond market is, the less motivated the investors demand poison put to protect them. On the other hand, the better the equity market performance, the more motivated the investors to demand for poison puts. Market volatility also has a positive and significant impact on the inclusion of poison puts: volatility of interest rate and volatility of bond index returns motivate the use of poison puts. Finally, term and default premiums promote the inclusion of poison puts, protecting bondholders from interest rate and credit risks.

IV. Conclusion

As Cremers, Nair, and Wei (2007) point out the importance of bondholder governance through the use

[3] 5-year Treasury constant maturity rates are obtained from the Federal Reserve Bank in St. Louis FRED database.

of bond covenants and the interactions between shareholder and bondholder governance mechanisms, the role of bondholder governance in corporate governance is highlighted. Therefore, how the overall governance structure consisting of shareholder and bondholder governance (or investor protection) affects management decisions and asset prices is an important issue (King and Wen (2009)). In this paper, we study bondholder governance mechanisms through the takeover-related bond covenants and the characteristics of firms that are more likely to include these covenants in their bonds. In particular, we focus on poison puts and the triggers associated with the puts, which are the covenants that are closely related to takeover defenses. We examine bondholder governance through the use of takeover-related defenses and emphasize the importance of bondholder governance in the overall structure of corporate governance.

In this study, we empirically examine poison puts in U.S. corporate bonds. We present the following interesting implications. First, we examine if bonds with poison puts are more likely to be bundled with a given set of covenants for governance purposes. Due the option to exit and the characteristics of issuers, certain covenant(s) may be included on a bond with a poison put so as to design an effective bondholder governance structure. We find that poison puts are often bundled with asset sale, payout, and financing restrictions, which is consistent with agency theory. Firms with greater free cash flows (Jensen (1986)) are more likely to over-invest in negative NPV projects and therefore have higher agency costs. In addition, firms with a higher credit risk are more likely to have higher agency costs. The results suggest that, to design an effective debt contract, controls for agency conflicts are strengthened for firms with high agency costs that stem from over-investment, credit risk, and takeover possibilities.

Second, we examine characteristics of issuers that are more likely to issue bonds with poison puts. We perform a cross-sectional analysis of firm characteristics that lead to the use of poison puts in bondholder governance. We find that high growth firms, large, profitable, low-leverage firms are more likely to use poison puts. In addition, firms with a higher percentage of fixed assets have a greater probability to issue poison put bonds. Our findings on free cash flow, insider and institutional ownership provide support for agency explanation.

Lastly, we examine time series factors that affect the use of poison puts. We find that poor bond market performance and good equity market performance are likely to motivate the incidence of poison put bond issuance. We also find that the volatility of interest rate and volatility of bond index returns motivate more issues of poison put debt. Finally, greater market term and default premiums promote the use of poison puts.

The structure of bondholder governance (or protection) is an important area of study in corporate governance. However, so far it has received limited attention in the literature. Our study, following Cremers, Nair, and Wei (2007) and Billett, King, and Mauer (2007), provides findings that further understanding of bondholder protection and its design. Future research is needed to study the interactions among bondholder, shareholder protection, and other elements of corporate governance.

References

1. Albuquerque, R. and Wang, N. 2008, Agency Conflicts, Investment and Asset Pricing, *Journal of Finance*, 53, 1-40
2. Anderson, C. W., 1999, Financial contracting under extreme uncertainty: An analysis of Brazilian corporate debentures, *Journal of Financial Economics* 51, 45–84.
3. Bae, S. C., and Klein, D. P., 1997, Further evidence on corporate bonds with event-risk covenants: Inherences from Standard and Poor's and Moody's bond ratings, *The Quarterly Review of Economics and Finance* 37, 709-724.
4. Bae, S. C., Klein, D. P., and Padmaraj, R., 1994, Event risk bond covenants, agency costs of debt and equity, and stockholder wealth, *Financial Management* 23, 28-41.
5. Bae, S. C., Klein, D. P., and Padmaraj, R., 1997, Firm characteristics and the presence of event risk covenants in bond indentures, *The Journal of Financial Research* 10, 373-388.
6. Billett, M. T., King, D. T., Mauer, D. C., 2007, Growth opportunities and the choice of leverage, debt maturity, and covenants, *Journal of Finance* 62, 697-730.
7. Cook, D. O., and Easterwood, J. C., 1994, Poison put bonds: An analysis of their economic role, *Journal of Finance* 49, 1905-1920.
8. Crabbe, L. 1991, Event risk: An analysis of losses to bondholders and "super poison Put" bond covenants, *Journal of Finance* 46, 689-706.
9. Cremers, K. J. Martijn, Vinay B. Nair, and Chenyang Wei, 2007, Governance mechanisms and bond prices, *The Review of Financial Studies* 20, 1359.
10. David, A., 2001, Pricing the strategic value of putable securities in liquidity crises, *Journal of Financial Economics* 59, 63-99.
11. Dow, James, Gary B. Gorton, and Arvind Krishnamurthy, 2005, Equilibrium investment and asset prices under imperfect corporate control, *American Economic Review* 95, 659--681.
12. Driessen, J., 2005, Is default event risk priced in corporate bonds? *Review of Financial Studies* 18, 165-195.
13. Fields, J. A., Kidwell, D. S., and Klein, L. S., 1994, Coupon resets versus poison puts: The valuation of event risk provisions in corporate debt, *Financial Services Review* 3, 143-156.
14. Gompers, P., and Lerner, J., 1996, The use of covenants: An empirical analysis of venture partnership agreements, *Journal of Law and Economics* 39, 463-498.
15. Hartley, M., and Kendall, C., 2005, Issuers weigh the case for stronger bond covenants, *International Financial Law Review* 24, 18-20.
16. Jensen, M. C., and Meckling, W. H., 1976, Theory of the firm: Managerial behavior, agency costs, and ownership structure, *Journal of Financial Economics* 3, 305-360.

17. Kahan, M., and Yermack, D., 1998, Investment opportunities and the design of debt securities, *Journal of Law, Economics, and Organization* 14, 136–151.
18. King, T., and Wen, M., 2009, Shareholder and bondholder governance, managerial risk-taking, and security returns, working paper.
19. Liu, J., Longstaff, F. A., and Pan, J., 2003, Dynamic asset allocation with event risk, *Journal of Finance* 58, 231-259.
20. Myers, S., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.
21. Nanda, V., and Yun, Y., 1996, Financial innovation and investor wealth: A study of the poison put in convertible bonds, *Journal of Corporate Finance* 3, 1–22.
22. Roth, G., and McDonald, C. G., 1999, Shareholder-management conflict and event risk covenants, *The Journal of Financial Research* 12, 207-225.
23. Shleifer, Andrei, and Robert Vishny, 1997, A survey of corporate governance, *Journal of Finance* 42, 737--783.
24. Smith, C. W., Jr., and Warner, J. B., 1979, On financial contracting: An analysis of bond covenants, *Journal of Financial Economics* 7, 117-161.
25. Torabzadeh, K. M., Roufagalas, J., and Wooddruff, C. G., 2000, Self-selection and the effects of poison put/call covenants on the reoffering yields of corporate bonds, *International Review of Economics and Finance* 9, 139-156.

Appendices

Table 1. Descriptive Statistics of Poison Put Bonds

The table presents the descriptive statistics on offering amount, coupon rate, and original maturity for the 5,113 bonds with poison puts. Stdev denotes the standard deviation of variable, Q1 is the first quartile, and Q3 is the third quartile. Offering amount is presented in $ million, coupon rate in percent, and original maturity in years.

Poison Put Bonds (n=5,113)

Bond Characteristics	Mean	Median	Max	Min	Stdev	Q1	Q3
Offering Amount ($million)	237.29	160.00	5,442.08	1.00	282.07	100.00	275.00
Coupon (%)	8.83	9.63	19.75	0.00	3.51	7.50	11.00
Maturity (year)	8.53	10.00	35.00	1.00	2.04	7.00	10.00

Table 2. Poison Put Bonds by Convertibility, Seniority, Industry, and Decade

The table presents the frequency and percentage of 5,113 poison put bonds by convertibility, seniority, industry, and decade.

Panel A. By Conversion and Seniority

By Conversion Option	No. of Bonds	% of Total No.
Convertible	970	18.97%
Nonconvertible	4,143	81.03%
By Seniority		
Senior Secured	2263	44.26%
Senior	2340	45.77%
Senior Subordinate	427	8.35%
Subordinate/Junior	25	0.49%
Not Specified	58	1.13%

Panel B. By Industry

Industry	No. of Bonds	% of Total No.
Industrial	4,558	89.15%
Financial	376	7.35%
Utility	155	3.03%
Miscellaneous	24	0.47%
Total	**5,113**	**100.00%**

Panel C. By Decade

Year	No. of Bonds	% of Total No.
1985-1989	246	4.81%
1990-1999	3,597	70.35%
2000-2003	1,270	24.84%
Total	**5,113**	**100.00%**

Table 3. Poison Put Provision and Other Covenants

This table examines the frequency and percentage of various covenants in the 5,113 poison put bonds. We include a total of 12 covenants. Negative pledge is a covenant that limits the issuer to issue secured debt unless it secures the current issue on a pari passu basis. Cross default is designed to activate default in the issue if an event of default has occurred in any other debt by the same issuer. Dividends restriction limits payments to shareholders or other entities. Share repurchase restriction prohibits the issuer from making payments (other than dividend payments) to shareholders and other claimholders using share repurchases or other cash distribution methods. Indebtedness limits the total indebtedness of the issuer. Funded debt prohibits the issuer from issuing additional funded debt. Senior debt issuance limits issuer's ability to issue senior debt. Subordinated debt issuance limits the issuer's ability to issue junior or subordinated debt. Investments clause prohibits the issuer from making risky investments. Asset sale restricts the issuer's ability to sell assets or requires the issuer to use proceeds to redeem the bonds. Sale and leaseback restricts the issuer to the type or amount of property used on a sale leaseback transaction. Stock issuance restriction limits the issuer's ability to issue additional common stock.

	Number and Percentage of Poison Put Bonds Containing Other Covenants		Pearson Correlation of Poison Put and Other Covenants	
Covenant	No Poison Put Bond with Covenant	% Poison Put Bond with Covenant	Correlation	P value
Negative Pledge	2,799	55.28	0.37019	<.0001
Cross Default	67	1.34	0.00478	0.0792
Dividends Restriction	3,297	67.01	0.76272	<.0001
Share Repurchase Restriction	3,537	70.58	0.77322	<.0001
Indebtedness	3,592	71.68	0.73093	<.0001
Funded Debt	47	0.96	0.02935	0.0001
Senior Debt Issuance	199	3.97	0.17219	<.0001
Subordinated Debt Issuance	922	18.40	0.39397	<.0001
Investments	406	8.15	0.22959	<.0001
Asset Sale	4,768	94.17	0.53362	<.0001
Sale and Leaseback	1,662	32.83	0.30715	<.0001
Stock Issuance Restriction	312	6.23	0.21399	<.0001

Table 4. Issuer Characteristics of Firms issuing Poison Put Bonds

The table reports the results of the logistic regression of the probability of including a poison put on its cross-sectional determinants. The sample includes 12,486 firm-year observations that contained valid firm information from Compustat and issued from 1980 to 2003. The dependent variable (POISONPUT) is a dummy variable for poison put covenant, equals one if the bond contains a poison put covenant and zero otherwise. We include the following independent variables. Research and development expense (RD) is measured by the research and development expenses dividing by total sales. Market to book value ratio (MV_BV) is measured by market value of assets divided by the book value of assets, where market value of assets equals the book value of assets minus book value of equity plus market value of equity. Market value of equity equals stock price per share times the number of shares. Leverage (LEVERAGE) is measured by the book value of total debt divided by market value of assets, where total debt equals total long term debt plus debt in current liabilities. Fixed assets (FIXA) is measured by net plant and property equipment divided by the book value of assets. Profitability (PROFIT) is measured by EBITA divided by the book value of assets. Interest rate (RATE) is measured by the yield on 6-month Treasury bills in percent. Free cash flow (FCF) is measured by the operating income before depreciation adjusted for income taxes, change in deferred taxed, interest expense, preferred dividends, and common stock dividends. Insider ownership (INSIDER) is measured by the percentage ownership of insiders including top management and directors. Institution ownership (INSTITUTION) is measured by the percentage ownership of institutional investors.

	Model 1		Model 2		Model 3		Model 4	
Variable	Estimate	p value	Estimate	p value	Estimate	p value	Estimate	p value
RD	0.0055	0.5872						
MV_BV			0.1233	<.0001	0.1659	<.0001	0.2776	<.0001
SIZE	0.3022	<.0001	0.3592	<.0001	0.3465	<.0001	0.5476	<.0001
LEVERAGE	-1.3335	<.0001	-2.2576	<.0001	-2.3815	<.0001	-3.8265	<.0001
FIXA	-0.1455	0.2552	0.5562	<.0001	0.5755	<.0001	0.6376	<.0001
PROFIT	1.6744	<.0001	1.7035	<.0001	1.4276	<.0001	2.3459	<.0001
RATE					-0.0084	0.2582	-0.1251	<.0001
FCF	0.0002	<.0001	0.0001	<.0001	0.0001	<.0028	0.0002	<.0050
INSIDER							-0.0098	<.0001
INSTITUTION							-0.0005	0.6470
Likelihood Ratio		<.0001		<.0001		<.0001		<.0001
Sample Size		5,662		12,486		10,665		6,356

Table 5. Time Series Analysis of the likelihood of Issuing Poison Put Bonds

The table reports the regression results of the probability of including a poison put and various time series factors. The sample includes 60,694 bond-year observations from 1980 to 2003. The dependent variable (POISONPUT) is a dummy variable for poison put covenant, equals one if the bond contains a poison put covenant and zero otherwise. We include the following macroeconomic factors as independent variables. Bond index return (BONDINDX) is measured by the total monthly return of the Lehman Brothers Aggregate Bond Index. Volatility of the bond index return (VOL_BINDX) is measured by the standard deviation of BONDINDX during the 12-month period immediately prior to bond issuance. Equity index return (EQUITYINDX) is measured by the monthly returns of various equity indices. We use eight different equity indices including the S&P500 (value- and equal-weighted), NASDAQ (value- and equal-weighted), NYSE (value- and equal-weighted), and Amex (value- and equal-weighted) index. Volatility of equity index return (VOL_EINDX) is measured by the volatility of EQUITYINDX during the 12-month period prior to the issue date. Interest rate (RATE) is measured by yield on the 6-month Treasury bill. Volatility of interest rate (VOL_RATE) is measured by the volatility of RATE during the 12-month period prior to the issue date. Term premium (TERMPREM) is measured by difference between the yield on the 10-year Treasury note and the yield on the 6-month Treasury bill. Default risk premium (DEFAPREM) is measured by yield difference between AAA and BBB corporate bonds.

Variable	Estimate	p value
BONDINDX	-0.0514	0.0020
VOL_BINDX	0.6667	<.0001
EQUITYINDX	1.1692	0.0054
VOL__EINDX	0.0899	0.9528
RATE	-0.0315	0.2941
VOL__RATE	0.9269	<.0001
TERMPREM	0.0762	0.0046
DEFAPREM	0.0468	0.0050
Likelihood Ratio		<.0001
Sample Size		60,694