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Financial Innovation and Investor Wealth: A Study of the Poison Put in Convertible Bonds

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Abstract

The takeover boom of the 1980s was accompanied by a series of innovations in debt contracts, including the poison put that allows bonds to be redeemed in the event of a corporate control change. The poison put was included in a large majority of convertible debt offerings, shortly after the first issues with such provisions. We attempt to understand the factors that contributed to the widespread adoption of this innovation in convertible bonds and the consequences for shareholder wealth. Our findings suggest that by reducing the potential for bondholder-shareholder conflicts and by conveying positive information about future takeover prospects, poison puts result in significant benefits to issuing firm shareholders, particularly if the firm is under takeover speculation. There are, however, no benefits when a firm has adopted anti-takeover measures prior to the offering. There is weaker evidence that existing bondholders do worse when poison puts are present.

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1. Introduction

The takeover boom of the 1980s, especially the development of the leveraged buyout (LBO), triggered a series of innovations in debt contracts. Among these was the "poison put" provision in bond indentures that gives bondholders the option to redeem their bonds if there is a change of control in the issuing firm.[1] The inclusion of such "event risk covenants" in debt contracts was intended to reassure investors that their investment would be protected if the firm was acquired or significantly reorganized.[2] The innovation proved popular and poison puts were soon incorporated into a substantial fraction of new issues of corporate bonds. Lehn and Poulsen (1991) report that by 1989, over 30% of non-convertible debt offerings included such covenants.

It is well accepted in the finance literature that issuers may benefit from the inclusion of debt covenants since, by reducing potential bondholder-shareholder conflicts, such covenants may permit cheaper debt financing. Providing bondholders with the option to convert their bonds to equity has also been regarded as an effective way to reduce bondholder-shareholder conflicts (see Jensen and Meckling (1976)). It is interesting to observe, therefore, that despite lower expected agency problems with convertible debt, poison puts were adopted to a far greater extent in convertible bonds compared to non-convertible bonds. Just two years after their introduction in 1986, poison puts were included in 66.7% of the convertible debt offerings in our sample for 1988. The figure increased to 89.7% for 1989.

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1) For an overview of innovations in corporate secutities, many of which failed to gain significant adherence, see Finnerty (1992).

2) Recent studies have confirmed that bondholders, not well protected by traditional covenants, experience significant losses on average at the announcement of LBOs (see Asquith and Wizman (1990)).

The objective of this paper is to understand why poison puts were so widely adopted in convertible bonds and to investigate whether there were significant wealth benefits to issuing firm shareholders as a result of the innovation.[3] Our approach is to examine differences in the stock price reactions to announcements of convertible bond offerings with and without poison puts. Event studies have established that announcements of convertible debt offerings tend to adversely impact the stock prices of issuing firms (see Dann and Mikkelson (1984)).[4] To the extent shareholders benefit from the inclusion of poison puts, these benefits should be reflected in more positive (less negative) stock price reactions than otherwise to announcements of convertible debt offerings with such provisions. Poison puts can enhance firm value by reducing the potential for bondholder-shareholder conflicts. Further, in the presence of asymmetric information, inclusion of the poison put may reassure investors that in choosing to issue convertible debt, the firm is seeking to reduce such problems, rather than to take advantage of overpriced equity. The poison put may also persuade investors that the firm believed a takeover attempt to be likely.

Offsetting these benefits is the possibility that the provisions served to entrench existing management by increasing takeover costs -- the name "poison put" derives from the fact that the put is triggered by a change of control in the fashion of "poison pills". However, as we will argue, the increase in takeover

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3) Benefits to the issuer from including debt covenants in non-convertible bonds has been examined in some research. Crabbe (1991) finds that non-convertible bonds with such provisions have a lower yield compated to other bonds of the same firm. Other studies have not, however, found significant benefits to the inclusion of such features in non-convertible bonds (See Pratt (1990)).

4) The negative stock price reaction can be understood in terms of the Myers and Majluf (1984) model. Their model provides an adverse selection explanation for the negative stock price reaction to announcements of seasoned equity sales in the presence of asymmetric information.

costs resulting from the puts is expected to be small compared to the wealth effects associated with the typical takeover. Despite this, puts were explicitly employed as part of the anti-takeover strategies of some early issuers. Indeed, the initial issues of such securities seem to have had a strong negative effect on the wealth of issuing firms' shareholders. It is possible that this perception of poison puts as anti-takeover devices --along with the realization that their deterrence value was limited anyhow -- may have made them unattractive to most issuers till things changed in 1988. It has been claimed in the literature that 1988 was a watershed year,[5] with bondholder losses in the famous leveraged buyout of RJR Nabisco leading to bondholder demands for enhanced protection in such situations.

Our evidence indicates that, excluding the earliest issues, abnormal stock price reaction to the announcement of convertible debt offerings with poison puts is significantly less negative compared to announcements of convertible debt without such provisions. The average abnormal stock price return at announcements of convertible bonds with poison puts is -0.55% and statistically indistinguishable from zero. In contrast, the average abnormal stock return for other convertible debt offerings is -1.78% and statistically significant, similar to the effect of convertible debt offerings on stock prices reported in earlier studies (see Dann and Mikkelson (1984)). The findings are generally consistent across various years in the sample period and across different types of offerings. Our evidence also indicates that, from 1988 onward, all sample firms that were subject to takeover speculation or had adopted anti-takeover measures prior to the offering, issued convertible debt with poison puts.

Cross-sectional regressions that control for various issue and issuer

5) See Brealey and Myers (1991 p.603), Lehn and Poulsen (1991), Crabbe (1991) and Business Week (12/5/88) by Farrel, Miller and Zigas.

characteristics confirm the significantly less negative returns associated with the presence of poison puts. Inclusion of poison puts has a significantly greater positive effect on the stock price of firms that have been under takeover speculation prior to the offering announcement. On the other hand, poison puts have no significant effect on the stock prices of firms that instituted anti-takeover amendments prior to the offering announcement. In addition, firms with lower agency problems (as proxied by the Q-ratio) and those in a poorer liquidity position experience significantly less negative stock returns at the announcement of convertible debt offerings. These findings suggest that there are significant shareholder benefits from the inclusion of the poison put, presumably accounting for the widespread adoption of such provisions.

We also examine the effect of poison puts on the wealth of existing bondholders of issuing firms. The poison put provision, by making convertible debt the senior claim in change of control events, may benefit shareholders at the expense of existing debtholders. There is evidence that the poison put provision is associated with more negative returns to junior bonds at the announcement of convertible debt offerings. The magnitude of these losses is, however, small compared to the positive benefit shareholders receive from the inclusion of poison puts.

The rest of the paper is organized as follows. Section 2 provides background on poison puts and lays out the main hypotheses. Section 3 discusses the sample and announcement period stock returns. Cross-sectional regressions are reported in section 4. Section 5 investigates the effect of poison puts on existing bondholders, while section 6 concludes.

2. Poison put provisions in convertible debt

2.1 Background

Two types of put provisions are commonly observed in recent issues of bonds. The poison put is designed to protect bondholders in the event of a corporate control change by giving them the option to exchange the bonds for a prespecified amount of cash.[6] Other types of puts permit bonds to be redeemed on one or more prespecified dates. Such puts are rarely observed in non-convertible bonds (see Finnerty (1992)). In convertible bonds, puts allowing for periodic redemption are almost exclusively associated with LYONs,[7] possibly indicating that the absence of a regular coupon leads investors to demand additional protection.

In the period following the introduction of poison puts in 1986, there was a lack of consensus among market participants as to the rationale and impact of these provisions. This is reflected in the following excerpt from the Wall Street Journal:[8]

Some Wall Street takeover specialists have dubbed the provision "a poison put" because it may make a company indigestible for a hostile bidder. Investment bankers, however, say that the provision is primarily directed at placating prospective bondholders, particularly financial institutions. During the

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6) An example of a LYON (Liquid Yield Option Notes) with poison put protection is the Whirlpool Corp. LYON due 2011. The contract specifies that:

... in the event of a change of control of the company occuring on or prior to May 14, 1996, each holder will have the option, subject to the terms and the conditions of the indenture, to require company to repurchase all or any part proveded that the principal amount at maturity must be $1,000 or an integral multiple thereof of the holder's LYONs on the date that is 35 business days after the occurrence of such change in control at a cash price equal to the issue price plus accrued original issue discount to the change in control purchase date (Moody's Industrial Manual, 1992).

7) LYONs (Liquid Yield Option Notes) are zero coupon, convertible, callable and puttable bonds.

8) Daniel Hertzberg, WSJ (2/13/86).

recent boom in takeovers and leveraged buyouts, many stockholders have profited handsomely but many bondholders have suffered.

The earliest instances of convertible bond offerings with poison puts that we could identify were by W.R. Grace & Co. and Sperry Corporation, both underwritten by First Boston Corporation in 1986.[9] Both companies were under takeover speculation at the time. In the case of W.R. Grace, statements by the firm indicate that the offering was part of an anti-takeover plan being implemented by the firm.[10] Though we were unable to find similar statements on behalf of Sperry Corporation, the unfavorable nature of the stock price reactions suggests that both offerings were probably perceived by investors as being anti-takeover measures. The market adjusted announcement period two day returns for W.R. Grace (1/21/86) and Sperry Corporation (1/8/86) were -8.77% and -3.25% respectively. For the rest of 1986 we identified three other offerings of convertible debt with poison puts by issuers listed on the NYSE or AMEX at the time. The 2-day market adjusted announcement period stock returns for these five offerings averaged -2.2%, and at least four of these issuing firms were involved in takeover activity around the time of the offering announcement.[11]

As mentioned earlier, only since 1988 has the incorporation of poison puts in convertible debt been common. Some issuers may have been reluctant to incorporate provisions that could be viewed as being anti-takeover measures -- in the case of W.R.Grace they were explicitly meant to serve such a role -- and by the apparently negative investor reactions to the earliest offerings with poison

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9) The data sources are detailed in section 3.1

10) From reports in the WSJ (1/17/86).

11) The other three announcements of convertible debt offerings with poison puts were by Fruehauf Corp. (3/24/86), Airborne Freight Corp. (5/12/86), and Edo Corp. (11/12/86) and the 2-day market adjusted stock returns were 5.4%, -.2% and -4.6%, respectively. In the case of Fruehauf Corp., there was takeover speculation on the same day as the offering announcement.

puts. On the other hand, firms that were interested in deterring takeovers may have tended to view the puts as being ineffective. The reason things changed in 1988 may be, as suggested by some authors, that bondholder losses in the LBO of RJR Nabisco in 1988 heightened bondholder concerns about expropriation in such situations and led to investor demands for greater protection in the form of "event risk covenants".[12][13]

In our empirical analysis of the wealth effects of poison puts, we exclude the five convertible bond offerings with poison puts in 1986.[14] These were the earliest issues with poison puts and investor unfamiliarity with the provisions, particularly their similarity to poison pills, may have colored the initial market reaction. It was only two years later, in an economic environment in which bondholders demanded additional protection, that poison puts became common. It is the wealth effects of these poison puts that are most germane to understanding the popularity of these provisions.

As noted earlier, poison puts have become considerably more common in convertible debt issues, compared to issues of non-convertible debt. A reason for this may be that non-convertible debt is often issued with other covenant protections, so that poison put protection may be unnecessary. In fact, Asquith and Wizman (1990) ask why event risk covenants are even used in non-convertible bonds, given their finding that other, more traditional, types of covenants in non-convertible bonds are effective in preventing bondholder

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12) See references in footnote 5.

13) Lehn and Poulsen (1991) report a similar pattern for the adoption of poison puts in non-convertible bonds. They point out, however, that: *while the RJR Nabisco leveraged buyout may have encouraged large corporations to include event-risk covenants, it is not clear why its leveraged buyout should have induced smaller companies, which presumably were known to be potential leveraged buyout candidates for some time, to suddenly begin including "event-risk covenants" in their debt issues.*

14) Inclusion of these offerings does not significantly affect the results.

expropriation. Unlike non-convertible debt, however, convertible debt contracts are subordinated and are traditionally issued with few covenants, which may account for their greater reliance on poison puts. Finally, it is worth emphasizing that though expropriation risk may seem small for convertible bonds, there are instances in which unprotected convertible debtholders suffered substantial losses because of LBOs.[15]

2.2 Hypotheses and empirical predictions

We briefly summarize possible hypotheses to account for the widespread adoption of the poison put in convertible bonds and ways to empirically test these hypotheses. These hypotheses are not necessarily mutually exclusive.

(1) Reduction of bondholder-shareholder conflicts and a positive signal of takeover prospects

The poison put reduces the likelihood of bondholder-shareholder conflicts that may arise in association with a change in corporate control. Such conflicts are likely to occur when the change of control is also accompanied by a large increase in firm leverage (as in LBOs) or other changes to firm policy (such as a substitution toward riskier projects) that result in bondholder losses. Covenants that protect bondholders from such expropriation will be a positive sum game if the covenants do not discourage takeovers that enhance total firm value -- while discouraging costly takeovers motivated largely by the desire to transfer value from

15) One example is the announcement of the management buyout of Hospital Corp. of America (9/16/88). The stock price rose 26.86%, while the convertible bond (9%, 1998) fell by -9.82% in the week surrounding the announcement. Antother instance is the announcement of the leveraged buyout of American Medical International Inc. (3/27/89). While the share price climbed 22.9%, convertible bonds (8.25%, 2008) suffered a loss of -7.54% in the week surrounding the LBO announcement.

bondholders to equity holders by recapitalization or asset substitution. To the extent total firm value is enhanced by the anticipated reduction in bondholder-shareholder conflicts, these benefits should accrue to the equity holders of issuing firms in the form of a less negative stock price reaction than otherwise to the announcement of convertible debt offerings.[16] The effect should be strongest for firms that were under takeover speculation at the time of the issue and, consequently, perceived to be likely takeover targets. Similarly, the effect should be weakest for firms that had adopted strong anti-takeover measures that would make them difficult to be acquired.[17]

In the presence of asymmetric information, inclusion of the poison put may also convey positive information about firm value to the market. The presence of poison put clauses may indicate the firm's interest in minimizing bondholder-shareholder conflicts and mitigate the usual adverse selection effects associated with the issuance of equity related securities (see Myers and Majluf (1984)). The inclusion of the poison put may also serve to confirm that the firm expected to become a takeover target in the near term.

(2) Managerial entrenchment

Poison puts may increase takeover costs by forcing potential acquirers to raise extra funds to redeem the convertible debt when debtholders choose to exercise the put.[18] Given the size of the wealth gains (as indicated, for example, by the

16) Total firm value is increased by the fact that potentially dissipative bondholder-shareholder conflicts are prevented. Hence, if the bonds are sold at a fair market price (*i.e.*, investors correctly anticipate the likelihood of expropriation ets.), we would expect the benefit from this reduction in dissipative costs to be reflected as an increase in equity value.

17) The notion is that *Expected Benefit = (Probability of takeover)*(Benefit if there is a takeover)*. Hence, keeping the second term on the right hand side fixed, edpected benefit will be increasing in the probability of takeover.

18) The costs will depend on the value of the bonds relative to the redemption price as

average shareholder premium)[19] associated with takeovers, it does not appear that the incremental cost of poison puts should deter most takeover attempts.[20] However, to the extent that poison puts may discourage the more marginal takeover attempts and/or serve to signal managerial intention to resist takeover attempts in the future, the announcement of a convertible debt offering with poison put provisions should result in a larger negative stock price reaction than otherwise. The stock price reaction is expected to be more negative in those instances in which a takeover had been considered probable and the firm was under active speculation regarding a takeover attempt prior to the convertible debt offering.[21][22]

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well as the costs incurred in raising additional funds.

19) See for example Jarrel, Brickley and Netter (1988). They, citing a study by the Office of the Chief Economist of the SEC, report that, for a sample of 225 successful tender offers during 1981-1984, the average premium to shareholders was 53.2 per cent (The premium is calculated by comparing the price paid by the bidder to the price at which the stock was trading one month before the offer.) Also, Jarrell and Poulsen (1987) reported that in their sample of 663 successful tender offers between 1962-1985, the average premium was 19 per cent in the 1960s, 35 per cent in the 1970s, and 30 per cent for 1980-1985.

20) As an example, consider a situation in which the fair value of the bonds is 10% less than the price at which the acquirer is forced to redeem them. The median offering size of convertibles (non-LYON) is 19% of the market value of issuer equity (see table 2). Hence, the cost to the acquirer on account of the poison put being triggered would by about 1.9% of equity. This is much smaller than the 20-30% average stock price premium associated with takeovers (see footnote 19).

21) Ryngaert (1988) finds that firms that were subject to prior takeover speculation experenced significant negative stock returns at the announcement of poison pill adoptions. For firms that were not subject to prior speculation, however, the stock price reaction was insignificant.

22) It has been argued by some (see Ryngaert (1988)) that a possible benefit with acquirers and, thereby, increase shareholder wealth. It is unlikely, however, that poison puts in convertible bonds would increase managerial bargaining strength, since management cannot affect the triggering of the poison put as it can with certain poison pills.

(3) Expropriation of existing debtholders

Though convertible debt typically has the same priority as subordinated debt, poison puts give convertible debt seniority in the event of a control change. This may lead to expropriation of value from other outstanding debt contracts, especially subordinated debt. The hypothesis predicts that the poison put should be associated with a more negative return to the issuing firm's bonds at the time of the offering announcement.

3. The Sample

3.1 Sources

The sample consists of convertible bond offerings between January 1987 and December 1992 by U.S. firms listed on the NYSE or AMEX at the time of the offering announcement. To identify convertible bond offerings we examined reports of offerings in Value Line Convertibles and searched Moody's Bond Record for the appearance of new convertible bonds. The offering announcement date is defined as the earlier of either the date at which the offering was filed with the SEC or one day prior tothe date on which news of the offering was first reported in the Wall Street Journal. SEC filing dates are collected from Investment Dealers Digest and Lexis/Nexis. Announcements in which the convertible debt is to be issued jointly with other securities are excluded, as are exchange offers of convertible debt for other securities. Only offerings in which the security is convertible to the issuer's common stock are included.[23] Filing or announcement date information is not available for 18 issues, of which 9 are euro-

23) The excluded cases are mainly instances of exchangeable bonds that were convertible to stock of other companies. For an anaysis of exchangeable debt offers, see Fhosh, Varma and Woolridge (1990).

bonds. Our final data set consists of 167 announcements of convertible debt offerings in the U.S. and the euromarket by 153 firms.

The put provisions in convertible debt contracts are identified from *Moody's Manual, Value Line Convertibles and Standard and Poor's Bond Guide.* Other information about the contracts such as issue size, coupon rate, maturity and conversion ratio are gathered from *Moody's Manual, Maxwell MacMillan's Capital Adjustment, Value Line Convertibles, Standard and Poor's Bond Guide* and *Moody's Bond Record. Stock price return data is from CRSP.* The capital structure data was obtained from *Compustat and Moody's Manual.*

3.2 Overview of convertible bond offerings

Table 1 provides the number of convertible bond offerings in the sample for each year over the 1987-1992 period. While only 7.7% (4 of 52) of convertible bond offerings in 1987 have poison puts, about 80% of convertible debt offerings in the 1988-1992 period include such provisions.[24]

Table 2 provides descriptive statistics of the convertible bond offerings and of the issuing firms in our sample. Most issues of LYONs come with poison puts, with 29 out of 33 LYON issues having such provisions. While all LYONs are also redeemable on prespecified dates, only four of the coupon paying convertible bonds in the sample have this feature.[25] This feature of LYONS may reflect the additional protection investors require in the absence of a regular coupon payment.

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24) Three of the convertible bond offerings in 1988 and one in 1989 had provisions such that the terms ot the contact were reset in the event of a change of control. These issues are treated as having poison puts. The results in the paper are unaffected when these four offerings are dropped from our sample.

25) Of these 4 cases, two bonds had coupon rates substantially lower than those of other coupon paying convertible bonds. As in the case of LYONs, this suggests that the absence of a regular coupon or a lower than normal coupon rate leads investors to require additional protection in the form of such puts.

Table 2 indicates that the size (based on par value) of convertible debt offerings tends to be substantial relative to firm size, averaging above 20% of the market value of the issuing firm's equity. If converted, the new shares would result in an increase in the number of outstanding shares by 10-20% for the typical issue. The bulk of the offerings in the sample consist of offerings made in the U.S. (154 of 167) and of issues by industrial firms (142 of 167). Issuers with higher leverage and lower Q-ratios tend to include poison puts in convertible debt offerings. A possible interpretation may be that firms with riskier debt (given higher leverage and lower Q-ratios) may seek to reassure investors by including such provisions. The average size of LYON issues is larger than the average size of other issues after adjusting for original issue discount, reflecting in part the larger size of the firms that tend to issue LYONs. The average maturity of LYONs with poison puts (without poison puts) is 16.5 (16.3) years, marginally less than the average maturity of other issues at 17.3 (19.4) years.

3.3 Market reaction to convertible bond offering announcements

The 2-day average abnormal stock price returns at the announcements of convertible debt offerings are reported in table 3. To obtain abnormal returns we subtract the stock market return from the stock price return of the issuing firm over the 2-day event window.[26]

The table provides the full sample and the yearly averages of abnormal stock returns at the announcement of convertible bond offerings with and without poison put provisions. Abnormal returns are also categorized by whether or not the issue is a LYON. We expect the stock price reaction to LYON issues to be more

26) The CRSP Equally Weighted Index with dividends was used. Abnormal return estimates using a market model over the 1987-1992 period (not reported) were very similar to the abnormal return results reported.

negative, since the absence of a coupon obligation could indicate either problems in the firm's cash flow situation or a greater potential for managerial abuse of the firm's free cash flow. To determine the influence of other features of the offering, abnormal returns are also categorized by whether the bond is issued in the U.S. or the euromarket and whether the issuer is an industrial or non-industrial company.

The 2-day average abnormal stock return at the announcement of convertible bond offerings without poison put provisions is -1.78%, with 73% of the firms experiencing negative abnormal returns at the announcement. The negative abnormal returns are statistically significant at the 1% level and comparable to results reported in the literature (see Dann and Mikkelson (1984)). For the convertible bonds that include poison put provisions, however, the magnitude of the average abnormal return is much smaller at -0.55% and is not statistically significant. The difference in returns for convertible bond announcements with and without poison puts is significant at the 5% level on the basis of both the two sample t-test and the Wilcoxon test. The average abnormal returns reveal a similar pattern on a year by year basis.

The average announcement period stock return for LYONs with poison puts (without poison puts) is -0.86% (-2.5%), while for other convertible bonds the average return is -0.42% (-1.73%). Hence, consistent with our priors, the point estimate is more negative for LYON issues though the difference is not statistically significant. The table also indicates that the difference between announcement returns at offerings of convertible bonds in the U.S. versus the euromarket and by industrial versus non-industrial firms is not statistically significant.

In summary, the evidence indicates that investors react more favorably to convertible debt issues with poison puts than to other issues of convertible debt.

This evidence is generally consistent with the view that shareholders benefit from a reduction in the likelihood of bondholder-shareholder conflicts as well as the favorable information conveyed when poison puts are incorporated.

3.4 Takeover speculation and poison puts

Since poison puts are triggered by change of control events, we investigate the relation between reported takeover activity and the incorporation of poison put provisions in convertible debt issues. On the basis of reports in the WSJ, our finding is that in the two years prior to the offering announcement, 7.2% of the sample firms had been involved in takeover speculation (without adopting anti-takeover measures) while 9.6% had resorted to anti-takeover moves (whether or not subject to speculation). In addition, between 1988-1992, all sample firms that had been subject to takeover speculation/activity or had adopted anti-takeover measures prior to the offering included poison put provisions in the convertible debt offered. This suggests that the firms that did not include the provisions were unlikely to be involved in takeover activity.

Takeover speculation prior to the offering suggests a greater likelihood that the firm will be taken over, while prior anti-takeover actions indicate a lower probability for eventual change of control.[27] As discussed in the hypothesis section, since the probability of a takeover is higher for firms under takeover speculation, the expected benefit from issuing a contract that reduces bondholder-shareholder conflict should be greater for these issuers.[28] Inclusion of the poison put may also convince market participants that the firm believes a takeover to be likely. By the same token, if anti-takeover measures have been

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27) See Pound (1987) for evidence that there is a lower probability of a takeover attempt being successful for targets that have adopted anti-takeover amendments.

28) See footnote 17.

adopted prior to the convertible debt offering, the expected benefit from reducing bondholder-shareholder conflicts will be small since a successful takeover might be viewed as unlikely. Also, since anti-takeover actions had already been taken, it is improbable that there would be any new positive information conveyed by the poison puts about the firm being a potential takeover target. To examine these predictions, table 4 categorizes the announcement period returns by whether or not the convertible bond had poison put provisions and further on the basis of whether the issuing firm was under takeover speculation, had adopted anti-takeover measures or neither.

Consistent with our predictions, we find that for convertible bonds with poison puts, the mean (median) abnormal return is 2.05% (.96%) for firms under speculation and -2.36% (-1.96%) for firms that had adopted anti-takeover measures. The difference between the returns for the two groups is significant at the conventional level on the basis of the t-test and the Wilcoxon test. For firms in neither of the two groups, the mean (median) abnormal return is -.67% (-.71%). For convertible bonds without poison puts, however, the average returns across the groups is similar and statistically indistinguishable.

4. Cross-sectional regression results

To analyze the effect of issue and issuer characteristics on the abnormal returns to the issuer's stock price at the announcement of a convertible bond offering, we estimate cross-sectional regressions with the abnormal return as the dependent variable. We begin with a brief description and interpretation of the explanatory variables used in the cross-sectional regressions.

A dummy variable, DumPoison, is used to indicate the presence of poison put

provisions. Based on earlier discussion, we expect this variable to be estimated with a positive coefficient. In the regressions we include interaction dummy variables *I(Poison*Spec)* and *I(Poison*AntiTO)*, to indicate both the presence of the poison put and prior speculation or anti-takeover measures. From the discussion above, the coefficient on *I(Poison*Spec)* is predicted to be positive, while the coefficient on *I(Poison*AntiTO)* is predicted to be negative in regressions that also include the variable *DumPoison*.

Since new financing is being raised, agency costs related to free cash flow (see Jensen (1986)) may be important. The Q-ratio has been used by several authors to proxy for the presence of agency problems (see Lang and Litzenberger (1989) and Lang, Stulz and Walkling (1989)). In the absence of replacement cost data for firms, we use the ratio of the firm's market to book value as our measure of the Q-ratio. A dummy variable, *HiQRatio*, is used to indicate whether the Q-ratio of a firm is above or below the sample median. We also use a liquidity variable defined as the ratio of the firm's current assets to current liabilities (the current ratio).[29] A dummy variable, *HiLiquid*, is used to indicate whether the current ratio of a firm is above or below the sample median. The prediction is that *HiQRatio* will be estimated with a positive coefficient and *HiLiquid* with a negative coefficient. Given the bonding benefits of debt in reducing free cash flow problems, we use LeverRatio, defined as the ratio of long term debt to the market value of equity plus long term debt, as an explanatory variable. The coefficient on *LeverRatio* is predicted to be positive.[30]

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29) Chung and Pruitt (1994) use a similar proxy and show that the approximations using book values work as well as the procedure used by Lindengerg and Ross 91981) with replacement costs.

30) Stein (1992) argues that issuance of convertible debt by firms with high leverage signals the firm's belief that it is unlikely to face a cash flow problem in the future. This argument also predicts a positive coefficient on the leverage variable.

Dummy variables are used to indicate LYON issues (*DumLYON*) and coupon bonds redeemable on prespecified dates (*DumPuttable*). The dummy variable for LYONs is expected to be estimated with a negative coefficient, given earlier discussion that the absence of a coupon obligation may involve greater agency costs on account of free cash flow. Since puttable coupon bonds also tend to have low coupon rates, these may have similar stock price effects as LYONs.

To examine whether the abnormal stock return is affected by the relative offering size, we used the ratio of the issue size to the market value of the issuer's equity. The stock price reaction is expected to be negatively related to the financing amount on the basis of both the Myers and Majluf (1984) asymmetric information model (see Krasker (1986)) and the free cash flow agency argument. Two size variables (*LYONRelSize* and *NoLYONRelSize* for LYONs and non-LYONs respectively) are used since the issue size is in terms of the par value of the offering.

The regression estimates are presented in table 5. The adjusted R-squares for these regressions range from 8 to 11%. In model 1, consistent with the earlier evidence, DumPoison is estimated with a statistically significant (at the 5% level) positive coefficient. Also, consistent with our predictions, the coefficient on *I(Poison*Spec)* is positive and statistically significant.[31] As discussed earlier, this is consistent with shareholder benefits from a reduction in potential bondholder-shareholder conflicts as well as positive information regarding issuer prospects for being acquired. The negative coefficient of *I(Poison*AntiTO)* in

31) We have not reported any regression models that include both the interaction dummy *I(Poison*Spec)* and a dummy for the presence of speculation because the correlation between these variables is 0.91. Severe multicollinearity results in the coefficient estimates being unreliable in such models. The same problem exists in regression models that include the interaction variable *I(Poison*AntiTO)* and a dummy for antitakeover measures.

model 3 is consistent with fewer benefits from the inclusion of the poison put for firms that, having instituted anti-takeover measures, are already known to be potential targets and have sought to lower the probability of being acquired. To test whether the poison put has any significant effect for these firms, we use an F-test to test the restriction that the sum of coefficients for *DumPoison* and *I(Poison*AntiTO)* is zero. This restriction cannot be rejected with a p-value of 0.83 in model 3. Hence, for firms that have adopted anti-takeover measures prior to the offering, the poison put provision has no significant benefit, compared to other firms that do not include the poison put.

The coefficients of *HiQRatio* and *HiLiquid* are statistically significant and estimated with signs predicted by the agency cost theory of free cash flow as discussed above. In model 4, neither *DumLYON* nor *DumPuttable* is estimated with a statistically significant coefficient. The estimates are negative, however, suggesting that zero or low coupon rate issues are less favorably received and reflect poorly on firm value. In models 5 and 6, the leverage ratio and the issue size variables are not found to be statistically significant, though the coefficients are estimated with the predicted signs.

Overall, our findings suggest that including poison puts in convertible bonds has significant wealth benefits for shareholders of issuing firms, particularly for firms under takeover speculation, and that shareholder interests are probably well-served by the widespread adoption of these provisions. In the next section we examine the evidence on whether expropriation of existing bondholders may also be a motivation for adopting poison put provisions.

5. The poison put and wealth of existing bondholders

In this section we examine the effect of convertible debt offerings and particularly

the inclusion of poison puts on the wealth of existing bondholders of the issuing firm.[32] Though convertible debt ordinarily has the same priority as subordinated debt, poison puts give convertible debt seniority in the event of a control change. Potentially this can result in the expropriation of outstanding debt, especially subordinated debt or other debt not protected by covenants. Hence, the benefit to shareholders of including poison put provisions may partly be at the expense of existing debtholders.

Our data is derived from the daily bond prices available in the WSJ for the sample of convertible debt offering announcements. The total number of outstanding bonds available to calculate announcement period bond returns is 42 (issued by 32 firms), of which 16 are convertible, nine are non-convertible subordinated and the remaining 17 are non-convertible senior bonds. Abnormal returns are obtained by subtracting the Dow Jones 20 Bond Averages from issuer bond returns over the event period.[33][34]

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32) The documentation of the effect of convertible bond offerings on existing bondholder wealth may be of independent interest. While Kalay and Shimrat (1987) find that announcements of seasoned equity offerings have a negative effect on the prices of the issuer's bonds, we are unaware of a similar study of the impact of convertible debt offerings on the bonds of the issuing firm.

33) For 32 bonds, transaction prices were found for the day prior to the offering announcement (day -1). For other bonds, the last transaction price before the offering announcement was used, so long as it was not more than 5 trading days prior to the event date. This gave us transaction prices for an additional 10 bonds. Three bonds had to be dropped to satisfy this criteria. Including these three bonds in the sample does not affect the results. Similarly, bond prices 1 day after the event date were not available for 10 bonds. For 4 bonds out of these 10 we were able to find transaction prices on day 2 following the event. We used day 2 prices for these 4 bonds, while we were forced to use day 0 prices for the remaining 6 bonds. In calculating abnormal returns, the period over which the Dow Jones 20 Bond Averages return was calculated was appropriately matched to the period over which the bond return was calculated. Accrued interest (essentially negligible) was ignored.

34) The results are quite robust to the manner in which the abnormal returns are derived. The results are essentially unchanged when raw bond returns (without any index

The mean (median) abnormal return for convertible debt is -0.74% (-0.64%), which is significantly different from zero at the 5% level. Subordinated non-convertible bonds experienced a mean (median) return of -0.76% (-0.13%), while the return for non-convertible senior bonds is 0.16% (0.18%). The average abnormal return for non-convertible bonds is not statistically significant.

Table 6 reports the estimated cross-sectional regression equations for the sample of non-convertible bonds with abnormal bond returns as the dependent variable. As explanatory variables we use dummy variables *DumJr* and *DumPoison* to indicate non-convertible subordinated bonds and to indicate whether the new convertible debt was to be issued with poison puts. If the poison put results in expropriation of existing bondholders, we would expect *DumPoison* to be estimated with a negative coefficient. We also include leverage, *LeverRatio*, as an independent variable. Leverage should be estimated with a positive coefficient based on Stein's (1992) argument that the issue of convertible debt signals firm's belief that it is unlikely to face cash flow problems in the future.[35]

The negative and significant (at the 5% level) coefficient estimate for *DumPoison* is consistent with the hypothesis that existing bondholders suffer losses as a consequence of the poison put. The returns to subordinated non-convertible bonds are significantly more negative than the returns to senior bonds. Consistent with the prediction above, leverage is estimated with a significant and positive coefficient.[36] Hence, it appears that bondholders are relatively worse off when the convertible debt offering includes a poison put. We

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adjustment) are analyzed.

35) Several other variables such as dummies for speculation activity, the Q-ratio, bond rating and liquidity were not found to be significantly related to the bond returns. These regression results have not been reported.

36) When the data is enlarged to include both convertible and non-convertible bonds, the statistical significance of the *DumPoison* is lower though the coefficient is still significant at the 10% level.

now examine the issue of whether shareholder benefits from the inclusion of the poison put can be attributed to a transfer of value from bondholders to equityholders.

As we have seen above, median bond price returns are negative for existing subordinated and convertible debt, while the net impact on senior non-convertible bonds is small and positive. The median dollar loss to subordinated debt at the announcement of convertible debt offerings with (without) poison puts is estimated to be $-0.23 million ($ -.015 million). This median loss amounts to only -0.04% (-0.07%) as a percentage of issuer equity value. The loss to existing convertible debtholders is even smaller at about -.01% (-.04%) of issuer equity value. Hence, in comparison with the earlier finding that the positive effect of the poison put is approximately 1% of equity value, it does not appear plausible that shareholder benefits result mainly from the expropriation of existing bondholders.[37]

6. Conclusion

In this paper we examine the emergence of the poison put in convertible debt contracts. By any measure the poison put was a successful innovation and was adopted in a large majority of convertible debt offerings, two years after the first

37) We also examined the correlation between announcement stock price and bond price returns. To the extent that the stock returns are dreven by bondholder expropriation, we would expect the correlation in the returns to be negative. For the case of announcements of convertible debt with poison puts, the Pearson correlation coefficient is estimated to be -.13, though it is insignficant. For convertible debt offerings without poison puts, on the other hand, the correlation is .62 and statistically significant at the 5% level.

issues with such provisions. We find that inclusion of the poison put results in significant wealth benefits for shareholder of issuing firms, particularly for firms under takeover speculation prior to the offering. The evidence suggests that shareholder interests are probably well-served by the widespread adoption of these provisions. We do not, however, find there to be any benefits to the inclusion of the poison put for firms that have adopted anti-takeover measures prior to the offering. Also, existing bondholders appear to fare worse when poison puts are included. However, these losses are small in relation to the benefits received by shareholders from the inclusion of poison puts in convertible debt.

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Table 1
Annual distribution of the number of convertible bond offerings in the final sample by firms listed on the NYSE or AMEX for the period, 1987-1992.

Year of offering	Total convertible bond offerings	Offerings without poison put provisions	Offerings with poison put provisions	Offerings with poison put provisions as % of total
1987	52	48	4	7.7
1988	15	5	10	66.7
1989	29	3	26	89.7
1990	18	2	16	88.9
1991	27	6	21	77.8
1992	26	5	21	80.8
1987-92	167	69	98	58.7

Table 2
Descriptive statistics for the sample of convertible bond offerings; entries in the table are means (medians).

Issue / issuer attributes	Offerings without poison put provisions		Offerings with poison put provisions	
	Non-LYONs	LYONs[a]	Non-LYONs	LYONs[a]
Panel A: The full sample				
(1) Number of issues	65[b]	4	69	29
(2) Issue size in $ million	125 (90)	596 (455)	101 (75)	771 (650)
(3) Issue size/ Market value of equity[c]	0.22 (0.16)	0.29 (0.17)	0.27 (0.19)	0.37 (0.30)
(4) Number of shares upon conversion/ Shares outstanding[c]	0.18 (0.12)	0.10 (0.06)	0.22 (0.16)	0.11 (0.08)
(5) Conversion price/ Stock price[c]	1.24 (1.25)	3.08 (2.96)	1.21 (1.22)	3.58 (3.68)
(6) Long-term debt / (Market value of Equity + Long-term debt)[c,d]	0.22 (0.16)	0.16 (0.19)	0.30 (0.26)	0.26 (0.30)
(7) Q ratio[d,e]	1.85 (1.59)	2.23 (1.49)	1.70 (1.39)	1.89 (1.41)
(8) Current asset / Current liability[d,f]	68.82 (22.01)	11.21 (2.38)	68.37 (13.18)	64.69 (9.89)
(9) Years to maturity	19.4 (20)	16.3 (15)	17.3 (15)	16.5 (15)
(10) Coupon rate (%)	6.65 (6.5)	0 (0)	7.42 (7.25)	0 (0)
Panel B: Domestic versus Euro-offerings				
(1) Domestic offerings				
A. Number of issues	54	4	67	29
B. Issue size in $ million	112 (75)	596 (455)	99 (75)	771 (650)
(2) Euro-offerings				
A. Number of issues	11	0	2	0
B. Issue size in $ million	186 (100)	0	175 (175)	0
Panel C: Industrial versus non-industrial firm offerings				
(1) Industrial firm Offerings				
A. Number of issues	51	4	63	24
B. Issue size in $ million	126 (90)	596 (455)	104 (75)	741 (625)
(2) Non-industrial firm Offerings				
A. Number of issues	14	0	6	5
B. Issue size in $ million	121 (87.5)	0	69 (63)	911 (903)

[a]LYONs are zero coupon bonds that are convertible, callable and puttable.

[b]Four issues of convertible bonds that are puttable on prespecified dates and pay coupons are classified as non-LYONs.

[c]Based on data on stock price and total number of shares outstanding one week prior to an offering announcement from *CRSP*. Market value of equity is defined as a product of stock price and total number of shares outstanding.

[d]The year-end accounting data prior to an offering announcement, such as long-term debt, current asset, current liability, total asset and book value of equity, were derived from *Compustat*.

[e]Q ratio = (Total asset + Market value of equity - Book value of equity) / Total asset.

[f]This ratio has been calculated for non-financial firms only. In addition data for six other firms were not available. From left to right the numbers of issues for which the ratio is reported are: 54, 3, 63 and 26.

Table 3

Two-day average abnormal stock returns at the announcement of convertible bond offerings with and without poison put provisions. Abnormal returns are calculated by subtracting stock market returns from issuer's stock returns over the two-day announcement period. For stock market return the *CRSP* equally weighted index return is used.

	Offerings without poison put provisions					Offerings with poison put provisions				
	N	Mean %	Median %	t-statistic	% negative	N	Mean %	Median %	t-statistic	% negative
Panel A: Abnormal returns by year of offering										
1987	48	-1.54	-1.47	-3.31***	70.8	4	-0.12	0.34	-0.18	50.0
1988	5	-1.65	-1.02	-1.63	80.0	10	-1.93	-1.72	-1.99*	70.0
1989	3	-2.20	-3.26	-1.91	66.7	26	-0.84	-0.26	-1.20	53.9
1990	2	-2.01	-2.01	-0.77	50.0	16	0.34	-0.35	0.28	68.8
1991	6	-3.60	-2.41	-2.45*	83.3	21	0.30	-0.67	0.38	61.9
1992	5	-1.66	-2.20	-1.74	80.0	21	-1.14	-0.95	-1.28	71.4
1987-92[a]	69	-1.78	-1.92	-4.82***	72.5	98	-0.55	-0.66	-1.44	63.3
Panel B: Abnormal returns by issue/issuer attributes										
Non-LYONs (All)	65	-1.73	-1.88	-4.48***	72.3	69	-0.42	-0.65	-0.82	60.1
Non-LYONs (Puttable)	4	-2.38	-2.35	-1.82	75.0	0	n.a.[b]	n.a.[b]	n.a.[b]	n.a.[b]
LYONs	4	-2.50	-2.75	-2.47*	75.0	29	-0.86	-0.67	-2.08**	69.0
Domestic offerings	58	-1.81	-1.99	-4.20***	69.0	96	-0.55	-0.66	-1.41	63.5
Euro-offerings	11	-1.59	-1.88	-3.59***	90.9	2	-0.64	-0.64	-0.48	50.0
Industrial offerings	55	-1.68	-2.06	-4.06***	74.5	87	-0.53	-0.67	-1.24	63.2
Non-industrial offerings	14	-2.15	-1.58	-2.59**	64.3	11	-0.75	-0.27	-1.05	63.6

*Significant at the 0.10 level.

**Significant at the 0.05 level.

***Significant at the 0.01 level.

[a]Two-sample tests of stock returns at the announcement of offerings with and without poison puts are significant at the 5% level: P-value of t-test is 0.022 and p-value of Wilcoxon test is 0.029.

[b]Not applicable.

Table 4
Two-day average abnormal stock returns at the announcement of convertible bond offerings by firms subject to takeover speculation/activity.

	N	Mean (%)	Median (%)	t-statistic	% negative
Panel A: Convertible bond offerings with poison put provisions.[c]					
(1) Offerings by firms subject to prior takeover speculation/activity[a]	10	2.05	0.96	1.10	40.0
(2) Offerings by firms that adopted prior anti-takeover amendments[b]	9	-2.36	-1.96	-2.48*	77.8
(3) Offerings by other firms	79	-0.67	-0.71	-1.75	64.6
Panel B: Convertible bond offerings without poison put provisions.[d]					
(1) Offerings by firms subject to prior takeover speculation/activity[a]	2	-1.61	-1.61	-0.95	100.0
(2) Offerings by firms that adopted prior anti-takeover amendments[b]	7	-1.12	-2.38	-1.08	57.1
(3) Offerings by other firms	60	-1.86	-1.90	-4.58**	75.0

*Significant at the 0.05 level.

**Significant at the 0.01 level.

[a]The issues are classified as group (1) if there was takeover speculation/activity concerning issuer without adoptions of anti-takeover amendments in the 2 years prior to the convertible bond offering announcement.

[b]The issues are classified as group (2) if anti-takeover amendments were adopted by issuer in the 2 years prior to offering announcement.

[c]P-values of two-sample test between group (1) and the rest of the sample are 0.159 for t-test and 0.029 for Wilcoxon test. P-values of two-sample test between group (2) and the rest of the sample are 0.134 for t-test and 0.168 for Wilcoxon test. P-values of two-sample test between group (1) and group (2) are 0.055 for t-test and 0.020 for Wilcoxon test.

[d]Two-sample tests between group (1) and the rest of the sample, between group (2) and the rest of the sample, and between group (1) and group (2) are not significant for both t-tests and Wilcoxon tests.

Table 5
OLS estimates of coefficients in cross-sectional regressions of the two-day average abnormal returns (%) to issuer common stock at the announcement of convertible bond offerings; t-statistics are given in parentheses.[a]

Independent variables	Predicted sign	Model 1	2	3	4	5	6
Constant		-2.56	-1.97	-1.93	-1.84	-2.64	-1.62
		(-4.99)	(-3.00)	(-2.95)	(-2.69)	(-2.71)	(-2.07)
DumPoison	+	1.10	1.09	1.24	1.22	1.04	1.25
		(2.00)	(1.79)	(2.01)	(1.84)	(1.71)	(2.02)
*I(Poison*Spec)*	+	3.10	2.80	2.63	2.91	2.72	2.90
		(2.73)	(2.30)	(2.15)	(2.38)	(2.23)	(2.35)
HiQRatio	+	1.34	1.58	1.50	1.59	2.06	1.43
		(2.52)	(2.70)	(2.57)	(2.71)	(2.63)	(2.38)
HiLiquid	-		-1.34	-1.33	-1.43	-1.36	-1.46
			(-2.32)	(-2.31)	(-2.45)	(-2.36)	(-2.49)
*I(Poison*AntiTO)*	-			-1.65			
				(-1.29)			
DumLYON	-				-0.81		
					(-1.04)		
DumPuttable	-				-0.43		
					(-0.28)		
LeverRatio	+					1.80	
						(0.93)	
LYONRelSize	-						-2.49
							(-1.51)
NoLYONRelSize	-						-0.71
							(-0.58)
Adjusted R^2		0.084	0.108	0.113	0.105	0.108	0.110
Number of observations		167	146	146	146	146	146

[a]Variable definitions are as follows: *DumPoison* = dummy variable that equals one if the convertible bond being offered has a poison put provision, and zero otherwise; *I(Poison*Spec)* = interaction of *DumPoison* and *DumSpec*, where *DumSpec* is a dummy variable that equals one if there was takeover speculation/activity concerning issuer without adoptions of anti-takeover amendments in the 2 years prior to the convertible bond offering announcement, and zero otherwise; *HiQRatio* = dummy variable that equals one if the issuer's Q ratio is above the median of total sample, and zero otherwise; *HiLiquid* = dummy variable that equals one if the issuer's liquidity ratio (current asset/current liability) is above the median of total sample, and zero otherwise; *I(Poison* AntiTO)* = interaction of *DumPoison* and *DumAntiTO*, where *DumAntiTO* is a dummy variable that equals one if anti-takeover amendments were adopted by issuer in the 2 years prior to the offering announcement, and zero otherwise; *DumLYON* = dummy variable that equals one if the convertible bond being offered is a LYON, and zero otherwise; *DumPuttable* = dummy variable that equals one if the convertible bond being offered is puttable, and zero otherwise; *LeverRatio* = long-term debt / (market value of equity + long-term debt); *LYONRelSize* = *DumLYON* *(issue size / market value of equity); *NoLYONRelSize* = (1-*DumLYON*)*(issue size / market value of equity).

Table 6
OLS estimates of coefficients in cross-sectional regressions of the two-day average abnormal returns (%) to issuer's outstanding non-convertible bonds at the announcement of convertible bond offerings; t-statistics are given in parentheses.[a]

Independent variables	Predicted sign	Model
Constant		0.14 (0.23)
DumPoison	-	-1.63 (-2.65)
DumJr	-	-0.81 (-1.91)
LeverRatio	+	3.05 (2.68)
Adjusted R^2		0.322
Number of Observations		26

[a]Variable definitions are as follows: *DumPoison* = dummy variable that equals one if the convertible bond being offered has a poison put provision, and zero otherwise; *DumJr* = dummy variable that equals one if the outstanding bond is subordinated non-convertible, and zero otherwise; *LeverRatio* = long-term debt / (market value of equity + long-term debt).