The Life Cycle of Make-whole Call Provisions

Scott Brown[*]

Eric Powers[**]

March 12, 2012

Abstract: We start by analyzing the factors that affect whether a firm issuing a bond will incorporate a make-whole call provision. We then characterize the factors that affect whether make-whole call bonds are retired early via either a tender offer or call. For a sample of 701 make-whole callable bonds that were retired early, we search newswire reports and determine precisely why each bond was retired early. In general, this is for three primary reasons: 1) to refund the debt at what are perceived to be low current interest rates, 2) as a result of a merger or acquisition, often by a private equity group, or 3) as a mechanism for paying out excess cash, often generated by prior divestitures. Further analysis of the refunding transactions indicates that, despite paying a premium to retire the debt early, the firms actually save several million dollars on average relative to what the present value of their interest costs would have been if they waited a year to retire. Given the prevalence of restructuring driven early retirement, we conclude by analyzing whether firms with a large percentage of make-whole callable debt are more likely to be engaged in M&A transactions. Make-whole heavy firms are more likely to be M&A acquirors, but not more likely to be M&A targets.

Key Words: Make-whole call, tender offer, callable bond

[*] Assistant Professor of Finance at the Graduate School of Business Administration, University of Puerto Rico, Rio Piedras Campus

[**] Associate Professor of Finance at the Darla Moore School of Business, The University of South Carolina

I. Introduction

Survey evidence provided by Graham and Harvey (2001), Bancel and Mittoo (2004), and Brounen, de Jong, and Koedijk (2004) clearly indicates that maintaining financial flexibility is one of the highest priorities of executives when they are making capital structure decisions. One way to interpret this is that leverage levels are kept lower than the firm value maximizing level that would hold in a static framework – in other words, corporate executives proactively follow the financial pecking order described by Myers (1984). Maintaining low leverage, however, is just one dimension by which firms maintain financial flexibility. Another dimension for maintaining financial flexibility is to structure financial claims, in particular debt claims, so that they can be easily renegotiated if future circumstances necessitate this action.

One method for increasing financial flexibility vis-à-vis debt is to incorporate a call provision. Mason (1984) for example, noted that this is a benefit of fixed-price call provisions. More recently, Mann and Powers (2004) and Powers and Tsyplakov (2008) have highlighted make-whole call provisions as a mechanism for increasing financial flexibility.[1] We first characterize the types of firms that issue make-whole call provisions rather than non-callable bonds or bonds with fixed price call provisions. We next pursue our primary objective in this paper which is to characterize the scenarios where make-

[1] With a make-whole call provision, the call price is calculated as the greater of par value or the present value of the bond's remaining payments. In the U.S. the discount rate used in the present value calculation will be the prevailing risk-free rate for similar maturity Treasuries, plus a contractually specified spread known as the make-whole premium - make-whole premiums typically range between 0 and 50 bp (Powers and Sarkar; 2009). Since the call price floats with risk-free rates, bondholders are insulated from the wealth expropriation that typically occurs when a bond with a fixed-price call provision is called (bond investors are still exposed to credit spread risk.) Given this, the upfront cost of a make-whole call provision is significantly less than that of a fixed-price call provision (Mann and Powers; 2004 and Powers and Tsyplakov; 2008). Thus, a make-whole call is almost purely an instrument for enabling a firm to retire debt early without having to resort to a tender offer. To use the terminology of Mann and Powers (2004), "a make-whole call provision functions as a cap on the price of a successful tender offer."

whole call provisions are exercised. In particular, we assess whether they are truly utilized ex-post to improve the issuing firm's financial flexibility. Finally, we investigate whether, ex-post, firms with more flexible debt structures are more likely to engage in significant activities like mergers and acquisitions.

To our knowledge, we are the first researchers to address the second and third issues described in the previous paragraph. Despite the prevalence of make-whole call bonds, the lack of existing research on how the call provisions are utilized is mainly due to the fact that until now, there have not been a sufficient number of exercised make-whole call provisions to analyze. This paucity of observations reflects two issues. First, make-whole call provisions are a relatively recent addition to the fixed-income universe.[2] Second, the floating call price significantly reduces the incentive to refund at a lower cost that motivates most calls of fixed-price callable bonds (see King and Mauer (2000) for factors driving execution of fixed-price calls.)

With respect to who issues make-whole callable debt, we show that the make-whole call issuers can be characterized as higher growth firms, higher profitability, and more research-intensive firms. This is consistent with our belief that make-whole calls are included to improve financial flexibility as these are the types of firms that are more likely to require that flexibility. We then characterize the circumstances under which make-whole callable bonds are retired early. Our analysis of 701 early retirements shows that there are three primary motivations. The first is to refinance the debt – usually at a

[2] The first make-whole call bond issued in the U.S. capital market seems to have been the 8 1/8% 15 year note issued by Harvard University in 1993. A handful of make-whole bonds were issued each year up until 1997 when they became prevalent. Since 1998, new issues of make-whole callable bonds have outnumbered new issues of traditional fixed-price callable bonds. Since 2001, new issues of make-whole callable bonds have also outnumbered new issues of noncallable bonds.

lower rate and with an extended maturity. The second motivation for early retirement is as part of a major corporate restructuring such as a buyout by a private equity group. Finally, many early retirements occur as part of an effort to delever the firm.

Expanding on what we learn by looking at the actual early retirement events, we take a deeper look at whether the firms that refinanced prior to the scheduled maturity of the bonds made ex-post value increasing decisions. We also investigate whether firms with a greater percentage of make-whole callable debt are more likely to be engaged in significant M&A activity than firms with predominantly non-callable debt.

With regards to the efficacy of the refinancing decisions, ex-post it appears that the firms made good decisions. Despite paying premiums to retire their bonds early, the firms saved several million dollars on average by avoiding higher interest rates in the future. With respect to restructuring and financial flexibility, our prior was that firms with a large percentage of callable debt would be more likely to be targets of takeover attempts. What we actually find, however, is that firms with a greater percentage of callable debt in their capital structures are significantly more likely to be M&A acquirers.

The many pieces of evidence that we accumulate greatly expand our understanding of how and why firms make use of make-whole call provisions. In particular, our results confirm the characterization of make-whole call provisions as an innovative mechanism for improving a firm’s financial flexibility.

II. Prior Research

a. Ex-Ante incentives to Incorporate a Fixed-Price Call Provision

Because we conduct an analysis of factors that determine whether a firm incorporates a make-whole call provision versus either a fixed-price call provision or keeping a bond non-callable, it is necessary to review the literature on fixed-price call provisions. Four primary hypotheses have been put forth for why firms incorporate fixed-price call provisions: 1) moderating underinvestment, 2) reducing the likelihood of risk-shifting, 3) attenuating the effect of asymmetric information, and 4) hedging interest rate risk.[3]

Bodie and Taggart (1978) were among the first to hypothesize that agency costs motivate the use of fixed-price call provisions. Specifically, they demonstrate how call provisions enable firms that face a debt overhang problem (Myers; 1977) to invest in positive NPV projects that would have been ignored by calling debt at less than the post-investment market price and reducing the wealth transfer to existing debt holders. Barnea, et al. (1980) take a slightly different approach and show that call provisions can reduce the incentive of managers to risk shift by pursuing high risk, negative NPV projects. While risk shifting reduces the value of the underlying debt claim, it also reduces the value of the call option held by the firm. Thus, a call option can be a credible ex-post commitment not to risk shift. The final agency theoretic rationale is that call provisions can help resolve asymmetric information. Barnea, et al. (1980) show that call provisions enable firms with positive private information regarding their true credit quality to refinance at better rates once that information becomes public.

[3] There is an early literature that hypothesizes that firms incorporate fixed-price call provisions to speculate on interest rate movements, with the assumption that issuing firm managers believe that they have better insights on interest rate movements than other market participants (see e.g. Bowlin; 1966 and Jen and Wert; 1967). With the ascendancy of the belief in reasonably efficient markets, however, the logic of why firms would rationally speculate on interest rates has been seriously weakened. Thus, the interest rate speculation hypothesis is largely out of favor.

The interest rate hedging hypothesis is articulated by Güntay, et al. (2004). Empirically, they show that firms that are operationally exposed to greater interest rate risk are more likely to incorporate call provisions. Güntay, et al. (2004) also show that issuers who seem more likely to have a difficult time hedging interest rate risk are more likely to incorporate fixed-price call provisions. Finally, they argue that the secular shift away from fixed-price call provisions in the 1990s corresponds with the significant increase in the availability of interest rate derivative securities.

In addition to the empirical analysis of Güntay, et al. (2004), there are several empirical papers testing the determinants of whether to incorporate fixed-price call provisions. Thatcher (1985) finds that smaller firms and firms with _____ (i.e. firms that presumed to be more affected by agency problems) are more likely to have less binding call protection on callable bonds. She argues that this alleviates the under investment problem. Mitchell (1991) finds that firms with _____ and _____ (presumed to be firms with greater information asymmetry) are more likely to incorporate call provisionsncorporate fixed-price call provisions. Thatcher (1985) finds that smaller firms and firms with _____ (i.e. firms that presumed to be more affected by agency problems) are more likely to have less binding call protection on callable bonds. She argues that this alleviates the under investment problem. Mitchell (1991) finds that firms with _____ and _____ (presumed to be firms with greater information asymmetry) are more likely to incorporate call provisions. Kish and Livingston (1992), find that firms with higher growth rates and worse credit ratings are more likely to incorporate call provisions. Consistent with Güntay, et al. (2004), they also find that call provisions are more common when interest rates are high.

Banko and Zhou (2010) employ a larger sample than many of the earlier empirical studies. Because of the larger sample, they are able to parse their sample more finely and more clearly identify determinants of fixed-price call inclusion. In contrast to the theoretical literature, Banko and Zhou (2010) find that the likelihood of call provisions decreases in proxies for the potential of risk shifting. More importantly, they find that call provisions are most likely when firms are subject to both a potential underinvestment problem and an asymmetric information problem. One might characterize their results as firms having both the motive and the opportunity to incorporate fixed-price call provisions are the likeliest subjects.

In contrast to the many empirical papers that support the agency theoretic motivation for call provisions, Crabbe and Helwege (1994) find that callable bonds are significantly no more likely than comparable non-callable bonds to experience ratings upgrades. Callable bonds are, however, significantly more likely to experience downgrades. In addition, callable bond issuers seem to have lower capital expenditures than non-callable bond issuers – a fact that is not consistent with the underinvestment hypothesis. Finally, first call dates for fixed-price callable bonds are relatively uniform, casting doubt on the theory that call provisions are employed to ameliorate asymmetric information or enable a firm to take on profitable investment opportunities.

b. Ex-Post Calls of Fixed-Price Callable Bonds

Many, if not most, calls of bonds with fixed-price call provisions occur because the call provision is in-the-money and the firm can maximize equity value by calling the bond and expropriating wealth from existing bondholders. It is precisely because of this valuable interest rate option that bond investors require substantial additional yield when investing in fixed-price callable bonds.[4] Clearly, the interest rate option present in fixed-price call provisions is significantly muted in make-whole call provisions. Thus, it might seem that calls of fixed-price callable bonds shed little light on calls of make-whole callable bonds. Vu (1986) and King and Mauer (2000), however, both document that a substantial number of calls of fixed-price callable bonds actually occur when the call provision is out the money. Vu (1986), for example, finds that 75% (76 out of 102) of the calls in his sample occur when the call provision is out-of-the-money. While a smaller percentage of out-of-the-money calls are present in the sample analyzed by King and Mauer (2000), the number is still significant at 19% of total calls (312 out of 1,642). In addition, King and Mauer (2000) report that 77% of the call events in their sample are not followed by substantial issuance of new debt in the ensuing year, i.e. the called bonds are not being refunded. Using a more recent sample and a different data source, Chen, et al. (2010) report that only 46% of the called bonds in their sample appear to be refunded in the subsequent year.

It is clear from these three studies that fixed-price calls are sometimes executed to retire debt early for reasons other than to expropriate value from existing bondholders. Potential rationales identified by King and Mauer (2000) for these out-of-the-money calls are to eliminate bonds with restrictive covenants, use surplus cash to retire debt, and to adjust the capital structure of the firm. Chen, et al. (2010) model how calling a bond helps reduce risk-shifting problems when investment opportunities turn out to be worse

---

[4] Kish and Livingston (1993) estimate that fixed-price callable bonds have yields that are 60 basis points greater than comparable non-callable bonds.

than initially expected. While it is likely that some of these motives are common in calls of make-whole callable bonds, it remains to be documented conclusively.

a. Make-whole Call Provisions

Research on make-whole call provisions is still relatively sparse. Mann and Powers (2004) provide the first analysis of make-whole call provisions and document that the incremental yield associated with the call provision has an average (median) value of 11.2 bp (6.2 bp). In addition, they report survey results from CFOs whose firms issued make-whole callable bonds. Sixty-nine percent of responding CEOs indicated (unprompted) that a primary benefit of a make-whole call provision is that it provides the ability to retire 100 percent of a debt issue. While fixed-price call provisions provide the same early retirement benefit, 73 percent of survey respondents indicated that make-whole call provisions were preferred to fixed-price call provisions due to a substantially lower upfront cost. Finally, 49 percent of respondents cited "increased financial-flexibility" as a primary benefit of make-whole call provisions.

Powers and Tsyplakov (2008) provide the first structural pricing model for make-whole call provisions. After incorporating a variety of market imperfections such as taxes, default costs, transaction costs, and exogenous events that require early retirement, they indicate that the theoretical incremental yield associated with a make-whole call provision should be no more than 5.4 bp. Consistent with Mann and Powers (2004), however, they again document that actual incremental yields are significantly greater than 5.4 bp.[5]

Powers and Sarkar (2009) also employ a structural model. However, their intent is to assess whether the industry practice of setting the make-whole premium equal to 15 percent of the credit spread of the bond at issue is optimal. According to their results, this 15 percent thumb rule is a relatively good approximation for setting the optimal, firm-value maximizing, make-whole call premium.

The final paper in the make-whole call literature is Nayar and Stock (2009) who measure the stock price announcement effect associated with issuance of a shelf registered make-whole call bond relative to the announcement effects associated with issuance of noncallable or fixed-price callable shelf registered bonds. They find that the announcement effect associated with a make-whole call bond issue is significantly greater than that associated with a straight bond issue. This is consistent with make-whole call inclusion signaling positive information about the issuing firm and is perhaps also consistent with our view that these firms are consciously building flexibility into their capital structures.

III. Data:

a. Sample Identification

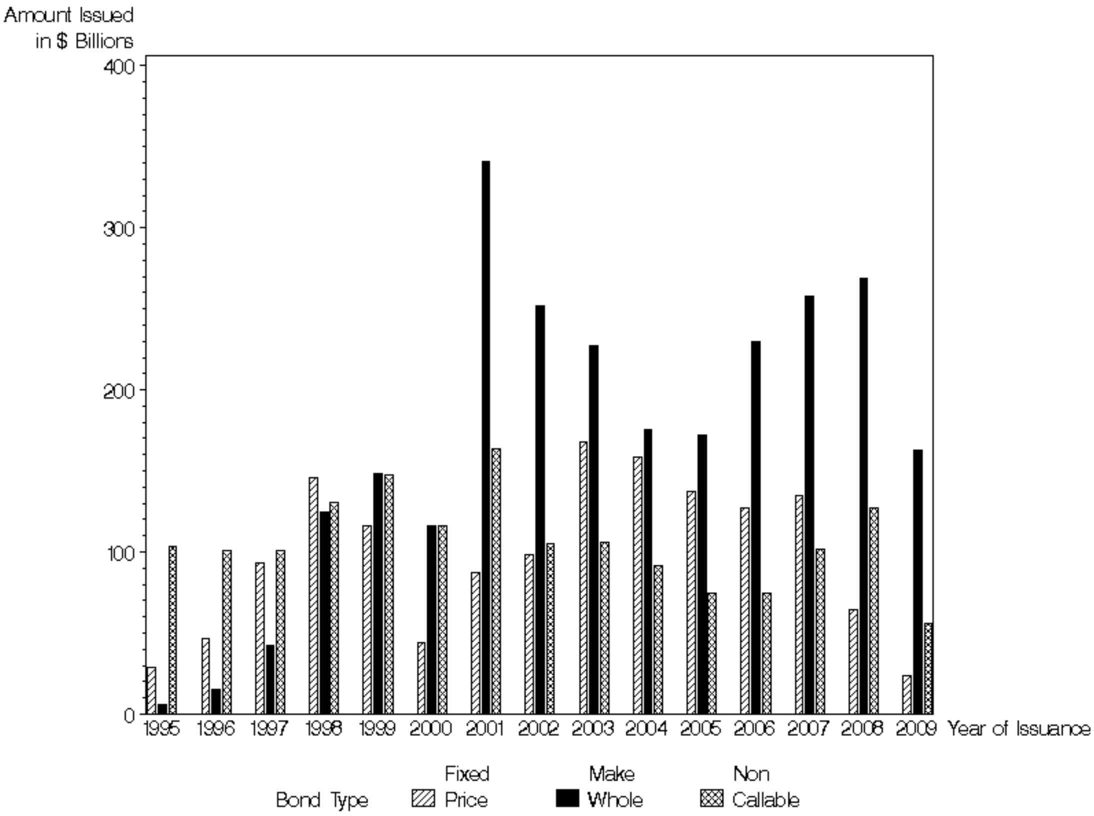
We identify our sample by first screening the Fixed Income Securities Database (FISD) for bonds that have the following characteristics: (1) issued between January 1st, 1995 and December 31st, 2009, (2) maturity of at least one year, (3) denominated in US

[5] Powers and Tsyplakov (2008) show that there is a decline in the incremental yield attributed to the make-whole call provision later in their sample period. Presumably, this reflects investors becoming more familiar with the call provision and less wary of it.

dollars, (4) offering amount of at least $10 million, (5) fixed semi-annual coupon, (6) not asset backed, (7) not putable, (8) without a sinking fund, (9) not a Yankee bond, (10) not part of a unit offering, (11) not convertible, and (12) listed as a Corporate Debenture These screens provide an initial sample of 14,983 bonds. A similar set of screening criteria is used by Powers and Tsyplakov (2008) and Powers and Sarkar (2009). Of these bonds, 3,539 are non-callable, 5,668 have fixed-price call provisions, and 5,776 have make-whole call provisions.

Figure 1 displays the par value issued per year for each of the three types of bonds since 1995. As will be seen later, the fixed-price call issuers are much smaller than the other two and have much worse credit ratings. Thus, the par value issued of fixed-price callable bonds is not commensurate with the number issued.

Figure 1: Issue Amounts Since 1995



IV. Who Issues Make-Whole Callable Bonds?

To provide appropriate context for the early retirement decisions, we investigate the financial characteristics at issue for the three bond type issuers. The first four characteristics come directly from the FISD. These are the time to maturity of the bond, coupon rate, initial rating, and total number of restrictive covenants. For other characteristics, we make use of Compustat data, CRSP data, and Bloomberg data. For each bond observation, we use the 6 digit issuer cusip from FISD and then match to the appropriate prior fiscal year Compustat record.[6] Using the Compustat data, we then

[6] Matching the Mergent FISD data to standard data sources like Compustat is rather difficult. Larger companies will often issue under multiple FISD Issuer IDs. A common example of this is an industrial firm that has a separate customer finance arm. Moreover, many Issuer IDs have more than one six digit CUSIP associated with them. In general, only one CUSIP from each issuer ID will match with a valid Compustat

calculate the issuer's prior year Log Size, Leverage, Liquidity, Return on Assets (ROA), Tobin's Q, Sales Growth, Research Intensity, and whether the firm is incorporated in Delaware. We also use the 6 digit issuer cusips to match to the appropriate stock market data in CRSP. Using the CRSP data, we calculate the annual return on the Value Weighted Index as well as the excess return on the firm's stock relative to the Value Weighted Index. For both values, the returns are calculated for the twelve month period that ends at month end of the month prior to the issuance.

In addition to the financial statement information, we include three indicators of credit market conditions gathered from Bloomberg. The first credit market indicator is the Ten Year Constant Maturity Treasury Yield for the offering date. The second credit market indicator is the spread between the average Ten Year BBB Rated Industrial Corporate Yield and the Ten Year Constant Maturity Treasury Yield. Finally, we include the implied volatility of Treasury Rates as given by the Merrill MORE Index.

Valid matches are made for 1,430 of the non-callable bonds, 1,814 of the fixed-price callable bonds, and 3,060 of the make-whole callable bonds. Summary statistics on these many characteristics are presented in Table 1. For the basic bond characteristics, we see that make-whole call bonds are the longest maturity on average, have slightly worse initial ratings than non-callable bonds, and have approximately the same mean and median coupon. In contrast, fixed-price callable bonds have by far the worst ratings, shortest maturities, highest coupons, smallest issue size, and the greatest number of

---

record. Moreover, it is rare that more than one Issuer ID for each firm will have a matchable CUSIP. While many bonds are left unmatched, few of the matches that we do generate appear erroneous. A more complex but much messier alternative would be to attempt to gather under each of these matchable issuer IDs, all of the bonds that the ultimate parent company issues.

restrictive covenants. All of these characteristics are consistent with the earlier empirical studies discussed in the literature review.

The characteristics derived from the Compustat data paint a similar picture. Make-whole call issuers are similar to non-callable issuers in terms of size, leverage, and sales growth, but have greater profitability, Tobin's Q, and research intensity.[7] In contrast, fixed-price callable issuers are smaller, have higher leverage, lower profitability, lower Tobin's Q, etc, as would be expected with their worse ratings. For reasons that currently elude us, make-whole call issuers are less likely to be incorporated in Delaware than are issuers of the other two types of bonds.

With respect to the stock market variables, non-callable bonds have historically been issued following periods with the greatest increases in the Value-Weighted Index. Make-whole call bonds, however, have historically been issued after the issuer enjoyed the greatest excess return relative to the Value-Weighted Index. In contrast, fixed-price callable bonds have been issued following the worst overall and relative stock price performance. Perhaps not surprisingly though, the means and medians for relative stock price performance for all three types of issuers are greater than zero – firms that underperform either don't need capital for expansion or simply have significant difficulty in convincing bond market participants to invest in them.

Table 1: Bond, Issuer and Macro_Economic Characteristics.

Means and medians (in parentheses) are presented in each cell. Maturity is years from offering date until scheduled maturity. Rating is ordinalized rating: AAA=1, AA+=2, etc. Coupon is the bond's annual coupon rate. Log(Size) is log of Total Assets. Leverage is

[7] There is clearly a time effect that is difficult to disentangle when analyzing univariate statistics. Many of the make-whole call issuers were formerly non-callable issuers – make-whole call bonds seem to be the "upgraded replacement" model. As seen in Figure 1, the make-whole call issues are clustered towards the later part of the sample period while non-callable issues are clustered towards the early part.

Long-Term Debt Divided by Total Assets. Liquidity is cash and short term investments divided by total assets. ROA is Earnings before Interest, Taxes and Depreciation divided by Total Assets. Tobin's Q is (Total Assets minus Book Equity plus Market Equity minus Deferred Taxes)/Total Assets. Sales Growth is percentage growth in annual sales. Research Intensity is Research and Development expenses divided by Sales. Delaware (0,1) denotes whether the firm is incorporated in Delaware. Value Weighted Return is the three yield buy and hold return for the CRSP Value-Weighted Index. Excess Return is the issuer's three year buy and hold stock return minus Value Weighted Return. Ten Year Treasury Yield is yield to maturity on the constant maturity ten year Treasury. BBB Spread is the average yield on ten year industrial BBB or Baa rated bonds minus the yield on the ten year constant maturity Treasury. Tsy Implied Vol is the implied volatility given by the Merrill MORE Index.

	Non-Callable	*Fixed-Price Callable*	*Make-Whole Callable*
Maturity	10.55 (8.64)	9.26 (9.67)	12.74 (10.15)
Rating	7.4 (7)	14.8 (15)	8.4 (8.5)
Coupon	6.83% (6.76%)	9.57% (9.63%)	6.52% (6.42%)
Restrictive Covenants	2.4 (3)	4.7 (7)	2.8 (3)
Log(Size)	9.78 (9.53)	7.16 (7.05)	9.10 (9.10)
Leverage	0.330 (0.298)	0.442 (0.437)	0.303 (0.297)
ROA	0.036 (0.025)	0.005 (0.023)	0.051 (0.048)
Tobin's Q	1.50 (1.17)	1.41 (1.22)	1.64 (1.34)
Sales Growth	1.14 (1.09)	1.27 (1.12)	1.16 (1.09)
Liquidity	0.074 (0.041)	.080 (.036)	.057 (.026)
Tangibility	0.257 (0.181)	0.389 (0.360)	0.342 (0.395)
Delaware Incorporation	0.625 (1)	0.680 (1)	0.531 (1)

Ten Year BBB Yield	6.72 (6.77)	6.34 (6.41)	6.31 (6.29)
Ten Year BBB Spread	1.28 (1.13)	1.31 (1.26)	1.63 (1.46)
Treasury Volatility	102.97 (101.64)	98.22 (97.63)	102.89 (101.72)

To more fully understand which firms issue which bonds, we estimate a multinomial logit regression where the dependent variable is whether a particular bond was issued as a non-callable, fixed-price callable, or make-whole callable bond. In this regression, we include two additional independent variables. The first additional independent variable – Log Year - is log (offer year – 1994). We choose this non-linear transformation to reflect the rapid ramp-up in the prevalence of make-whole call bonds and subsequent leveling off that is reflected in Figure 1. The second additional independent variable measures the propensity of the lead underwriter to underwrite bonds with make-whole call provisions. For this variable, we first calculate the percentage of all corporate bonds underwritten by each lead underwriter in the previous calendar year that incorporated make-whole call provisions. From this, we subtract the average calculated for all lead underwriters for that year. Thus, Underwriter_MW quantifies the degree to which the lead underwriter for each bond was a market leader in introducing make-whole call provisions. Together, Log Year and Underwriter_MW capture the time trend evident in make-whole call introduction as well as cross-sectional variation in introduction that is due to the underwriters.

Results are presented in Table 2. Because we have three categories of bonds, the regression analysis is a multinomial logit regression where make-whole callable bonds are the excluded category. Coefficient estimates then indicate the odds of observing a straight or fixed-price call outcome relative to a make-whole call outcome. Standard errors are clustered by issuer to counteract heteroscedasticity.[8]

The conditions under which make-whole callable bonds are issued differ in several ways from those for straight and fixed price callable bonds. One of the more striking differences is that the coefficient estimates for Underwriter_MW are negative and are highly statistically significant – if the underwriter has a history of incorporating make-whole call provisions, odds are they will convince subsequent issuers to incorporate make-whole call provisions.[9] Consistent with the time trend displayed in Figure 1, the coefficient estimate for Log Year is negative and highly significant for straight bonds (straight bonds are less likely relative to make-whole call bonds as time goes by), but positive and weakly significantly for fixed-price callable bonds. Thus, as suggested by Figure 1, make-whole call bonds have primarily replaced straight bonds while fixed-price callable bonds have made a small comeback in recent years – an observation that is also made by Banko and Zhou (2010). We also find that make-whole call provisions are more likely in longer maturity bonds. It would seem that the longer term investment grade bonds that once had fixed price call provisions in studies such as Crabbe and Helwege (1994) are now much more likely to have make-whole call provisions.

[8] When comparing straight and fixed-price callable bonds, the log of the ratio of the two coefficient estimates indicates the odds of observing a straight bond relative to a fixed-price callable bond.

[9] While reverse causality is a possibility, we do not feel that this would explain the result. Specifically, it could be that firms interested in incorporating "new" features like make-whole call provisions are more likely to call on underwriters that are familiar with these features. Given how simple make-whole call provisions are, however, it would surprise us if any underwriters would have difficulty incorporating this feature if this is what the issuer specified.

The impact of firm-specific financial characteristics is largely consistent with the univariate statistics presented in Table 1. This is particularly true for the fixed-price callable bonds. Coefficient estimates indicate that fixed-price callable issuers are significantly smaller than make-whole call issuers, have lower ROA, and lower Tobin's Q, but greater leverage, and liquidity.[10] For the straight bond issuers, they are larger in size, have greater leverage and liquidity (significant at the 10% level), and lower sales growth than make-whole callable bond issuers. If rating is used in place of the firm-specific independent variables (results not presented in tables), we see consistent results where the coefficient estimate is negative for straight bonds (better ratings) and positive for fixed-price callable bonds (worse ratings).

For the credit market variables and stock return variables, we find that make-whole callable bonds are more prevalent when the BBB Spread is wide. Surprisingly, fixed-price callable bonds are no more prevalent when interest rates in general are high. In contrast, straight bonds are more prevalent when interest rates are higher and are slightly more prevalent when the implied volatility of Treasury Rates is higher.

In summary, it appears that issuers of make-whole callable bonds are those that will obtain the greatest benefit from having an option that improves their financial flexibility. The make-whole callable bonds have longer maturities on average, and are issued by reasonably profitable and reasonably high growth firms. In keeping with the fact that make-whole call provisions are essentially a deeply out of the money credit spread option, we also see that they are more prevalent when credit spreads are wide.

[10] The greater liquidity of these issuers may be endogenous – because of their poor ratings and limited access to capital, they are forced to hold more in liquid assets for "rainy day" needs.

Table 2
Multinomial-Logit Analysis of Bond Type

The dependent variable is an indicator of whether the bond is a straight bond, callable with a fixed-price call provision, or callable with a make-whole call provision. The excluded case is bonds that are callable with a make-whole call provision. Log Year is Log(bond issue year – 1995). Underwriter_MW is the percentage of corporate bonds that were underwritten by the lead underwriter in the previous year that incorporated a make-whole call provision, minus the average of that value for all lead underwriters. Log Maturity is Log of years until maturity. Log Size is log of Total Assets. Leverage is Long-Term Debt Divided by Total Assets. Liquidity is cash and short term investments divided by total assets. Tangibility is Net PP&E divided by Total Assets. ROA is Earnings before Interest, Taxes and Depreciation divided by Total Assets. Q is (Total Assets minus Book Equity plus Market Equity minus Deferred Taxes)/Total Assets. Sales Growth is percentage growth in annual sales. Delaware (0,1) denotes whether the firm is incorporated in Delaware. Ten Year BBB Yield is average yield of 10 year industrial BBB or Baa rated bonds. BBB Spread is Ten Year BBB Yield minus the Constant Maturity Ten Year Treasury Yield. Treasury Implied Vol is the implied volatility given by the Merrill MORE Index. All independent variables are lagged one year. Standard errors are clustered by issuing firm. P-Values are reported in the lower cells in parentheses and statistical significance at the 10%, 5% and 1% levels is further annotated by *,**,*** respectively.

	Straight	*Fixed Price Call*
Log Year	-1.752***	0.452*
	(9.60)	(1.89)
Underwriter_MW	-4.824***	-5.115***
	(8.48)	(9.71)
Log Maturity	-0.852***	0.042
	(8.79)	(0.40)
Log Size	0.461***	-1.117***
	(6.21)	(12.58)
Leverage	0.980*	3.094***
	(1.71)	(5.73)
Liquidity	2.009*	5.503***
	(1.91)	(5.52)
Tangibility	-0.840	0.420
	(2.37)**	(1.29)
ROA	-2.347	-5.940***
	(1.14)	(4.22)
Q	0.031	-0.684***
	(0.37)	(6.05)
Sales Growth	-0.629***	0.231

	(2.74)	(1.20)
Delaware	0.197	0.704***
	(1.15)	(4.11)
Ten year BBB Yield	0.209	-0.106
	(2.19)**	(1.01)
BBB Spread	-0.722***	-0.523***
	(3.41)	(3.28)
Treasury Implied Vol.	0.005	0.003
	(1.65)*	(1.10)
Number of obs	5,845	
Pseudo R sq.	0.410	

V. Early Retirement

a. Identifying Early Retirement

Our next step is to characterize the situations where make-whole call provisions are exercised to see whether ex-post execution is consistent with an ex-ante desire to incorporate financial flexibility. To identify make-whole callable bonds that are retired early, we take our sample of 5,776 make-whole callable bonds and search the Amount_Outstanding and Amount_Outstanding_Historical files of the FISD for events that have an action code of "B" - balance of issue called, "E": entire issue called, or "P" - part of issue called. We also search for action code "T": tender offer since many make-whole call bonds are retired via tender offers. For each event, we individually verify that each of these observations is an actual call or tender offer via the bond descriptions and associated news stories available in Bloomberg.[11] Of the 5,776 make-whole call bonds, 701 (12.1%) were subject to either a tender offer, make-whole call execution, or both

[11] A substantial number of reported tender offers in the FISD are open-market repurchases. These are generally small in magnitude. Thus, all open-market repurchase events are dropped.

events as of June 2010.[12] Make-whole call bonds that were called at least once numbered 391 (6.8% of total make-whole call bonds). Tendered bonds numbered 390 (6.8% of total make-whole call bonds). These two subsets overlap – 80 make-whole call bonds were subject to both tender offers and a call. In the majority of cases, the make-whole call cleaned up a stub of bonds left over from an earlier tender offer. In no case did a call precede a tender offer.

Table 3, Panel A presents basic characteristics at issue for make-whole call bonds that were subsequently called or subsequently tendered for, as well as data for the set of make-whole call bonds that remained untouched as of the end of our sample period. The bonds that were retired early are distinctive on several dimensions. Relative to bonds that remained untouched, the called and tendered make-whole call bonds have weaker initial credit ratings, along with higher coupon rates, yields, and spreads relative to Treasuries at issue. Moreover, the called and tendered bonds have shorter maturities, and they have more restrictive covenants. An interesting comparison is the called make-whole bonds and the tendered make-whole callable bonds. While the tendered bonds start life with better credit ratings (median rating of BBB versus BBB-), at the time of the early retirement event, the tendered bonds have worse credit ratings (median rating of BB+ versus BBB-). Thus, the call options will be deeper out of the money for the tendered bonds.[13] We strongly suspect that the firms that tendered rather than called simply felt

---

[12] Note that many of these make-whole callable bonds are only a few years into their respective lives so 12.1% underreports the percentage that will be retired early sometime during their lifespan.

[13] The decline in ratings is potentially consistent with Julio (2007). He finds that firms repurchasing debt in general have an increase in what he terms "debt overhang" in the years prior to repurchase, coupled with a drop in rating. In addition, Crabbe and Helwege (1994), King and Mauer (2000), and Chen, et al. (2010) all document moderate declines in rating for fixed-price callable bonds that are called. The decline in rating is inconsistent with the signaling hypothesis that earlier theoretical literature used to motivate why firms would incorporate fixed-price call provisions.

that bondholders would tender bonds at prices below the calculated make-whole call price.

Table 3, Panel A: Make-whole Call Bond Characteristics.

Mean (median) values for each characteristic are reported in each cell. Coupon Rate and Yield-to-Maturity at Issue are self-explanatory. Credit Spread is Yield-to-Maturity of the bond at issue minus yield of the closest maturity on-the-run Treasury Security. It is reported in basis points. Time-to-Maturity is number of years until the bond matures when issued. Number of restrictive covenants is a simple count of the number of restrictive covenants present in the bond indenture. The Rating at Issue and Rating at End are ordinal mappings of standard bond ratings: Aaa=1, Aa+=2, Aa=3, etc. Rating at End is the last recorded rating prior to the early retirement of the bonds in columns two and three, or prior to the earlier of bond maturity or end of sample period for the bonds in column 4.

	Called Make-Whole	*Tendered Make-Whole*	*Untouched Make-Whole*
Coupon Rate	7.79% (7.5%)	7.32% (7.15%)	6.41% (6.35%)
Yield to Maturity at Issue	7.16% (7.21%)	6.94% (7.06%)	6.42% (6.31%)
Credit Spread	190 (160)	181 (170)	163 (140)
Time to Maturity	8.73 (7.0)	11.18 (9.78)	13.07 (10.02)
Number of Covenants	4.79 (4)	4.40 (4)	2.71 (3)
Rating at Issue	10.60 (10)	9.80 (9)	8.41 (9)
Rating at End	10.90 (10)	11.45 (11)	9.04 (9)

These characteristics are also reflected in Table 3, Panel B where we report summary characteristics for issuers. For this panel each observation represented in the summary statistics of this table corresponds to a make-whole firm-bond-year. Thus, if firm XYZ issues a make-whole call bond in 2001 that is subsequently called in 2006 and two make-whole call bonds in 2002 that remain untouched as of the end of our sample period, this firm will then be represented with one observation in column 2 (Issue = 2000, End = 2005) and two observations in column 4 (Issue = 2001, End = 2009).

Consistent with Panel A, issuers of make-whole call bonds that are retired early are more levered, both on a market value and on a book value basis, than issuers of make-whole call bonds that remain untouched. The issuers that retired bonds early are also slightly less profitable than the issuers that did not touch their bonds. Both characteristics are consistent with the prior observation that issuers that retired bonds early have worse credit ratings on average.

Table 3, Panel B: Make-whole Call Bond Issuer Characteristics.

Mean (median) issuer financial characteristics are reported for the fiscal year immediately prior to the issuance date and for the fiscal year immediately prior to the early retirement of the bonds represented in columns 2 and 3, or prior to the earlier of bond maturity or end of sample period for the bonds in column 4. ROA is Return on Assets calculated as Net Income/Total Assets. Market Leverage is Total Debt/(Total Assets – Book Equity + Market Value of Equity). Book Leverage is Total Debt/Total Assets. CAPX Ratio is Capital Expenditures/Total Assets. Acquisition Ratio is Acquisition/Total Assets. Each observation represented in the summary statistics of this table corresponds to a make-whole firm-bond-year as described in the text.

	Called Make-Whole	*Tendered Make-Whole*	*Untouched Make-Whole*
Total Assets at Issue	$30.41 bn ($7.51 bn)	$17.01 bn ($11.75 bn)	$32.77 bn ($11.38 bn)
ROA at Issue	0.124 (0.113)	0.125 (0.107)	0.138 (0.124)
ROA at End	0.121 (0.108)	0.120 (0.109)	0.130 (0.117)
Market Leverage at Issue	0.236 (0.233)	0.230 (0.233)	0.199 (0.194)

Book Leverage at Issue	0.320 (0.308)	0.321 (0.321)	0.278 (0.268)
Market Leverage at End	0.265 (0.257)	0.269 (0.254)	0.219 (0.210)
Book Leverage at End	0.344 (0.340)	0.354 (0.355)	0.304 (0.294)
CAPX Ratio at Issue	0.058 (0.047)	0.063 (0.050)	0.063 (0.051)
CAPX Ratio at End	0.053 (0.039)	0.061 (0.048)	0.062 (0.050)
Acquisition Ratio at Issue	0.042 (0.005)	0.036 (0.000)	0.030 (0.001)
Acquisition Ratio at End	0.051 (0.001)	0.054 (0.006)	0.036 (0.002)

b. Taxonomy of Early Retirement Decisions

To understand the circumstances under which each of the bonds detailed in Table 3 were retired early, we collect all of the news stories available in Bloomberg for the issuing firm for six months surrounding the call or tender date of the security in question. As revealed by these news stories, the underlying motivations for early bond retiring fall into three major categories: (1) to refinance, usually at lower rates, (2) as a result of a major restructuring of the corporation such as a buyout, merger, or significant divestiture of assets, (3) as part of an effort to reduce leverage. There is also a smaller subset of events that are calls used to clean up a stub of bonds left over from a much earlier tender offer. Finally there are some events for which we were simply unable to find valid news stories.

For each of the three major rationales there are several subcategories that will be subsequently described. To avoid overweighting early retirements of multiple bonds by larger firms, we report summary statistics by independent events. Thus, a firm retiring three bonds at the same point in time represents one event. Similarly, a call that closely follows a tender offer for the same bond – again often done to clean up the stub of bonds left over from the tender offer – constitutes one event.

Table 4
Motives for Early Bond Retirement

Motives for each early retirement event are classified as either Refinancing, Restructuring, Debt Reduction, Clean-up of a stub left by a much earlier tender offer, a required Change of Control call, or Unknown. The Refinancing motive is further split into those where refinancing was via a Fixed Rate Bond, Bank Loan, Convertible Bond, or Floating Rate Bond. The Restructuring motive is further split into those where the restructuring was a buyout by a private equity group, a Buyout/Merger with another publicly traded corporation, or because of a Spinoff of a significant part of the parent firm. The Debt Reduction motive is further subdivided into those where the cash for the retirement was from internal stockpiles, from cash received for a recent divestiture, from an equity offering, or unknown. The shaded percentages sum up to more than 100% because some events share multiple motives.

	Percentage of Observations	
Refinancing	34.7%	
Fixed Rate Bond		66.7%
Bank Loan		23.5%
Convertible Bond		7.2%
Floating Rate Bond		2.6%
Restructuring	27.9%	
Private Buyout		49.3%
Buyout/Merger		37.3%
Spinoff		12.8%
Debt Reduction	19.2%	
Internal Cash		59.4%
Divestiture Cash		21.5%
Equity Offering		11.4%
Unknown		6.3%
Clean-up Call	6.8%	

Change of Control	0.5%
Unknown	14.7%

34.7% of events are driven by a desire to refinance.[14] For 66.7% of the refinancing events, the make-whole call bonds are replaced by newly issued bonds. In the vast majority of cases, these newly issued bonds also have make-whole call provisions. In general the replacement bonds have lower coupon rates and extend maturity several years beyond the maturity of the retired bonds. The mean (median) remaining maturity of these bonds is 1.8 years (3.9 years), while the replacement bonds extend maturity by 8.1 years (7 years). The mean (median) coupon rate differential is -1.16% (-1.25%). Note, however, that approximately 25% of the retired make-whole call bonds are replaced with new bonds having higher coupon rates and that 14% are replaced with bonds having maturity dates that expire sooner. In the remaining refinancing events, the bonds are replaced by bank loans (23.5% of the time), convertible bonds (7.2% of the time) and floating rate bonds (2.6% of the time.)[15] Later in the paper, we will revisit the events where refinancing was via new fixed rate bonds to assess whether this made economic sense.

27.9% of the events were associated with a significant restructuring of the issuer. A surprisingly large 49.3% of these events were buyouts where a private equity group purchased the issuer and immediately retired the majority of the issuer's debt. 37.3% of

[141414] This figure is roughly consistent with King and Mauer (2000) and Chen, et al. (2010) who find that 23% and 46% of the called fixed-price callable bonds in their respective samples are refunded. Note that their shared methodology is much different than ours. In both cases, they look to see whether new debt issued over the subsequent year is more than 110% of amount of debt called. As noted, we are characterizing our events by looking directly at newswire reports.

[15] In many events the refinancing comes from more than one source. In these cases, we characterize the primary source.

the restructuring events were more traditional M&A where another corporation either purchased or merged with the issuer. The remaining 12.8% of the restructuring events were situations where the issuer spun off a significant proportion of its operations. Typically the debt retirement occurred prior to the spinoff. In most cases, this seemed to be an action to avoid violating covenants on the retired debt.

The last major rationale for early retirement was simply to reduce the amount of the issuer's outstanding debt. This accounted for 19.2% of the sample. Cash for the delevering came from accrued company profits 59.4% of the time. This was particularly true for oil companies such as Chevron that enjoyed extremely profitable years in 2005 and 2006. The other notable sources of cash for delevering were funds from asset divestitures (21.5% of the time) and from recent equity offerings (11.4% of the time.)

In addition to the three primary rationales of refinancing, restructuring and delivering, 6.8% of events were calls that cleaned up a stub of bonds left over from a much earlier tender offer. One event was a required call that was triggered by a change of corporate control. Finally, in 14.7% of events we were simply unable to find any newswire reports in Bloomberg that shed light on the early debt retirement.

c. The Refinancing Events in More Detail

It is clear from many of the corporate announcements that we read that firms who refinanced their make-whole call bonds with new fixed rate debt were attempting to time the credit market. Amerisource-Bergen was one such company that retired make-whole call bonds early in September/October 2005. In a newswire report released on August 25, 2005, CFO Michael D. DiCandilo was quoted as saying "with long-term interest rates at historically low rates, this is an opportune time to refinance these notes and lower our interest expense for the future."

To assess whether the refinancing firms are successful at timing the market, we collect daily historical corporate bond Fair Market Yields from Bloomberg. Fair Market Yields are averages of market-determined option-adjusted yields-to-maturity and are reported for 15 separate maturities across the ratings spectrum.[16] For each bond, we extract the Fair Market Yield for its particular rating and maturity at the issue date. We also collect the Fair Market Yield for the applicable rating on the effective date of the call or tender event and for a date that is the minimum of scheduled maturity date and effective event date plus one year. Despite the fact that retired bonds have aged significantly, we again use the original maturity of the bond in selecting these event and post-event date values. This enables us to make a cleaner comparison of Fair Market Yields across time. The choice of event date plus one year for the final Fair Market Yield is arbitrary. We are implicitly assuming that corporate executives evaluate whether to retire the bond "today" at the event date or one year later. If Fair Market Yields are higher one year later, we interpret this as evidence that corporate executives have some skill in timing the credit markets.

Summary statistics on these Fair Market Yields are reported in Table 5. We report results separately for bonds where the stated rationale was to refinance and for all other bonds. As was done for Table 4, we only calculate values for the first event occurrence

[16] Fair Market Yields are available at the following maturities: 3 and 6 month, 1, 2, 3, 4, 5, 7, 8, 9, 10, 15, 20, 25, and 30 years. They are available for AAA, AA, and all of the plus and minus subgrades from A to B. For maturities that fall in between the available Fair Market Yield maturities, we round to the closest appropriate value. Thus, for a bond with 17 years to maturity at issue, we use the 15 year Fair Market Yield. Similarly, for bonds with ratings worse than B-, we use the B- Fair Market Yield. Finally, since there is only one AA Fair Market Yield, we use it for AA+, AA, and AA- rated bonds.

for each bond. Thus, a bond that was subjected to a tender and then subjected to a clean-up call, is only counted for the initial tender offer. There is some evidence that is consistent with market-timing ability. For example, Fair Market Yields as of the event date are consistently lower than Fair Market Yields at either the issue date or one year following the event date. For bonds where the rationale for early retirement was to refinance, the mean (median) difference between event FMY and event + 1 year FMY is -0.53% (-0.28%). The t-statistic and Wilcoxon sign-rank statistics for whether these two values are statistically different from zero are 4.91 and 4.14 respectively. A significant caveat, however, is that these Fair Market Yield differentials are actually greater in magnitude for events where the firm announced that it was retiring the bonds early for reason other than to refinance them. For this subsample, mean (median) Fair Market Yield Differentials are -0.90% (-0.50%). These Fair Market Yield Differentials are statistically different from the corresponding values for the refinancing subsample at the one percent level (t-statistic = 2.45, ranksum test statistic = 2.93). It may be that all firms in the sample were simply lucky, on average, and avoided the significant increase in yields for low credit quality bonds that occurred as a result of the sub-prime mortgage credit crisis of 2008-2009.

While there is some evidence of interest rate timing/luck associated with the early retirement of these bonds, one must remember to account for the premium paid to retire these bonds early. In the case of both tender offers and calls, the Action Price is typically well above the prevailing market price of the bond. For tender offers, this is necessary in order to get investors to voluntarily part with their bonds.[17] For calls, the price premium

[17]Using a comprehensive sample of bond tender offers occurring between 1997 and 2003, Mann and Powers (2007) find that tender premiums (tender price – market price) averaged 4.94% of par.

occurs because the make-whole premium used in calculating the call price is generally well below prevailing credit spreads at the time of the call.[18] To estimate the full economic impact of early retirement, we calculate the difference in dollars spent to retire the bond early and dollars saved by "refinancing" the bond at the early retirement date as opposed to a year later (or at the original maturity date if it would have occurred less than a year after the early retirement.)

Rather than hand-gathering the market prices of our sample bonds prior to the events, we estimate market prices as of the event date using the Fair Market Yield corresponding to the remaining maturity and last rating of the bond. We calculate Dollar Cost as (Action Price - Estimated Price)*Action Amount. To proxy for Dollar Savings, we calculate the difference between the Fair Market Yield at the event date and Fair Market Yield at event date plus the minimum of one year or the remaining life of the bond. This difference can be thought of as the coupon savings associated with refinancing at the event date rather than one year later. We then calculate the present value of this coupon savings using the average of the two Fair Market Yields. In doing so, we assume that the coupon savings due to market timing accrue for a period equal to the original maturity of the retired bonds. This present value of coupon savings is then multiplied by the Action Amount to generate Dollar Savings. Net Dollar Savings are then calculated as Dollar Savings minus Dollar Cost. These calculations are done for both the bonds where the rationale for retiring early was to refinance and for bonds where some other rationale

[18] Powers and Sarkar (2009) demonstrate that make-whole premiums are typically set at the minimum of 50 bp or 15% of the prevailing credit spread above Treasuries for the bond when it is issued. Thus, either the credit quality of the bond would have to drastically improve or market-wide credit spreads would have to narrow significantly for the calculated make-whole call price to be in-the-money.

motivated early retirement. For the other rationale bonds, this is largely a theoretical exercise which provides a benchmark for comparison.

In the calculations of Dollar Cost and Dollar Savings, we use all events, not just the first event for each bond. Thus, if a bond is retired via a sequence of tender offers or via a tender offer followed by a cleanup-call, each transaction will be included but will be weighted by the dollar amount retired in the transaction. Consistent with the fact that premiums are paid to retire bonds early, Dollar Cost averages $1.65 million for refinancing motivated early retirements and $7.48 million for all other early retirements. The magnitude of the difference in costs between the two groups is somewhat surprising. It would appear that the refinancing group is undertaking the transaction because they can execute them with minimal cost. The "other rationale" early retirements, however, appear to be much less cost conscious. Consistent with the observation that Fair Market Yields at the event date are lower than Fair Market Yields a year later, the present value of dollar savings average approximately $5.5 million for refinancing motivated early retirements and approximately $11.3 million for other early retirements. When costs and savings are netted, the Net Cost Savings are approximately the same at $4.0 million and $4.2 million.[19]

Table 5: Cost Effectiveness

FMY stands for Fair Market Yield as reported by Bloomberg for the average option-free bond. FMY at Issue was the prevailing FMY for bonds with the same rating and maturity on the issue date of the bond in question. FMY at Event and FMY at Event + 1yr are FMYs on the early retirement date and early retirement date plus one year or maturity (whichever comes sooner). These later two FMYs reflect the rating of the bond on the event date but the original maturity of the bond. Action Price is the reported transaction price for the tender or call. Action Amount was the Par Value that was retired in each

[19] Net cost savings will likely be even greater than suggested by these numbers as premiums paid above par value to retire debt early are tax deductible.

event. Dollar Cost is (Action Price – Estimated Market Price)*Action Amount. Dollar Savings is the present value of coupon savings that would have accrued if the bond was financed on the event date with a new bond having the same original maturity as opposed to refinancing at Event +1yr. Net Dollar Savings is Dollar Savings – Dollar Cost. Means are reported in the upper part of each cells, medians are reported immediately below in parentheses.

	Refinancing Motivated	*Other Rationales*
FMY at Issue	7.58% (7.56%)	6.93% (6.97%)
FMY at Event	6.97% (6.94%)	6.50% (6.21%)
FMY at Event + 1yr	7.51% (7.19%)	7.40% (6.46%)
Action Price	$104.73 $104.38	$107.05 ($105.32)
Action Amount	$282,864,000 ($200,000,000)	$266,939,000 ($200,000,000)
Dollar Cost	$ 1,652,778 ($623,170)	$ 7,480,079 (2,278,701)
Dollar Savings	$5,520,843 ($906,670)	$11,239,325 ($3,005,583)
Net Dollar Savings	$4,025,711 ($484,434)	$4,176,345 ($448,874)

VI: Restructuring in More Detail

Because such a large percentage of make-whole call executions are driven by major restructuring events, our prior is that make-whole call issuers are more likely to be M&A targets. However, because they are generally higher growth firms when they issue, it could also be that they are more likely to be acquirers in the future. Thus, we conclude our analysis by assessing whether firms having a greater percentage of bonds incorporating make-whole call provisions are more likely to be engaged in M&A activity as either targets or acquirers. This relates back to prior research that hypothesizes that make-whole call provisions improve financial flexibility. Specifically, if all of a firm's publicly traded debt is callable, an acquirer has the option to retire outstanding debt and replace it with debt whose characteristics are more reflective of the needs of the merged set of firms. Similarly, a firm with a more flexible debt structure may have greater ability to absorb targets.

We start by subsetting the FISD data set, retaining all bonds that had maturity dates after January 1, 2000 and that satisfied the screening criteria used to separate out the make-whole call bonds analyzed previously. The only alteration to those criteria is that we include medium term notes at this stage.[20] These criteria leave us with 34,793 bonds. For each unique issuer id represented in this set of bonds, we calculate the yearly total par value of bonds outstanding that are non-callable, have a fixed-price call provision, or have a make-whole call provision. We then calculate the yearly percentage of total par value outstanding for each category.

Our objective is to see whether debt structure characteristics in year t are correlated with the likelihood that a firm becomes a takeover target in year t+1. To do this properly, we also control for factors that existing literature has found predict whether a firm will become a takeover target or be an acquiror.[21] These factors include sales growth, liquidity, Tobin's Q / market-to-book / book-to-market, asset tangibility, excess stock returns, R&D intensity, whether the firm is incorporated in Delaware or elsewhere, etc.[22,23] As was done earlier, with the exception of whether the firm is incorporated in

---

[20] The screening criteria identified earlier are as follows: (1) maturity of at least one year, (2) denominated in US dollars, (3) offering amount of at least $10 million, (4) fixed semi-annual coupon, (5) not asset backed, (6) not putable, (7) without a sinking fund, (8) not a Yankee bond, (9) not a Medium Term Note, (10) not part of a unit offering, (11) listed as a Corporate Debenture.

[21] A representative listing of papers comprising this literature includes Hasbrouck (1985) Palepu (1986), Morck, Schleifer and Vishny (1989), Mikkelson and Partch (1989), Martin and McConnell (1991), Ambrose and Megginson (1992), Song and Walking (1993), Berger and Ofek (1996), Powell (1997), Mulherin and Boone (2000), Daines (2001), and Cremers, Nair and John (2009).

[22] The existing literature has demonstrated that a number of ownership variables such as the existence of a 5% or greater equity blockholder affect the likelihood that a firm becomes a takeover target (see e.g. Ambrose and Megginson; 1992, Song and Walking; 1993, Cremers, Nair and John; 2008, Ivashina, et al.; 2008). Unfortunately, we do not currently have access to ownership data so incorporating variables reflecting ownership is beyond the scope of this paper.

[23] Size, Leverage, ROA and Firm Age have also been shown to be correlated with the likelihood that a firm will be engaged in M&A activity. Unfortunately, the first three variables are relatively highly correlated with the percentage of a firm's outstanding bonds that have make-whole calls. Firm Age is problematic

Delaware, all control variables are winsorized using the yearly 5th and 95th percentile values for the entire merged Compustat and CRSP universe.

To identify M&A activity, we utilize takeover data from the Securities Data Corp (SDC) Mergers and Acquisitions database. From SDC, we extract all deals for greater than $10m that were either completed or withdrawn between January 1, 2000 and December 31, 2009. We exclude deals where the acquirer purchased less than 50 percent of shares and self-tenders where the target and acquirer have the same six digit cusip. We then merge this data with the combined debt structure and control variable observations. For each annual observation we identify whether the bond-issuing firm was a target or an acquirer during the year.

Merging these four datasets is difficult as the only common identifier amongst them is the six digit CUSIP. We have a total of 9,933 annual observations where we can calculate summary variables for the debt structure of the firm as well as either the Compustat sourced control variables, the CRSP sourced control variables, or both. The issuing firm was a takeover target in 2.5% of the firm years and an acquirer in 9.6% of the firm years.

In Table 6 we present results of logit regressions where the dependent variable is whether the firm was a takeover target (0,1) or an acquirer (0,1) in that particular year. Our primary independent variable is the one year lagged percentage of the firm's outstanding bonds that incorporate a make-whole call provision minus the industry group (industrial, financial or utility) average for that particular year. By calculating the difference, we are able to adjust for the time trend in the percentage of outstanding bonds that have make-whole calls as well as adjust for some unique difference in debt structures that manifest in financial firms and in utilities.

Contrary to our expectations, the odds of being a takeover target are actually decreasing in the percentage of a firm's outstanding bonds that have make-whole call provisions. The marginal effect for the first coefficient estimate of -0.371 (significant at the 5% level) is slightly larger in magnitude than -.01. Thus, a one standard deviation increase in MW_Pct_Dif of 0.41 corresponds to a 0.4% decrease in the likelihood of

because we can only calculate it for a subset of our observations due to missing data. Thus, none of these four variables are included in our regressions.

being a takeover target. Note that the unconditional likelihood of being a takeover target in the sample is only 2.5% so the sensitivity is actually reasonably large. In contrast to the target results, the likelihood of being an acquirer is actually increasing in the percentage of a firm's outstanding bonds that have a make-whole call provision. Here, the marginal effect for the first coefficient estimate of 0.146 (significant at the 5% level) is approximately 0.016. Thus, a one standard deviation increase in MW_Pct_Dif is associated with a 0.66% increase in the likelihood of the firm being an acquirer. Again, this is reasonably large relative to the unconditional likelihood of being an acquirer.

Coefficient estimates for the remaining independent variables that are included as controls are largely consistent in sign with results reported in prior literature. Due to the complex merging of datasets that is required to put together our sample, our final sample is only a subset of those typically used in the M&A literature.

As with most empirical analyses, causality in the M&A regressions is not clear. If the percentage of make-whole callable bonds in a firm's capital structure were exogenously determined, our prior is that firm's with a greater percentage of make-whole callable bonds would be more likely to be targets of takeover activity. Instead, the opposite relationship is observed. In addition, firms with more make-whole callable bonds in their capital structures are significantly more likely to be acquirers. We think it likely that firms with an aggressive growth mentality are more likely to value the financial flexibility offered by make-whole call provisions. Thus, in years past, this is how they structured their debt offerings. In our regressions, therefore, the percentage of outstanding bonds having make-whole call provisions may simply act as a marker for expansion-minded firms.

Table 6
Logit Analysis of M&A Activity

The dependent variable is a (0,1) indicator of whether the firm was either the target of a takeover or an acquirer of another corporation in a particular year. Takeover target regressions are presented in the first two columns. Acquiror regressions are presented in the final two columns. MW_Pct_Dif is the percentage of the firm's outstanding bonds that incorporate make-whole call provisions minus the sample average for the firm's industry group in that year. Delaware (0,1) denotes whether the firm is incorporated in Delaware. Sales Growth is percentage growth in annual sales. Tangibility is net property, plant and equipment divided by total assets. Tobin's Q is (total assets minus book equity plus market equity minus deferred taxes)/total assets. Liquidity is cash and short term investments divided by total assets. Research Intensity is research and development expenses divided by sales. Excess return is the four year return for the firm's common stock minus the contemporaneous return for the CRSP Value-Weighted Index. All independent variables are lagged one year. P-Values are reported in the lower cells in parentheses and statistical significance at the 10%, 5% and 1% levels is further annotated by *,**,*** respectively.

	Takeover Target		*Acquiror*	
MW_Pct_Dif	-0.371**	-0.425***	0.146**	0.147**
	(0.013)	(.003)	(0.040)	(0.039)
Delaware	0.289**	0.350***	-0.023	
	(0.022)	(.004)	(0.71)	
Sales Growth	0.420**	0.387	0.772***	0.771***
	(0.020)	(.021)	(0.000)	(0.000)
Tangibility	-0.169		-1.572***	-1.574***
	(0.488)		(0.000)	(0.000)
Tobin's Q	-0.086		0.195***	0.194***
	(0.237)		(0.000)	(6.32)
Liquidity	-0.089		-0.456	-0.465*
	(0.873)		(0.104)	(.096)
Research Intensity	0.605		-0.712**	-0.713
	(0.285)		(0.030)	(0.030)**
Excess Return	0.503***		0.308***	0.309***
	(0.001)		(0.000)	(0.000)
Constant	-4.051***	-4.076***	-2.592	-0.260
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	9,529	9,933	9,537	9,537
Pseudo R2	0.011	0.009	0.037	.037

VII. Conclusion

The life cycle of make-whole callable bonds suggest that make-whole call provisions are more than boiler plate additions to an indenture. Instead, growth minded firms consciously incorporate make-whole calls to build financial flexibility into their capital structures. This is evident at the beginning of the life cycle where we find that, relative to straight bond issuers, make-whole call issuers are higher growth on average and have greater profitability. This is also evident later in the life cycle where we find that issuers with a greater percentage of make-whole callable debt in the debt component of their capital structures are significantly more likely to be acquirers. Finally, this link to financial flexibility presents in the middle of the life cycle where we find that more than 12 percent of make-whole callable bonds were retired for reasons related to refinancing, restructuring, or delevering.

Prior research by Nayar and Stock (2009) finds that incorporation of a make-whole call provision is associated with a positive announcement effect, indicating that inclusion signals positive information about the firm. Our results, particularly those related to the greater likelihood of make-whole call issuers engaging in M&A activity, seem consistent with this result. Given the low cost of incorporating make-whole call provisions (Powers and Tsyplakov (2008)), we suspect that make-whole callable debt will continue to supplant traditional non-callable debt. Indeed, this financial innovation is now increasingly prevalent in other developed debt markets such as Europe and Japan as well as the U.S. municipal bond market.

References:

Ambrose, Brent and William Megginson, 1992, The role of asset structure, ownership structure, and takeover defenses in determining acquisition likelihood, *Journal of Financial and Quantitative Analysis* 27, 575-589.

Bancel, Franck and Usha Mittoo, 2004, Cross-country determinants of capital structure choice: a survey of European firms, *Financial Management*

Banko, John and Lei Zhou, 2010, Callable bonds revisited, *Financial Management* 39, 613-641.

Barnea, Amir, Robert Haugen, and Lemma Senbet, 1980, A rationale for debt maturity structure and call provisions in the agency theoretic framework, *Journal of Finance* 35, 1223-1234.

Bowlin, Oswald, 1966, The refunding decision: another special case in capital budgeting, *Journal of Finance* 21, 55-68.

Berger, Philip and Eli Ofek, 1996, Bustup takeovers of value-destroying diversified firms. *Journal of Finance* 51 1175-2000.

Chen, Zhaohui, Connie Mao, and Yong Wang, 2010, Why firms issue callable bonds: hedging investment uncertainty, *Journal of Corporate Finance* 16, 588-607.

Crabbe, Leland and Jean Helwege, 1994, Alternative tests of agency theories of callable corporate bonds, *Financial Management* 23, 3-20.

Cremer, Martin, Vinay Nair, and Kose John, 2009, Takeovers and the cross-section of returns, *Review of Financial Studies* 22, 1409-1445.

Daines, Robert, 2001, Does Delaware law improve firm value?, *Journal of Financial Economics* 62, 525-558.

Graham, John and Campbell Harvey, 2001, The theory and practice of corporate finance: evidence from the field, *Journal of Financial Economics* 60, 187-243.

Güntay, Levent, Nagpurnanand Prabhala, and Haluk Unal, 2004, Callable bonds, interest rate risk, and the supply side of hedging, Indiana University working paper.

Hasbrouck, Joel, 1985, The characteristics of takeover targets: Q and other measures, *Journal of Banking and Finance* 9, 351-362.

Ivashina, Victoria, Vinay Nair, Anthony Saunders, Nadia Massoud, and Roger Stover, 2008, Bank Debt and Corporate Governance, *Review of Financial Studies* 22, 41-77.

Jen, Frank and James Wert, The effect of call risk on corporate bond yields, *Journal of Finance* 22, 637-651.

Julio, Brandon, 2007, Overcoming overhang, agency costs, investment and the option to repurchase debt, London Business School working paper.

King, Tao-Hsien Dolly and David Mauer, 2000, Corporate Call Policy for Nonconvertible Bonds, *The Journal of Business* 73, pp.403-444.

Kish, Richard, and Miles Livingston, 1992, Determinants of the call option on corporate bonds, *Journal of Banking and Finance* 16, 687-703.

Kish, Richard and Miles Livingston, 1993, Estimating the value of call options on corporate bonds, *Journal of Applied Corporate Finance* 6, 95-99

Mann, Steven and Eric Powers (2004) Indexing a Bond's Call Price: An Analysis of Make-whole Call Provisions, *Journal of Corporate Finance* 9, 535-554.

Martin, Kenneth, and John McConnell, 1991, Corporate performance, corporate takeovers and management turnover, *Journal of Finance* 46, 671-688.

Mason, Scott, 1984, Valuing Financial Flexibility, NBER working paper 1522 in Financing Corporate Capital Formation (1986), Benjamin M. Friedman, ed. (p. 91 - 106)

Mikkelson, Wayne and Meghan Partch (1989). Managers' voting rights and corporate control, *Journal of Financial Economics*, 25, 263-290.

Mitchell, Karlyn, 1991, The call, sinking fund, and term-to-maturity features of corporate bonds: an empirical feature, *Journal of Financial and Quantitative Analysis* 26, 201-222.

Morck, Randall, Andrei Shleifer and Robert Vishny. 1989, Alternative mechanisms for corporate control, *American Economic Review* 79, 842-852.

Mulherrin, Harold and Audra Boone, 2000, Comparing acquisitions and divestitures, *Journal of Corporate Finance* 6, 117-139.

Myers, Stuart, 1984, The capital structure puzzle, *Journal of Finance* 39, 575-592.

Nayar, Nandu, and Duane Stock, 2009, Make-whole call provisions: A case of "much ado about nothing?" *Journal of Corporate Finance* 14, 387-404.

Powell, Ronan, 1997, Modeling takeover likelihood, *Journal of Business Finance and Accounting* 24, 1009-1030.

Powers, Eric and Sudipto Sarkar (2009) Setting the Optimal Make-Whole Call Premium, University of South Carolina Working Paper.

Powers, Eric and Sergey Tsyplakov (2008) What is the Cost of Financial Flexibility? Theory and Evidence for Make-whole Call Provisions, *Financial Management* 37, 485-512.

Robbins, John and Edward Schatzberg, 1986, Callable bonds: a risk reducing signaling mechanism, *Journal of Finance* 41, 935-949.

Song, Moon and Ralph Walkling, 1993, The impact of managerial ownership on acquisition attempts and target shareholder wealth, *Journal of Financial and Quantitative Analysis* 28, 439-457.

Thatcher, Janet, 1985, The choice of call provision terms: evidence of the existence of agency costs of debt, *Journal of Finance* 40, 549-561.

Vu, Joseph, 1986, An empirical investigation of calls of non-convertible bonds, *Journal of Financial Economics* 16, 235-265.

Questions:

1) What is the spread in the time prior to calls and tenders of make-whole call bonds as well as the difference between market price and transaction price.

```
. mlogit type ln_maturity ln_year uw_amt_mw_dif lnsize leverage liquidity roa q
sales_growth research_intensity delaware ytm_bbb_10 spr_bbb_10 tsy_implied_vol
vwret vwexret if type<3, cluster(issuer_id)

Iteration 0:   log pseudolikelihood = -7485.1453
Iteration 1:   log pseudolikelihood = -5229.2651
Iteration 2:   log pseudolikelihood = -5077.4122
Iteration 3:   log pseudolikelihood = -5069.3849
Iteration 4:   log pseudolikelihood = -5069.3353
Iteration 5:   log pseudolikelihood = -5069.3353

Multinomial logistic regression                   Number of obs   =       6983
                                                  Wald chi2(32)   =     912.27
                                                  Prob > chi2     =     0.0000
Log pseudolikelihood = -5069.3353                 Pseudo R2       =     0.3227

                           (Std. Err. adjusted for 1132 clusters in issuer_id)
------------------------------------------------------------------------------
             |               Robust
        type |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
0            |
 ln_maturity |  -3.785965    .484787    -7.81   0.000     -4.73613     -2.8358
     ln_year |  -1.613024   .1593994   -10.12   0.000    -1.925441   -1.300607
uw_amt_mw_~f |  -2.632169   .4646571    -5.66   0.000     -3.54288   -1.721458
      lnsize |   .3870023   .0593622     6.52   0.000     .2706546    .5033501
    leverage |   1.001126   .5346237     1.87   0.061    -.0467172    2.048969
   liquidity |   2.144898   1.231009     1.74   0.081     -.267835     4.55763
         roa |  -1.060224   1.932551    -0.55   0.583    -4.847954    2.727506
           q |   .0311989   .0884606     0.35   0.724    -.1421806    .2045784
sales_growth |  -.7250066    .218473    -3.32   0.001    -1.153206   -.2968074
research_i~y |  -4.831006   2.873699    -1.68   0.093    -10.46335     .801341
    delaware |  -.0199426   .1720469    -0.12   0.908    -.3571484    .3172632
  ytm_bbb_10 |   .0124372    .092531     0.13   0.893    -.1689202    .1937946
  spr_bbb_10 |  -.5872237   .1774184    -3.31   0.001    -.9349574   -.2394899
tsy_implie~l |   .0023967   .0025631     0.94   0.350     -.002627    .0074203
       vwret |   .1420666   .1460657     0.97   0.331     -.144217    .4283502
     vwexret |  -.0572109   .0713714    -0.80   0.423    -.1970964    .0826746
       _cons |   37.39503   4.933305     7.58   0.000     27.72593    47.06413
-------------+----------------------------------------------------------------
1            |
 ln_maturity |  -1.181876   .3911682    -3.02   0.003    -1.948551   -.4152001
```

ln_year	-.0462127	.2045349	-0.23	0.821	-.4470937	.3546683
uw_amt_mw_~f	-2.033296	.4045735	-5.03	0.000	-2.826245	-1.240346
lnsize	-.5634384	.1047745	-5.38	0.000	-.7687927	-.3580841
leverage	3.924242	.5641891	6.96	0.000	2.818452	5.030032
liquidity	7.827592	1.42874	5.48	0.000	5.027312	10.62787
roa	-5.414183	1.460095	-3.71	0.000	-8.275918	-2.552449
q	-.6481756	.1290958	-5.02	0.000	-.9011988	-.3951524
sales_growth	.2877637	.2269444	1.27	0.205	-.1570391	.7325664
research_i~y	-1.323124	1.946155	-0.68	0.497	-5.137518	2.491269
delaware	.9413745	.1687576	5.58	0.000	.6106157	1.272133
ytm_bbb_10	.2076855	.1122732	1.85	0.064	-.0123659	.427737
spr_bbb_10	-.5846309	.1316958	-4.44	0.000	-.84275	-.3265119
tsy_implie~l	-.0008286	.0026195	-0.32	0.752	-.0059627	.0043055
vwret	-.4496245	.1996457	-2.25	0.024	-.8409229	-.0583261
vwexret	.0530082	.0703877	0.75	0.451	-.084949	.1909655
_cons	14.10929	3.562381	3.96	0.000	7.127148	21.09142

(type==2 is the base outcome)

.