



# Callable bonds, reinvestment risk, and credit rating improvements: Role of the call premium<sup>☆</sup>



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## ABSTRACT

We identify the call premium in nonconvertible callable bonds as an effective contracting provision to address agency conflict due to reinvestment risk and credit rating improvements. We analyze 4,495 bonds issued between 1980 and 2012. When interest rates are high, a majority of investment-grade issues and almost the entire subset with long maturities ( $> 20$  years) include a call premium. When interest rates are low, virtually all investment-grade issues with long and short maturities are callable at par. High-yield issues are limited to short maturities. By about 4:1, they include a call premium regardless of interest rate levels.

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## 1. Introduction

A corporate financing decision is a contract between firms and investors with disparate objectives facing market frictions characterized by agency conflict, incomplete information, and imperfect inferences. For debt financing, traditional methods to correct for these frictions include restrictive covenants, which can constrain managerial flexibility (Smith and Warner, 1979; Begley, 1994). Alternate methods to moderate the impact of these frictions include structured provisions. For example, a convertible provision can mitigate asset substitution (Green, 1984), information asymmetry (Brennan and Kraus, 1987; Constantinides and Grundy, 1989), and uncertainty about the firm's risk (Brennan and Schwartz, 1988). A call provision

further affords delayed equity financing to overcome the negative price impact of adverse selection associated with common stock issuances (Stein, 1992). Varying the call protection period affords the timing of follow-on investments arising from growth options (Korkeamaki and Moore, 2004).

In this study, we focus on a seemingly innocuous structured provision in callable bonds: the call premium. Bonds are callable at par or at par plus a premium equal to one year's coupon payment. We identify key factors that motivate inclusion of a call premium for nonconvertible debt. Our investigation extends inquiry into how call provisions for nonconvertible debt can be engineered to overcome market frictions in efficient contracting. For example, the call provision can mitigate underinvestment for firms with growth options (Bodie and Taggart, 1978) and address agency issues due to informational asymmetry and managerial risk incentives (Barnea, Haugen, and Senbet, 1980). The call provision signals better prospects (Robbins and Schatzberg, 1986; Ederington and Stock, 2002),

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enables the firm to reduce financial leverage or remove restrictive covenants (Vu, 1986), and mitigates interest rate risk (Kish and Livingston, 1992). The call protection period affords flexibility to mitigate underinvestment (Thatcher, 1985).

We hypothesize that the call premium compensates investors for a call due to either a decline in interest rates (Kish and Livingston, 1992), an improvement in the credit rating for high-risk firms (Diamond, 1991), or the realization of growth options for low-risk firms (Bodie and Taggart, 1978). Other options to mitigate the investors' loss in the event of a call include a lower issue price, higher coupon rate, and greater call protection. Lower issue price and higher coupon rate are upfront costs the firm bears regardless of whether the opportunity to call arises. Greater call protection imposes a cost on the investor by way of a higher issue price even if the bond's value fails to rise, in which case call protection is useless. In contrast, the call premium is a cost the firm pays only in the event of a beneficial call, and the investor is compensated for the corresponding harm only when it occurs.

We examine a sample of 4,495 callable, nonconvertible bonds issued between 1980 and 2012. Our findings support the reinvestment risk and credit improvement hypotheses, but not the growth options hypothesis. When interest rates are high, the majority of investment-grade issues and the entire subset of investment-grade issues with longer maturities include a call premium. When interest rates are low, virtually all investment-grade issues across the maturity spectrum are callable at par. In comparison, the proportion of high-yield issues that includes a call premium relative to those that are callable at par averages about 4:1 for both high and low interest rates. These stylized facts support the reinvestment risk hypothesis for investment-grade issues and the credit rating hypothesis for high-yield issues.

The paper is organized as follows. We discuss sample selection in Section 2, ordinal ratings metrics in Section 3, descriptive statistics in Section 4, and annual comparative stylized facts and the joint ratings – maturity distribution in Section 5. We summarize stylized facts that support our hypotheses in Section 6, specify and estimate a logistic model for the choice to include a call premium in Section 7, and conclude in Section 8.

## 2. The sample

Our data source is the Securities Data Company (SDC) Platinum New Issues Database. The initial sample is all public callable, nonconvertible, non-puttable, fixed-coupon debt issued between 1980 and 2012, excluding federal credit agency issues by the Federal Home Loan Mortgage Corporation (Freddie Mac), the Federal National Mortgage Association (Fannie Mae), and the Federal Home Loan Bank. The initial sample is 9,357 issues. We then exclude issues that are callable only in the final six months prior to maturity (i.e., clean-up calls) and issues that are callable only under provisions such as corporate restructuring and changes in US tax law (i.e., event-risk calls). We also exclude issues for which financial leverage, issue size, and firm size data are unavailable on the SDC database. The resulting sample is 4,757 issues.

**Table 1**

Industry classification.

In this table, we provide the industry classification for our sample of 4,495 callable bonds issued between 1980 and 2012 obtained from the Securities Data Company Platinum New Issues Database.

Industry classification	Number of issues
Agriculture	6
Construction	38
Finance, insurance and real estate	1,581
Manufacturing	681
Mineral industries	226
Public administration	12
Retail	176
Service	277
Transportation, communications	327
Utilities	1,141
Wholesale	30
Total	4,495

At the short end, we exclude issues that are immediately callable as the majority of them are also callable at par (110 of 125 issues) and, hence, can be retired for any reason immediately upon issuance. We also exclude issues callable in less than one year with fewer than 18 months to maturity, deeming those to be short-term securities. At the long end, we exclude issues with 10–20 years to maturity that are callable after 80% of their lives and issues with more than 20 years to maturity that are callable after 15 years, as the interest rate and credit risk predictions beyond such long call protection periods are not credible. The final sample is 4,495 bond issues. Their industry classifications are listed in Table 1.<sup>1</sup>

## 3. Ordinal ratings

To enable comparison of call premiums and credit ratings, we convert Standard & Poor's (S&P) and Moody's alpha-numeric rankings to ordinal measures. Prime issues (rated AAA for S&P and Aaa for Moody's) are assigned the ordinal measure 16, and highly speculative issues (rated B- for S&P and B3 for Moody's) are assigned the ordinal measure one. Issues that range from substantial risk to default (rated less than B- for S&P and less than B3 for Moody's) are assigned the ordinal measure zero. For issues listed as investment grade (IG) or high yield (HY) only by SDC Platinum, we assign the mean ordinal value for these subgroups (11.5 for IG issues and 3.0 for HY issues). Table 2 lists the conversion to ordinal for all ratings.

For our sample of 4,495 issues, 4,263 are letter-rated by S&P, 4,316 are letter-rated by Moody's, 4,224 are letter-rated by both S&P and Moody's, and 142 are not letter-rated by either S&P or Moody's but are rated either IG or HY by SDC Platinum. Of the 4,224 issues that are letter-rated by both ratings agencies, 1,867 have equivalent ratings and the remaining 2,357 have split ratings. Of the 2,357 split-rated issues, 1,040 have higher S&P ratings and

<sup>1</sup> To assess the robustness of our results, we repeat the entire analysis in this paper for the reduced sample of 1,773 issues obtained by excluding financials and utilities and find no material difference in the presented results.

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