Call Provisions, Shelf Registered Debt Issuances, and Information Effects

by

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September 15, 2006
Preliminary and incomplete
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* Nayar acknowledges financial support from the Hans J. Bär Chair. Michaël Dewally, Wei-Guan, Nikolai Kosturov, Tian Lijuan, Wilson Liu, and Phuong Nguyen provided excellent research assistance. We thank Thomson Financial Services, Inc. for the IBES data provided as part of a broad academic program to encourage earnings expectation research. Valuable comments were received from Louis Ederington, Rick Kish, Scott Linn, Ajai Singh, participants at the presentation at the FMA meetings and the EFMA meetings. The authors are responsible for any errors.

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Abstract

Theoretical research has shown that the lack of a call provision can act as a signal of negative future states of nature. While tangential empirical evidence exists, a direct test of the signaling role for the lack of a call provision has not yet appeared. This paper addresses this shortcoming. We conduct tests using a sample of shelf-registered debt issuances with three possibilities for the callability of the debt instrument issued: (a) non-callables (b) regular callables, and (c) make-whole callables. Our results show that the average stock market reaction to non-callable bond issuances is significantly negative. Conversely, the average reaction to callable bond issuances (whether regular callable or make-whole callable) is insignificant. Furthermore, the difference between callable and non-callable reaction is significant. This difference between callable issuances and non-callable issuances exists even after controlling for firm-specific and other bond-specific features. Further tests on long-run returns and changes in analysts' estimates provide extra support for the hypothesis regarding the role of call provisions as a signal.

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MANY CORPORATE BONDS INCLUDE A CALL FEATURE wherein the call permits the firm to call the bonds back at a specified price before maturity. Why does a firm choose to include, or not include, a call feature in its corporate bonds? Related to this, is a choice to not include a call bad news to stock holders? Our primary purpose is to test the hypothesis that the decision to *not* include a call feature is negative information for the firm's stock holders.

Numerous studies provide the theoretical reasoning behind the decision to include a call at time of issuance. Güntay, Prabhala, and Unal (2004) have recently provided an interesting theory that firms include call features to manage interest rate risk (hedge). Other prior theoretical explanations for including a call have largely relied upon how a call addresses agency costs and, also, how a call (lack of) may serve as a signal of positive (negative) information. We suggest the most appealing theory for why lack of a call may be bad news is the signaling theory developed by Robbins and Schatzberg (1986), hereafter RS, and further analyzed by Wall (1988).

While the use of the call provision has been investigated theoretically, surprisingly little empirical research exists on its signaling role. Mitchell (1991) is an exception. She uses a conditional logistic regression model and reports that firms facing asymmetric information that finance high quality projects choose callable bonds. However, extant research that investigates the effects of security issuance on stockholder welfare has ignored the call provision's impact.

The general consensus appears to be that bond issuances are commonly associated with a statistically insignificant stock price reaction.[1] In this context, the existence of (lack of) the call

[1] See Eckbo (1986), Mikkelson and Partch (1986), and Shyam-Sunder (1991). In an exception, Datta, Iskandar-Datta, and Patel (1999) have examined the stock price reaction to initial public offerings of bonds, and report a significant negative stock price reaction. However, they also point out that the negative stock price reaction is due to the substitution of public debt for private debt, and that subsequent bond issuances are not accompanied by a significant stock price reaction.

provision, and the attendant agency cost and signaling effects may have a major impact on the (lack of) stock price reaction to debt issuance documented by earlier studies. Consider what happens if the RS prediction is correct. That is, callable bond issuances are positive signals while non-callable bond issuances are negative signals. If a study contains a sample that includes both callable and non-callable bond issuances, the negative stock price effects associated with the latter could negate the positive stock price reaction associated with the former. This may then lead to the well known result that debt issuances are commonly associated with an insignificant stock price reaction.[2] Thus, we argue that it is critical to control for the existence of the call feature when examining the effects of debt issuance.

Given this view, our paper examines the impact of issuing bonds after controlling for the existence or absence of the call feature and also the nature of the call feature (i.e., regular call versus make-whole call). We find that making this distinction yields interesting results with respect to short-window stock price effects surrounding the offer date for such bonds. Also, when we examine long-run stock returns after the debt issuance, there appears to be some difference between make-whole callable issuers and the non-callable bond issuers. We furthermore examine changes in analyst earnings forecasts to see if analysts revise their forecasts in response to the issuance but do not detect any statistically significant difference in earnings forecast revisions between the three types of debt issuances. However, analysts' estimates of long term growth rates are lowered significantly more for non-callable issuers as opposed to callable bond issuers. This difference appears to be driven by the make-whole call issuance sample rather than the regular callable sample.

The rest of this paper proceeds as follows. In the next section, we briefly discuss theories for why firms include or exclude call features. Following that, we describe the data sources and provide information about the sample. Then, empirical methods and associated results are presented. The last section concludes the paper with a summary of our results and implications for corporate finance.

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2 Chaplinsky and Hansen (1993) speculate that the lack of a significant stock price reaction to debt issuances is because such offerings are partially anticipated by the market.

I. Theories of Call Provision Inclusion

A. Agency Theory Explanation

A.1 Risk Incentive Mitigation

First, consider the risk incentive aspect of agency theory. Among others, Barnea, Haugen, and Senbet (1980) maintain that firms are encouraged to include call features in order to address risk incentives (asset substitution). More specifically, this theory maintains that stockholders are inclined to expropriate wealth from bondholders by increasing the risk of the firm (adopting risky projects) after bond issuance. In support of such a view, Parrino and Weisbach (1999) illustrate scenarios where managers will adopt high variance projects with negative expected net present values. Alert bondholders should anticipate this behavior and demand greater yields to compensate for the added risk. However, in order to address this problem, the firm may include a call feature which will decline in value if the firm adopts risky projects. As the call feature is held by stockholders, the inclination to adopt risky projects is diminished. In summary, a call feature can control the risk incentive surrounding managers' investment decisions. Lack of a call suggests lack of risk incentive control and has negative implications for equity returns.

A.2 Underinvestment Mitigation

Second, consider the underinvestment aspect of agency theory analyzed by, among others, Myers (1977) and Acharya and Carpenter (2002). Here firms are discouraged from undertaking profitable investments because of the concern that part (or even all) of the benefit will be received by bondholders in the context of a reduction in the likelihood of bankruptcy and greater bondholder payoffs in bankruptcy situations. Parrino and Weisbach (1999) illustrate cases where firms may not undertake low risk positive net present value projects but accept more risky negative net present value projects. However, Bodie and Taggart (1980) maintain that if the bonds are callable, shareholders can later (after the time of new investment) pay off the debt at a fixed price and negotiate a new interest rate on replacement debt which is indicative of the firm's improved prospects and the positive value of the investment. Thus shareholder inclination to invest in projects is strengthened as they can capture more of the benefit if a call is included. The potential to capture the benefit may be construed as positive information for investors considering purchasing the firm's stock. If no call feature is included, then shareholder ability to share the returns from good investment projects is diminished. Thus, the inclusion of a call may be positive information for stockholders and the lack of a call may be negative information for stock holders.

B. Signaling Explanations of Calls

Under asymmetric information, a firm with strong prospects is not able to relay the information to the market. If such a firm is issuing debt, it may be wise to include a call feature which is beneficial to the firm because bondholders likely underestimate the likelihood of a call exercise due to perceptions the firm is relatively weaker than is truly the case. The value of the call feature (sold by stockholders at issuance) is underestimated. When the firm with strong prospects is able to reveal its strong prospects and greater value, the bond can be refunded with lower cost debt. Thus, informed stock investors may interpret the decision to include a call as information that the firm, in fact, has strong prospects whereas the lack of a call could be interpreted to mean the firm has weaker prospects.

Consequently, inclusion (exclusion) of a call feature can be interpreted as reducing (maintaining or increasing) at least some types of agency costs and, also, potentially, suggesting positive (negative) information about the firm and thus enhancing (reducing) stock value. However, agency theory does not say that a weak firm without any positive net present value projects could not also issue callable bonds in an attempt to perhaps persuade the market the firm is stronger than it actually is. In other words, the decision to include a call is not necessarily a strong and clear indication the firm has positive information.

A signaling theory where weak firms would not issue callable bonds but strong firms would issue callable bonds definitely enhances the idea that the decision to include (exclude) a call feature is positive (negative) information for potential stock purchasers. Such a signaling model was in fact developed by RS (1986). In their model, managers first contract with owners for their compensation schedules and then the firm later invests in a project where any good or bad news cannot initially be shared with the market. Information concerning the likelihood of different payoffs subsequently becomes available in a later period and, finally, in the last period, the project is liquidated with some realized positive payoff or nothing. The probabilities for the positive payoff or nothing are different for good (strong) and bad (weak) news firms.

Two of the critical aspects of this signaling model are lemmas which maintain that the manager of a firm with good news *cannot* signal the good prospects through issuance of non-callable bonds and, also, the manager of a firm with good news *can* signal the firm's good prospects through issuance of callable bonds. A separating equilibrium exists. It is important to note that Wall (1988) thinks the RS results are not robust to different probabilities in the second stage lottery. Wall finds that if the RS probabilities are switched for the good and bad news firms, callable bonds do *not* represent a separating equilibrium and bad news firms can issue callable bonds in hopes of being mistaken for a good news firm. Also, Wall (1988) develops a case (for a lottery of good news firms) where short term debt dominates callable bonds which is in contrast to RS (1986).

In summary, we have given agency and signaling reasons for thinking the decision to include a call can suggest to potential investors that the firm has strong prospects or is at least reducing agency costs. Such an interpretation is also consistent with Mitchell (1991) who finds that firms facing asymmetric information and financing high quality projects choose to include call features in their bond issuances.

The bond markets have recently witnessed the advent of a different type of call mechanism: the make-whole call (e.g., see Mann and Powers, 2003). This call feature allows the borrower to pay off the debt early by making a lump sum payment equal to the present value of remaining coupon payments which will not be paid in the future as a result of the call. To determine the present value to be paid to bondholders to call their bonds, the discount rate used is the sum of the comparable maturity Treasury bond yield and a spread (specified at issuance in the bond indenture). This spread is fixed and is presumably related to the default risk of the firm at the initial issuance of the bond. Thus, a make-whole callable bond can be retired prematurely but the firm will have to pay an amount that is dependent on future treasury yields.[3]

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[3] Note that for regular callable bonds, the call price is stated in the indenture and is independent of prevailing interest rates.

We maintain that this call feature is a stronger signaling device in the RS context than a regular callable bond (which can only be retired for a fixed, predetermined dollar amount). The reason for this is that it is beneficial to call make-whole callable bonds only when the default risk premium on the bond is much lower than it was when the bond was originally issued. Reductions in treasury yields alone will not make it beneficial to call a make-whole callable bond since the call price will merely increase as the original cash flows are now being discounted at a lower rate (treasury plus credit spread). This is not true for regular callable bonds where the call price is a fixed amount and independent of the general level of rates in the economy at the time of a potential call exercise.

C. Hedging Explanations of Calls

In many cases, a hedge against various types of risk can increase the value of the firm and its equity. As one example among many, Allayannis and Weston (2001) find that firms hedging foreign exchange can increase firm value by doing so. Güntay, Prabhala, and Unal (2004) , hereafter GPU, maintain that firms include call features to hedge interest rate risk. Thus, inclusion of a call may indicate a hedging motive which, if done correctly, increases firm and stockholder value. Their view is that every new debt issue creates an incremental interest rate exposure for the firm. Interest rate exposure increases with size of issue, maturity, and level of interest rates when issued. GPU find that firms with higher bankruptcy risk are more likely to hedge with a call as they are more subject to failure due to interest rate risk and other exposures.

Furthermore, GPU maintain that firms with a lot of growth options are more likely to hedge with call features. This is consistent with agency theory discussed above where firms will not undertake good projects because the benefits will accrue to bondholders instead of stockholders. However, if the firm includes a call feature, underinvestment problems will be less likely to occur, which is good news for stock holders; they can enjoy returns due to the firm not passing up good projects. GPU use book to market value as a measure of growth options and investment opportunities.

Importantly, GPU logically suggest that including a call feature to hedge is more likely if a firm's cash flow is positively correlated with interest rates. That is, if interest rates and the firm's cash flows simultaneously decline, then the ability to call the bond at a fixed call price (below market value) helps offset any decline in cash flows related to declining interest rates.

We now test alternative theories of how the choice to include (exclude) a call feature may affect equity valuation. If none of the above agency, signaling, or hedging theories are valid, then the decision to include a call will have no impact on equity values. If the decision to include (exclude) a call has a significant impact on equity valuation, then we attempt to determine which theory is most applicable. In general, our evidence tends to support agency and signaling theories more so than hedging.

II. Data and Sample Characteristics

To examine the information effects associated with call features, we employ shelf registered bond issuances and forgo the use of normal registered bond issuances. Our justification for this selection follows. In a regular registered issuance, an issuer must file a registration statement with the SEC which discloses material information about the bond issuance. This will include the terms of the call (if any). While this registration is being reviewed by the SEC, the issuing firm's investment banker(s) shops the offering around and may or may not amend the terms of the offering. The final terms are unknown until the offering is actually made but the market develops expectations as the issue is shopped around. Thus, for normal registered bond issuances, the information effects associated with the inclusion of a call provision are spread out over a period that begins with the initial registration date and ends with the offer date.

From an empirical analysis standpoint, this may lead to weak power in the statistical tests because the stock market reaction to the inclusion of the call is diffused over this long period, which is typically a month in duration. Additionally, other corporate events could also occur within this period which contaminate the effects of the inclusion of the call provision.

In the case of shelf registered issuances, the firm files a master registration statement that encompasses all securities that the firm may issue over a two-year duration. This filing does not contain any specific details regarding the terms of the debt offerings that may be made in the following two year period. When the firm makes an offering by taking securities "off the shelf", the pricing for the issuance takes into account the then existing market conditions. Further, only when the offer is made ready for sale are the exact terms of the bond issue (including whether the bond is callable) known by the market. Thus, for a shelf registered bond issuance, the exact date on which the market learns of the inclusion of a call provision is more precisely known compared to the case for regular registered bond issuances. We exploit this fact in our empirical tests to determine the nature of the stock price reaction to the inclusion of a call provision.

Additionally, in a regularly registered issuance, the amount of debt issued may serve to influence the stock price reaction. Several papers starting with Miller and Rock (1985) have argued that the size of the issuance can convey information to the market (e.g., Linn and Stock, 2005). In a shelf offering, the firm has already pre-registered the total financing to be raised over the next two years. Given that the potential total financing amount is now known to the market, when a firm issues a portion of this amount to raise ongoing funding, we suggest that the amount issued exerts less of an influence on stock price. Consequently, shelf-registered debt issuances may be a better setting to explore the stock price reaction to the presence of the call feature.

For our empirical analyses, the primary sample of shelf-registered bond issuances was extracted from the SDC Platinum Global New Issues Database and satisfied the following criteria:

(1) Issued between 1/1/1986 and 12/31/2001
(2) Firm's stock trades on NYSE or ASE or NASDAQ
(3) Only shelf registered issues are included
(4) Simultaneous offerings of other securities are excluded
(5) Coupon type is fixed rate
(6) Unit issues are excluded
(7) No foreign flagged issues are included
(8) No rights issues are included
(9) Equity related offerings (e.g. convertibles, warrants, etc) are excluded
(10) Proceeds from issuance must be greater than or equal to $50 Million
(11) Original maturity must be greater than or equal to 20 years
(12) Issuers must have data on the CRSP stock returns database. Specifically, the CUSIP field in the CRSP database must have a match with the six-character CUSIP from the sample from SDC Platinum so that a unique PERMNO (CRSP identifier variable) was obtained

for every bond issuer.

We terminated the sample in 2001 so that we could compute 3 year post-issuance returns from the 2004 CRSP stock returns database. We excluded simultaneous issuances of any other securities to eliminate any confounding influences. The fixed coupon rate assumption was imposed because variable rate coupons could possibly obviate the need for a call feature. Restrictions (6) through (9) were imposed to remove contaminating effects. For example, issuance of convertibles may be viewed as back door equity financing (See Stein, 1992).

The use of the $50 million cutoff was arbitrarily chosen because smaller issuances may not necessitate a call provision. Specifically, to retire small issues, a firm could possibly just buy back those bonds on the open market without facing tremendous price pressure. Additionally, smaller issues may pass under the "radar screen" and not precipitate any reaction whatsoever in the equity market, leading to lower power in our statistical tests to distinguish differences between non-callable and callable issuances. The restriction on original maturity to be at least 20 years was imposed to eliminate any possibility of signaling via the maturity of the bond issue. Specifically, several papers, for example Diamond (1991) and Flannery (1986), have shown theoretically that firms employ short term debt issuances to signal their positive future prospects instead of using long-term debt.

Using the restrictions discussed above, we obtained a sample of 413 issuances. This sample was then examined to see whether the issuance was callable or not. We used the process suggested by GPU (2004) for this purpose. Additionally, we note that some of our callable bonds employed 'Make-Whole Calls' as opposed to plain "vanilla" type call provisions. Our 413 issuances are broken down into 244 non-callable bonds and 169 callable bonds (77 make-whole call, 92 regular callable bonds). Table I presents a chronological distribution of the sample across the years used in constructing the sample. First, we note that there are not many observations in the early years of the sample. The most noticeable feature is that make-whole calls make their appearance in 1995. Thus, this type of call feature is a fairly recent innovation. Further, issuances containing this call mechanism seem to dominate (in number) bond issuances containing the regular call feature in the remaining period, except for 2001. In Table II, we present the composition of the sample by industry grouping. The majority of each subsample (by type of call provision) comes from the DNUM groups 2000 – 3999: about 57% for non-callables, 58% for regular callables, and 60% for make-whole callables.[4]

We next present details on the issuer and issue characteristics in Table III. For the financial ratios, we use financial statement data as of the fiscal year-end immediately preceding the issuance date. Wilcoxon two-sample rank-sum tests are used to differentiate between the subsamples with call provisions versus the non-callable subsample.[5] In the first and second rows, the profit margins, before and after taxes, are higher for the make-whole call sample as compared to the non-callable sample, while regular callable bond issuers are not different from non-callable issuers. This evidence suggests that make-whole callable bond issuers are ex-ante more profitable than other issuers.

In the third row, the current ratio is significantly lower for issuers with any type of call provision compared to the non-callable issuers, while in the fourth row, the debt ratio is not different among the three types of issuers. The evidence in the third and fourth row together suggests that the issuers with call provisions have higher current liabilities than non-callable issuers, while their usage of total liabilities in the capital structure is similar. This implies that the callable bond issuing firms have more short-term debt in their capital structure. Issuance of long-term callable debt suggests a lengthening of the average maturity of the liabilities and possibly an improvement in the current ratio in the following post-issuance year.

In the fifth row of Table III, we present data on the market to book value of equity. Numerous papers have proposed that the market to book value of equity is a proxy for the firm's growth options (e.g., see Pilotte, 1992; Smith and Watts 1992; Barclay and Smith, 1995; Krishnaswami, Spindt, and Subramaniam, 1999). This ratio is not very different between regular callable issuers and non-callable issuers. However, the ratio is significantly higher for make-whole

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4 A chi-squared test did not reject the null hypothesis of similar industry composition between the three sub-samples. Thus, industry composition should not affect our results in subsequent analysis of the three sub-samples.

5 Parametric t-tests were not performed because normality assumptions were violated on several of these variables.

callable issuers than for non-callable issuers.[6] Given the above, growth prospects of issuers using make-whole callable provisions would appear higher (on average) than others.

The last three rows provide some statistics on the bond issuances in our sample. First, in the sixth row, the amount issued by make-whole callable bond issuers is significantly larger (on average) than the amount issued by non-callable issuers while there is no difference between regular callable and non-callable issuers. Next, on the maturity dimension, there is no difference between the three sub-samples. Finally, in the last row, both regular callable bonds and make-whole callable bonds have an at-issue spread over the benchmark treasury bond that is significantly higher than for non-callable issues. Thus, the right to call the bond prior to the stated maturity is not a free option but costs the issuer a significant spread in terms of interest expense.

In a test that is not reported in Table III, the difference in the benchmark treasury spread between make-whole call issues and regular callable issues was not significantly different. This is surprising since in a make-whole callable bond, the bondholder is "made-whole" in the event of a call, and stands to lose less than if the bondholder held a regular callable bond with a fixed call price. Consequently, bondholders *ceteris paribus*, should require a lower yield (at issuance) on make-whole callable bonds, which in turn, implies a lower spread to benchmark treasury, as compared to regular callable issues. Our evidence in regard to similar yield spreads over benchmark treasuries for make-whole callable and regular callable issues is consistent with the findings of Powers and Tsyplakov (2004) who state,

> *"Our conclusion is that make-whole call provisions at origination have been mispriced and that issuing firms have been paying too much for the financial flexibility that the call provision provides."*

This conclusion in Powers and Tsyplakov (2004) and our evidence of higher yield spreads than expected thus raises the question as to why firms are willing to bear the burden of the extra spread associated with make-whole calls without any associated benefits. In other words, why are firms

6 The mean of the market to book equity ratio can be highly unreliable (and very large) for drawing inferences if the book value is an extremely small number. Consequently, the median value of this variable is used to draw inferences.

systematically ignorant about the mispricing, and willing to pay higher yields to include the make-whole call provision in their bond issuances? We speculate that a rational explanation for the high cost option is that it provides signaling benefits. Specifically, as discussed earlier, the inclusion of the call provision provides a mechanism to signal brighter future states and firms derive benefit from this signal, albeit at a cost.[7]

III. Empirical Methods and Results

We use three basic methods to determine the effects of including the call provision on issuers. For our first method, we conduct an event-study using daily stock returns to determine the effects of the call-provision on common stock. Next, we examine long-run stock returns following the issuance to see if there is any differential performance between callable and non-callable issuers. In the third method, we examine whether financial analysts revise their forecasts in response to the inclusion of the call provision. Finally, we augment our results using cross-sectional regressions to determine the nature of the abnormal stock return found in the first method. This last step helps determine whether agency, signaling or hedging theories explain any impact on equity valuation.

A. Common stock return response to issuance

Our first procedure analyzes stock price reaction to the issuance of debt, contingent on whether a call provision is included. To examine the market's reaction to the news that a call is included in the bond issue, it is important to identify the exact date that this information is known to the market. Since we examine shelf registered bond issuances, the offer date becomes the first date where investors learn of a call provision's existence. Specifically, terms of the debt issuance are not known until the offering is taken off the "shelf" and issued. Thus, for our sample of shelf registered bond issuances, the offer date becomes the event date for our analysis.[8]

Our event study method is similar to that in Mikkelson and Partch (1988). In this

[7] In our context, if the inclusion of the make-whole call provision prevents a value decrease (i.e. from an adverse stock price reaction to the issuance), then the call provision's cost may be justified.

[8] This is not true for empirical studies that examine regularly registered bond issuances, which typically use the registration date as the event date of interest.

method, we employ an estimation period of 255 trading days beginning 255 days after the event date. This estimation period is used to establish the market model parameters, which are then employed to compute abnormal returns during the event windows being analyzed. We use the CRSP equally weighted index as the proxy for the market index in our analysis. Additionally, we augment the analysis by using the CRSP value weighted index as a robustness check. A parametric z-statistic is computed using standardized abnormal returns (see Mikkelson and Partch, 1988).[9] We also employ a non-parametric generalized sign test to examine whether the ratio of the number of positive returns to negative returns is different in the event period relative to the same ratio during the estimation period. (See Cowan, 1992).

The results for the event study are presented in Table IV. Specifically, Panel A is for non-callable bond issuances, Panel B is for a sample that contains all the bond issuances with a call provision (i.e., both regular and make-whole callable issuances), Panel C is for regular callable issuances, while make-whole callable issuance results are in Panel D. In Panel A, the two-day abnormal return over days [0,+1] for non-callable bond issuers is significantly negative as indicated by both the *Z*-statistic as well as the generalized sign test z-statistic. In no other subsample is the abnormal return to the issuance itself significant.

It is important to realize that the results discussed above reflect the full sample of issuances. This sample includes event dates where there might have been significant corporate events such as earnings announcements, mergers and acquisitions, etc occurring on the same day.[10] The stock price reaction to these events may contaminate the empirical results we report in Table IV. To examine the extent of contamination, we performed an online search for announcements in the News Wires section of the Lexis-Nexis database in the [-1,+1] window surrounding the issuance date. After eliminating issuances where there were significant corporate announcements in that event window, the relevant event studies were performed and these results appear in the Appendix. The results from this "informationally clean" examination are quite strong, and suggest that make-whole callable issuances are met with a positive and significant

9 In this method, even if the mean abnormal return is positive, the standardized abnormal return may be negative and will, thus, be associated with a negative *Z*-statistic.

10 We thank the referee for suggesting this additional empirical analysis, which further strengthens our conclusions.

stock price reaction, noncallable bonds are met with a significant negative stock price reaction, and regularly callable issuances evoke only a marginal stock price reaction. For the rest of the analyses on long-run post-issuance stock returns and earnings estimate revisions, we use the full sample of issuances instead of the informationally clean sample. Since we are not using the stock price reaction to the issuance itself in any of these subsequent analyses, contaminating information at the issuance should not exert any effect on the empirical analyses.

The results discussed above suggest that issuances that do not contain a call provision are viewed negatively by the market. We next conducted a difference of location test to see whether the abnormal return in response to the issuance for the non-callable bond sample is different from the abnormal return for the combined regular callable and make-whole callable bond sample (whose event-study results are shown in Panel B of Table IV). A Wilcoxon Rank Sum test was employed for this purpose which showed that there was a statistically significant difference at the .08 and .06 levels respectively for the abnormal returns with the equally weighted and value weighted index proxies, respectively. These results are even stronger if we employ the informationally clean sample (see Appendix).

The next test consisted of determining whether the difference between abnormal returns to non-callable issuances and callable issuances was driven by the type of call provision, i.e. regular call versus make-whole call. When the abnormal return at issuance for the *regular callable* sample was compared to the equivalent for the non-callable sample, there was a marginally statistically significant difference between the two (p-value slightly lower than 0.1). However, when the *make-whole issuance* sample was compared to the non-callable issuance sample, the abnormal return was significantly different at the .05 level using both the equally weighted and value weighted proxies for the market. This suggests that the make-whole call bond issuances are viewed more positively than regular callable issuances, and that non-callable issuances are viewed the most negatively. We take this issue up again using cross-sectional regressions later. A negative abnormal return for non-callable bonds is consistent with the non-mutually exclusive theories mentioned above. Specifically, it is consistent with negative asymmetric information, and lack of controls for (a) risk incentives, (b) underinvestment, and (c) hedging.

B. Long run stock returns after issuance

Spiess and Affleck-Graves (1999) show that the stock returns of firms issuing bonds are negative and significant for up to five years subsequent to the offering. However, no control is made for whether the offering contains a call provision. In this section, we analyze the effect of the call provision as a signal regarding long run stock returns subsequent to bond offerings. We compute these long-run abnormal returns over three intervals: [+2,+250], [+2,+500], and [+2,+750], where the return is measured over days relative to the event date, day 0. These are equivalent to one, two, and three year returns, respectively. Our process consists of the following. First, a buy-and-hold return which includes dividends is computed for the bond issuer over each specific post-event window mentioned above. Then, a buy-and-hold return is computed for the size-portfolio corresponding to that firm's decile of market value as of the December-end immediately preceding the event.

A 'size-adjusted buy-and-hold *abnormal* return', *SABHAR*, for that firm is computed as the buy-and-hold return for the firm minus the buy-and-hold return for the corresponding size decile portfolio over each event window. Under the null hypothesis of no abnormal return, this *SABHAR* should be zero. We compute *SABHAR* for the three categories of shelf registered issuances: non-callable, regular callable, and make-whole callable. For statistical test purposes, we employ the skewness-corrected transformed normal test statistic (denoted by $T1$) derived by Hall (1992). We also use a nonparametric generalized sign test which compares the ratio of positive to negative *SABHAR* values in the window of interest to a similar ratio computed over a 255 day pre-event window. The results for these tests are presented in Table V.

In all four panels of Table V, none of the long-run abnormal returns in any window are significant using the skewness-corrected $T1$ statistic. However, in Panel A, the non-parametric generalized sign test indicates that the long-run abnormal returns over all three windows are negative and significant for non-callable bond issuers. In Panel B, when we examine all callable bond issuers collectively, none of the post-issuance window abnormal returns are significant. We next repeat the analysis after separating the all-callable issuer sample into the two subsamples: regular callable issuances, and make-whole callable issuances. These results appear in Panels C and D. In Panel C, only the return over the [+2,+500] window is negative and marginally significant for the regular callable bond issuer sample. None of the windows show a significant return for make-whole callable issuers. Summing up the results of these tests, it appears that long-run returns are negative and significant only for the non-callable bond issuance sample, but not for bond issuances that contain a call provision.

Recent research has demonstrated that studies examining long run returns are subject to the benchmark problem and very often reject the null hypothesis of no abnormal returns in stock prices.[11] To continue our examination of long-run returns and to draw inferences, we need to alleviate the effect of the estimation biases in long-run returns. Consequently, we now focus on the difference in long-run returns between the different subsamples as opposed to the absolute magnitude of the long-run returns in each subsample.

In our context, if there is any bias in the abnormal return measure, then, when we take the difference in the abnormal return between the non-callable bond subsample and the callable bond subsample, the bias should cancel out. Specifically, assume that the abnormal return computed for any callable issuer or non-callable issuer, $SABHAR_j$, has a bias, $\tilde{\gamma}_j$, and that the expected value of this bias is denoted by Γ. Thus, the following relationship holds:

$$SABHAR_j = X_j + \tilde{\gamma}_j,$$
$$\text{where } j \in [\text{callable, non-callable}]$$

Assume also that the bias is uncorrelated with the magnitude of the true abnormal return, X_j. Then, when the difference in the expected value of $SABHAR_j$ between callable and non-callable bond issuers is computed, we get:

$$E(SABHAR_{callable} - SABHAR_{non\text{-}callable}) = E\,(X_{callable} + \tilde{\gamma}_{j,\,callable} - X_{non\text{-}callable} - \tilde{\gamma}_{j,\,non\text{-}callable})$$

which reduces to:

---

[11] For example, Barber and Lyon (1997) and Lyon, Barber and Tsai (1999) suggest existence of the benchmark problem. Kothari and Warner (2005) provide a comprehensive overview of long-run event study methods and the biases therein. They conclude, "Whether calendar time, BHAR methods or some combination can best address long-horizon issues remains an open question." Thus, according to these authors, it would seem that none of the methods used for long-run return measurement is free from bias.

$$E(SABHAR_{callable} - SABHAR_{non\text{-}callable}) = E(X_{callable}) + \Gamma - E(X_{non\text{-}callable}) - \Gamma$$

In the above, the expected bias terms, Γ, cancel out and the difference in the $SABHAR_j$ values will be free of the measurement bias. In this respect, we perform difference of location tests on the following subsamples:

(1) Non-callable issuers and all-callable issuers[12]
(2) Non-callable issuers and regular-callable issuers
(3) Non-callable issuers and make-whole callable issuers

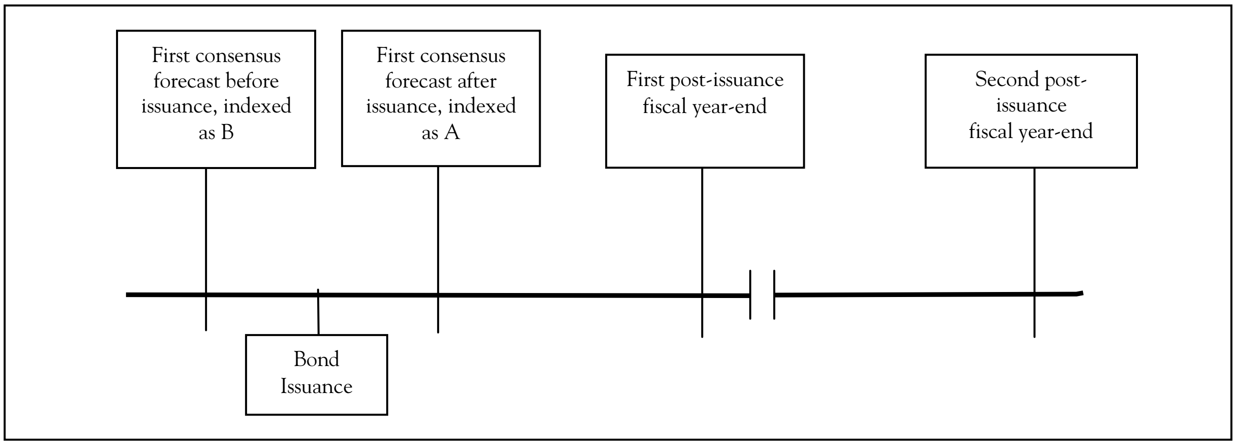
We use nonparametric Wilcoxon rank sum tests for this purpose. The results are presented in Table VI. First, we note that in all three comparisons mentioned above, the *SABHAR* are not different from one another for the period [+2,+250] across the various subsample comparisons. In other words, the abnormal returns for all issuers irrespective of the existence of call provisions (and whether regular call or make-whole call), are not distinguishable from one another over the **first** post-issuance year. In row 1 and for the event periods [+2,+500] and [+2,+750], the *SABHAR* for the non-callable issuer sample is significantly different from the *SABHAR* for the all callable issuer sample (at the .05 level).

To determine whether the above result is driven by the regular callable issuers or the make-whole callable issuers, we now turn to the results in row 2 and 3 of Table VI. In row 2, regular callables versus non-callables, there is only weak evidence that the *SABHAR* over [+2,+500] and [+2,+750] is different from that of the non-callable issuer sample. This is in marked contrast with the evidence in row 3 that compares non-callable issuers with make-whole callable issuers. Specifically, the *SABHAR* over [+2,+500] and [+2,+750] for make-whole callables is significantly different from the values for the non-callable issuer sample. The evidence suggests that long-run return for make-whole call issuers is superior to that of both regular callable and non-callable issuers. Such a result is consistent with call features being effective mechanisms for controlling agency costs, signaling, and hedging.

12 The term "all callable issuers" refers to the combined sample of regular callable as well as make-whole callable issuers.

C. Analyst Earnings Forecast Changes

Here, we investigate whether analysts (i.e., the "smart-money") react to the signal in the call provision. We use the IBES consensus earnings database to extract forecasts of earnings and long-term growth rates. Figure 1 shows the key points on a timeline to explain our empirical procedure.



The earnings estimates and long term growth rates are extracted from the IBES database at two points in time. The first point is the consensus forecast immediately prior to the issuance (indexed as B in Figure 1). The second point is first forecast immediately following the issuance (indexed as A in Figure 1). Since some firms are not covered in the IBES database, we have missing data for some firms in our sample. We use estimates for each issuer taken at points B and A for three variables:

(a) first post-issuance fiscal year-end earnings estimate, *EFY*

(b) second post-issuance fiscal year-end earnings estimate, *ESY*

(c) long-run growth rate in earnings, *LTG*

For each of these variables, we compute two empirical change measures as shown below:

$$\Delta e1 = (\text{median of } e_A) - (\text{median of } e_B), \text{ and}$$

$$\Delta e2 = \Delta\, e1 \;/\; (\text{median of } e_B)$$

where estimate, $e \in [EFY, ESY, LTG]$, and the subscripts B, A denote whether the estimate was from before or after the issuance.[13] Note that the second empirical measure, $\Delta e2$, is a percentage change measure in the estimate from its pre-issuance value. Under the null hypothesis of no change in analysts' estimates, $\Delta e1$ and $\Delta e2$ should be zero. We conduct a nonparametric sign test on the change measures, $\Delta e1$ and $\Delta e2$. The results are summarized in Table VII. In Table VII, the overall result seems to be that analysts are lowering their expectations from before the issuance to after the issuance for $\Delta EFY1$, $\Delta EFY2$, $\Delta ESY1$, and $\Delta ESY2$ for non-callable issuers (Panel A) and for the general sample of callable issuers (Panel B). When the sample of all callable issuers is split into the two components – regular callables (Panel C) and make-whole callables (Panel D) – the smaller sample sizes may reduce statistical significance, but the general tenor of the results is the same. This general result is to be expected since the firm is issuing more debt which will consequently increase interest expense and lead to lower earnings per share in the near future. Later, if, for example, projects financed by the bonds are profitable, earnings may indeed rise.

When we look at changes in long-term growth forecasts ($\Delta LTG1$ and $\Delta LTG2$), these variables are negative and significant for non-callable issuers but not for callable issuers (the combined all callable bond issuance sample, the regular callable sample or the make-whole callable sample in Panels B, C, and D, respectively). Specifically, it appears that non-callable issuers are expected to have lower long-term growth rate of earnings, which is not the case for callable issuers.

To examine differences in revisions between the different call provision subsamples, difference of location tests were conducted. These results are presented in Table VIII. Our tests here are performed only on the scaled versions of the variables, i.e., $\Delta EFY2$, $\Delta ESY2$, and $\Delta LTG2$. This is because only the scaled versions permit comparability across the subsamples since they are percentage changes in analysts' estimates from before the issuance to after the issuance. In Panel A, the first two rows show that $\Delta EFY2$ and $\Delta ESY2$ are not different between the non-callable and all callable issuer subsamples. However, the third row of Panel A shows that the $\Delta LTG2$ variable is marginally significantly different between the two groups.

[13] The firm subscript has been omitted for brevity.

To examine whether this effect in $\Delta LTG2$ is being driven by regular callables or make-whole callable issuers, we now refer to the results in Panels B and C. The first two rows of both panels show that these two subsamples with call provisions are similar with respect to $\Delta EFY2$ and $\Delta ESY2$ as in the non-callable issuer sample. However, the statistically significant difference in $\Delta LTG2$ seen in the third row of Panel A is due to the make-whole callable sample (as shown in the third row of Panel C compared to the third row in Panel B for regular callable issuers).

Summing up our results in this series of tests, our evidence indicates that analysts lower their estimates of earnings for the first and second post-issuance fiscal year-ends for all debt issuers irrespective of the existence or the nature of the call provision. However, expected long-term earnings growth rates are relatively stronger for callable issuers. Such a result is consistent with call features being effective mechanisms for controlling agency costs, signaling, and hedging.

D. Cross-sectional analysis of abnormal returns

Here, we analyze determinants of the abnormal return (i.e., over days [0, +1]) to the issuance obtained from the event-study. After testing many independent variables, only the following were found significant. Except for *CALLTYPE* below, the variables are fundamentally control variables that do not have a strong connection to theories for including a call feature. Below, we provide a brief discussion of their effect on the abnormal return to the debt issuance.[14]

- *CALLTYPE*: This captures the intuition of agency cost and signaling where a callable bond issuance controls agency costs and is a more positive signal than a non-callable bond issuance. We further extend this intuition to include make-whole callable issuances as an even stronger signal than regular callable bonds. To capture this overall effect, this variable takes on a value of -1 for non-callable bond issuances (viewed as most negative signal), 0 for regular callable issuances, and +1 for make-whole callable bonds (viewed as most positive signal).

- LTG_B: This is the median estimate of the long-term growth rate in earnings

[14] For brevity, we have omitted descriptive statistics for the variables used in the cross-sectional regressions. These statistics are available on request from the authors.

obtained immediately prior to the issuance from the IBES consensus estimates database. Our prediction is that for firms with higher growth estimates, the issuance of debt will be viewed positively compared to the case where a firm uses external equity. This is consistent with the pecking order theory of capital structure, which promotes the view that debt will be used before external equity. It is noteworthy that LTG_B may be strongly correlated with price to book ratios (which reflect high value of growth options, and consequently, the need to address underinvestment incentives).

- *ESTVOL* : This variable is computed as the volatility of the earnings estimates scaled by the mean consensus estimate immediately prior to the bond issuance. This variable captures the transparency of the issuer's financial statements. Such transparency affects the information environment surrounding the firm. Specifically, we predict that higher volatility of earnings estimates implies a less transparent firm and therefore, a higher degree of asymmetric information. If an issuance is undertaken by such an opaque firm, then the market may believe that the issuance does not augur well for future earnings.[15] This is consistent with the evidence in Lang and Lundholm (1996) who find that firms with more informative disclosure policies have lower dispersion in analysts' forecasts.

- *CFACCURACY* : This variable is computed as the cash flow from operating activity (COMPUSTAT data item 308) scaled by the operating income before depreciation (COMPUSTAT data item 13). The main discrepancy between the numerator and denominator is primarily due to total accruals. If managers of issuing firms are manipulating earnings prior to the offering, this would be most likely through adjustments in accrual accounts.[16] If accruals are low, then the ratio should be close to one, which implies lower potential earnings management. More importantly, if the ratio is extremely low, then it means that the true cash being generated by the firm through operations is much lower than what the income statement implies. We predict that the

[15] Several papers (e.g., Miller and Rock, 1985) argue that issuances undertaken by firms may imply negative future earnings.

[16] See Dechow, Sloan and Sweeney (1995), DeFond and Jiambalvo (1994), Guay, Kothari and Watts (1996), Guenther (1994), and Sloan (1996) for the role of accruals in earnings management.

higher this explanatory variable, the greater the abnormal return.[17]

The reason to include the last two variables stems from the claim that shelf registrations (since they are completed rapidly via an amendment to the original registration statement) may be subject to less scrutiny prior to issuance.[18] For example, Allen, Lamy and Thompson (1990) state,

> *"The concern has been that the investment banker's ability to assure that no misstatement or omissions appear in the issuer's registration statement, i.e., to perform the due-diligence obligation, is impaired under the rapid-fire nature of security issues under the SEC's Rule 415."*

If such reduced due diligence is one reason why issuers employ shelf registrations, then the signal value of the call provision should be higher to avoid the "lemons" problem.[19]

In our cross-sectional regressions, we use the two-day abnormal returns over days [0,+1] as the dependent variable. For this variable, day 0 is the day that the market learns of the presence of the call provision (i.e. it is the issuance date for shelf registrations). We employ cross-sectional regressions and compute *t*-statistics that incorporate White's (1980) correction for heteroscedasticity.[20] The results are shown in Table IX.

In Panel A, we present results for various univariate regressions using the independent variables outlined earlier. The number of observations in the individual regressions differs because of missing data for some of the variables. In Panel A, the abnormal return to the issuance is positively related to the type of call feature. This confirms our hypothesis regarding the presence of the call provision, and furthermore, the importance of the exact nature of the call, i.e. whether regular callable or make-whole callable. Specifically, make-whole callable bond issuances are viewed the most positively. We also see that the abnormal return at issuance is positively related

[17] This variable can be said to be related conceptually to the *ESTVOL* variable discussed above. Specifically, a low ESTVOL (higher transparency) should be related to high *CFACCURACY* (less potential managerial manipulation).

[18] For example, see Allen, Lamy and Thompson (1990), Blackwell, Marr, and Spivey (1990), and Sherman (1999).

[19] We also attempted to include several measures suggested by the literature – proxies for size of the issue, maturity of the issue, issue rating, interest expense, tax related variables, size of the firm, etc. However, none of these variables were significant.

[20] Checks for influential observations using the process suggested in Belsley, Kuh, and Welch (1980), and for multicollinearity using variance inflation factors (VIF) were implemented in the regression analyses.

to the pre-issuance median estimate of long-term earnings growth rate. Thus, firms which are expected to have higher growth rates are positively affected when they issue debt, consistent with the use of callable debt to control underinvestment incentives.

Next, in rows 3 and 4 of Panel A, we examine the impact of transparency and the congruence of accounting based income measures to operating cash flows, respectively, on abnormal returns. In row 3, the higher the value of *ESTVOL* (i.e. the scaled volatility of analyst estimates of one-year ahead earnings), the more negative the stock price reaction to the issuance, although the significance is marginal. In row 4, the higher the congruence between the accounting income measure and operating cash flow, *CFACCURACY*, the higher the abnormal return to the issuance. Thus, the results suggest that shelf registered issuances made by opaque firms may not be well received by the equity markets.

The above results are robust to estimation using observations with no missing data on any of those variables. These results are shown in Panel B of Table IX. Finally in Panel C, we report the results of a multiple regression using the explanatory variables simultaneously. In row 9, the results for all the variables are the same as in the univariate regressions reported on earlier except for *ESTVOL*, which appears insignificant. In results not reported here, we find that ESTVOL is highly correlated to *CFACCURACY*. This finding is interesting in that *ESTVOL* is computed using IBES analyst estimate data, while *CFACCURACY* is computed using financial statement data reported by the issuing firm. Thus, the volatility in analysts' estimates appears to be driven by the congruence between operating cash flow and the reported income statement measure. After removing the ESTVOL variable from the estimation, the *CFACCURACY* variable continues to be significant (row 10 in Panel C). In all the estimations, *CALLTYPE* continues to be positive and statistically significant. This result implies that after controlling for other factors, the inclusion of the call provision, and more importantly, the type of the call provision used, is an important determinant of the stock price reaction to the issuance.

The above table reflects independent variables that were found to be significant. Many other independent variables were used but none were found significant. For example, hedging theory suggested by GPU (2004) suggests that bonds with a greater maturity and lower rating provide more hedging value and potentially more positive returns. However, maturity and rating were not significant. Also, a high price to book ratio may indicate that firm has more growth opportunities so that a call feature is more beneficial in controlling underinvestment.[21]

E. Further Testing of Theories

We performed further tests to determine if the call features (or lack thereof) in our sample could be associated with the theories of call inclusion. With respect to risk incentive, one might expect more post-issuance credit rating downgrades for the non-callables (or more upgrades for callables). However, we found no significant difference. Also with respect to risk incentive, one might expect a relative post-issuance increase (decline) in beta and volatility of return on assets for non-callables (callables) but we did not find a significant change. With respect to underinvestment, one might expect a lesser (larger) increase in total assets and/or lesser capital expenditures for non-callables (callables) but we detected no difference. With respect to asymmetric information and signaling, one might expect worse (better) post-issuance return on assets for non-callables (callables) but, again, we detected no difference.

Finally, we considered factors unique to the hedging theory. The value of the hedge may be greater if the value of the call option is higher due to standard option pricing theory. More specifically, call option values may increase with greater volatility of interest rates and lower slopes of the term structure.[22] However, these did not have any significance when in included in regressions as in Table IX. Also, GPU (2004) suggest hedges may be more valuable for longer maturities and lower credit ratings, but, again, these were not significant in Table IX regressions.[23]

IV. Conclusions

Firms frequently issue debt where there is a very long and potentially complex list of decisions that must be made about the specific features (design) of the debt. One common and important

[21] Some of the other variables that were insignificant included issue size divided by total assets, bond credit rating, and tax related variables.

[22] A stronger positive slope suggests a strong likelihood of an increase in interest rates and thus low likelihood of a call exercise being beneficial.

[23] GPU (2004) suggest that larger firms have more access to alternative derivative instruments to hedge interest rate risk and thus larger firms may less likely to include a call feature. As our sample has only large firms, this could explain lack of support for hedging theory.

element that may or may not be included is the call feature. Traditional discussions of this decision have commonly focused on the potential for the firm to replace the debt with lower cost debt. More recently, agency and signaling theory suggest that the call may be included for other reasons. For example, agency theory maintains that management may not undertake certain positive net present value projects if the gain is captured by bond holders. However, a call feature allows recontracting before maturity so that stockholders can capture some of the benefits of the project. Consequently, if the firm employs callable debt, it may undertake a project which would otherwise be rejected had non-callable debt been used. Signaling theory developed by Robbins and Schatzberg furthermore suggests that callable debt is not unique in that short term debt also allows recontracting. They develop theory where, under asymmetric information, the call feature can serve to credibly signal that the firm has strong prospects. More recently, call features have been described as a way for the firm to hedge value in the face of volatile interest rates.

Our empirical study finds that, consistent with the Robbins and Schatzberg (1986) prediction, a non-callable bond issuance is associated with a significantly negative abnormal stock price reaction, while callable bond issuances do not suffer this negative outcome. There is also a significant difference between the abnormal returns to non-callable bond issuances compared to those associated with make-whole call bond issuances. When long run returns are examined, non-callable bond issuers again generate lower returns than make-whole callable issuers.

We also examine how sell-side analysts react to the call feature or lack thereof. We note that analysts revise long-run growth forecasts downward if the bond issued is non-callable but not for callable bonds. The differences between non-callable and callable revisions in long term growth rate are significantly different, where the difference is largely driven by bonds with make-whole call features. These results are generally consistent with the signaling theory of RS.

Cross sectional analysis of the abnormal returns to the issuance suggests that bonds with a make-whole call have a positive and significant effect upon abnormal returns, which is again consistent with a call feature being a positive signal. Additionally, we find that the results associated with the control variables for our regressions are quite interesting. More specifically, shelf issuances have been criticized as perhaps not permitting adequate time for thorough due diligence investigations to be performed. Our results suggest the firms with less transparent accounting information suffer reduced stock returns upon a shelf issuance. Apparently, the market is doubtful of the quality of due diligence in shelf registrations for such firms.

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Table I. Chronological distribution of sample by type of call feature

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. Various criteria were used to reduce the sample size to obtain a carefully constructed sample to examine the effects of including the call feature.

Year of issuance	Number of Observations		
	Non-callable Issuances	Issuances with Regular Call Provision	Issuances with Make-Whole Call Provision
1986	0	1	0
1987	0	0	0
1988	0	0	0
1989	6	4	0
1990	6	1	0
1991	44	8	0
1992	36	20	0
1993	41	29	0
1994	3	4	0
1995	23 (22)[a]	8	5
1996	19	2	5
1997	24	1	11
1998	30	3	34
1999	8	3	10
2000	3	0	6
2001	1	8	6
Total	**244 (243)[a]**	**92**	**77**

[a] The number in parenthesis represents the actual number from that year used in the event study performed.

Table II. Composition of the sample by industry and call provision

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. Various criteria were used to reduce the sample size to obtain a carefully constructed sample to examine the effects of including the call feature.

Compustat DNUM Value	Non-callable Issuances		Regular Callable Issuances		Make-Whole Callable Issuances	
	Number of Observ-ations	Percentage of that sample	Number of Observ-ations	Percentage of that sample	Number of Observ-ations	Percentage of that sample
1000 – 1999	22	9.02%	1	1.09%	3	3.90%
2000 – 2999	86	35.25%	43	46.74%	34	44.16%
3000 – 3999	53	21.72%	10	10.87%	12	15.58%
4000 – 4999	33	13.52%	18	19.57%	7	9.09%
5000 – 5999	37	15.16%	16	17.39%	15	19.48%
6000 – 6999	2	0.82%	0	0.00%	0	0.00%
7000 – 7999	6	2.46%	2	2.17%	4	5.19%
8000 – 8999	1	0.41%	1	1.09%	0	0.00%
Missing	4	1.64%	1	1.09%	2	2.60%
Total	**244**	100.00%	**92**	100.00%	**77**	100.00%

Table III. Characteristics of issuers and their issuances

Data used to compute ratios are taken from the financial statements for the fiscal year-end immediately preceding the bond issuance. The ratios are computed as follows: Profit Margin Before (After) Taxes is computed as the ratio of operating income after depreciation but before (and after) taxes divided by Sales Revenues, Current Ratio is calculated as current assets divided by current liabilities, Debt Ratio is computed as the ratio of total liabilities divided by total assets, Market to Book Equity is computed as the product of number of shares outstanding and price per share as of the fiscal year end divided by the book value of equity. The number of observations are not the same across all the measures due to availability of data.

Variable	**Non-callable bonds**				**Regular Callable Bonds**					**Make-whole Call Bonds**				
	# of obs	Mean	Std dev	Median	# of obs	Mean	Std dev	Median	Wilcoxon p-value[a] (1-tail)	# of obs	Mean	Std dev	Median	Wilcoxon p-value[a] (1-tail)
Profit Margin BeforeTaxes	240	.042	.063	.041	91	.046	.044	.040	.451	75	.070	.068	.061	.0061**
Profit Margin After Taxes	240	.037	.073	.040	91	.049	.111	.040	.488	75	.071	.069	.061	.0006**
Current Ratio	211	1.434	.662	1.319	84	1.296	.642	1.122	.022*	70	1.218	.470	1.129	.010**
Debt Ratio	240	.653	.147	.636	91	.656	.118	.656	.2746	75	.676	.132	.657	.1223
Market to Book Equity[b]	223	7.216	38.960	2.432	87	2.726	1.734	2.091	.0605	64	7.057	11.083	3.529	<.0001 ***
Issue Amount ($Million)	244	224.5	156.1	200	92	216.7	109.6	200.0	.2469	77	287.7	163.0	250	<.0001***
Maturity (years)	244	27.9	6.42	30.0	92	31.9	4.8	30.0	.1447	77	28.3	4.096	30.0	.2101
Spread to bench-mark Treasury (b.p.)	233	104.8	44.8	94.0	91	119.4	49.89	105.0	.045*	76	120.9	55.99	114.0	.0009**

[a] The statistical test compares the values for the callable subsample against the values for the non-callable bond issuance subsample.

[b] Observations where the market to book equity value was negative were omitted for these statistics.

*, **, *** represent statistical significance at the .05, .01, and .0001 levels respectively.

Table IV. Event study results for shelf registered bond issuances

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. Three samples based on the type of callability – non-callable, regular callable, and make-whole callable bonds were studied separately. The event study used an estimation period spanning 255 days which began 255 days after the event date.

Event Period	Number of Observations	Mean Cumulative Abnormal Returns	z-statistic	Number of Positive : Negative Abnormal Returns	Generalized Sign Test z-Statistic
Panel A. Non-callable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	243	.38%	-.673	113 : 130	-.328
[0,+1]	243	-.42%	-3.234***	101 : 142	-1.807*
[+2,+50]	243	-.27%	-.760	105 : 138	-1.356
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	243	.48%	-.168	121 : 122	.568
[0,+1]	243	-.31%	-2.634***	100 : 143	-2.129**
[+2,+50]	243	.37%	.295	123 : 120	.825
Panel B. All Callable (Regular and Make-whole) Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	169	.08%	-.254	81 : 88	-.147
[0,+1]	169	-.05%	-.394	78 : 91	-.609
[+2,+50]	169	.10%	-.477	85 : 84	.468
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	169	.10%	-.154	82 : 87	-.017
[0,+1]	169	.02%	-.026	83 : 86	.137
[+2,+50]	169	-.36%	-.581	85 : 84	.444
Panel C. Regular Callable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	92	.17%	-.505	46 : 46	.259
[0,+1]	92	-.29%	-1.342	41 : 51	-.784
[+2,+50]	92	-1.95%	-1.897*	38 : 54	-1.410
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	92	.83%	.046	48 : 44	.713
[0,+1]	92	-.15%	-.849	44 : 48	-.121
[+2,+50]	92	-1.31%	-1.254	41 : 51	-.747
Panel D. Make-whole Callable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	77	-.03%	.196	35 : 42	-.501
[0,+1]	77	.25%	.932	37 : 40	-.045
[+2,+50]	77	2.69%	1.272	44 : 33	1.552
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	77	-.79%	-.333	34 : 43	-.806
[0,+1]	77	.22%	.902	39 : 38	.335
[+2,+50]	77	1.02%	.440	43 : 34	1.247

* , **, ***, significant at .10, .05, and .01 levels, respectively

Table IV. Event study results for shelf registered bond issuances (Continued)

Panel E. Difference of Location Tests on Event Window Returns Between Sub-samples					
Subsample	Number of observations	Mean	Median	*p*-value in parenthesis for a one-tail, two-sample *t*-test	*p*-value for a one-tail Wilcoxon two-sample Rank Sum test
1. Abnormal return obtained using CRSP equally weighted index as market portfolio proxy					
Non-callable issuances	243	-.42%	-.40%	.0643	.083
All callable issuances	169	-.05%	-.13%		
2. Abnormal return obtained using CSRP value weighted index as market portfolio proxy					
Non-callable issuances	243	-.31%	-.51%	.0841	.062
All callable issuances	169	.02%	.00%		

Table V. Long-run abnormal returns for shelf registered bond issuances

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. Three samples, based on the type of callability – non-callable, regular callable, and make-whole callable bonds, were studied separately. The tests use size-adjusted buy and hold abnormal returns, *SABHAR*. Due to skewness in the *SABHAR* variable, we present median values instead of means.

Period Examined	Number of observations	Median Size-Adjusted Buy and Hold Abnormal Return	Skewness Corrected *T*1 Statistic	Number of Positive: Negative Abnormal Returns	Generalized Sign Test z-Statistic
Panel A. Non-callable Bonds					
(+2,+250)	243	-4.26%	-0.800	104:139	-1.724*
(+2,+500)	243	-15.39%	-1.366	90:153	-3.521***
(+2,+750)	243	-17.42%	-1.409	86:157	-4.035***
Panel B. All Callable (Regular and Make-whole) Bonds					
(+2,+250)	168	-2.32%	-0.398	79:89	-0.379
(+2,+500)	168	-4.39%	-0.064	72:96	-1.459
(+2,+750)	168	-1.60%	-0.718	80:88	-0.224
Panel C. Regular Callable Bonds					
(+2,+250)	91	-2.44%	-1.243	42:49	-0.520
(+2,+500)	91	-6.72%	-1.056	36:55	-1.778*
(+2,+750)	91	-8.50%	-1.051	39:52	-1.149
Panel D. Make-whole Callable Bonds					
(+2,+250)	77	-2.25%	0.314	37:40	0.008
(+2,+500)	77	-2.45%	0.615	36:41	-0.220
(+2,+750)	77	0.63%	0.030	39:38	0.464

* , **, ***, significant at .10, .05, and .01 levels, respectively

Table VI. Difference of location tests on long-run size adjusted buy and hold abnormal returns based on type of call provision.

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. The tests use size-adjusted buy and hold abnormal returns, *SABHAR*. Due to skewness in the *SABHAR* variable, we employ nonparametric Wilcoxon rank sum tests.

Row Number	Samples Compared (Sample sizes in parenthesis)	Normal Approximation z-statistic and *p*-value in parenthesis for Wilcoxon rank sum test for difference in the size-adjusted buy and hold abnormal return, *SABHAR*, over event period indicated below		
		[+2, +250]	[+2, +500]	[+2,+750]
1	All callable versus non-callable issuers (168: 243)	.9405 (.3469)	2.2785 (.0227)**	2.2177 (.0266)**
2	Regular callable versus non-callable issuers (91:243)	.5995 (.5489)	1.6648 (.0960)*	1.4357 (.1511)
3	Make-whole callable versus non-callable issuers (77: 243)	.9075 (.3642)	1.963 (.0496)**	2.1160 (.0343)**

* , **, ***, significant at .10, .05, and .01 levels, respectively

Table VII. Changes in analysts' expectations of earnings and long term growth rates

The data are obtained from the IBES database. The variables considered are changes in earnings estimates of first and second post issuance fiscal year-ends as well as changes in analysts' estimates of long-term growth rate in earnings. A Wilcoxon sign test is used for determining statistical significance. $\Delta EFY1$ is the change in earnings estimate from before the issuance to after the issuance for the first post issuance fiscal year-end. $\Delta EFY2$ is the percentage change in the earnings estimate (i.e. $\Delta EFY1$ scaled by the pre-issuance estimate, EFY_B). Similarly, $\Delta ESY1$ and $\Delta ESY2$ are the analogs for the second post issuance fiscal year-end, and $\Delta LTG1$ and $\Delta LTG2$ are the analogs for the change in long-term growth rate in earnings, respectively.

Variable	Number of observations	Mean	Median	Standard deviation	Wilcoxon signed M statistic and p-value in parenthesis
Panel A. Non-callable Bonds					
$\Delta EFY1$	161	-.161	-.030	.472	-28.0 (<.0001)***
$\Delta EFY2$	160	-.065	-.0194	1.043	-27.5 (<.0001) ***
$\Delta ESY1$	161	-.0703	-.030	.279	-21.0 (.0006) ***
$\Delta ESY2$	161	-.033	-.018	.116	-22.0 (.0003) ***
$\Delta LTG1$	243	-.143	.000	1.267	-12.5 (.044) **
$\Delta LTG2$	243	-.004	.000	.095	-12.5 (.044) **
Panel B. All Callable (Regular and Make-whole) Bonds					
$\Delta EFY1$	102	-.176	-.025	.809	-16.5 (.0004) ***
$\Delta EFY2$	101	-.050	-.007	.244	-14 (.0026) ***
$\Delta ESY1$	102	-.155	-.045	.819	-20 (<.0001) ***
$\Delta ESY2$	102	-.052	-.017	.141	-20 (<.0001) ***
$\Delta LTG1$	156	.135	.000	1.126	3.5 (.4828)
$\Delta LTG2$	156	.012	.000	.091	3.5 (.4828)
Panel C. Regular Callable bond Bonds					
$\Delta EFY1$	62	-.098	-.045	.299	-10.5 (.0046) ***
$\Delta EFY2$	61	-.038	-.020	.269	-9 (.0153) **
$\Delta ESY1$	62	-.091	-.05	.311	-15.5 (<.0001) ***
$\Delta ESY2$	62	-.053	-.021	.109	-15.5 (<.0001) ***
$\Delta LTG1$	82	.038	.000	.806	-1 (.871)
$\Delta LTG2$	82	.010	.000	.089	-1 (.871)
Panel D. Make-whole Callable Bonds					
$\Delta EFY1$	40	-.296	-.010	1.237	-6 (.0501) *
$\Delta EFY2$	40	-.068	-.005	.202	-5 (.1102)
$\Delta ESY1$	40	-.256	-.010	1.252	-4.5 (.1628)
$\Delta ESY2$	40	-.051	-.005	.181	-4.5 (.1628)
$\Delta LTG1$	74	.243	.000	1.397	4.5 (.1755)
$\Delta LTG2$	74	.014	.000	.094	4.5 (.1755)

* , **, ***, significant at .10, .05, and .01 levels, respectively

Table VIII. Changes in earnings estimates and long-term earnings growth rates based on type of call provision.

The data are obtained from the IBES database. The variables considered are changes in earnings estimates of first and second post issuance fiscal year-ends as well as changes in analysts' estimates of long-term growth rate in earnings. $\Delta EFY2$ is the change in earnings estimate from before the issuance to after the issuance for the first post-issuance fiscal year-end, and then scaled by the pre-issuance estimate for that fiscal year-end. Similarly, $\Delta ESY2$ is the analog for the second post issuance fiscal year-end, and $\Delta LTG2$ is the analog for the change in long-term growth rate in earnings, respectively. Scaling by the pre-issuance estimate produces a percentage change number which can then be compared across subsamples. Due to skewness in the variables, we employ nonparametric Wilcoxon rank sum tests to test for differences between the different call provision subsamples.

Variable	Number of observations (non-callable : callable type)	p-value for Wilcoxon Ranked Sum Two-sample test (two-tail)
Panel A. Non-callable Versus All Callable Bond Issuers		
$\Delta EFY2$	160 : 101	.7447
$\Delta ESY2$	161 : 102	.5215
$\Delta LTG2$	243 : 156	.0624 *
Panel B. Non-callable Versus Regular Callable Bond Issuers		
$\Delta EFY2$	160 : 61	.9408
$\Delta ESY2$	161 : 62	.1740
$\Delta LTG2$	243 : 82	.3105
Panel C. Non-callable Versus Make-whole Callable Bond Issuers		
$\Delta EFY2$	160 : 40	.4910
$\Delta ESY2$	161 : 40	.5413
$\Delta LTG2$	243 : 74	.0531*

* : significant at .10 level

Table IX. Cross-sectional regressions of abnormal returns at bond issuance

In regressions, the dependent variable is the abnormal return over days [0,+1] where day 0 is the issuance date. The independent variables are: (a) $LTG_{B,}$ the median consensus estimate of the long term growth rate of earnings provided by analysts immediately preceding the issuance, (b) *CALLTYPE* is a variable that captures the type of call provision which equals 1 for a make-whole call, 0 for regular call, and -1 for non-callable issuance, (c) *ESTVOL* is the pre-issuance standard deviation of analysts' earnings estimates for the first post-issuance fiscal year-end scaled by the relevant mean earnings estimate, and (d) *CFACCURACY* is the cash from operating activity (COMPUSTAT data item 308) scaled by operating income before depreciation (COMPUSTAT data item 13).

Row	Number of Observations	Regression coefficients (p-values in parenthesis)					Adjusted R-Squared (p-value for F statistic)
		INTERCEPT	*CALLTYPE*	LTG_B	*ESTVOL*	*CFACCURACY*	
Panel A. Regression with different number of observations in each model							
1	402	-0.0101 (0.0144)	0.0031 (0.0439)				0.0064 (0.0586)
2	413	-0.0013 (0.3028)		0.0006 (0.0586)			0.0074 (0.0439)
3	401	-0.0030 (0.0160)			-0.0002 (0.0798)		0.0052 (0.0798)
4	403	-0.0009 (0.0002)				0.0093 (0.0024)	0.0204 (0.0024)
Panel B. Regression with same number of observations in each model							
5	393	-0.0029 (0.0163)	0.0029 (0.0681)				0.0093 (0.0308)
6	393	-0.0017 (0.2259)		0.0007 (0.0308)			0.0060 (0.0681)
7	393	-0.0030 (0.0163)			-0.0002 (0.0814)		0.0052 (0.0814)
8	393	-0.0095 (0.0001)				0.0093 (0.0022)	0.0213 (0.0022)
Panel C. Multiple regression with same number of observations in each model							
9	393	-0.01748 (0.0004)	0.0030 (0.0482)	0.0008 (0.0175)	-0.0001 (0.7226)	0.0092 (0.0067)	0.0376 (0.0008)
10	393	-0.01789 (0.0002)	0.0030 (0.0486)	0.0008 (0.0172)		0.0098 (0.0011)	0.0397 (0.0003)

APPENDIX

Event study results for shelf registered bond issuances – using informationally clean events only

The sample of shelf debt offerings is obtained from the SDC Platinum Global New Issues database. Three samples based on the type of callability – noncallable, regular callable, and make-whole callable bonds were studied separately. The event study used an estimation period spanning 255 days which began 255 days after the event date. An event was defined as informationally clean if there were no significant corporate events in the (-1,+1) window, where day 0 is the event date.

Event Period	Number of Observations	Mean Cumulative Abnormal Returns	z-statistic	Number of Positive : Negative Abnormal Returns	Generalized Sign Test z-Statistic
Panel A. Noncallable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	175	0.53%	-0.267	87:88	0.544
[0,+1]	175	-0.90%	-5.298***	55:120	-4.300***
[+2,+50]	175	-0.28%	-0.598	82:93	-0.213
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	175	0.52%	0.050	90:85	0.927
[0,+1]	175	-0.81%	-5.526***	51:124	-4.974***
[+2,+50]	175	0.18%	0.116	91:84	1.079
Panel B. All Callable (Regular and Make-whole) Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	108	1.63%	0.869	59:49	1.290
[0,+1]	108	0.80%	3.618***	71:37	3.600***
[+2,+50]	108	0.64%	0.084	57:51	0.905
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	108	1.49%	1.385	60:48	1.457
[0,+1]	108	0.80%	3.689***	71:37	3.575***
[+2,+50]	108	0.24%	-0.073	56:62	0.687
Panel C. Regular Callable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	61	2.02%	0.720	36:25	1.634
[0,+1]	61	0.30%	1.533	38:23	2.146*
[+2,+50]	61	-0.66%	-0.671	30:31	0.096
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	61	2.64%	1.981*	39:22	2.421*
[0,+1]	61	0.33%	1.671*	38:23	2.165*
[+2,+50]	61	-0.22%	-0.225	30:31	0.116
Panel D. Make-whole Callable Bonds					
1. Using CRSP equally weighted index as market portfolio proxy					
[-50,-1]	47	1.12%	0.489	23:34	0.094
[0,+1]	47	1.45%	3.708***	33:14	3.013**
[+2,+50]	47	2.33%	0.804	27:20	1.262
2. Using CSRP value weighted index as market portfolio proxy					
[-50,-1]	47	0.01%	-0.012	21:26	-0.550
[0,+1]	47	1.40%	3.636***	33:14	2.952**
[+2,+50]	47	0.83%	0.112	26:21	0.909

* , **, ***, significant at .10, .05, and .01 levels, respectively

Appendix (Cont'd)

Panel E. Difference of Location Tests on Event Window Returns Between Sub-samples					
Subsample	Number of observations	Mean	Median	*p*-value in parenthesis for a one-tail, two-sample *t*-test	*p*-value for a one-tail Wilcoxon two-sample Rank Sum test
1. Abnormal return obtained using CRSP equally weighted index as market portfolio proxy					
Non-callable issuances	175	-0.90%	-0.86%	< 0.0001	< 0.0001
All callable issuances	108	0.80%	0.51%		
2. Abnormal return obtained using CSRP value weighted index as market portfolio proxy					
Non-callable issuances	175	-0.81%	-0.89%	< 0.0001	< 0.0001
All callable issuances	108	0.79%	0.51%		