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Top Management Incentives and Financial Flexibility: The Case of Make-Whole Call Provisions

Melvin Jameson

University of Nevada, Las Vegas, melvin.jameson@unlv.edu

Tao-Hsien Dolly King

University of North Carolina at Charlotte

Andrew Prevost

University of Vermont, aprevost@bsad.uvm.edu

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Abstract:	<p>Consistent with the premise that make-whole call provisions enhance value-creating financial flexibility, we find that higher sensitivity of managerial wealth to stock price (delta) increases the likelihood that corporate bonds contain make-whole provisions. In line with prior findings that demonstrate financial flexibility can be costly to bondholders, we find that managerial equity incentives impact the incremental effect of make-whole provisions on the pricing of corporate debt securities. Consistent with the flexibility explanation, we also find that the market response as measured by abnormal trading volume to the issuance of make-whole callable debt varies in equity incentives. Overall, our results suggest that managerial incentives play a role in the choice, pricing, and market response to make-whole options in corporate debt securities.</p>

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Abstract

Consistent with the premise that make-whole call provisions enhance value-creating financial flexibility, we find that higher sensitivity of managerial wealth to stock price (delta) increases the likelihood that corporate bonds contain make-whole provisions. Building on the results of related research, post-issue financial performance of make-whole callable bond issuers increases in delta. In line with prior findings that demonstrate financial flexibility can be costly to bondholders, we find that managerial equity incentives impact the incremental effect of make-whole provisions on the pricing of corporate debt securities. Consistent with the flexibility explanation, we also find that the market response as measured by abnormal trading volume to the issuance of make-whole callable debt varies in equity incentives. Overall, our results suggest that managerial incentives play a role in the choice, pricing, and market response to make-whole options in corporate debt securities.

Keywords: corporate debt; call provision; financial flexibility

1. Introduction

Both practitioners and the academic finance literature have underlined the value of financial flexibility. Defined as a firm's ability to access and restructure its financing at low cost (Gamba and Triantis, 2008), flexibility is valuable because it creates a range of alternative responses to unexpected investment opportunities or negative cash flow shocks (Almeida, Campbello and Weisbach, 2011; DeAngelo, DeAngelo and Whited, 2011). An extensive agency theory literature argues that CEO compensation should be aligned to firm performance (e.g. Grossman and Hart, 1983; Jensen and Murphy, 1990) to provide an incentive for CEOs to act in the best interest of shareholders. Thus, to the extent that greater financial flexibility ultimately creates value for shareholders in the face of unanticipated negative financing or cash flow shocks, managerial incentive compensation should play a role in corporate financial decisions that enhance flexibility. In this study, we investigate the hitherto unexplored role of managerial equity incentives in the use, and market pricing, of a specific but increasingly prevalent, flexibility-enhancing decision: the choice to include a make-whole call provision in a bond issue.

The make-whole call feature is a relatively recent financial innovation that has come into increasingly widespread international use. As Afik, Jacoby, Stangeland and Wu (2019) discuss, the make-whole provision can be traced to the 'Canada-call' provision beginning in 1987 when Domtar Inc. issued a CAN\$100 million 24-year maturity debenture that contained a make-whole call. This preceded the first issue (by Quaker State) of a make-whole callable bond in the US by eight years (Mann and Powers, 2003). As documented by Labbé (2014), the use of the make-whole call in Europe began in 2001 with a Euro bond issued by AT&T and by 2012 was being issued by large European firms including Pirelli, Vivendi, Michelin, and France Telecom among others. Rather than following a fixed-price schedule, a make-whole call price is the present value of the

remaining cash flows at the maturity-matched Treasury yield plus a small, contractually fixed spread. In practice, make-whole calls also differ from traditional calls in that they are typically written deep out-of-the money. Therefore, potential motivations to use make-whole call provisions differ from those applying to traditional fixed-price calls. By compensating bond buyers for any market-wide drop in interest rates, the make-whole provision virtually eliminates the call's value as an option on interest rates. The issuer does retain an option on the credit spread, but the typical out-of-the money structure makes it very unlikely that credit quality will improve enough to justify exercise. In light of this structure and practice, recent studies focusing on the use and pricing of make-whole call provisions infer that the principal motivation for issuers to include a make-whole call feature is to increase financial flexibility.

An extensive executive equity compensation literature rests on the premise that pay-for-performance compensation better aligns managers' interests with those of shareholders, thus incentivizing value maximizing decisions. Indeed, as Core, Guay and Larcker (2003, p. 32) note, "A fundamental reason for the use of equity incentives is the desire by firms to link changes in executive wealth directly to changes in stock price, thereby providing executives with incentives to maximize shareholder wealth." We follow this literature and use executive pay-for-performance sensitivity as a proxy for the value-maximizing quality of managerial decisions associated with the use of a make-whole call. Based on the premise that financial flexibility contributes to shareholder value, we anticipate that greater managerial-shareholder incentive alignment directly affects the use of make-whole call provisions. This effect should be particularly strong for firms with greater growth opportunities for whom there is more to be gained from higher levels of flexibility (Gamba and Triantis, 2008). Powers and Tsyplakov (2008) argue that the enhanced flexibility provided by a make-whole call comes from the cap it places on the cost of retiring debt early, relative to the

alternative of a tender offer. They provide evidence that make-whole provisions are associated with an increased yield to maturity commensurate with the cap on potential bondholder gains implied by the call. Extending these findings, we expect that the impact of make-whole call provisions on bond yield spreads is increasing in managerial equity incentives.

Overall, our empirical results support these expectations and extend findings in prior research by demonstrating a flexibility-driven motivation for the use of make-whole call provisions that is linked to shareholder-manager incentive alignment. First, we find that managerial equity incentives are significantly associated with the use of make-whole call provisions. Subsample analysis affirms the robustness of the financial flexibility explanation: the equity incentive effect becomes stronger for firms with greater growth potential, where the value created from flexibility should be greatest, but diminishes for firms nearer default, where both managerial equity incentives and the make-whole call provision become less effective. In line with these findings, post-issue financial performance of make-whole call issuers increases in equity incentives. Next, building on prior findings that demonstrate greater flexibility is potentially costly to bondholders, we identify a differential effect on the yield spread of bonds with make-whole provisions that varies in the degree of managerial equity incentives. Finally, consistent with the notion that higher equity incentives provide a clearer indication to market participants about the underlying motivation for a make-whole provision, abnormal relative trading volume is decreasing in equity incentives. Viewed collectively, our results support the view that equity incentives enhance the motivation for managers to use flexibility-enhancing make-whole provisions in debt securities.

We structure the remainder of the paper as follows. Section 2 of the paper reviews related literature while Section 3 develops the hypotheses to be tested. We describe the data and methodology in Section 4, empirical results in Section 5, and Section 6 concludes.

2. Literature Review

A well-developed literature proposes various explanations for the use of fixed-price call provisions, including interest risk hedging (Pye, 1966; Guntay, Prabhala and Unal, 2004), mitigating asymmetric information (Robbins and Schatzberg, 1986), debt overhang and underinvestment (Bodie and Taggart, 1978; Myers, 1977; Parrino and Weisbach, 1999), alleviating risk-shifting or asset substitution (Barnea, Haugen and Senbet, 1980; Jensen and Meckling, 1976), tax effects (Marshall and Yawitz, 1980; Fischer, Heinkel and Zechner, 1989), and investment hedging (Chen, Mao and Wang, 2010) among others. The structure and typical terms of a make-whole call provision differ from the traditional fixed-price call provision in ways that preclude many of these previously suggested motives, thereby suggesting the two types of calls play different roles in financial structure. The make-whole call price is not fixed, but is the present value of the outstanding coupon payments calculated using a current treasury rate plus a contractually fixed premium that typically varies between 0 and 50 basis points (Brown and Powers, 2018), or about 15 percent of the prevailing corporate credit spread with a ceiling of typically 50 basis points and a floor call price of par value (Powers and Tsyplakov, 2008; Powers and Sarkar, 2012). Thus, the make-whole call provides the issuer no protection against a drop in interest rates so interest rate risk hedging is not a motive for its use. Moreover, make-whole call provisions are typically written deep out of the money (Mann and Powers, 2004; Powers and Tsyplakov, 2008; Powers and Sarkar, 2013). Thus, although the issuer retains an option on credit quality, the likelihood that

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3 this will change enough to justify exercise is remote.¹ With exercise highly unlikely, the make-
4 whole call loses the capacity to mitigate asymmetric information or agency problems by limiting
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6 whole call loses the capacity to mitigate asymmetric information or agency problems by limiting
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8 *ex post* wealth transfers to bondholders resulting from these situations. Consistent with this
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10 observation, Alderson, Lin and Stock (2017) provide evidence that issuers with potential
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12 bondholder-shareholder agency conflicts are more likely to use fixed-price call provisions rather
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14 than make-whole provisions.²
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17 On the other hand, writing make-whole options so deeply out of the money makes their up-
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19 front cost to the issuer very low. Because interest rate risk hedging and mitigating agency issues
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21 cannot explain the use of make-whole calls, Brown and Powers (2018) argue that make-whole
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23 provisions instead can provide valuable financial flexibility for issuers through two primary
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25 channels. First, a make-whole call provision allows the issuer to engage in precautionary
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27 refinancing at any point in the bond's life at a cost that is much lower than a fixed-price call
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29 provision. They report evidence supporting this conjecture: make-whole callable bond issuers are
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31 smaller, less liquid, and have lower credit ratings. Further, they have capital structures with
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33 concentrated maturities, are less likely to have alternative financing sources, and are more opaque.
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35 Second, Brown and Powers (2018) argue that make-whole call options provide a mechanism for
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37 greater flexibility around corporate events such as mergers and acquisitions and divestitures by
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39 facilitating the early retirement of existing debt by capping the price of a successful bond tender
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41 offer. They find that make-whole issuers are more likely to be future takeover targets as measured
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43 by incorporation in Delaware, greater debt, lower market-book ratios, and higher profitability.
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45 Consistent with these findings, Nayar and Stock (2008) report that make-whole callable issuers
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47 experience superior post-issue stock returns compared to non-callable bond issuers.
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The impact of a make-whole provision on bond pricing is consistent with the financial flexibility argument. Powers and Tsyplakov (2008) argue that the rapid increase in make-whole callable debt issuance suggests that the benefits of greater flexibility exceed the higher incremental yield of a make-whole provision. The higher yield is compensation for lost potential gains from a tender offer in the event of early retirement. Additionally, the higher yield reflects compensation for frictions related to early debt retirement such as capital gains taxes incurred when the call price exceeds the investor's basis value and portfolio rebalancing costs for institutional investors. Powers and Tsyplakov (2008) predict an incremental effect associated with a make-whole provision of slightly over 5 basis points, while their regression analysis estimates an incremental effect of 13-24 basis points.

Taken together, this literature suggests the make-whole call option serves as a mechanism to improve financial flexibility. As such, research focusing on the make-whole provision expands the evidence on the value of financial flexibility by considering a corporate decision variable beyond debt capacity and cash policy choices examined in prior research (e.g. Chen, Harford and Lin, 2017).

3. Hypotheses and Data

3.1 Hypotheses

Survey evidence indicates that managers place great value on financial flexibility (e.g. Graham and Harvey, 2001; Brounen, de Jong and Koedijk, 2004; Bancel and Matoo, 2004). The academic finance literature provides both theoretical justification (Gamba and Triantis, 2008) and empirical support for the notion that financial flexibility increases growth opportunities (e.g. Rajput, Wongchoti, Chen and Faff, 2019) and firm value (Rapp, Schmid and Urban, 2014; Arslan-

Ayaydin, Florackis and Ozkan, 2014), arguing that flexibility results in greater freedom to respond to unexpected negative cash flow shocks or to investment, acquisition, or financing opportunities. In looking for evidence that financial flexibility motivates use of make-whole calls, we pay particular attention to the fact that increasing flexibility, i.e. increasing the range of available actions, accentuates the role of managerial decisions. We posit that the shareholder value created by flexibility increases with the quality of those managerial decisions and, following agency theory, that equity incentives improve these decisions by aligning managerial incentives toward maximizing the value of equity. The better decisions induced by higher managerial incentives impact the use of make-whole call provisions through two potential channels that are not necessarily mutually exclusive. First, better motivated managers can be expected to make better decisions in the future (i.e., subsequent to bond issue); in particular, they will be expected to make more effective use of the financial flexibility afforded by a make-whole call option to maximize shareholder value. Second, better motivated managers make better decisions at the time of issue – in particular, they are more likely to include shareholder value enhancing features, such as the make-whole call option. Both of these channels – i.e., the greater value a make-whole call brings when managers are motivated in their future decisions, and the greater propensity of currently motivated managers to seize the opportunity to create value at the time of issue – imply a make-whole call option will be more often included when managerial equity incentives are stronger. This argument motivates *Hypothesis 1*:

Hypothesis 1: Managerial equity incentives are positively associated with the choice to use a make-whole call provision.

The postulated relation between executive equity incentives and the quality of future decision-making associated with make-whole provisions generates several additional testable

subset-based hypotheses. To the extent that anticipated future managerial decisions influence make-whole call choice, then the association between managerial equity incentives and the use of make-whole provisions should be moderated by firm characteristics that weaken (strengthen) the importance of these decisions. Closer proximity to bankruptcy should be associated with less manager-shareholder interest alignment and therefore a weakened sensitivity between managerial equity incentives and the use of the make-whole call option for two potential reasons.³ First, make-whole premiums are treated as unmatured interest in the event of a bankruptcy, and the payment of unmatured interest in a bankruptcy is disallowed under Section 502(b)(2) of the Bankruptcy Code.⁴ Therefore, restrictions on an issuer's ability to prepay make-whole callable debt may diminish the hypothesized association between executive incentives and the use of make-whole provisions in financially distressed firms. Second, extant work argues that financial distress associated with high debt exacerbates manager-shareholder incentive misalignment. For example, Ortiz-Molina (2007) finds that capital structure affects CEO incentives where pay-performance sensitivity declines in the proportion of straight debt, thereby supporting the view that firms trade off shareholder-manager incentive alignment in order to reduce shareholder-bondholder conflicts of interest that increase in the proportion of non-convertible debt financing. These arguments motivate *Hypothesis 1a*:

Hypothesis 1a: The positive relation between equity incentives and make-whole call choice weakens with increased default risk.

Next, Gamba and Triantis (2008) develop a theoretical framework that analyzes the effect of flexibility on firm value. Their model predicts, among others, that firms with high levels of financial flexibility should be valued at a premium relative to less flexible firms and that the premium should be significantly larger for younger firms with significant opportunity for upside

growth. Following this view, we postulate that the quality of future managerial decisions regarding use of the make-whole call option increases in importance for firms with greater growth opportunities. To the extent managerial incentives drive the choice to increase financial flexibility, the effect should be greater for firms with greater growth prospects as predicted by *Hypothesis 1b*:

Hypothesis 1b: The positive relation between equity incentives and make-whole call choice strengthens in firms with higher growth potential.

We consider more direct evidence that managerial engagement subsequent to make-whole callable bond issue increases with managerial equity compensation. Nayar and Stock (2008) demonstrate that issuers of make-whole callable bonds have superior post-issue stock returns and are more likely to have positive analyst revisions in the long-term growth rate. Based on the central role played by equity incentives in the financial flexibility explanation of make-whole provisions, a natural extension of Nayar and Stocks' (2008) findings is to hypothesize that post-issue performance of make-whole callable bond issuers varies according to the extent of managerial incentives. To the extent higher pay-performance sensitivity incentivizes greater engagement and higher quality future decision-making, then *Hypothesis 2* predicts make-whole issuers with higher equity incentives will have better post-issue performance:

Hypothesis 2: Post-issue improvement in corporate performance and growth subsequent to issue increases with the level of managerial equity incentives.

A related question is if managerial equity incentives play a role in the pricing of make-whole call provisions in debt securities. To answer this question, we build on the findings of Powers and Tsyplakov (2008), who report that the early-retirement flexibility provided by make-whole call provisions is associated with a small but positive effect on at-issue bond yields. A significant part of the advantage shareholders derive from the make-whole call option results

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3 because the option limits the portion of the benefits of financial flexibility that are shared with
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5 bondholders (Brown and Powers, 2018); the findings of Powers and Tsyplakov (2008) are
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7 consistent with this limiting effect. Therefore, if better motivated managers are expected to more
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9 effectively use the make-whole call option to limit such bond holder gains, then the incremental
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11 effect of make-whole provisions on at-issue yield spreads should increase in executive equity
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13 compensation as predicted by *Hypothesis 3*:
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17 **Hypothesis 3:** The incremental effect of the make-whole call provision on bond yield
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19 spread is positively associated with managerial equity incentives.
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22 The financial flexibility explanation also has implications for the nature of the information
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24 conveyed to the equity market by the issue of a bond with a make-whole call option. Trading
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26 volume is an indicator of the precision of this information. Leuz and Verrecchia (2000) argue that
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28 trading volume captures willingness of investors to transact. While trading volume increases on
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30 the arrival of company-specific information (e.g. Bamber, Barron and Stevens, 2011; Hong and
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32 Stein, 2007), Karpoff (1986) argues that investors' willingness to trade arises from dispersion in
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34 prior expectations and idiosyncratic interpretation of information events. In a similar vein, Kandel
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36 and Pearson (1995) asserts that trading activity is stimulated when investors share, but interpret
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38 differently, the same public information. The previous hypotheses rest on the argument that higher
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40 levels of executive equity compensation are expected to lead to future uses of financial flexibility
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42 that are, on average, more advantageous for shareholders. It seems natural to extend this argument
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44 to postulate that the variance of these decisions around the optimum will also be reduced when
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46 managers are better motivated. This leads to the conjecture that higher levels of executive equity
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48 compensation create the expectation of more consistent decision-making, which reduces investor
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disagreement about the valuation impact of the bond issue, and therefore the volume of trade around the time of issue as predicted by *Hypothesis 4*:

Hypothesis 4: The volume of stock market trade in reaction to the issue of a bond with a make-whole provision decreases with managerial equity incentives.

3.2 Sample selection and data

We empirically examine the predictions of our testable hypotheses using a broad sample of at-issue bonds drawn from the the Thomson Financial SDC Platinum database (SDC) and the Mergent Fixed Income Securities Issues Database (FISD). The sample period covers 1995-2017 where the starting year is based on the advent of make-whole callable bond issuance in the US market. We obtain equity incentive information for the CEO and top management team from the Execucomp database which covers active S&P 1500 companies plus companies that were once part of the S&P 1500 but still trading. We measure incentive alignment with shareholders (*Delta*) as the change in the dollar value of equity incentives (current and previously granted option and equity compensation) to a 0.01 change in stock price using the approximation method described by Core and Guay (2002).⁵

As discussed by Powers (2016), there are distinct differences in corporate bond coverage between SDC and FISD. For example, SDC has better coverage of investment grade corporate debt while FISD has a broader array of high yield bonds. To examine the broadest possible range of primary market US corporate debt, we aggregate the two databases and eliminate duplicate issues on the basis of issuer, issue date, final maturity, and coupon. Following Powers and Tsyplakov (2008) and Brown and Powers (2018), we exclude bonds with maturity under three years, offering amount less than \$10 million, and bonds issued as registered replacements for Rule 144a bonds using information from FISD. We also exclude convertibles, bonds for which there is

no conventional yield to maturity (e.g. floating and step-up coupon bonds), and bonds with synthetic features and exotic structures. As the motivations for- and benefits from financial flexibility may be different in regulated industries, we exclude issuers classified as financial ($6000 \leq SIC \leq 6999$) and utilities ($4900 \leq SIC \leq 4999$) throughout the study.

Table 1 provides a breakdown of the sample selection process that results in the 7,657 bond level observations that appear in the broadest multinomial logistic regression model (Table 5 Columns 4-5), and the 6,266 observations that are used in the broadest at-issue yield spread regression model (Table 10 Columns 4-5). Table 2 provides summary statistics for variables used throughout the analyses. Characterizing a bond as make-whole callable and fixed-price callable is complicated by the existence of many bonds that contain features of both provisions. For example, a bond may have a make-whole call provision for the first several years of a bond’s life which is followed by a standard fixed-price call provision. As a result, overlapping call provision features would confound the interpretation of our multinomial estimates. Similar to the process described by Brown and Powers (2018, pp. 13-14), we employ a ‘dominant characteristic’ classification scheme using information provided by the FISD and SDC datasets to classify bonds into three categories according to whether a provision is exercisable over a supermajority (2/3s or more) of the bond’s life. We define make-whole callable bonds as (1) those that are always make-whole callable or (2) make-whole callable with a fixed-price call in the final third of the bond’s life. We define bonds that are fixed-price callable as (1) callable immediately, where the first call date is less than 90 days after the issue date, or (2) with call protection, where the first call date is at least 90 days after the issue date, or (3) with make-whole call protection. Straight bonds do not have either call feature.

Figure 1 demonstrates the proportions of each bond type by year over the 1995-2017 period in our primary at-issue sample. The increasing prevalence of make-whole callable bonds depicted in Figure 1 in our sample corroborates extant research documenting the growing usage of bonds with make-whole provisions (e.g. Elsaify and Roussanov, 2016; Brown and Powers, 2018; Alderson, Lin and Stock, 2017; Afik et al., 2019). In aggregate, Table 2 Panel A1 illustrates that about 59 percent of the bonds in this sample are make-whole callable, 20 percent are fixed-price callable, and 21 percent are non-callable. In Panel A2, we provide characteristics of bond-level control variables used in the multinomial logit analyses. The typical (median) bond has a time to maturity of 10 years and an offering amount of \$500 million. About 17.6 percent are issued without a public registration statement and therefore limited to trading among qualified institutional investors under Securities and Exchange Commission Rule 144a.

Table 2 Panel B1 reports equity incentive summary statistics for the CEO and aggregate top management team. Consistent with the findings of Coles, Daniel and Naveen (2006) and related work, CEO delta within our sample of public debt issuers is heavily skewed with a mean (median) of \$2,425,000 (\$503,000). Turning to the additional firm-level financial variables in Panel B2, we calculate capital structure granularity using the “*GRANI*” measure described by Choi, Hackbarth and Zechner (2017). *Granularity* is the inverse of the Herfindahl index of bond maturity fractions of all bonds outstanding for a given firm in a given year. Median granularity in our sample is 2.880. Following Güntay, Prabhala, and Unal (2004), we measure exposure of operating income to interest rates with *Stock – Treasury correlation*, defined as the correlation between the issuer’s weekly stock returns and the 10-year Treasury rate over the two years prior to the issue date. Similar to Brown and Powers (2018) who report positive values for make-whole and fixed-price call provision issuers, the median correlation is 0.138 over our sample period. We

gauge growth potential alternatively with the market-book ratio and past (five-year) sales growth. *Firm size* is the logged sum of the market capitalization of equity, long-term debt, and current maturities of long-term debt. *Liquidity* is cash scaled by total assets. Following Brown and Powers (2018), we include a binary variable for incorporation in Delaware, leverage, measures of profitability and cash flow volatility, asset tangibility, and risk-adjusted cumulated stock return using the CRSP value-weighted measured over the 225 days ending at the day prior to the issue date. Following Mansi, Maxwell and Miller (2011), we measure information asymmetry with the number of analysts following the issuer’s stock obtained from the IBES database.

Table 2 Panel C provides descriptive statistics for additional variables used in the subsequent yield spread analyses. At the bond level, the typical (median) rated bond has a Moody’s rating of Baa1 and a modified duration of 6.987. About 4.2 percent are subordinated, and a small percentage have embedded put options. Firm-level control variables include a binary variable if the firm reported negative income for the year of the bond issue, and *Industry Concentration* as measured by the Herfindahl-Hirschman Index. Finally, Panel D provides measures of the macroeconomic interest rate environment at the time of issuance. These include the slope of the 10-year Treasury yield, the 10-year Treasury spot rate and volatility of the 10-year rate, and the Baa-Aaa index obtained from the Federal Reserve St. Louis Data Repository (FRED). The Appendix provides additional details for these variables.

4. Empirical Methodology and Results

4.1 Univariate analysis

In Table 3 Panel A, we examine if characteristics of make-whole callable (MWC) and fixed-price callable (FPC) bond issuers differ from those that issue straight debt in a univariate

context. We focus on the firm-level measures presented in Table 2 Panels B1-B2, and C. Viewed collectively, the results of Table 3 demonstrate that MWC and FPC issuers differ sharply from straight debt issuers. Consistent with *Hypothesis 1*, the results provided in Panel A illustrate that MWC issuers have significantly higher executive delta compared to straight and FPC debt issuers. Consistent with the interest rate hedging explanation for call provisions, MWC issuers have greater correlation between their stock returns and Treasury rates. While MWC issuers have slightly lower past growth in sales than FPC debt issuers, their market-book ratio is substantially higher at the time of issue. MWC issuers also tend to be larger. Consistent with the flexibility explanation, they have more cash holdings and less debt on their balance sheets than straight or FPC issuers. While MWC issuers have higher cash flow risk than straight debt issuers, they have significantly less compared to FPC bond issuers. Consistent with Brown and Powers' (2018) conjecture that the financial flexibility associated with the MWC provision becomes more valuable when firms are more likely to be acquired, MWC issuers are more likely to be incorporated in Delaware. Finally, MWC issuers have a higher quality information environment based on analyst coverage.

In Table 3 Panel B, we examine univariate differences for the measures presented in Table 2 Panel C. These results reveal further distinctions between MWC and FPC bonds. Consistent with past findings, yield spreads on MWC bonds are higher than straight bonds but much lower than FPC bonds. In a similar vein, Moody's ratings on MWC bonds are slightly lower than straight bonds but significantly higher than FPC debt. MWC bonds have the highest duration of the three categories and are less likely to be subordinated. While MWC bonds are slightly more likely to have reported negative net income than straight bond issuers, they are much less likely compared to FPC issuers. Viewed collectively, Table 3 illustrates that MWC issuers have higher delta and

exhibit characteristics associated with greater financial flexibility, while FPC issuers have lower delta and have characteristics associated with greater cash flow uncertainty and higher credit risk.

4.2. Managerial incentives and call provision choice: multinomial logit analysis

Hypothesis 1 predicts that managerial equity incentives are positively associated with the choice to use a make-whole call provision. This is, if make-whole call provisions enhance financial flexibility, and to the extent greater flexibility ultimately creates value for shareholders, then the choice to include a make-whole call provision should be increasing in manager-shareholder interest alignment as gauged by managerial equity incentives. We examine the robustness of *Hypothesis 1* by contrasting the *Delta* effect using a fixed price call binary variable as the dependent variable, which also provides financial flexibility (e.g. Xu, 2018) but at the expense of a costly interest rate option. We calculate the probability of issuer *j* including a make-whole call provision (alternatively, fixed-price call provision) in bond *i* in year *t* in a multi-equation framework using a multinomial logistic regression as follows:

$$MWC_{i,t}(FPC_{i,t}) = \alpha_0 + \alpha_1 Log(\Delta)_{j,t} + Bond\ level\ controls_{i,t} + Firm - level\ controls_{j,t} + Market - level\ controls_t + \sum_i \alpha_i Fama - French\ 30\ industry\ fixed\ effects + \sum_i \alpha_i Year\ fixed\ effects + e_i \tag{1}$$

The binary *MWC* and *FPC* response variables are defined according to the definitions described above, while straight bonds comprise the base category. We measure *Delta* at the CEO level and alternatively at the top management level. The bond- and firm-level control variables broadly control for the financial flexibility, interest rate hedging, and other explanations for call provision choices explored in prior research and follow specifications used by Brown and Powers (2018) and related work including Mann and Powers (2003), Powers and Tsyplakov (2008), Alderson, Lin and Stock (2017), and Skinner and Gounopoulos (2014). At the bond level, *Log (Time to maturity)* measures refinancing risk, while logged *Offering amount* controls for interest

rate exposure (Chen et al., 2010). *Rule 144a* controls for systematic effects linked to privately-traded bonds such as lower liquidity (Livingston and Zhou, 2002).

At the firm level, capital structure granularity controls for firm-level refinancing risk (Choi, et al. 2017) while *Stock–Treasury corr.* is the correlation between the issuer’s weekly stock return and the weekly 10-year Treasury spot rate measured over two years prior to the issue date and gauges exposure of earnings to interest rates (Güntay et al., 2004). *Sales growth* and *Market-book ratio* control for realized and expected growth opportunities, respectively, at the year of the offering; Chen et al. (2010) find evidence that firms with lower future growth opportunities are more likely to use call provisions, supporting the notion that call provisions can be used to hedge investment uncertainty. According to Kish and Livingston (1992) and Banko and Zhao (2010), bond credit risk and firm debt ratios are typically used to control for agency-based explanations for callable bond issuance. In addition, Brown and Powers (2018) examine the corporate event flexibility hypothesis with a set of similar variables that describe the likelihood of a firm being targeted in an M&A event. Other control variables used by extant research to control for the firm’s creditworthiness, as well as to distinguish between the refinancing risk and corporate event flexibility hypotheses (Brown and Powers, 2018), include *Firm size*, *Liquidity*, *Leverage*, *ROA*, *Std. (ROA)*, *Tangibility*, *Risk-adjusted stock return*, and incorporation in Delaware. As described above, *Analyst coverage* controls for the effect of the information environment on call provision choices (Banko and Zhou, 2010). In Table 4, we provide pairwise correlations between these firm-level characteristics. Consistent with prior findings (e.g. Coles, Daniel and Naveen, 2006), higher delta is significantly associated with larger firms, higher growth and prior stock return, higher profitability, and lower earnings volatility. In untabulated analysis, the variance inflation factors

among these measures range from 3.59 (*Firm size*) to 1.03 (*Delaware*), indicating that our subsequent logistic regression coefficient estimates are reliable and stable.

Table 5 presents the multinomial regression estimates for Equation (1). All explanatory variables are winsorized at the one percent tails. We include fixed effects for industry and year, and cluster the robust standard errors at the firm level. We argue above that higher executive equity incentives potentially affect make-whole call choice through two channels, where equity incentives (1) motivate better use of the flexibility associated with the MWC provision in the future when opportunities to make use of financial flexibility arise, and (2) motivate managers to choose valuable flexibility-increasing options for the firm at the time of the bond issue that may include MWC debt. Given this distinction in timing, Columns 2-5 measure equity incentives using logged *Delta* at the time of the issue, while Columns 6-9 use logged *Delta* lagged one year. Although the two channels are not mutually exclusive, and lagged and contemporaneous delta are correlated, we would expect to see a stronger effect from contemporaneous *Delta* if expected future decision quality is most important (Channel 1), and from the lagged *Delta* if decision quality at the time of issue matters more (Channel 2). Consistent with the notion that the improved flexibility associated with a make-whole call provision is motivated by higher contemporaneous equity incentives and the empirical prediction of *Hypothesis 1*, Columns 2-5 demonstrate that CEO and, alternatively, top management *Delta* is a significant determinant of make-whole callable debt. The logged *CEO Delta* coefficient of 0.143 in the MWC group corresponds to an (untabulated) average marginal effect of 0.0279. Because *CEO Delta* is logged, we multiply by 0.1 to derive the average change in the probability when delta increases by approximately 10 percent. Therefore, the average increase in the probability of the choice to use a make-whole provision is about 0.279 percentage points given a 10 percent increase in CEO delta.⁶ Similarly, the logged *Top management delta*

estimate of 0.157 in the MWC group corresponds to an (untabulated) average marginal effect of 0.0304. Thus, the average increase in the probability of the choice to use a make-whole provision is about 0.304 percentage points given a 10 percent increase in top management delta. In contrast, the *Delta* coefficient estimates are insignificantly different from zero in the respective *FPC* categories. As evidenced by the lagged *Delta* estimates in Columns 6-9, there is evidence that Channel (2) is also at work with respect to MWC choice. However, the contemporaneous CEO- and top management *Delta* estimates in Models 1-4 are larger and of greater statistical significance. As such, these results suggest that the aggregate effect is best measured by contemporaneous delta. Therefore, we base the subsequent analyses on the contemporaneous *Delta*.

Comparison of the coefficient estimates between MWC and FPC groups reveals additional commonalities and differences compared to the straight bond base category. For example, while MWC bonds are associated with larger offering amounts, both types of calls are associated with longer times to maturity. MWC (FPC) provisions are less (more) common with Rule 144a debt. MWC debt is associated with firms with less granular capital structures, while FPC debt is more likely to be issued by firms with greater stock return - Treasury rate correlation. Consistent with our univariate findings, FPC issuers are smaller and have characteristics associated with greater credit risk including higher leverage, lower profitability, and higher volatility in earnings.

Potential endogeneity between equity incentives and the choice to include make-whole call features in newly issued debt resulting from omitted variables or simultaneous causality may confound the multinomial results of Table 5. As a test of robustness for *Hypothesis 1*, we employ an instrumental variables (IV) probit methodology using maximum likelihood estimation. The IV approach uses instruments to isolate changes in managerial equity incentives that are uncorrelated with the error term in Equation (1). This uncorrelated component creates an unbiased coefficient

for equity incentives in the probit regression. We construct instruments for managerial equity incentives based on prior research showing that equity incentives are correlated with geographically proximate firms (Bouwman, 2013), that the intensity of interlocking directorates have a direct effect on compensation (Gallani, 2016), and that CEO experience and skills contribute to the equity portion of executive compensation (Cremers and Palia, 2011). We create a measure of pay-performance sensitivity of geographically proximate firms by calculating the average delta of all firms headquartered within the same state. We construct a proxy for the intensity of each firm’s connections to other firms by calculating the number of publicly listed firms headquartered in the firm’s standard federal (i.e., GSA) region using the *LexisNexis* database.⁷ Finally, we use the logged number of years that the CEO has held the position to measure experience.

Table 6 provides the IV probit estimates for the CEO and top management equity incentive measures where the dependent variable equals one (zero) if the bond is *MWC* (straight), respectively. We report descriptive statistics for the three instruments in Panel A, and first-stage estimates in Panel B. Consistent with our expectations, the three instruments are positive and significantly related to managerial equity incentives. In Panel C, we report the second stage estimates. Consistent with the multinomial logit estimates, the IV estimates are positive and statistically significant at the five percent level in both models. The Wald test of exogeneity examines if there is significance correlation between the error terms of the structural and reduced-form equations. For Models 1-2, the chi-square statistics fail to reject the null hypothesis of exogeneity, indicating that a single equation approach is appropriate. The Anderson LR statistic rejects the null hypothesis of weak instruments. Finally, the Hansen *J* statistic tests the null

hypothesis that the overidentification restrictions are valid. The J statistic p -values suggest the instruments are well-identified and relevant.

Hypothesis 1a predicts that financial distress affects the association between equity incentives and make-whole call provision choice based on the dual rationales that make-whole exercise may be restricted in bankruptcy based on the treatment of make-whole premiums as unmatured interest, and that firms with high debt may trade off shareholder-manager incentive alignment to reduce shareholder-bondholder agency conflicts. We use alternative measures of financial distress to investigate this premise. First, we gauge creditworthiness at the firm level using the Standard & Poor's Quality Ranking (Compustat item SPCSRC), which varies in eight categories from 'D' to 'A+' and provides a stock's relative standing based on the past performance of a stock's earnings and dividends. Unlike other Standard & Poor's measures such as the Long Term Issuer Credit Ranking (SPLTICRM), the Quality Ranking is available for a wide variety of firms. In addition, we alternatively gauge proximity to distress using the Moody's rating obtained from the FISD / SDC databases. In Table 7 Columns 2-4, we segment the sample by the Quality Ranking: 'B+' or higher ('B' or lower) is lesser (higher) likelihood of distress, respectively. The coefficient estimates support our expectations. Within the subset of issuers with at least 'B+' Quality Ranking, the logged *CEO Delta* estimate of 0.187 is significant at the five percent level. The (untabulated) marginal effect is 0.0301, implying that the average increase in the probability of the choice to use a make-whole provision in higher quality firms increases to about 0.301 percentage points given a 10 percent increase in CEO delta. In contrast, the *CEO Delta* estimate among 'B' or lower Quality Ranking firms is insignificantly different from zero. In Columns 5-8, we segment the sample by investment grade ('Baa3' or higher) and high yield ('Ba1' or lower) Moody's bond ratings. These results closely reflect the estimates using the Quality Ranking.

Hypothesis 1b predicts that the positive relation between equity incentives and make-whole call choice strengthens in firms with higher growth potential. We estimate growth opportunities using past growth in sales and the market-book ratio. In Table 8, we gauge relative high growth potential by combining these measures. In Columns 2-3, firms are classified as high growth when past sales growth *and* market-book are in the top terciles (*HSG-HMB*) of their respective cross-sectional distributions. We test if the incremental association between equity incentives and the make-whole choice differs significantly for issuers within this subset by interacting *HSG-HMB* with logged *CEO Delta* (Model 1) and, alternatively, *Top management delta* (Model 2). In Model 1, the logged *CEO Delta* $\times$ *HSG-HMB* interaction is positive and significant at the one percent level, demonstrating that high growth opportunities amplify the ability of equity incentives to predict the use of make-whole call provisions. We assess the economic interpretation of the interaction by estimating the logged *CEO Delta* effect in the *HSG-HMB* segment of the sample. The (untabulated) average *CEO Delta* marginal effect is 0.0883 implying that the average increase in the probability of the choice to use a make-whole provision in *HSG-HMB* firms is 0.883 percentage points given a 10 percent increase in CEO delta. Model 2 provides qualitatively similar results using top management incentives. In Models 3-4, we follow Brown and Powers (2018) by adjusting these measures by industry. For each year, we calculate average sales growth and market-book ratio by Fama-French 30 industry and year. For each issuer-year, we subtract sales growth and market-book ratio from its respective industry mean. We define high (low) growth firms as when both differences are positive (negative). Model 3 illustrates the *Log (Delta)* interaction using CEO equity incentives for high-growth issuers is positive and significant at the one percent level. Based on a (untabulated) marginal effect of 0.0933, the average increase in the probability of the choice to use a make-whole provision in *HSG-HMB* firms reaches 0.933 percentage points given

a 10 percent increase in CEO delta. These results are qualitatively similar in Model 4 using top management incentives.

A natural question is if the positive incremental MWC effect among the highest *Delta* tercile issuers is associated with actual subsequent reductions in the amount outstanding due to call exercises or tender offers. While the SDC database does not provide this information, the FISC Redemptions file provides data items about the type of action that took place to change the amount outstanding (ACTION_TYPE), along with the date the change to the issue's amount outstanding became effective (EFFECTIVE_DATE). We examine the impact of *Delta* on the probability of a reduction in amount outstanding due to early exercises (i.e. when ACTION_TYPE is "B", "E", or "P"), or "T" (tender offer) for all make-whole callable bonds and for growth-based subsets per the results in Table 8. To improve the efficiency of the estimates based on the lower number of observations, we gauge high and low growth using the cross-sectional medians. The controls are at the bond- (logged remaining maturity and offering amount), firm- (S&P Quality Ranking, growth measures, and size), and market levels (Baa-Aaa spread and yield curve slope). Consistent with the results provided in Table 8, our findings suggest that logged CEO delta (alternatively, top management delta) is significantly associated with early redemptions among higher growth MWC issuers, thereby providing more context for the channel that drives the association between MWC and equity incentives. For brevity we leave these results untabulated but they are available upon request.

5.2 Managerial incentives and post-issue performance

Extending the implications of *Hypothesis 1* and building on the findings of prior related research showing that make-whole issuance is followed by higher stock returns and positive analyst revisions, *Hypothesis 2* posits that post-issue improvement in corporate performance and

growth subsequent to the issuance of make-whole callable debt is associated with the level of managerial equity incentives. To address this question, we employ a matched firm propensity score matching (PSM) approach. A firm may issue multiple bond issues in a given year while performance is measured at the firm-year level; therefore, we define a firm as a make-whole issuer if at least one bond issue during a given year contains a make-whole provision and the firm does not issue any fixed-price callable bonds during that year. The propensity score matching (PSM) methodology (Rosenbaum and Rubin, 1983; 1985) controls for self-selection by matching treated firms with control firms with similar characteristics according to a function of covariates. The basic approach of propensity score matching is to first model make-whole call issuing (or treated) firms with firm-specific variables explaining the propensity for make-whole call issuance, and then to identify a comparable untreated sample of firms that are matched on their propensity scores. The key PSM result is the average treatment effect on the treated (ATET), which is the average difference in the outcome (performance) variable between the treated and propensity score-matched control firms. A key requirement of the PSM process is that the propensity score is balanced across the treatment and control groups. If the balancing property is not satisfied, then the treatment and comparison groups are unlikely to be sufficiently similar to reduce selection bias in the treatment effect estimate (e.g. Pinzon, 2015). To ensure that our PSM estimates meet the balancing requirement, we parsimoniously select covariates gauging performance, leverage, and firm size. We identify control firms from the Compustat database after excluding financials and utilities along with the set of MWC issuers. We estimate propensity scores based on the following model:

$$MWC\ Issuer_{j,t} = \alpha_0 + \alpha_1 Performance\ measure_{j,t} + \alpha_2 Debt\ ratio_{j,t} + \alpha_3 Firm\ size_{j,t} \tag{2}$$

We examine three alternative outcome measures measured over the two years subsequent to the issue: top-line sales growth over the two-year post-issue period, and bottom-line performance as measured by ROA in $t+1$ and $t+2$ relative to issue year t . The first covariate is motivated by Barber and Lyon (1996), who stress the importance of matching on pre-event operating performance to assess abnormal future performance. As such, we use ROA in year t (five-year prior growth in sales) as a matching covariate when the outcome measure is subsequent ROA (subsequent two-year sales growth, respectively). Following the arguments underlying *Hypothesis 1a*, the leverage ratio controls for proximity to distress. Finally, we include the firm size to mitigate biases related to size differences. Using the propensity scores estimated from Equation (2), we identify propensity score-matched control samples.⁸ PSM matching methodologies range from one-to-one to one-to-many; as discussed by Tucker (2010), there is no single best matching approach. We employ the nearest-neighbor approach with replacement using a caliper of 0.1, which identifies a single match for each treated firm according to the closest propensity score. For robustness, we repeat the analysis using five matched firms for each treated firm and present results in Panel C2.

Table 9 provides the PSM average treatment effects for the overall sample of MWC issuers and for subsets of MWC issuers segmented by high and low (top and bottom tercile) CEO delta, respectively. Panel A provides results using ROA_{t+1} as the outcome variable. In Panel A1 using one-to-one matching, the the difference between treated and control firm average ROA_{t+1} is 0.0367 (t -statistic=2.31). In the top delta tercile, the difference is 0.0196 (t -statistic=2.69); however, in the bottom delta tercile, this difference decreases to 0.0009 (t -statistic=0.10). This pattern becomes more distinctive in Panel A2 using one-to-five matching, where the difference in the highest tercile delta subset is 0.0377 and decreases to -0.0044 in the lowest tercile. Panel B provides similar

pattern of results using ROA_{t+2} as the outcome variable. In Panel C, we report results using two-year growth in sales following the MWC issue year. In Panel C1 using one-to-one matching, the difference in two-year growth in sales between treated and control firms across the overall sample is -0.0121. However, within the top delta tercile, this difference is 0.0160 (t -statistic=1.59) and decreases to -0.0402 (t -statistic=-2.59) in the lowest delta tercile. These results continue in Panel C2, where the difference in two-year growth in sales for top delta tercile issuers is 0.0133 (t -statistic=1.97) and -0.0363 (t -statistic=-4.07) in the lowest delta tercile. Overall, these results support the predictions of *Hypothesis 2* and the notion that managerial engagement subsequent to make-whole callable bond issue increases with equity incentives.

5.3. Managerial incentives, call provisions, and the pricing of at-issue corporate debt

Powers and Tsyplakov (2008) provide evidence that make-whole bondholders require a small but positive at-issue premium in exchange for the risks associated with improved financial flexibility. We extend these findings by empirically examining the implications of *Hypothesis 3*. Based on their findings, we expect to find a positive association between make-whole call provisions and the marginal cost of debt. However, *Hypothesis 3* predicts that the MWC effect increases in the amount of managerial equity incentives due to increased bondholder risk related to managerial incentives to improve flexibility. To test this hypothesis, we examine the incremental impact of make-whole callable debt on at-issue yield spreads drawn from the aggregated SDC-FISD dataset using the following least-squares regression model:

$$\begin{aligned} \text{Yield spread}_{i,t} = & \alpha_0 + \alpha_1 \text{MWC}_{i,t} + \alpha_2 \text{Top-third delta}_{j,t} + \text{Bond-level controls}_{i,t} + \text{Firm-level controls}_{j,t} + \text{Market-level controls}_t + \sum_i \alpha_i \text{Fama-French 30 industry fixed effects} + \sum_i \alpha_i \text{Year fixed effects} + e_i \end{aligned} \tag{3}$$

Bond yield spreads are calculated as $i_{Corp} - i_{Gov}$, where i_{Corp} is the offering yield-to-maturity of the sample corporate bond provided by SDC or FISD and i_{Gov} is the interpolated yield-to-

maturity for the point on the Treasury yield curve corresponding to the same time to maturity as the sample corporate bond. We obtain constant-maturity Treasury bond indices to calculate the yield spread from FRED.⁹ Along with the binary variable *MWC*, we control for the reinvestment risk associated with fixed-price callable debt (e.g., Ederington and Stock, 2002) with the *FPC* binary variable. In addition to many of the firm characteristics specified in Equation 1, we add the Moody's bond rating due to its powerful impact on bond prices independent of the additional control variables. The inclusion of the rating along with the additional control variables reduces the final sample size to 6,266 at-issue observations as outlined in Table 1. Because the bond rating partially captures the information contained in the remaining bond- and firm-level control variables (e.g. Mansi, Maxwell and Miller, 2011), we utilize the *Residual bond rating* as the residual from regressing numerical Moody's ratings on all other independent variables specified in Equation (3).

Consistent with related work, the additional control variables are at the bond, firm, and macroeconomic levels. Among the additional bond-level control variables, logged *Offering amount* controls for liquidity: larger issues are associated with economies of scale in underwriting and reduction in liquidity risk (Bhojraj and Sengupta, 2003). We control for interest rate risk with modified duration, defined as the first derivative of the price-yield function evaluated at the current yield to maturity divided by price. *Subordinate* is an indicator variable equal to one if the bond is subordinate to other debt issues, and should be positively related to rating as subordinate bonds have lower recovery rates in the event of bankruptcy, and *Rule 144a* controls for the effect of private trading on yield spreads (Livingston and Zhou, 2002). *Putable* hedges investors against interest rate risk and therefore should be negatively associated with yield spread.

We choose firm-level variables representing aspects of profitability and cash flow risk from an extensive literature that examines determinants of the cost of corporate debt (e.g. Bhojraj and Sengupta, 2003; Klock et al., 2005; Ortiz-Molina, 2006; Mansi et al., 2011). Based on the findings of Acharya, Davydenko and Strebulaev (2012), who argue that a conservative cash policy is more likely to be pursued by firms that are closer to distress, we expect *Liquidity* to be positively related to yield spread. *Firm size* gauges liquidity and information risks: larger issuers generally have greater market presence and are therefore of more interest to institutional investors. The proportion of long-term debt in the capital structure (*Leverage*) measures default risk. *Market-book ratio* and *Sales growth* measure realized growth and cash flow growth opportunities, respectively. *ROA* measures profitability, while the standard deviation of *Profitability* measures cash flow risk. As an additional measure of cash flow risk, we follow Ortiz-Molina (2006) by including a dummy variable equal to one when net income is negative. *Asset tangibility* represents greater collateralization to bondholders and should be negatively related to yield spread. Based on a line of research demonstrating that information asymmetry is perceived as a dimension of risk to bondholders (e.g. Lu, Chen and Liao, 2010), we control for the quality of the information environment with the number of analysts following the stock. *Industry concentration* is the Herfindahl-Hirschman Index and measures the extent of monopolistic pricing potential in the issuer's industry. Finally, based on the specification of Collin-Dufresne, Goldstein, and Martin (2001) who examine the determinants of credit spread changes, we include the set of macroeconomic variables used in our initial analyses that describe the interest rate environment at the time of issue: *Yield curve slope*, *10-year Treasury rate*, *Std. (10-year Treasury rate)*, and *Baa - Aaa spread*. The Appendix provides additional details for these variables.

Table 10 presents the least squares coefficient estimates for Equation (3). As in the prior analyses, all variables are winsorized at the one percent tails. In Model 1, we estimate a baseline effect for make-whole callable bonds. In line with Powers and Tsyplakov's (2008) finding that make-whole call provisions are associated with a small incremental effect on yields averaging between 13 and 24 basis points, Model 1 demonstrates that the *MWC* coefficient estimate is associated with a 10 basis point incremental effect on yield spread. Consistent with the notion that interest rate hedging with a fixed-price call provision represents reinvestment risk for the investor, *FPC* is associated with a 65 basis point incremental effect. The remaining bond-level control variables are largely as predicted: Higher *Residual bond rating* has a strong negative effect on yield spread, while *Rule 144a* issues are associated with higher spread. With respect to firm financial characteristics, higher liquidity as measured by cash holdings positively affects spread. Likewise, *Firm size*, *Leverage*, *Profitability*, *Std. (Profitability)*, *Negative net income*, and *Analyst coverage* have the expected signs and significance.

We empirically examine the prediction of *Hypothesis 3* that managerial equity incentives affect the intensity of the *MWC*-yield spread association by sorting the sample into terciles using incentives held by the CEO (Models 1-2) and top management (Models 3-4). We create a binary variable *Top third delta* if a given issuer is in the top delta tercile in a given year and interact this binary variable with *MWC*. As illustrated in Model 2, the statistically significant $MWC \times Top\ third\ delta$ estimate has a coefficient estimate of 0.0031, implying the incremental effect of top tercile CEO delta is 31 basis points and thereby demonstrating that bondholders associate higher equity incentives with a greater risk of early retirement associated with the make-whole call. Models 3-4 repeat this analysis using top management delta and report qualitatively similar results. In line with the results of Model 2, the baseline *MWC* effect in Model 4 is 11 basis points. In Model 4,

the significant $MWC \times Top\ third\ delta$ estimate increases to 35 basis points. Overall, the results of Table 10 support the intuition that managerial equity incentives increase the perceived risks associated with make-whole callable debt to bondholders.

5.4. Managerial incentives and the market reaction to make-whole callable bonds

To investigate the prediction of *Hypothesis 4* and to enhance our contribution to extant research reporting significant wealth effects around make-whole callable bond issuance (Nayar and Stock, 2008), we investigate whether changes in trading incentive around the make-whole callable bond issuance date are associated with equity incentives. We examine issue date abnormal trading volume. We follow Beaver (1968), Morse (1981), and related research by defining market-model relative abnormal volume as:

$$AV_{j,t} = V_{j,t} - (\alpha_j + \beta_j V_{mt}) \tag{4}$$

where $V_{j,t}$ is number of shares of firm j traded on day t divided by number of shares outstanding and V_{mt} is the aggregate number of shares traded on day t divided by total shares outstanding on day t . $AV_{j,t}$ is (actual – predicted) volume, where predicted volume is based on the parameters α_j and β_j estimated over the (-225,-2) period relative to the issue date. We examine daily and cumulated abnormal relative trading volume over a two-day window.¹⁰

Because abnormal trading volume are measured with the issuers' equity and since there may be more than one bond issue for a given issuer on a given date, we reduce the primary at-issue sample to one firm observation per issue date if there is at least one bond with a make-whole provision issued on that date. To insure that our results specifically relate to make-whole call provisions, we exclude observations if one or more fixed-price callable bonds were also issued on the same date. The resulting sample of make-whole call issues has a maximum of 2,928 firm-level observations. To reduce the influence of firm-level clustering on the results, we employ the *J*-Test

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3 statistic proposed by Kolari and Pynnonen (2010) to assess the significance of single-day and
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5 cumulative event period abnormal CARV. The *J*-Test modifies the standardized cross-sectional test
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7 (Boehmer, Musumeci and Poulsen, 1991) to take cross-correlation into account. In addition, we
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9 also report the nonparametric generalized rank statistic proposed by Kolari and Pynnonen (2011)
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11 which may be more appropriate if there are non-normalities in the distribution of the trading
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13 volume measure.
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17 Table 11 presents the single- and multi-day abnormal volume results. We begin with a
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19 baseline effect in Panel A that utilizes the full sample of make-whole callable issue observations.
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21 Consistent with the premise that make-whole callable bond issuance releases information that
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23 stimulates trading, Panel A illustrates that abnormal volume increases significantly around the
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25 issue date. However, there are differing effects when managerial incentives are higher and lower.
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27 In Panel B, mean abnormal volume on day-zero is 3.43 percent for issuers in the highest CEO delta
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29 tercile while the cumulated two-day effect is 6.70 percent. In contrast, and in support of the
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31 intuition that lower delta provokes greater divergence in investors' opinions about the motivation
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33 for the use of the make-whole call provision and greater uncertainty about the likelihood of future
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35 events for which flexibility is useful, Panel C demonstrates the abnormal volume for issuers in the
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37 lowest tercile increases more than two-fold, where the day-zero effect is 7.44 percent and the
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39 cumulated two-day effect is approximately 16.14 percent. Finally, Panel D illustrates the two-day
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41 cumulated CARV in Panels B-C are significantly different at the five (10) percent level using the
42
43 standard *t*-statistic (Wilcoxon *Z*-statistic), respectively.
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6. Conclusions

Motivated by the view that make-whole call provisions provide a mechanism for facilitating greater financial flexibility, we hypothesize that greater incentive alignment between shareholders and managers incentivizes the use of the make-whole call provision in corporate debt securities. Our conjecture that equity incentives motivate the use of make-whole call provisions finds strong support in the data. Consistent with the findings of prior research demonstrating that make-whole callable bonds are associated with subsequent debt retirements related to shareholder wealth-enhancing precautionary refinancing and M&A transactions, our multinomial logit analyses document a strong positive association between managerial equity incentives and make-whole provisions. Consistent with the view that the link between managerial incentives and issuance of make-whole callable is affected by financial distress, our results document a diminished association between equity incentives and the use of make-whole calls for lower credit quality issuers. Further, and consistent with the view that there is greater potential value creation from financial flexibility when growth opportunities are greater, this relation is strongest for issuers with higher growth prospects. This result is robust to endogeneity concerns. Building on these findings, a propensity score matching approach demonstrates that make-whole call issuance is followed by significantly better performance relative to a matched set of control firms and the effect is strongest for higher managerial equity incentive issuers.

Following the view that financial flexibility associated with the make-whole call provision imposes potential costs on bondholders, prior research demonstrates that make-whole call provisions are associated with a small yet positive premium on newly issued corporate debt. We extend these findings by demonstrating that managerial equity incentives impact the incremental make-whole effect on yield spreads: when equity incentives are high (low), the premium is greater (lesser). Finally, in support of the view that higher equity incentives provide a clearer indication

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3 to market participants of the underlying motivation for a make-whole provision, abnormal relative
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5 trading volume is decreasing in equity incentives. Overall, these results collectively support the
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7 notion that managerial incentives play a financial flexibility-linked role in the use and pricing of
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9 corporate debt characteristics.
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Endnotes

¹ While infrequent, there are instances of dramatic credit quality improvement resulting from extreme market conditions that allow for advantageous make-whole call exercise. For example, Kolotay (2010) points to the following example: “In April 2009 Verizon issued 6.35% bonds maturing in 2019 at a whopping 387 basis bps spread to the 10-year Treasury. The make-whole call at T+75 bps appeared innocuous at the time. But after the credit crisis abated and Verizon’s spreads tightened considerably, it is conceivable that the bonds will be called below fair value.”

² A contrary opinion is expressed by Nayar and Stock (2008), who argue that a make-whole call provision is a more efficient mechanism for a manager with positive private information to signal that information to the market because the call premium no longer compensates for an interest rate option. However, this argument ignores the infrequency with which make-whole calls are exercised in-the-money.

³ We thank our reviewer for suggesting these possibilities.

⁴ See <https://www.jonesday.com/en/insights/2019/08/make-whole-premium-is-unmatured-interest> for more detail.

⁵ We use the “deltavega_2013” SAS code provided by Lalitha Naveen to calculate CEO and top management incentives (https://astro.temple.edu/~lnaveen/documents/deltavega_2013.sas).

⁶ We use Stata’s *margins* command to obtain marginal effects.

⁷ These ten regions are based on https://en.wikipedia.org/wiki/List_of_regions_of_the_United_States.

⁸ We conduct the PSM procedure with the PSMATCH2 Stata command.

⁹ FRED provides daily yields to maturity for constant maturity Treasury bond indices including 3-month, 6-month, 1-year, 2-year, 3-year, 5-year, 7-year, 10-year, and 20-year maturities. We interpolate these indices to obtain a yield curve for any maturity between 3 months and 20 years.

¹⁰ We generate issue date daily and cumulated abnormal trading volume with the *Eventus* software package written by Arnie Cowan.

Appendix

Description of Variables Used in the Study

Variable Name	Description and Source
Panel A: Bond-level variables	
Time to maturity	Fractional number of years to final maturity. <i>Source of inputs:</i> Final maturity (SDC) or maturity (FISD Issues)
Offering amount	Principal issued on the issue date: <i>Source of inputs:</i> Principal amount (SDC) or offering_amt (FISD Issues)
Rule 144a	Dummy variable equal to one if the bond is issued under SEC Rule 144a. <i>Source of inputs:</i> Rule 144A (SDC) or parsed from issue_name (FISD Issues)
Yield spread	The bond YTM (calculated using inputs provided by SDC or FISD) minus the interpolated monthly Treasury bond yield. <i>Source:</i> SDC Platinum or FISD Issues (at-issue bond prices), St. Louis Federal Reserve (Treasury Note and Bond yields)
Moody's bond rating	Moody rating (SDC) or rating_type='MR' (FISD Issues)
Modified duration	First derivative of the price-yield function, divided by price. <i>Source of inputs:</i> SDC or FISD Issues.
Subordinate	Dummy variable equal to one if the bond is subordinated. <i>Source of inputs:</i> Parsed from security_type (SDC) or security_level='SUB' (FISD Issues).
Putable	Dummy variable equal to one if the bond contains embedded put provisions. <i>Source of inputs:</i> Put features = 'Putable' (SDC) or putable='Y' (FISD Issues).
Panel B: Firm-level variables	
Panel B1: Equity Incentives	
CEO Delta (or Delta)	Sensitivity of CEO incentives (previously granted exercisable and unexercisable options plus current option awards plus equity grants) to a 1% change in stock price, using the method of Core and Guay (2002). <i>Source:</i> ExecuComp.
Top management delta	Aggregate delta of all executives for a firm. <i>Source:</i> ExecuComp.
Panel B2: Control Variables	
Granularity	Capital structure granularity using the method ("GRAN1") of Choi, Hackbarth and Zechner (2017). <i>Source of inputs:</i> SDC Platinum or FISD Issues.
Stock -Treasury corr.	Correlation between weekly stock return and the weekly 10-year Treasury spot rate measured over two years prior to the issue date. <i>Source:</i> CRSP (returns), FRED (weekly Treasury rates).
Market-book ratio	Total liabilities plus market capitalization of equity divided by total assets (AT-CEQ + (PRCCF×CSHO) / AT). <i>Source:</i> Compustat
Sales growth	Five-year geometric growth in sales ending on the year of the issue. <i>Source:</i> Compustat
Firm size	Logged sum of market capitalization (PRCCF×CSHO). <i>Source:</i> Compustat
Liquidity	Cash (CHE) divided by total assets (AT). <i>Source:</i> Compustat.
Delaware	Dummy variable equal to one if INCORP = 'DE'. <i>Source:</i> Compustat.
Leverage	Long term debt (DLTT) divided by total assets (AT). <i>Source:</i> Compustat
ROA	Net income (NI) divided by total assets (AT). <i>Source:</i> Compustat
Std. ROA	Standard deviation of ROA for the prior 5 years. <i>Source:</i> Compustat
Tangibility	Property, plant and equipment (PPENT) divided by total assets (AT). <i>Source:</i> Compustat
Risk-adjusted stock return	Cumulated one-year abnormal return ending the month prior to the issue date using a single market model and the CRSP value-weighted index. <i>Source:</i> CRSP
Analyst coverage	Logged Number of analysts following the issuer's stock (NUMEST). <i>Source:</i> IBES
Industry fixed effects	Industry classifications based on 30 industry definitions. <i>Source:</i> Kenneth R French Data Library (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
Panel B3: Additional Control Variables Used in Yield Spread Analysis	
Negative net income	Binary variable equal to 1 if net income (NI) is negative. <i>Source:</i> Compustat
Industry concentration	Herfindahl Hirschman Index for the issuer's 3-digit SIC code, calculated as $\sum_{i=1}^N s_i^2$, where s_i is the proportion of sales of firm I in the issuer's 3-digit SIC industry and N is the number of firms in the industry. <i>Source:</i> Compustat
Panel C: Market-level Interest Rate Variables	
Yield curve slope	10-year Treasury rate minus the 6-month Treasury rate on the bond offering date. <i>Source:</i> FRED
10-year Treasury rate	10-year Treasury rate on the bond offering date. <i>Source:</i> FRED
Std. (10-year Treasury rate)	Standard deviation of the monthly 10-year Treasury rate for the prior six months. <i>Source:</i> FRED
Baa-Aaa spread	Moody's Seasoned Baa Corporate Bond Yield minus the Aaa Corporate Bond Yield. <i>Source:</i> FRED

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For Review Only

Figure 1
Proportions of Fixed Price Callable, Make-Whole Callable, and Straight Debt Issuance by Year

Figure 1 illustrates the proportions of make-whole callable (MWC), fixed price callable (FPC), and straight debt by year over the 1995-2017 period in our primary sample of 7,657 at-issue observations.

Table 1
Sample Selection Criteria

Selection Criteria	No. Obs.
SDC (1980-2017) and FISD (1950-2017) non-convertible, fixed rate, at-issue corporate bonds	330,734
Less: Offering year < 1995, maturity < 3 years, Offering amount < \$10 million	(109,543)
Less: Utilities ($4900 \leq \text{SIC} \leq 4999$) and financials ($6000 \leq \text{SIC} \leq 6999$)	(188,287)
	32,904
Less: Missing additional firm characteristics obtained from Execucomp, CRSP, Compustat, and IBES used in multinomial logit analysis	(25,247)
Sample of MWC, FPC, and straight bonds used in multinomial logit analysis (Table 2 Panels A-B)	7,657
Less: Missing Moody's rating	(433)
Less: Missing additional bond- and firm characteristics used in yield spread analysis	(998)
Sample of MWC, FPC, and straight bonds used in yield spread analysis (Table 2 Panel C)	6,266

Table 2
Summary Statistics for Variables Used in Call Provision Choice and
Yield Spread Models

Bond-level variables (No. Obs. = 7,657)					
Panel A1: Embedded call provisions	Mean	Std. Dev.	Q25	Median	Q75
Make-whole callable	0.498				
Make-whole callable with fixed price at end	0.096				
Make-whole callable (total)	0.594				
Fixed price callable immediately	0.002				
Fixed price callable with call protection	0.135				
Fixed-price callable with make-whole call protection	0.060				
Fixed price callable (total)	0.197				
Non-callable	0.196				
Panel A2: Bond-level characteristics used in the multinomial logit analyses					
Time to maturity (years)	11.005	9.024	6.016	9.970	10.058
Offering amount (unadjusted \$MM)	979	1,951	250	500	1000
Rule 144a	0.176	0.380	0	0	0
Panel B1: Managerial equity incentives (\$000's)					
Top management delta (No. Obs. = 7,657)	4238	29277	454	1075	2363
CEO delta (No. Obs. = 7,456)	2425	20383	197	503	1173
Panel B2: Firm-level control variables (No. Obs. = 7,657)					
Granularity	3.123	1.578	1.988	2.880	3.987
Stock–Treasury corr.	0.136	0.162	0.025	0.138	0.242
Market-book ratio	1.849	0.881	1.262	1.588	2.148
Sales growth	0.073	0.110	0.014	0.051	0.107
Log (Firm size)	9.676	1.615	8.516	9.642	10.807
Liquidity	0.086	0.104	0.018	0.048	0.112
Delaware	0.636	0.481	0	1	1
Leverage	0.344	0.154	0.237	0.322	0.430
Profitability	0.051	0.072	0.024	0.052	0.084
Std. (Profitability)	0.035	0.048	0.012	0.021	0.039
Tangibility	0.343	0.519	0.123	0.261	0.506
Risk-adjusted stock return	0.038	0.371	-0.153	0.023	0.213
Analyst coverage	3.869	3.162	1	3	6
Panel C: Additional bond- and firm-level variables used in yield spread models (No. Obs. = 6,266)					
Yield spread	0.020	0.018	0.008	0.014	0.027
Moody's bond rating	13.356	3.561	12 (Baa3)	14 (Baa1)	16 (A2)
Modified duration	7.376	3.326	4.849	6.987	8.292
Subordinate	0.042	0.201	0	0	0
Putable	0.008	0.090	0	0	0
Negative net income	0.108	0.310	0	0	0
Industry concentration	0.176	0.162	0.072	0.133	0.221
Panel D: Market-level control variables					
Yield curve slope	0.017	0.010	0.009	0.018	0.025
10-year Treasury rate	0.037	0.015	0.023	0.036	0.048
Std. (10-year Treasury rate)	0.002	0.001	0.001	0.002	0.003
Baa-Aaa index spread	0.010	0.004	0.008	0.009	0.012

Table 3
Differences in Means of Selected Variables

In Table 3 Panel A, the subset comparisons are based on a total of 7,657 observations indicated in Table 2 Panels B1-B2 and are comprised of 1,507 straight bond issues, 4,552 make-whole callable issues, and 1,505 fixed-price callable issues. In Panel B, the comparisons are based on the 6,266 observations indicated in Table 2 Panel C.

Panel A: Comparisons of firm-level characteristics used in the multinomial logit analyses

	Straight bonds	MWC bonds	Difference (MWC vs. Straight)	FPC bonds	Difference (FPC vs. Straight)
CEO delta (\$M)	1,441	3,214	-1,774***	1,028	413
Top management delta (\$M)	2,501	5,771	-3,271***	1,662	838**
Granularity	3.548	3.136	0.411***	2.644	0.904***
Stock-Treasury Corr.	0.073	0.159	-0.085***	0.137	-0.064***
Market-book ratio	1.945	1.909	0.036	1.558	0.387***
Sales growth	0.071	0.060	0.011***	0.105	-0.034***
Log (Firm size)	9.484	10.149	-0.665***	8.510	0.974***
Liquidity	0.062	0.096	-0.034***	0.077	-0.015***
Delaware	0.570	0.633	-0.063***	0.733	-0.163***
Leverage	0.333	0.321	0.013***	0.422	-0.089***
ROA	0.060	0.058	0.002	0.019	0.041***
Std. (ROA)	0.026	0.032	-0.007***	0.054	-0.029***
Tangibility	0.416	0.312	0.105***	0.359	0.057**
Risk-adjusted stock return	0.021	0.027	-0.007	0.095	-0.075***
Analyst coverage	2.786	4.610	-1.824***	2.806	-0.020

Panel B: Comparisons of additional bond- and firm-level characteristics used in the yield spread analysis

	Straight bonds	MWC bonds	Difference (MWC vs. Straight)	FPC bonds	Difference (FPC vs. Straight)
Yield spread	0.013	0.018	-0.006***	0.035	-0.023***
Moody's rating	14.565	13.855	0.710***	9.452	5.114***
Modified duration	6.229	7.825	-1.596***	6.917	-0.688***
Subordinate	0.023	0.010	0.013***	0.211	-0.187***
Putable	0.015	0.001	0.014***	0.029	-0.013**
Negative net income	0.067	0.090	-0.023**	0.243	-0.177***
Industry concentration	0.185	0.176	0.009*	0.164	0.021***

Table 4
Correlation Matrix

Table 4 provides Pearson pair-wise correlation coefficients for the firm-level measures provided in Table 2 Panels B1-B2. * and ** denote significance at the 5 percent and 1 percent levels, respectively.

	Log (Delta)	Granularity	Stock-Treasury Corr.	Market- book ratio	Sales growth	Firm size	Liquidity	Delaware	Leverage	ROA	Std. ROA	Tangibility	Risk-adjusted stock return
Log (Delta)	1												
Granularity	0.150**	1											
Stock-Treasury Corr.	-0.050**	-0.112**	1										
Market-book ratio	0.324**	0.033**	-0.129**	1									
Sales growth	0.103**	-0.110**	-0.115**	-0.006	1								
Firm size	0.491**	0.385**	0.020	0.346**	-0.145**	1							
Liquidity	0.076**	-0.015	0.095**	0.276**	-0.071**	0.182**	1						
Delaware	-0.002	-0.068**	0.051**	-0.020	0.068**	-0.041**	0.031**	1					
Leverage	-0.156**	0.036**	-0.124**	-0.018	0.048**	-0.227**	-0.123**	0.024*	1				
ROA	0.276**	0.028*	-0.024*	0.486**	-0.003	0.289**	0.137**	-0.065**	-0.204**	1			
Std. ROA	-0.206**	-0.073**	0.059**	-0.048**	-0.042**	-0.192**	0.116**	0.061**	0.230**	-0.288**	1		
Tangibility	0.009	0.050**	-0.003	-0.065**	0.026*	-0.022*	-0.065**	0.015	0.023*	-0.092**	0.022	1	
Risk-adjusted stock return	0.073**	-0.019	-0.022*	0.059**	0.066**	-0.016	-0.023*	0.020	0.082**	0.045**	0.050**	-0.020	1
Analyst coverage	0.232**	0.082**	0.230**	0.143**	-0.096**	0.513**	0.222**	0.045**	-0.133**	0.107**	-0.009	-0.017	-0.012

Table 5
Managerial Equity Incentives and Call Provision Choice in Newly Issued Bonds:
Multinomial Logit Estimates

Table 5 provides maximum-likelihood multinomial logit estimates using three levels of call protection as discrete outcomes on managerial equity incentives and other explanatory variables. The robust standard errors are adjusted for clustering at the firm level. *P*-values are provided in parentheses. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

	CEO Delta		Top Management Delta		Lagged CEO Delta		Lagged Top Management Delta	
	MWC	FPC	MWC	FPC	MWC	FPC	MWC	FPC
	Category	Category	Category	Category	Category	Category	Category	Category
Log (Delta)	0.143** (0.023)	0.036 (0.645)	0.157** (0.022)	0.042 (0.630)	0.112* (0.053)	-0.039 (0.581)	0.141** (0.029)	-0.032 (0.687)
Log (Time to maturity)	1.154*** (0.000)	1.157*** (0.000)	1.135*** (0.000)	1.134*** (0.000)	1.132*** (0.000)	1.146*** (0.000)	1.122*** (0.000)	1.108*** (0.000)
Log (Offering amount)	0.793*** (0.000)	0.199 (0.411)	0.783*** (0.000)	0.176 (0.445)	0.779*** (0.000)	0.195 (0.422)	0.786*** (0.000)	0.208 (0.386)
Rule 144A	-0.522*** (0.000)	0.377*** (0.004)	-0.457*** (0.001)	0.398*** (0.002)	-0.507*** (0.000)	0.377*** (0.005)	-0.484*** (0.000)	0.405*** (0.002)
Granularity	-0.136*** (0.003)	-0.095 (0.109)	-0.139*** (0.002)	-0.108* (0.091)	-0.128*** (0.004)	-0.072 (0.208)	-0.139*** (0.001)	-0.090 (0.144)
Stock-Treasury Corr.	0.466 (0.326)	0.949* (0.063)	0.353 (0.453)	0.838* (0.098)	0.349 (0.478)	0.786 (0.138)	0.405 (0.405)	0.867* (0.097)
Market-book ratio	-0.025 (0.793)	-0.262* (0.053)	-0.004 (0.969)	-0.255* (0.053)	-0.035 (0.715)	-0.280** (0.030)	-0.003 (0.976)	-0.245* (0.057)
Sales growth	-0.134 (0.848)	2.722*** (0.000)	-0.110 (0.873)	2.825*** (0.000)	-0.172 (0.814)	2.818*** (0.000)	-0.149 (0.833)	2.853*** (0.000)
Firm size	-0.158 (0.133)	-0.466** (0.016)	-0.169* (0.093)	-0.468** (0.013)	-0.157 (0.137)	-0.457** (0.016)	-0.164 (0.110)	-0.455** (0.015)
Liquidity	-0.158 (0.832)	0.701 (0.413)	-0.592 (0.418)	0.065 (0.943)	-0.018 (0.981)	0.886 (0.288)	-0.560 (0.448)	0.057 (0.949)
Delaware	0.054 (0.744)	0.580*** (0.001)	0.085 (0.597)	0.560*** (0.001)	0.049 (0.773)	0.573*** (0.002)	0.079 (0.634)	0.566*** (0.002)
Leverage	-0.517 (0.399)	2.249*** (0.000)	-0.509 (0.395)	2.199*** (0.000)	-0.416 (0.516)	2.263*** (0.000)	-0.470 (0.445)	2.070*** (0.000)
ROA	-3.207* (0.054)	-4.713*** (0.004)	-3.667* (0.029)	-4.805*** (0.004)	-2.917* (0.077)	-4.034** (0.013)	-3.571** (0.036)	-4.569*** (0.006)
Std. ROA	5.463** (0.028)	8.702*** (0.001)	5.773** (0.021)	9.582*** (0.000)	4.391* (0.084)	8.124*** (0.003)	4.945** (0.043)	8.858*** (0.001)
Tangibility	-0.176 (0.367)	0.062 (0.345)	-0.172 (0.392)	0.065 (0.311)	-0.212 (0.343)	0.066 (0.301)	-0.169 (0.398)	0.073 (0.248)
Risk-adjusted stock return	-0.069 (0.597)	0.226 (0.102)	-0.048 (0.712)	0.210 (0.128)	-0.070 (0.614)	0.199 (0.168)	-0.024 (0.859)	0.228 (0.103)
Analyst coverage	0.177 (0.131)	-0.156 (0.239)	0.200* (0.080)	-0.141 (0.265)	0.227* (0.059)	-0.103 (0.446)	0.204* (0.078)	-0.117 (0.367)
Yield curve slope	-18.425* (0.086)	-16.597 (0.139)	-17.776* (0.093)	-15.876 (0.145)	-14.839 (0.164)	-15.269 (0.178)	-17.553* (0.098)	-16.577 (0.127)
10-year Treasury rate	3.052 (0.848)	18.525 (0.250)	1.464 (0.926)	14.905 (0.346)	-0.425 (0.980)	10.421 (0.535)	1.607 (0.920)	13.525 (0.401)
Std. (10-year Treasury rate)	-2.896 (0.946)	25.676 (0.621)	-9.432 (0.823)	17.602 (0.733)	-19.214 (0.658)	18.373 (0.734)	-12.505 (0.768)	20.078 (0.701)
Baa-Aaa spread	9.661 (0.711)	-15.271 (0.587)	6.486 (0.799)	-17.705 (0.521)	11.952 (0.655)	-19.208 (0.500)	7.328 (0.777)	-19.520 (0.484)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	7,456	7,456	7,657	7,657	7,183	7,183	7,439	7,439
Pseudo <i>R</i> -squared	0.290		0.290		0.287		0.291	
Wald Chi-squared	5566.24		5436.77		5305.37		5607.21	

Table 6
Managerial Equity Incentives and Call Provision Choice in Newly Issued Bonds:
Instrumental Variable Probit Models

Table 6 reports instrumental variable (IV) probit estimates of the association between managerial equity incentives and the choice to use a make-whole call (MWC) provision in newly issued bond issues using an instrumental variable (IV) approach. The binary response variable in Models 1-2 equals one if the issue is make-whole callable and zero if the bond does not contain any call provisions. The robust standard errors are adjusted for clustering at the firm level. *P*-values are provided in parentheses. ***, **, and * correspond to significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Instrument Summary Statistics	Mean	Std. Dev.	Q25	Median	Q75
Number of Standard Federal Region public companies	1,155	450.78	1000	1,125	1,352
Mean state pay-performance sensitivity (\$000's)	1,452	4,812	444	707	1,342
CEO tenure (years)	6.356	6.094	2	5	9
Panel B: First Stage Estimates		Model (1)	Model (2)		
		Delta = CEO Delta	Delta = Top Management Delta		
Log (Number of Standard Federal Region public companies)		0.067** (0.019)	0.064** (0.029)		
Log (Mean state pay-performance sensitivity)		0.195*** (0.000)	0.217*** (0.000)		
Log (CEO tenure)		0.662*** (0.000)	0.365*** (0.000)		
Additional first stage regressors		Yes	Yes		
Panel C: Second Stage Estimates					
Log (Delta) IV		0.090** (0.014)	0.121** (0.044)		
Additional control variables		Yes	Yes		
Industry fixed effects		Yes	Yes		
Year fixed effects		Yes	Yes		
No. Obs.		4,863	4,933		
Wald Chi-square		1,051.38	1,050.05		
(p-value)		(0.00)	(0.00)		
Wald test of exogeneity Chi-square statistic		2.29	0.01		
(p-value)		(0.130)	(0.926)		
Anderson LR statistic (IV identification / IV relevance test)		1,559.225	713.967		
(p-value)		(0.000)	(0.000)		
Hansen J over-identification test Chi-square statistic		1.532	0.612		
(p-value)		(0.465)	(0.736)		

Table 7
Managerial Equity Incentives and Call Provision Choice in Newly Issued Bonds:
Credit Rating Subsets

Table 7 provides maximum-likelihood multinomial logit estimates using three levels of call protection as discrete outcomes on managerial equity incentives and other explanatory variables. For brevity, we report results using the CEO delta. The subsets are segmented around the 'B+' S&P Firm Quality Rating and, alternatively, investment grade and high yield Moody's bond ratings. The robust standard errors are adjusted for clustering at the firm level. *P*-values are provided in parentheses. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

	S&P Firm Quality Ranking $\geq$ B+		S&P Firm Quality Ranking $\leq$ B		Moody's Rating $\geq$ Baa3		Moody's Rating $\leq$ Ba1	
	MWC	FPC	MWC	FPC	MWC	FPC	MWC	FPC
	Category	Category	Category	Category	Category	Category	Category	Category
Log (CEO delta)	0.187** (0.039)	0.139 (0.216)	0.088 (0.257)	-0.057 (0.451)	0.159** (0.029)	0.122 (0.183)	0.136 (0.244)	-0.021 (0.842)
Log (Time to maturity)	1.374*** (0.000)	1.331*** (0.000)	0.758*** (0.000)	0.860*** (0.000)	1.163*** (0.000)	1.214*** (0.000)	0.857** (0.042)	1.093** (0.010)
Log (offering amount)	0.830*** (0.000)	-0.179 (0.384)	0.901*** (0.000)	0.797*** (0.000)	0.867*** (0.000)	-0.268* (0.089)	0.377** (0.049)	0.486** (0.011)
Rule 144A	-0.566** (0.015)	0.771*** (0.000)	-0.543*** (0.001)	0.142 (0.417)	-0.154 (0.458)	0.424 (0.139)	-1.428*** (0.000)	-1.013*** (0.000)
Granularity	-0.098* (0.099)	-0.140* (0.054)	-0.182*** (0.007)	-0.069 (0.412)	-0.145*** (0.003)	-0.235*** (0.001)	-0.139 (0.178)	0.028 (0.738)
Stock-Treasury Corr.	0.766 (0.204)	0.080 (0.913)	0.264 (0.688)	1.324* (0.075)	0.355 (0.515)	0.054 (0.957)	0.711 (0.473)	1.795** (0.043)
Market-book ratio	-0.018 (0.883)	-0.234 (0.145)	-0.176 (0.273)	-0.299 (0.137)	-0.054 (0.587)	-0.083 (0.502)	0.181 (0.511)	0.083 (0.750)
Sales growth	-0.624 (0.578)	2.748*** (0.005)	0.752 (0.382)	3.187*** (0.001)	0.333 (0.739)	-1.895 (0.152)	-1.553* (0.087)	1.795** (0.040)
Firm size	-0.253* (0.082)	-0.219 (0.259)	-0.081 (0.492)	-0.771*** (0.000)	-0.191 (0.110)	0.307** (0.029)	0.019 (0.905)	-0.829*** (0.000)
Liquidity	-1.156 (0.219)	-0.096 (0.926)	2.170 (0.144)	2.276 (0.150)	-0.323 (0.686)	1.116 (0.253)	-0.127 (0.939)	0.516 (0.745)
Delaware	0.042 (0.851)	0.870*** (0.000)	0.005 (0.982)	0.231 (0.315)	0.095 (0.624)	0.909*** (0.000)	-0.517** (0.047)	-0.039 (0.869)
Leverage	0.317 (0.620)	3.021*** (0.000)	-1.368* (0.092)	1.647** (0.029)	-0.397 (0.604)	1.251* (0.097)	-1.568** (0.036)	0.022 (0.972)
ROA	-0.696 (0.779)	-3.945 (0.148)	-4.514** (0.022)	-4.481** (0.018)	-3.100 (0.151)	-5.440** (0.019)	-1.736 (0.331)	-1.572 (0.312)
Std. ROA	9.794** (0.018)	14.921*** (0.000)	2.894 (0.295)	4.538 (0.106)	11.017*** (0.000)	16.887*** (0.000)	-1.254 (0.519)	0.302 (0.842)
Tangibility	-0.111 (0.603)	0.028 (0.677)	-0.192 (0.661)	0.235 (0.624)	-0.190 (0.461)	-0.050 (0.475)	1.017** (0.031)	0.992* (0.054)
Risk-adjusted stock return	0.032 (0.862)	0.268 (0.271)	-0.086 (0.610)	0.158 (0.335)	-0.020 (0.909)	0.507* (0.064)	-0.073 (0.733)	0.049 (0.777)
Analyst coverage	0.256* (0.087)	-0.150 (0.418)	0.093 (0.565)	-0.160 (0.354)	0.116 (0.401)	-0.271 (0.181)	0.297 (0.192)	-0.028 (0.894)
Yield curve slope	-26.802* (0.059)	-19.705 (0.159)	1.677 (0.912)	-7.279 (0.638)	-18.177 (0.126)	-42.843*** (0.006)	2.314 (0.896)	7.430 (0.666)
10-year Treasury rate	17.505 (0.422)	-5.740 (0.792)	-16.882 (0.423)	21.580 (0.383)	2.575 (0.889)	40.058* (0.099)	-28.110 (0.317)	-29.789 (0.292)
Std. (10-year Treasury rate)	21.998 (0.696)	-2.610 (0.975)	-26.640 (0.688)	62.656 (0.381)	-6.500 (0.891)	-35.261 (0.725)	47.062 (0.639)	201.718** (0.036)
Baa-Aaa spread	-5.858 (0.865)	-35.123 (0.326)	69.661** (0.044)	49.635 (0.247)	11.737 (0.684)	-19.561 (0.656)	30.104 (0.615)	12.844 (0.833)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	4,287	4,287	3,169	3,169	5,435	5,435	2,021	2,021
Pseudo <i>R</i> -squared	0.317		0.271		0.291		0.208	
Wald Chi-squared	3064.69		5201.31		4012.46		11742.81	

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Table 8
Growth Prospects and the Effect of CEO Equity Incentives on Make-Whole Provision Choice

Table 8 reports estimates of the association between managerial equity incentives and the choice to use the make-whole call provision within growth-based subsets using the multinomial logit methodology. We adjust the standard errors for clustering at the firm level. *P*-values are provided in parentheses. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

	Delta = CEO Delta		Delta = Top Management Delta	
	Model (1)	Model (2)	Model (3)	Model (4)
Log (Delta)	0.102 (0.123)	0.101 (0.144)	0.117 (0.104)	0.102 (0.171)
Log(Delta) * HSG-HMB	0.395*** (0.000)		0.372*** (0.003)	
HSG-HMB	-4.014*** (0.000)		-2.982*** (0.001)	
Log(Delta) * Industry-adj. HSG-HMB		0.244** (0.018)		0.299*** (0.009)
Industry-adj. HSG-HMB		-1.795** (0.012)		-2.364*** (0.004)
Additional control variables	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. Obs.	7,456	7,456	7,657	7,657
Pseudo <i>R</i> -squared	0.292	0.291	0.292	0.292
Wald Chi-squared	5532.27	5596.53	5485.92	5385.94

Table 9
Post-Issue Performance for Make-whole Callable Bond Issuers:
Propensity Score Matching

Table 9 provides the average treatment effect on the treated (ATET) of make-whole callable bond issuers using one-to-one and one-to-five nearest-neighbor matching. There are 2,174 treated firm-year make-whole call issuers with non-missing CEO delta. Treated firms issue at least one make-whole callable bond and no fixed price callable bonds in a given year.

Panel A: Average Treatment Effect on the Treated (Outcome variable = ROA_{t+1})

	Treated	Controls	Difference	Std. Error	T-stat
Panel A1: One-to-one Matching					
Full Sample	0.0557	0.0189	0.0367	0.0159	2.31
Top tercile CEO delta	0.0737	0.0541	0.0196	0.0072	2.69
Bottom tercile CEO delta	0.0322	0.0313	0.0009	0.0086	0.10
Panel A2: One-to-five Matching					
Full Sample	0.0557	0.0273	0.0284	0.0081	3.50
Top tercile CEO delta	0.0737	0.0359	0.0377	0.0177	2.13
Bottom tercile CEO delta	0.0322	0.0366	-0.0044	0.0044	-1.00

Panel B: Average Treatment Effect on the Treated (Outcome variable = ROA_{t+2})

Panel B1: One-to-one Matching					
Full Sample	0.0528	0.0151	0.0377	0.0272	1.38
Top tercile CEO delta	0.0684	0.0456	0.0227	0.0083	2.75
Bottom tercile CEO delta	0.0327	0.0366	-0.0039	0.0069	-0.57
Panel B2: One-to-five Matching					
Full Sample	0.0528	0.0312	0.0216	0.0079	2.72
Top tercile CEO delta	0.0684	0.0531	0.0153	0.0054	2.84
Bottom tercile CEO delta	0.0327	0.0228	0.0098	0.0067	1.46

Panel C: Average Treatment Effect on the Treated (Outcome variable = $Sales\ Growth_{t,t+2}$)

Panel C1: One-to-one Matching					
Full Sample	0.0531	0.0654	-0.0121	0.0080	-1.53
Top tercile CEO delta	0.0770	0.0509	0.0160	0.0101	1.59
Bottom tercile CEO delta	0.0415	0.0817	-0.0402	0.0155	-2.59
Panel C2: One-to-five Matching					
Full Sample	0.0531	0.0641	-0.0355	0.0102	-3.47
Top tercile CEO delta	0.0770	0.0537	0.0133	0.0067	1.97
Bottom tercile CEO delta	0.0415	0.0778	-0.0363	0.0089	-4.07

Table 10
Managerial Equity Incentives and Call Provisions: At-Issue Bond Yield Spreads

Table 10 reports least squares coefficient estimates of at-issue yield spreads regressed on indicators for make-whole (MWC) and fixed price callable (FPC) bonds and other bond- and firm-level explanatory variables using a maximum of 6,015 bond-year observations. We measure equity incentives at the CEO and top management levels. The final row displays the *p*-value for the difference in *MWC* estimates for top vs. bottom *Delta* terciles. *P*-values based on robust cluster-adjusted standard errors are in parentheses. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

	Delta = CEO Delta		Delta = Top Management Delta	
	Model (1)	Model (2)	Model (3)	Model (4)
MWC	0.0010 (0.252)	-0.0000 (0.980)	0.0011 (0.228)	-0.0002 (0.848)
MWC * Top third delta		0.0031** (0.023)		0.0035*** (0.007)
Top third delta	-0.0010*** (0.008)	-0.0032*** (0.003)	-0.0010** (0.028)	-0.0034*** (0.003)
Residual bond rating	-0.0025*** (0.000)	-0.0025*** (0.000)	-0.0025*** (0.000)	-0.0025*** (0.000)
FPC	0.0065*** (0.000)	0.0063*** (0.000)	0.0067*** (0.000)	0.0065*** (0.000)
Log (offering amount)	-0.0002 (0.622)	-0.0002 (0.553)	-0.0002 (0.606)	-0.0002 (0.555)
Duration	0.0001 (0.230)	0.0001 (0.242)	0.0001 (0.249)	0.0001 (0.258)
Subordinate	0.0006 (0.629)	0.0006 (0.621)	0.0006 (0.615)	0.0005 (0.641)
Rule 144a	0.0092*** (0.000)	0.0091*** (0.000)	0.0092*** (0.000)	0.0091*** (0.000)
Putable	-0.0113*** (0.006)	-0.0113*** (0.006)	-0.0111*** (0.006)	-0.0110*** (0.005)
Liquidity	0.0084** (0.011)	0.0087** (0.010)	0.0084** (0.012)	0.0087*** (0.010)
Firm size	-0.0034*** (0.000)	-0.0034*** (0.000)	-0.0034*** (0.000)	-0.0034*** (0.000)
Leverage	0.0160*** (0.000)	0.0159*** (0.000)	0.0158*** (0.000)	0.0157*** (0.000)
Market-book ratio	-0.0019*** (0.000)	-0.0018*** (0.000)	-0.0019*** (0.000)	-0.0019*** (0.000)
Sales growth	0.0077*** (0.001)	0.0078*** (0.001)	0.0068*** (0.007)	0.0070*** (0.005)
ROA	-0.0185*** (0.001)	-0.0188*** (0.001)	-0.0179*** (0.001)	-0.0183*** (0.001)
Std. ROA	0.0407*** (0.000)	0.0403*** (0.000)	0.0403*** (0.000)	0.0399*** (0.000)
Negative net income	0.0078*** (0.000)	0.0079*** (0.000)	0.0078*** (0.000)	0.0078*** (0.000)
Tangibility	-0.0001 (0.674)	-0.0001 (0.813)	-0.0001 (0.695)	-0.0001 (0.826)
Analyst coverage	-0.0009* (0.089)	-0.0009* (0.083)	-0.0009* (0.070)	-0.0009* (0.075)
Industry concentration	0.0028 (0.133)	0.0029 (0.114)	0.0029 (0.119)	0.0030 (0.107)
Yield curve slope	0.1176 (0.107)	0.1174 (0.111)	0.1147 (0.119)	0.1151 (0.115)
10-year Treasury rate	-0.1927** (0.017)	-0.1915** (0.017)	-0.2060** (0.011)	-0.2021** (0.012)
Std. (10-year Treasury rate)	0.0979 (0.737)	0.1040 (0.718)	0.1126 (0.701)	0.1133 (0.693)
Baa-Aaa spread	1.1444*** (0.000)	1.1385*** (0.000)	1.1591*** (0.000)	1.1563*** (0.000)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. Obs.	6,135	6,135	6,266	6,266
R-squared	0.723	0.724	0.725	0.727
F-statistic	114.5	113.6	120.3	119.6

Table 11
Managerial Equity Incentives and Make-Whole Callable Bond Issuance:
Abnormal Trading Volume

Table 11 presents mean daily and cumulative abnormal relative volume (CARV) for make-whole callable bond issuance over the 1995-2017 sample period. The first column identifies the event window where day 0 is the bond issue date. Mean CARV is measured using an equally-weighted market model approach estimated over day -225 to day -2. The standardized cross-sectional z -statistic (generalized rank t -statistic) tests for the significance of each event day or window using a two-tail test, respectively. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A: Full Sample of MWC Issue Dates				
Event Window	No. Obs.	Mean CARV (%)	J -Test Z -statistic	Generalized Rank T -statistic
-1	2,926	4.98	2.277**	2.270**
0	2,927	6.07	2.771***	2.672***
[-1,0]	2,928	11.04	2.827***	2.762***
Panel B: Top Tercile CEO Delta				
-1	998	3.28	1.709*	1.845*
0	998	3.43	1.596	1.517
[-1,0]	999	6.70	1.843*	1.950*
Panel C: Bottom Tercile CEO Delta				
-1	1,004	7.44	2.656***	2.470**
0	1,005	8.70	3.129***	2.970***
[-1,0]	1,005	16.14	3.249***	2.999***
Panel D: Significance of Bottom Tercile vs. Top Tercile [-1, 0] Mean CARV				
Bottom-Top (%)		T -statistic (p -value)	Wilcoxon Z -statistic (p -value)	
9.43		2.38 (0.017)	1.814 (0.070)	

Response to Reviewer
(JBFA-08-19-07014)

“Top Management Incentives and Financial Flexibility: The Case of Make-Whole Call Provisions”

At the outset, we would like to thank the reviewer for their detailed and thoughtful review. We hope to have addressed these comments in the revised manuscript. Our replies to each (italicized) comment are as follows:

Major Comments

1. Channel for the connection between MWC and equity incentives. I think that a connection between the two is intuitive, but the author(s) need to be careful about how the argument is being made. Currently, the write-up identifies two potential channels:

- *MWC creates flexibility → flexibility is more valuable when the quality of managerial decisions is higher → the quality of managerial decisions is higher when incentives are aligned.*
- *MWC creates flexibility → flexibility is valuable for the firm → properly incentivized managers are more likely to choose valuable options for the firm*

Both of the channels above would drive an association between MWC and equity incentives, but the test of each would involve different timing of the variables. A test using contemporaneous left- and right-hand variables (like the current write-up presents) is more in line with the first channel, while the second channel would imply that the explanatory variables are lagged (i.e. if the manager’s incentives are aligned at t-1, they are likely to choose MWC at t).

The point is well taken. To incorporate the second channel into the motivation for *Hypothesis 1*, we have modified the discussion leading up to *Hypothesis 1* on p. 7 as follows:

We posit that the shareholder value created by flexibility increases with the quality of those managerial decisions and, following agency theory, that equity incentives improve these decisions by aligning managerial incentives toward maximizing the value of equity. The better decisions induced by higher managerial incentives impact the use of make-whole call provisions through two potential channels that are not necessarily mutually exclusive. First, better motivated managers can be expected to make better decisions in the future (i.e., subsequent to bond issue); in particular, they will be expected to make more effective use of the financial flexibility afforded by a make-whole call option to maximize shareholder value. Second, better motivated managers make better decisions at the time of issue – in particular, they are more likely to include shareholder value enhancing features, such as the make-whole call option. Both of these channels – i.e., the greater value a make-whole call brings when managers are motivated in their future decisions, and the greater propensity of currently motivated managers to seize the opportunity to create value at the time of issue – imply a make-whole call option will be more often included when managerial equity incentives are stronger. This argument motivates *Hypothesis 1*:

In Table 5, we include an explicit test of both channels, as we describe on p. 18:

We argue above that higher executive equity incentives potentially affect make-whole call choice through two channels, where equity incentives (1) motivate better use of the flexibility associated with the MWC provision in the future when opportunities to make use of financial flexibility arise, and (2) motivate managers to choose valuable flexibility-increasing options for the firm at the time of the bond issue that may include MWC debt. Given this distinction in timing, Columns 2-5 measures equity incentives using logged *Delta* at the time of the issue, while Columns 6-9 use logged *Delta* lagged one year. Although the two channels are not mutually exclusive, and lagged and contemporaneous delta are correlated, we would expect to see a stronger effect from

contemporaneous *Delta* if expected future decision quality is most important (Channel 1), and from the lagged *Delta* if decision quality at the time of issue matters more (Channel 2).

While both lagged measures remain statistically significant in their respective MWC category equations, the lagged estimates lessen in magnitude and statistical significance compared to the contemporaneous measures. As such, these results suggest that the dominant effect rests with the first channel. Accordingly, we focus the subsequent analysis on the contemporaneous deltas, as we explain on p. 19.

While not absolutely necessary, it would be nice to provide more context around the specific channel driving this connection between MWC and equity incentives. For example, if the argument is that properly incentivized managers are more likely to make good investment decisions and hence, they are more likely to benefit from exercising the MWC provisions on the debt, an easy to test implication would be that MWC provisions are more likely to be exercised if equity incentives are higher. Is that the case? The test can be easily designed either around the difference in difference analysis in section 5.2 or as a stand-alone logit regression.

We agree that an association between equity incentives and early retirements due to call exercises or tender offers would add more context to the results. We utilized the FISD Redemptions file to address this question, where we created a binary dependent variable equal to one if the FISD item ACTION_TYPE, which provides information about the type of action that changed the bond's amount outstanding, is equal to "B" (balance of issue called), "E" (entire issue called), "P" (part of issue called), or "T" (tender offer), and is zero otherwise. We estimated a series of logit models using the full FISD-based sample and on growth-based subsets per our findings in Table 8. Consistent with our growth-based findings in Table 8, logged *Delta* is significantly positively associated with reductions in issue amounts due to early exercise or tender offers among higher growth MWC issuers. We include these results below as Appendix Table 1. Because this analysis is restricted to the FISD Redemptions file, and not the aggregated SDC+FISD data used in the paper, the number of observations is considerably less than those used in the paper. For this reason and for brevity, we leave these results untabulated in the manuscript but could include them in the paper upon further editorial guidance. We provide details of this analysis on p. 23 as follows:

A natural question is if the positive incremental MWC effect among the highest *Delta* tercile issuers is associated with actual subsequent reductions in the amount outstanding due to call exercises or tender offers. While the SDC database does not provide this information, the FISD Redemptions file provides data items about the type of action that took place to change the amount outstanding (ACTION_TYPE), along with the date the change to the issue's amount outstanding became effective (EFFECTIVE_DATE). We examine the impact of *Delta* on the probability of a reduction in amount outstanding due to early exercises (i.e. when ACTION_TYPE is "B", "E", or "P"), or "T" (tender offer) for all make-whole callable bonds and for growth-based subsets per the results in Table 8. To improve the efficiency of the estimates based on the lower number of observations, we gauge high and low growth using the cross-sectional medians. The controls are at the bond- (logged remaining maturity and offering amount), firm- (S&P Quality Ranking, growth measures, and size), and market levels (Baa-Aaa spread and yield curve slope). Consistent with the results provided in Table 8, our findings suggest that logged CEO delta (alternatively, top management delta) is significantly associated with early redemptions among higher growth MWC issuers, thereby providing more context for the channel that drives the association between MWC and equity incentives. For brevity we leave these results untabulated but they are available upon request.

2. Sample formation and characteristics.

- **Classification of MWC vs FPC.** *The current classification of what constitutes MWC vs FPC seems fairly ad-hoc to me. Is this driven by the way the information is presented in SDC/FISD? It would be nice for the reader to get a sense of how these categories have evolved through time (this will also help with comparing the sample with other studies). It would be helpful to include a graph with either numbers or percentages for each category by year.*

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Essentially, these classifications address the issue of overlapping FPC and MWC provisions within the same bonds. While SDC and FISC describe these provisions somewhat differently, the broadest classification of a MWC provision is if the SDC item “Call Protection” is “Make Whole Call” or when the FISC items “Callable” and “Make Whole” are “Y” and “Y”, respectively. Similarly, the broadest classification of a FPC provision is if the SDC item “Call Protection” is other than “Non-call life” or when the FISC items “Callable” and “Make whole” are “Y” and “N”, respectively. Our classifications follow a more nuanced ‘dominant characteristic’ approach, based on the procedure described by Brown and Powers (2018, pp. 13-14).¹

Nevertheless, as we illustrate below in Appendix Table 2, the significant *Delta* effect on the probability of MWC issuance is preserved using the broadest MWC definition. To illustrate, we estimate logit regressions where the dependent variable equals one if the bond has any make-whole provision and zero otherwise (Columns 2-3) and, alternatively, where the dependent variable equals one if the bond has any fixed-price call provision and zero otherwise (Columns 4-5). In Columns 2-3, the logged *Delta* significantly predicts MWC issuance at the five percent (one percent) levels using delta measured at the CEO (top management) levels, respectively. In Columns 4-5, the *Delta* estimates are insignificantly different from zero.

We have provided a more detailed overview of the classification process on p. 12 as follows:

Characterizing a bond as make-whole callable and fixed-price callable is complicated by the existence of many bonds that contain features of both provisions. For example, a bond may have a make-whole call provision for the first several years of a bond’s life which is followed by a standard fixed-price call provision. As a result, overlapping call provision features would confound the interpretation of our multinomial estimates. Similar to the process described by Brown and Powers (2018, pp. 13-14), we employ a ‘dominant characteristic’ classification scheme using information provided by the FISC and SDC datasets to classify bonds into three categories according to whether a provision is exercisable over a supermajority (2/3s or more) of the bond’s life. We define make-whole callable bonds as (1) those that are always make-whole callable or (2) make-whole callable with a fixed-price call in the final third of the bond’s life. We define bonds that are fixed-price callable as (1) callable immediately, where the first call date is less than 90 days after the issue date, or (2) with call protection, where the first call date is at least 90 days after the issue date, or (3) with make-whole call protection. Straight bonds do not have either call feature.

We added Figure 1 to the paper to illustrate the proportion of each call provision type by year in our sample. The increasing prevalence of MWC bonds throughout our sample period lines up with related work including Elsaify and Roussanov (2016), Brown and Powers (2018), Afik, Jacoby, Stangeland and Wu, (2019), and Alderson, Lin and Stock (2017) as we note in the paper.

• **Bond- and firm-level Characteristics.** *The paper presents the descriptive stats for bond and firm level characteristics only at the whole sample level. However, it would be interesting to see these variables grouped by MWC, FPC and non-callable just to get an idea if there are any significant differences between issuers of different types of bonds. Specifically, it would be informative to split up variables presented in Table 2, panels B1, B2 and C.*

As suggested, we added a univariate analysis to the paper (Table 3) where we compare the measures in Table 2 panels B1-B2 and C between MWC, FPC, and straight debt. We highlight distinctions between these groups on pp. 14-15. As we summarize on p. 15, Table 3 broadly illustrates that MWC issuers have higher delta and exhibit characteristics associated with greater financial flexibility, while FPC issuers have lower delta and have characteristics associated with greater cash flow uncertainty and higher credit risk.

¹ Güntay, Prabhala and Unal (2004) follow a conceptually similar approach in classifying fixed-price callable bonds. As they note on p. 12, “For example, a 30-year bond could be callable after 29 years, thus allowing the issuer some flexibility on timing the refunding in the last year of a bond’s life. Such a bond is better classified as a noncallable bond.”

3. Research Design for Testing H1/H2

The current write-up presents two different tests to investigate the connection between equity incentives and issuance of MWC (i.e. the proposed H1 and H2):

1. The probit test (presented in T3) restricts the sample to either (1) MWC and non-callable bonds or to (2) FPC and non-callable bonds. The results from these two samples are then compared and contrasted
2. The multinomial logit test (presented in T4) considers the whole sample in a multinomial logit setting where the left hand side variable covers three levels of call protection (MWC, FPC and non-callable as the base group).

Testing of H1: The first type of test presumes that the manager can choose only between MWC and non-callable bonds (or FPC and non-callable bonds, respectively), rather than a full menu of options. In this type of test, it is not straight forward to compare the coefficients between models 1, 2 and models 3,4 – the way the test is structured these coefficients effectively capture the differences between MWC and the base group with the differences between the FPC and the base group, respectively. The second type of test makes much more sense to me compared to the first, and yet it is only presented as an after-fact.

In the revised manuscript, we removed the initial probit tests and focused the analyses on the multinomial approach beginning with Table 5. We retained the IV probit approach in Table 6 as we are unaware of an equivalent instrumental variable approach in the multinomial framework.

Testing of H2: Again, I would probably consider the multinomial logit (panels C and D) as the preferred methodology, rather than the probit model that current Table 6 starts with (panels A and B). On a side note, does it not make more sense to include a dummy/interaction term rather than running the test in separate terciles/categories (the advantage being that we can directly test whether the difference in coefficients between the two groups is statistically significant)?

Because proximity to financial distress and growth opportunities are characteristics that moderate the empirical prediction of *Hypothesis 1*, we have renamed the predictions associated with these characteristics *Hypotheses 1a-1b*, respectively. We examine all three hypotheses with the multinomial logit approach. In *Hypothesis 1b* (the growth based subset analysis), we use $\Delta \times [\text{high growth subset}]$ interactions to test the difference in coefficients between the high growth subset of issuers and the rest of the sample as suggested. Consistent with our findings in the first submission, these interactions are strongly statistically significant. This analysis appears in Table 8. For consistency, we also use interactions in Table 10 to test if equity incentives impact the incremental effect of MWC provisions on at-issue yield spreads. Likewise, these results are consistent with the subset-based results in the first submission.

Additional Comments

1. How is the link between managerial incentives and issuance of MWC affected by financial distress/bankruptcy? One of the interesting things about MWC provisions is that they entail certain risks in the event of bankruptcy – for example, in the event of bankruptcy by an issuer, make-whole premiums may be treated as unmatured interest, and the payment of unmatured interest is generally prohibited in a bankruptcy. Additionally, the alignment of incentives between managers and shareholders (as well as shareholders and bondholders for that matter) are notoriously disturbed as the firm goes deeper into financial distress. Given that, it would be interesting to see whether financial distress mitigates the connection between managerial incentives and MWC (the main tests could be repeated in two subsamples separated by financial distress characteristics).

This was an excellent suggestion that we implemented as *Hypothesis 1a* and developed as follows on pp. 7-8:

The postulated relation between executive equity compensation and the quality of future decision-making associated with make-whole provisions generates several additional testable subset-based hypotheses. To the extent that anticipated future managerial decisions influence make-whole call choice, then the association

between managerial equity incentives and the use of make-whole provisions should be moderated by firm characteristics that weaken (strengthen) the importance of these decisions. Closer proximity to bankruptcy should be associated with less manager-shareholder interest alignment and therefore a weakened sensitivity between managerial equity incentives and the use of the make-whole call option for two potential reasons. First, make-whole premiums are treated as unmatured interest in the event of a bankruptcy, and the payment of unmatured interest in a bankruptcy is disallowed under Section 502(b)(2) of the Bankruptcy Code. Therefore, restrictions on an issuer's ability to prepay make-whole callable debt may diminish the hypothesized association between executive incentives and the use of make-whole provisions in financially distressed firms. Second, extant work argues that financial distress associated with high debt exacerbates manager-shareholder incentive misalignment. For example, Ortiz-Molina (2007) finds that capital structure affects CEO incentives where pay-performance sensitivity declines in the proportion of straight debt, thereby supporting the view that firms trade off shareholder-manager incentive alignment in order to reduce shareholder-bondholder conflicts of interest that increase in the proportion of non-convertible debt financing. These arguments motivate *Hypothesis 1a*:

We present these results in Table 7. In line with this expectation, equity incentives significantly predict MWC issuance among the subset of firms with better credit quality (gauged by firms with 'B+' or higher S&P Firm Quality Ranking, and alternatively with investment grade Moody's bond ratings), and diminish in significance in the lower quality subset.

2. Diff in diff test (matching technique) – the results from the diff in diff test are relatively weak. I cannot help but wonder if the matching technique does not drive these results (for example, based on the argument made in point 1 above, one could argue that matching on credit rating may also be necessary). One way to potentially mitigate this concern is to implement a propensity score matching approach (see Rosenbaum & Rubin, 1983) so that you can simultaneously match on multiple dimensions.

We replaced the prior diff-in-diff analysis in Section 5.2 with a PSM approach as suggested. As we describe on p. 24,

To ensure that our PSM estimates meet the balancing requirement, we parsimoniously select covariates gauging performance, leverage, and firm size. We identify control firms from the Compustat database after excluding financials and utilities along with the set of MWC issuers. We estimate propensity scores based on the following model:

$$MWC\ Issuer_{j,t} = \alpha_0 + \alpha_1 Performance\ measure_{j,t} + \alpha_2 Debt\ ratio_{j,t} + \alpha_3 Firm\ size_{j,t} \tag{2}$$

We examine three alternative outcome measures measured over the two years subsequent to the issue: top-line sales growth over the two-year post-issue period, and bottom-line performance as measured by ROA in t and $t+1$ relative to the issue year. The first covariate is motivated by Barber and Lyon (1996), who stress the importance of matching on pre-event operating performance to assess abnormal future performance. As such, we use ROA in year t (five-year prior growth in sales) as a matching covariate when the outcome measure is subsequent ROA (subsequent two-year sales growth, respectively). Following the arguments underlying *Hypothesis 1a*, the leverage ratio controls for proximity to distress. Finally, we include the firm size to mitigate biases related to size differences. Using the propensity scores estimated from Equation (2), we identify propensity score-matched control samples. PSM matching methodologies range from one-to-one to one-to-many; as discussed by Tucker (2010), there is no single best matching approach. We employ the nearest-neighbor approach with replacement using a caliper of 0.1, which identifies a single match for each treated firm according to the closest propensity score. For robustness, we repeat the analysis using five matched firms for each treated firm and present results in Panel C2.

As we discuss in the paper, our choice of covariates in Equation (2) is based on parsimony, prior research that stresses the role of matching on performance (i.e., Barber and Lyon, 1996), and proximity to distress as noted in Comment 2. We present our PSM results in Table 9. Consistent with the notion that managerial engagement subsequent to make-whole callable bond issue increases with equity incentives, the results show that high delta MWC issuers experience higher post-issue top-line (revenue) growth as well as bottom-line (ROA) performance.

3. The control variables in equation 1 are potentially very highly correlated (without a correlation matrix, it is hard to make a definitive statement). This creates a potential multi-collinearity problem – this needs to be discussed and mitigated.

We removed two control variables from the previous submission's models that were redundant, and likely highly correlated, with the other measures: Altman's Z-score, and the stock bid-ask spread. We conducted a variance inflation factor analysis on the remaining measures in our primary analysis (Tables 5-8). As we point out on p. 18, the variance inflation factors for these measures range from 3.59 (*Firm size*) to 1.03 (*Delaware*), indicating that our subsequent logistic regression coefficient estimates are reliable and stable. We also provide a correlation matrix for the variables used in the difference-in-means analysis – this appears as Table 4 in the revised manuscript.

4. Positioning the paper in the literature – I think the authors do a good job at highlighting the main contribution of the paper, which is the link between managerial incentives and the issuance of MWC. However, the paper would benefit from a deeper discussion of the evolution of MWC provisions in bond issuances, especially in an international context.

We have added greater detail about the evolution of MWC debt issuance on p. 1. For the sake of brevity, we refer to Afik et al. (2019), Mann and Powers (2003), and Labbé (2014), who also document the evolution of the make-whole provision outside the US. This material is as follows:

As Afik, Jacoby, Stangeland and Wu (2019) discuss, the make-whole provision can be traced to the 'Canada-call' provision beginning in 1987 when Domtar Inc. issued a CAN\$100 million 24-year maturity debenture that contained a make-whole call. This preceded the first use of a make-whole callable bond (by Quaker State) in the US by eight years (Mann and Powers, 2003). As documented by Labbé (2014), the use of the make-whole call in Europe began in 2001 with a euro bond issued by AT&T and by 2012 was being issued by large European firms including Pirelli, Vivendi, Michelin, and France Telecom among others.

5. The arguments for the first three hypotheses are very well laid out. In contrast, there is not much context provided for the fourth hypotheses (the reduction in asymmetric information around MWC bond issuance and how this could potentially vary based on equity incentives). The paper would benefit from a better literature review in relation to this particular hypothesis.

We have focused this hypothesis on abnormal trading volume around MWC issuance, based on the premise that higher delta should lead to greater investor agreement on the motivation for the MWC provision and therefore less incentive to trade. As such, we removed the abnormal bid-ask spread analysis in this version. We develop *Hypothesis 4* as follows on p. 10:

The financial flexibility explanation also has implications for the nature of the information conveyed to the equity market by the issue of a bond with a make-whole call option. Trading volume is an indicator of the precision of this information. Leuz and Verrecchia (2000) argue that trading volume captures willingness of investors to transact. While trading volume increases on the arrival of company-specific information (e.g. Bamber, Barron and Stevens, 2011; Hong and Stein, 2007), Karpoff (1986) argues that investors' willingness to trade arises from dispersion in prior expectations and idiosyncratic interpretation of information events. In a similar vein, Kandel and Pearson (1995) asserts that trading activity is stimulated when investors share, but

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interpret differently, the same public information. The previous hypotheses rest on the argument that higher levels of executive equity compensation are expected to lead to future uses of financial flexibility that are, on average, more advantageous for shareholders. It seems natural to extend this argument to postulate that the variance of these decisions around the optimum will also be reduced when managers are better motivated. This leads to the conjecture that higher levels of executive equity compensation create the expectation of more consistent decision-making, which reduces investor disagreement about the valuation impact of the bond issue, and therefore the volume of trade around the time of issue:

For Review Only

Appendix Table 1 for Response to Reviewer

Managerial Equity Incentives and Early Redemptions of Make-Whole Callable Bonds

This table provides logit regression estimates where the dependent variable equals one for a given bond if FISC data item ACTION_TYPE = “B” (balance of issue called), “E” (entire issue called), “P” (part of issue called), or “T” (tender offer), and is zero otherwise. The control variables include logged CEO (alternatively, top management) delta, the logged remaining maturity of the bond as of the date the on which the change to the issue's amount outstanding became effective, the log of the issue's offering amount, the S&P firm quality rating at issue, prior sales growth and the market-book ratio, firm size, interest rate measures at the time of issue including the Baa-Aaa spread and the slope of the yield curve, and industry and year fixed effects. Issuers are classified as HSG-HMB (LSG-LMB) when past sales growth and market-book are in the top (bottom) medians, respectively, of their cross-sectional distributions. The robust standard errors are adjusted for clustering at the firm level. *P*-values are provided in parentheses. *, **, and *** denotes significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

	Delta = CEO Delta			Delta = Top Management Delta		
	Model (1) Full sample	Model (2) HSG-HMB	Model (3) LSG-LMB	Model (4) Full sample	Model (5) HSG-HMB	Model (6) LSG-LMB
Log (Delta)	-0.0014 (0.985)	0.3655** (0.028)	-0.1084 (0.285)	-0.0733 (0.392)	0.3563* (0.051)	-0.2276* (0.066)
Log (remaining maturity)	-0.4523*** (0.000)	-0.7370*** (0.000)	-0.4961*** (0.000)	-0.4499*** (0.000)	-0.7327*** (0.000)	-0.4943*** (0.000)
Log (offering amount)	0.2739* (0.051)	-0.1384 (0.703)	0.2771 (0.190)	0.2674* (0.055)	-0.1116 (0.747)	0.2635 (0.213)
S&P firm quality rating at issue	-0.1332** (0.026)	-0.3874*** (0.008)	-0.0500 (0.545)	-0.1218** (0.038)	-0.3748*** (0.009)	-0.0250 (0.746)
Market-book ratio	-0.2955** (0.013)	-0.6763** (0.044)	0.7372 (0.307)	-0.2810** (0.019)	-0.6202* (0.053)	0.7780 (0.292)
Sales growth	-4.0725*** (0.000)	-1.7483 (0.702)	-5.7786** (0.010)	-3.9558*** (0.000)	-1.7908 (0.695)	-6.1974*** (0.007)
Firm size	-0.1756 (0.105)	-0.1702 (0.450)	-0.1149 (0.464)	-0.1460 (0.191)	-0.1582 (0.506)	-0.0628 (0.680)
Baa-Aaa quality spread at issue	-0.9131** (0.013)	-1.3249 (0.184)	-0.2100 (0.679)	-0.9266** (0.013)	-1.2863 (0.191)	-0.2198 (0.666)
Yield curve slope at issue	-0.1118 (0.282)	-0.7492*** (0.005)	0.2440 (0.242)	-0.1137 (0.274)	-0.7487*** (0.004)	0.2436 (0.241)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	2,886	767	781	2,886	767	781
Pseudo <i>R</i> ²	0.118	0.230	0.107	0.192	0.225	0.112
Wald chi-square	190.83	66.80	79.55	0.119	69.51	78.35

Appendix Table 2 for Response to Reviewer
Logit Regression Estimates Using the Broadest Definitions of Make-Whole Callable and Fixed-Price Callable Bonds

	MWC Bonds and Non-MWC Bonds		FPC Bonds and Non-FPC Bonds	
	Model (1)	Model (2)	Model (3)	Model (4)
Log (CEO Delta)	0.129** (0.011)		0.068 (0.134)	
Log (Top management delta)		0.154*** (0.005)		0.061 (0.186)
Log (Time to maturity)	0.901*** (0.000)	0.897*** (0.000)	-1.016*** (0.000)	-1.009*** (0.000)
Log (Offering amount)	0.816*** (0.000)	0.809*** (0.000)	0.799*** (0.000)	0.779*** (0.000)
Rule 144A	-1.078*** (0.000)	-1.034*** (0.000)	0.537*** (0.000)	0.563*** (0.000)
Granularity	0.036 (0.355)	0.037 (0.320)	-0.371*** (0.000)	-0.369*** (0.000)
Stock-Treasury Corr.	0.403 (0.344)	0.337 (0.431)	0.897*** (0.004)	0.761** (0.014)
Market-book ratio	0.009 (0.921)	0.027 (0.757)	-0.045 (0.500)	-0.045 (0.483)
Sales growth	-0.489 (0.385)	-0.617 (0.251)	-0.562 (0.154)	-0.392 (0.307)
Firm size	-0.267*** (0.002)	-0.275*** (0.001)	-0.137 (0.183)	-0.141 (0.161)
Liquidity	-0.687 (0.252)	-0.940 (0.112)	0.119 (0.764)	-0.064 (0.874)
Delaware	-1.578*** (0.001)	-1.560*** (0.001)	0.590* (0.057)	0.635*** (0.037)
Leverage	-0.948 (0.242)	-1.379* (0.099)	0.412 (0.387)	0.493 (0.311)
ROA	0.721 (0.441)	0.577 (0.502)	0.131 (0.873)	0.263 (0.754)
Std. ROA	-0.131 (0.404)	-0.136 (0.415)	-0.035 (0.631)	-0.032 (0.648)
Tangibility	-0.088 (0.384)	-0.076 (0.449)	0.084 (0.312)	0.102 (0.223)
Risk-adjusted stock return	-0.089 (0.526)	-0.058 (0.677)	0.113 (0.272)	0.125 (0.216)
Analyst coverage	0.149 (0.123)	0.162* (0.086)	0.112 (0.169)	0.121 (0.127)
Yield curve slope	-9.522 (0.287)	-9.154 (0.300)	-17.659*** (0.008)	-16.854** (0.010)
10-year Treasury rate	-11.474 (0.397)	-10.833 (0.416)	9.025 (0.382)	7.407 (0.464)
Std. (10-year Treasury rate)	9.565 (0.804)	4.223 (0.912)	-30.785 (0.320)	-34.480 (0.258)
Baa-Aaa spread	-3.284 (0.888)	-4.770 (0.835)	33.681** (0.021)	31.440** (0.028)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
No. Obs.	7,456	7,657	7,456	7,657
Pseudo R-squared	0.284	0.284	0.207	0.205
Wald Chi-squared	510.35	517.44	513.08	518.95