



Capital structure pre-balancing: Evidence from convertible bonds



Mahdi Rastad

Department of Finance, California Polytechnic State University, Orfalea College of Business, San Luis Obispo, CA 93407, United States

ARTICLE INFO

Article history:

Received 18 June 2015

Received in revised form 25 August 2016

Accepted 27 August 2016

Available online 30 August 2016

JEL classification:

G32

C31

Keywords:

Financing policy

Capital structure

Trade-off theory

Convertible bonds

Regression discontinuity

ABSTRACT

A large body of the corporate finance literature is devoted to capital structure. This literature examines whether firms have a target capital structure, and whether they actively rebalance their capital structure toward a target. Since conversion of a convertible bond causes a drop in leverage, target capital structure theory suggests that the structure should be rebalanced in the future. I consistently find that following a realized conversion firms rebalance their positions in less than a year. When the stock price passes the conversion price threshold for a convertible bond, the firm expects this drop in leverage to occur in the near future. Using a regression discontinuity design around the conversion price threshold for those conversions that are decided by *investors, not by the firm*, my paper documents a 20% increase in leverage before an actual drop in leverage. That is to say, firms do not wait for the realization of leverage shocks but rather respond to anticipated shocks. A quantile treatment effect analysis reveals the effect to be a hump-shaped function of leverage, with a peak for firms with a conditional leverage ratio around the 70th percentile.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

In this paper, I study the capital structure decisions of firms that have issued convertible bonds whose stock price is close to the conversion price threshold at which bondholders can exchange the bond for equity. From the perspective of the firm, these decisions by bondholders act as exogenous shocks to their capital structure, altering the debt-equity composition of the firm and instantaneously reducing leverage by significant amounts. Target capital structure theory would suggest that firms should respond to such shocks by rebalancing. My paper investigates how firms respond in practice. In doing so, I answer a set of questions: How fully do firms respond to what are effectively exogenous shocks to their capital structure by re-establishing their original capital structure? What is the timing of firm responses? How quickly do firms rebalance their capital structures in response to exogenous changes to their capital structure? Do firms anticipate likely future changes to their capital structure, by preemptively beginning to rebalance prior to the actual shocks to their capital structure? In other words, does a firm's management passively wait until a change actually occurs, or does it respond preemptively when the current stock price suggests that future changes are likely?

Previous research has focused on capital structure decisions in response to *realized* deviations from target levels. The literature has largely ignored the real-time capital structure decisions that firms must make as a function of *anticipated* likely changes

E-mail address: mrastad@calpoly.edu (M. Rastad).

in capital structure. This is partially due to the fact that it is typically difficult to quantify anticipated changes in capital structure. More importantly, given that capital structure composition is a choice variable and therefore an internal decision to the firm, finding a clear answer to these questions requires an exogenous source of variation in capital structure, a feature that has been completely ignored by prior studies. That is, one needs to distinguish the effect of capital structure from the effects of other firm characteristics that influence the actual capital structure choice. The goal of this paper is to exploit the discrete changes in capital structure caused by conversion features of convertible bonds to answer these questions.

Static trade-off theory hypothesizes that firms identify an optimal target for their composition of debt and equity to balance financial distress and agency costs (of the conflict between lenders and shareholders) of debt to its tax benefits. Empirical evidence of the relevance of target capital structure theory is mixed. Titman and Wessels (1988), Rajan and Zingales (1995), Graham (1996) and Hovakimian et al. (2001) provide evidence of an association between leverage and firm characteristics consistent with a target capital structure. Moreover, Jalilvand and Harris (1984), Auerbach (1985), Flannery and Rangan (2006) and Faulkender et al. (2011) provide evidence consistent with firms actively rebalancing their capital structure toward a target. Conversely, the negative association between past profitability and the leverage ratio is widely presented as evidence against trade-off theory (Hovakimian et al., 2001). In addition, inconsistent with the target capital structure hypothesis, studies have documented that changes in capital structure are mainly the result of internal financing deficits (Shyam-Sunder and Myers, 1999), historical stock returns (Welch, 2004), or management attempts to time the market (Baker and Wurgler, 2002). A possible reason for why these studies have had mixed results is a lack of identification strategy which makes it really difficult to measure the causal impact of leverage deviations from the target on future financing decisions of the firm.

The conversion option of convertible bonds provides a unique opportunity to study the empirical relevance of the target capital structure hypothesis by allowing us to examine how the financing decisions of firms respond to both realized and anticipated changes in capital structure. Bondholders find it optimal to convert their bonds into equity only after the stock price passes a predetermined threshold (the conversion price). Conversion causes an instant drop in the leverage ratio, a drop that is exogenous from the perspective of the firm. Likewise, the “expected leverage” ratio falls as the share price approaches the conversion threshold. I search for evidence that the conversion threshold serves as a trigger for firms, inducing them to change capital structure when the stock price hits the threshold. I design my tests so that conversions and anticipated conversions, detected by the conversion option becoming in the money, can be seen as treatment. Following Lee (2008), I argue that around the conversion threshold, the assignment of treatment is close to a random assignment. This provides a quasi-experimental design to study the effect of changes in the anticipated leverage ratio on financing decisions.

Two facts make this opportunity a credible framework for investigating target capital structure theories. First, as Stein (1992) and Lyandres and Zhdanov (2014) point out, convertible bonds are an important source of financing for many firms. Korkeamaki and Moore (2004) find close to 4000 convertible debt issues during the period 1980 to 1996. Essig (1991) provides evidence that more than 10% of all COMPUSTAT companies had at least one-third of their total debt in the form of convertible debt in the period 1963–1984. Second, voluntary conversions (i.e., conversions decided by the bondholder and not by the firm) cause significant changes in capital structure. As I document below, the median size of a voluntary conversion shock is approximately 7.3% relative to total debt. Therefore, capital structure consequences of a conversion are both frequent and sizeable.

While theory provides a variety of explanations for why firms issue convertible bonds, it seems less clear that theory predicts how capital structure responds to a conversion. The presence of the conversion option is rationalized by its ability to mitigate the underinvestment problem caused by “risk-shifting” (Green, 1984), avoiding adverse-selection costs associated with direct equity issuance when shares are undervalued (Stein, 1992), and controlling over-investment or free cash flow problems (Jensen, 1986) by matching firms’ financing and investment options (Mayers, 1998). Contrary to others, Mayers (1998) provides insight into firms’ investment and financing behavior at conversion. He predicts that a drop in the leverage ratio due to a conversion would free up debt capacity. If firms use this new capacity to raise new debt to finance investment options, consistent with rebalancing theory, this would cause the leverage ratio to bounce back quickly. However, his empirical evidence—that both debt and equity issuances increase after conversion—makes it ambiguous as to what the direction is. This calls for a clean empirical analysis to identify the direction of financing decisions in response to capital structure changes.

To study the link between changes in capital structure and financing policy, one needs to address the endogeneity of capital structure. Without that, one may wonder whether the effect comes from changes in capital structure per se or from common underlying factors that determine the choice of capital structure. To alleviate this concern, I exploit the discrete changes in capital structure around the conversion threshold. In particular, the discontinuity in leverage due to the conversion feature of convertible bonds enables me to employ a regression discontinuity design as an empirical strategy to identify the impact of anticipated leverage changes on capital structure decisions. The quasi-experimental set-up in the regression discontinuity design provides a clean experiment in which changes in capital structure around the conversion threshold can be considered as exogenous. This approach allows me to compare otherwise similar firms for which the stock price is just below (above) the conversion price threshold and therefore conversion option is out of (in) the money. This comparison sheds light on how an anticipated change in capital structure (due to the conversion option being in the money) affects the financing policy of firms.

I also examine firms’ financing responses to a realized change in capital structure by comparing their behavior before and after a realized conversion to the behavior of a group of similar firms that did not experience a conversion in that period. To do this, I use a group of firm-quarter observations with a voluntary conversion as the treatment group. Perhaps the closest control group to the treatment group is the group of firm-quarter observations with outstanding convertible bonds that eventually have a conversion. I restrict the treatment to only voluntary conversions so that the resulting drop in leverage is as exogenous to the

Download English Version:

<https://daneshyari.com/en/article/5093157>

Download Persian Version:

<https://daneshyari.com/article/5093157>

[Daneshyari.com](https://daneshyari.com)