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What we do and do not know about convertible bond financing☆

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ABSTRACT

We review the literature on the issuance motives, shareholder wealth effects, and design of convertible bonds. Empirical studies on convertible debt issuance mainly focus on testing the predictions of four traditional theoretical models based on convertibles' potential to mitigate agency or adverse selection costs, and obtain mixed evidence. Recent studies on shareholder wealth effects of convertible bond issues highlight the need to control for arbitrage-related short selling and post-issuance risk changes. Studies on the determinants of convertible bond design uncover earnings management, as well as catering incentives to convertible arbitrage funds, as important determinants of innovations in convertible bond characteristics. Overall, our review indicates that recent empirical research on convertible debt provides valuable insights into issue motives and determinants of financial innovations, but also considers the broader question of how investor demand characteristics impact corporate finance decisions. We conclude with an overview of potential research questions to be addressed by future research on hybrid securities.

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1. Introduction

Convertible bonds are debt instruments that can be converted into common equity at the investor's discretion. Convertibles represent an important source of financing for corporations, both on an absolute basis as well as relative to standard security offerings. For example, U.S. corporations raised a total of $510 billion with convertible debt issues over the period 2000 to 2011. This compares with $1146 billion raised with seasoned equity issues, and $6635 billion raised with straight bond issues.[1]

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[1] Convertibles are also an important financing source outside the U.S. More particularly, Western European firms raised $189 billion in convertible bonds over the period 2000 to 2011, and Japanese firms raised $112 billion in convertible bonds over that same window. We calculate these issuance volumes using samples of security offerings retrieved from Thomson One Banker's New Issues database. We only consider plain vanilla convertible bonds (i.e., we remove preferred stock, mandatory convertibles, etc.). We also remove seasoned equity offerings that only consist of secondary shares, as well as mortgage- and asset-backed bonds. We only consider issues made by publicly quoted corporations. Issuance volumes are converted into constant June 2011 U.S. dollars using the U.S. Consumer Price Index retrieved from Datastream.

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Evidence suggests that the investor base that purchases convertible debt, the market channels utilized to distribute convertible debt, and the design of various convertible debt security characteristics have substantially changed over recent years. Together, these changes have inspired a host of empirical studies on convertible bond financing, from both an issuer and an investor perspective. These recent empirical studies have in turn created new ideas and insights regarding issuers' motives for raising convertible financing. In addition, the changes in convertible bond markets create a unique laboratory for addressing broader questions through the lens of convertible bond issuance choices.

The main goal of this paper is to review this recent academic work on corporate convertible debt issuance. We begin with an overview of competing, although not necessarily mutually exclusive, theoretical explanations for convertible bond issuance decisions, and proceed with a discussion of the empirical literature. Empirical corporate finance studies of convertible bonds address three main issues. One group of studies focuses on the fundamental question of why firms issue convertible bonds instead of standard non-hybrid financing instruments. A second set of studies examines the shareholder wealth effects of convertible bond issues, both in the short-run and the long-run. A third broad strand addresses the determinants of convertible securities design. We structure our review of the empirical literature around these three central issues. However, it is important to note that these issues are interrelated. For example, by studying the determinants of convertible bond design, researchers also can indirectly obtain more insight into convertible bond issuance motives as well as share price reactions to issuance and design decisions. Some empirical studies address more than one of these questions, and may thus appear in several sections of the paper.

Since our primary emphasis throughout the paper is on corporate finance-related studies, we do not review the extensive literature on convertible bond underpricing.[2] For the same reason, we refrain from specifically discussing studies on convertible arbitrage hedge fund performance or the impact of convertible arbitrage activity on the underlying common equity.[3]

Our paper complements and extends three other review studies. Loncarski et al. (2006) review focuses on a comparison of the empirical predictions generated by theoretical rationales of convertible bond issuance. Eckbo et al. (2007) briefly mention convertible bonds among the "miscellaneous offering types" in their review paper of security offerings. Abdul Rahim et al. (forthcoming) provide a meta-analysis of event studies of the announcement effects of convertible bonds and straight bonds combined with warrants. Our paper differs from these studies by covering a broader range of corporate finance research topics related to convertible bonds (issuance motives, shareholder wealth effects, and security design decisions). Moreover, while our review covers studies published as early as the 1950s and 1960s, our key focus is on recent theoretical and empirical advances in this area, with "recent" being loosely defined as published post-2005 or in working paper status.

Our review generates two main conclusions. First, empirical studies of convertible issue motives mainly focus on testing the validity of four theoretical models: the risk shifting theory of Green (1984), the risk uncertainty theory of Brennan and Kraus (1987) and Brennan and Schwartz (1988), the backdoor-equity theory of Stein (1992), and the sequential financing theory of Mayers (1998). The empirical studies that test these four theories do not reveal a clear pattern of evidence either in favor of, or against any of these four models. This finding could be due to the fact that each of these theories is incomplete, or that the population of convertible debt issuers is heterogeneous (i.e., different issuers have different reasons for issuing convertible debt). Moreover, we also find that there is no clear relation between the empirical findings and the geographical focus of the studies. That is, we review not only the U.S. market results, but also evidence from issuance in Europe and Asia. Finally, there does not seem to be any clear difference between qualitative and quantitative studies, except that qualitative studies systematically reject the risk shifting theory of Green (1984).

The second main conclusion is that recent corporate finance research on convertible bonds is able to address much broader questions about corporate financing decisions than is possible with standard securities like straight debt or common equity. This result can be attributed to three specific features of recent innovations in the convertible offering market. First, whilst historically most convertibles were issued through the public markets, almost all recent convertibles issued in the U.S. are now placed with qualified investors under Rule 144A (Huang and Ramirez, 2010).[4] As such, it is relatively straightforward to identify their investors (see, e.g., Brown et al., 2012). This link between issuer and investor allows researchers the opportunity to conduct cleaner tests on the impact of investor demand on security issuance decisions, stockholder wealth effects, and design choices than is possible for straight debt and seasoned equity offerings. Second, whilst convertibles were traditionally held by buy-and-hold institutional investors, around 75% of recent convertible bond issues are purchased by convertible arbitrage hedge funds (Brown et al., 2012; Mitchell et al., 2007; Pulliam, 2004).[5] Recent studies of convertible bond issues are therefore able to provide more insight into the important interplay between corporate finance behavior and hedge fund activities. Research on hedge funds has long been largely confined to asset pricing studies that examine their profitability and their effects on pricing efficiency. Recent studies of convertible debt demonstrate conclusively that convertible bond issuers cater to the hedging needs of arbitrageurs, thereby obtaining more favorable terms for their offering. Third, the many novelties in convertible securities design (e.g., cash

[2] Recent studies of convertible bond underpricing include Chan and Chen (2007), Mitchell et al. (2007), Ammann et al. (2010), Henderson and Tookes (2012), and Zabolotnyuk et al. (2010).

[3] Examples of studies of convertible arbitrage fund performance include Fabozzi et al. (2009) and Agarwal et al. (2011). Choi et al. (2009) examine the impact of convertible arbitrage on the liquidity, volatility, and efficiency of the underlying stock.

[4] Rule 144A was issued in 1990 to improve the liquidity and efficiency of the private placement market by giving more freedom to institutional investors to trade securities. Securities issued under Rule 144A do not require registration with the Securities and Exchange Commission (SEC), but can be traded without restriction in the secondary market among qualified institutional buyers.

[5] Convertible arbitrage involves buying (underpriced) convertibles and short-selling the underlying stock in order to hedge the position against stock price movements. If the convertible debt is underpriced, the investor profits regardless of whether the stock price falls (the convertible debt becomes more bond-like and declines less than the share price) or rises (the convertible debt becomes more equity-like and the holder sells more shares).

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