



# Convertible debt and shareholder incentives<sup>☆</sup>



Christian Dorion, Pascal François, Gunnar Grass<sup>\*</sup>, Alexandre Jeanneret

HEC Montréal, Canada

## ARTICLE INFO

### Article history:

Received 3 October 2012  
Received in revised form 29 October 2013  
Accepted 30 October 2013  
Available online 9 November 2013

### JEL classification:

G12  
G32

### Keywords:

Convertible bonds  
Risk-shifting  
Agency conflict  
Financial distress  
Asset volatility  
Contingent claims

## ABSTRACT

Given equity's convex payoff function, shareholders can transfer wealth from bondholders by increasing firm risk. We test the existing hypothesis that convertible debt reduces this classical agency problem of risk-shifting. First, we derive a measure of shareholders' risk incentives induced by convertible debt using a contingent claims framework. We then document that when risk-shifting incentives are high, the propensity to issue convertible (rather than straight) debt increases and the negative stock market reaction following convertible debt issue announcements is amplified. We further highlight that convertible debt is the only type of security that affects business risk durably downwards. Our conclusions support the agency theoretic rationale for convertible debt financing especially for financially distressed firms.

© 2013 Elsevier B.V. All rights reserved.

## 1. Introduction

Equity provides shareholders with a call option on the underlying firm. Because option values are an increasing function of risk, shareholders can transfer wealth from bondholders by increasing asset risk, leading to the classical risk-shifting (or asset substitution) agency conflict between shareholders and bondholders.

An appropriately designed convertible debt issue (Jensen and Meckling, 1976 and Green, 1984) can reduce this agency conflict because conversion forces existing shareholders to share the firm's upside potential as new shareholders are carved in when convertible bondholders choose to convert. This mitigates incentives for existing shareholders to engage in asset substitution.

The asset substitution problem has been widely analyzed in theoretical studies on agency conflicts. Yet, De Jong and Van Dijk (2007) and Graham et al. (2002) conclude from large-scale CFO surveys that managers care little about asset substitution in practice. This may be attributable to the observation that incentives to engage in asset substitution are most acute when firms are financially distressed and that most respondents are unlikely to be financially distressed at the time of the survey. In line with this perspective, Grass (2010) challenges the notion that ex-ante concerns about asset substitution are pervasive. Consistent with his view, Eisdorfer (2008) notices that broad empirical support for this agency conflict is scarce and provides specific evidence of risk-shifting in financially distressed firms.

The first objective of this paper is to gauge the economic magnitude of risk-shifting and the potential benefits from issuing convertible debt. To evaluate the economic significance of risk-shifting incentives, we develop a simple contingent claims

<sup>☆</sup> We thank the editors Craig Lewis and Chris Veld, and an anonymous referee, as well as Tolga Cenesizoglu, Jean-Sébastien Michel, and participants at the 2013 IFM2 Mathematical Finance Days for helpful comments. François Leclerc, Manping Li and Siyang Wu provided valuable research assistance. The authors are also affiliated to CIRPEE. Financial support from IFM2 (Dorion, Grass, and Jeanneret) and SSHRC (François) is gratefully acknowledged.

<sup>\*</sup> Corresponding author.

E-mail address: [gunnar.grass@hec.ca](mailto:gunnar.grass@hec.ca) (G. Grass).

framework that quantifies the magnitude of shareholders' incentives to increase risk. We then introduce "equity vega" as a measure of the potential economic loss associated with the risk-shifting incentives of shareholders (RSI).<sup>1</sup> We compute RSI for a broad sample of U.S. firms. On average, shareholders of firms that already have outstanding convertible debt can increase the value of their equity claim by nearly 2% if they increase asset volatility by 5%. Had those firms not used convertible debt financing, this increase would have been 2.6%, implying that convertible debt has reduced RSI by 0.6 percentage points across all sample firms. A closer look at the distribution of issuers reveals that most firms are largely unaffected by asset substitution problems, indicating that RSI is highly skewed. The incentives are most pronounced for a small number of highly levered issuers that have high exposure to such incentives. For example, one percent of the firms we consider have equity vegas that exceed 25%. In line with Eisdorfer (2008), our results suggest that the change in risk-shifting incentives induced by convertible debt is more economically significant for the subset of firms close to financial distress.

Our second objective is to consider whether risk-shifting incentives are empirically relevant. Our approach is threefold. First, we conduct an event study to understand how RSI influences the market reaction to convertible debt issuance. We show that shareholders perceive convertible debt issue more negatively when risk-shifting incentives are stronger. We also explore the cross-sectional variation in RSI to investigate the determinants of the announcement of convertible debt issuances and find that issue size, regulated status and CEO ownership are important explanatory variables. Overall, the evidence is consistent with the observation that convertible debt financing can mitigate agency costs associated with asset substitution. Second, we analyze the evolution of firm risk around such offerings and compare it to changes in risk around straight debt and equity offerings. We document both a strong short-term drop and a long-lasting reduction in firm risk around the issuance of convertible debt. Third, we study the decision to issue convertible debt. Results from a multinomial logit model à la Brown et al. (2012) show that firms with high risk-shifting incentives are more likely to issue convertible debt. The RSI-induced preference for convertible debt is even stronger when firms are financially distressed. The findings are robust across various controls and sub-samples.

The remainder of this paper is structured as follows. In Section 2, we review the literature on the use of convertible debt financing. The contingent claims analysis of risk-shifting incentives is conducted in Section 3 along with an empirical estimation of RSI for a large sample of U.S. firms that have issued convertible debt. Section 4 investigates the announcement effects of convertible debt issues. The dynamics of business risk around convertible debt issuance is examined in Section 5, and Section 6 studies the effect of RSI on the decision to issue convertible debt. Section 7 concludes. Methodological details are presented in the Appendices A, B and C.

## 2. Previous studies

Why do firms issue convertible debt and why do investors buy it? Despite the widespread use of convertible bonds as financing instruments, these questions remain challenging both theoretically and empirically. In this section, we present a broad overview of the common theories explaining the existence of convertible debt together with empirical evidence, and continue with a review of studies related to convertible debt financing and risk-shifting.

### 2.1. Convertible debt financing

Early studies suggest that convertible debt can be attractive to young companies due to its relatively low coupon. Brennan and Schwartz (1988) highlight that convertible debt cannot provide firms with a "free lunch" because it does not reduce the overall costs of financing. However, it does decrease the initial interest expense and can thus be advantageous to companies that will need liquidity in the near future. Along these lines, Mayers (2000) suggests that callable convertible bonds, which allow the issuer to force conversion, can be used by companies that have sequential financing needs due to growth options. In case these options turn out to be valuable in the future, firms can force the conversion of bonds into equity and raise additional financing. If the growth options do not turn out to be valuable, bonds are not converted, and excessive financing leading to overinvestment is prevented. Mayers' argument is supported by the observation that especially small companies with high growth rates use convertible debt for financing, as documented in Lee and Figlewicz (1999). Lyandres and Zhdanov (2014—this issue) provide another investment-based explanation for issuing convertible debt. They show using a theoretical framework that the issuance of convertibles helps alleviate the underinvestment problem (debt overhang, Myers, 1977).

Stein (1992) argues that firms use convertible debt as backdoor equity financing. Given information asymmetries between management and investors, equity issues are relatively unattractive. In line with the pecking order theory, a firm therefore prefers to issue less risky securities for financing. However, debt financing can be expensive given the high cost of financial distress and potential risk-shifting problems (see Choi et al. (2010)). Callable convertible bonds allow forced conversion and are attractive for firms that are optimistic about their future stock price performance. Following a stock price increase, firms can force conversion to bring equity into their capital structures. Stein (1992) and Mayers (2000) suggest that convertible debt is particularly interesting for high-growth companies. Jalan and Barone-Adesi (1995) add that even though it is backdoor equity, convertible debt provides the benefit of interest tax deductibility until conversion, which equity does not. Stein's (1992) argument is supported by empirical

<sup>1</sup> Equity vega is defined here as the partial derivative of equity value to an instantaneous change in the volatility of the underlying assets. This interpretation is somewhat loose, as we consider the sensitivity of equity to discrete changes in volatility. Our main results use a volatility change of 5%.

Download English Version:

<https://daneshyari.com/en/article/5093555>

Download Persian Version:

<https://daneshyari.com/article/5093555>

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