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Callable convertible bonds in sequential financing: Evidence on the Western European market

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ABSTRACT

The objective of the paper is to test empirically the Mayers (1998) sequential financing hypothesis stating that companies issue callable convertible debt to overcome the problem of overinvestment (Jensen, 1986) that could arise in a sequential investment setting. As a result of this theory we should observe higher investment and financing activities at the exercise call dates especially if it is in the money. Based on a sample of 277 Callable Convertible Bonds issued by non-financial firms in Western Europe between 1994 and 2009, comprising 161 callable convertible bonds being subject to forced conversion (calling subsample) and 116 non-called convertible bonds (non-calling subsample) and using classical and difference-in-differences methodologies, we find evidence only weakly in line with the sequential financing hypothesis of Mayers (1998). For the calling firms, we, in general, do not observe significant positive changes in capital expenditure at call dates that are greater than those of the non-calling firms. We observe a significant difference in new equity issuances only for the comparison between calling and non-calling firms. Unlike Alderson et al. (2006), we find that in the money calling firms increase their investment around the convertible bonds calls more than out of the money calling firms. We also find a positive impact of the call decision on the change of the new debt issuance at the call dates.

1. Introduction

Since the 70 s numerous research studies have focused on understanding why companies issue convertible bonds. These studies have recently been reviewed by Dutordoir et al. (2014). These authors give an overview of competing theoretical explanations for convertible bond issuance divided in two groups. In the first group, they present 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). In the second group of papers, authors argue that convertibles are issued in response to investors' demand consideration (Lewis et al., 2001; Brown et al., 2012; De Jong et al., 2013). A convertible bond is a hybrid-financing tool that combines the features of bonds and stocks in one instrument and gives the holder the right to convert his bond into a predetermined number of

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stocks (voluntary conversion). Convertible bonds combine the characteristics of equity and bonds, and include embedded options such as the call feature, which is the most common. Such bonds, referred to as "callable convertible bonds" allow the issuing firm to call back its debt, in exchange of a payment agreed in advance when the conversion value reaches the call price (forced conversion).

In this paper, we focus on testing the sequential financing theory of Mayers (1998) by investigating whether the exercise of the call option by issuers is associated with significant investing and financing activities. Mayers (1998) considers convertible bonds as a tool to reduce agency problems between managers and shareholders. If the company has a sequence of investment opportunities, convertible bonds are more suitable than long-term straight bonds for financing real options since they can overcome overinvestment problems (Jensen, 1986) by redeeming bonds and returning cash to bondholders when the investment option turns out to be worthless. If the investment turns out to be valuable, the convertible debt is converted into common equity. To overcome this problem of overinvestment incentives, firms can issue a sequence of short-term debts. But in this setting, rolling over short-term debt entails higher issuance costs. In this context, the callable convertible bond is preferable to classical sequential financing. The presence of a call option (and in a lesser extent a conversion option) can simultaneously reduce issue costs (generated by sequential financing) and control overinvestment incentives (Jensen, 1986).

Mayers' (1998) theory is worth being empirically tested since it is the only one to link company financing and investing activities and since most empirical tests have been conducted on the US market only, and by very few authors including Mayers (1998), Alderson et al. (2006) and King and Mauer (2014). Moreover, the empirical evidence is mixed. Mayers (1998) finds empirical support for his model followed by King and Mauer (2014), but the results of Alderson et al. (2006) are much less clear. The work of Korkeamaki and Moore (2004), although using a different methodology, also supports the Mayers model. The papers of Chang et al. (2004), Graham and Harvey (2001) and Bancel and Mittoo (2004), although they do not test the Mayers' theory directly, establish a link between issuing convertible bonds and the existence of investment opportunities.

We test the relevance of the sequential strategy using convertible bonds on the Western European market. We focus on European firms because most previous empirical studies have been conducted on the US market. Following Bancel and Mittoo (2004), we believe that Europe is worth investigating since European and US markets have different characteristics. The first is much more recent. Further, convertibles issued in Europe and in the US have different characteristics and the regulatory environment is different. For instance, differences in corporate tax rates and the levels of interest and dividends rates between Europe and USA have an effect on the cash flow advantage (Asquith and Mullins, 1991) and on the yield advantage (Constantinides and Grundy, 1987) that have an impact on the call strategy of the bond on the voluntary conversion strategy of investors. Dutordoir and Van De Gucht (2004) show that European convertible bonds are more debt-like than US convertible bonds. In the US, most convertibles are issued via private placement, which is not the case in Europe (Bancel et al., 2009). Both the characteristic of the issuer and the design of the convertible bonds suggest that the company motivations for issuing convertible bonds are not the same in the US and the Western European markets (see for example the surveys of Billingsley and Smith, 1996, Graham and Harvey, 2001 and Bancel and Mittoo, 2004). Regarding the characteristic of the convertible bonds issuers, existing literature provide evidence supporting that the European and US convertible bonds issuers are not similar. According to Noddings et al. (1998) and Dutordoir and Van De Gucht (2004), European convertible bonds issuers are large, financially healthy and mature firms which is in contradiction with the US convertible bonds issuers which are small, risky and high-growth companies (see Lewis et al., 2001). This difference seems particularly important in the perspective of testing the sequential financing theory of Mayers (1998). In effect, sequential financing is a way to control overinvestment and this problem is probably more relevant for mature firms that have less investment opportunities than high growth companies. Overall, it is interesting to investigate if these differences between European and US convertible bonds issuers are reflected in the sequential financing strategy.

The main methodological issue to test the Mayers' model is to compare the investment and financing activities generated by the callable convertible bonds strategy with an appropriate benchmark. In this paper, we will make essentially two different comparisons. First, in the same spirit as in the original paper of Mayers (1998), we will compare the investment and financing activities around the date at which companies have called theirs bonds to those of non-calling companies, which operate in the same industry. Then, following Alderson et al. (2006) we compare the investment and financing activities of the firms that called their convertibles bonds in-the-money to those that called them out-of-the-money. As in all previous empirical papers, we use industry means and medians as proxies for normal behavior. Furthermore, unlike the previous papers, our study uses difference-in-differences models to identify whether the investment and financing activities are different between companies using the convertible bonds strategy and the control group. The objective is to take into account the underlying trend in investment financing strategy, but we think that difference-in-differences is a more suitable method than those implemented in the previous papers. More specifically, it is helpful in addressing possible evaluation biases due to the effects of unobservable variables, which could be driving the difference in investment and financing activities between the convertible bonds strategy and the control group.[3] In line with the sequential financing hypothesis, we predict that the firms that called their bonds will have more investment financing activities around the call

[3] See Roberts and Whited (2012) for a review of the difference-in-differences applications in finance.

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