Stock Price Reactions to Private Placements of Convertible Debt

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We examine the valuation effect of private convertible bond placements on issuing firms' common stock for the period 1981 to 2013. We find a statistically significant cumulative abnormal return of -3.25 percent over the three-day announcement period for the overall sample of 423 private placements of convertible debts. In addition, we find that issuers of convertible bond private placements underperform issuing firms of non-convertible bonds. Our results are consistent with the prediction of the adverse selection model of Myers and Majluf (1984). The results suggest that private placements of convertible debt constitute unfavorable news about the earnings prospects of issuing firms.

INTRODUCTION

Convertible bonds, which are considered to be equity-related securities, carry the hybrid features of both common stocks and straight bonds. Its equity component, i.e., the conversion provision, is typically characterized as an out-of-the-money American call option that allows convertible bond investors to participate in the upside potential in stock prices. Its debt component serves as a cushion to the downside risk in its valuation. Hence, the risk characteristics of convertible bonds lie between those of common equity and straight debt, respectively. In their comprehensive review of security offerings research, Eckbo, Masulis and Norli (2007) document extensive empirical findings on the stock price reactions to public security offers that are consistent with the risk order of the security type. Besides, they report noted differences in the valuation effects of common stock issuance under different flotation methods. In contrast, there is limited research on the choice of flotation methods of other forms of equity-related securities. This paper intends to fill the gap in the literature with an examination of stock price reactions to the announcements of private placements of convertible debt. This research sheds light on the possible roles of private convertible bond placements in monitoring the management and/or mitigating the information asymmetry of the issuing firms.

The adverse selection model of Myers and Majluf (1984) predicts a positive relation between the magnitude of stock price decline and the riskiness of the security being offered to the public. In their separating equilibrium, the riskiness of the security being offered is indicative of the extent its overvaluation. Thus, the financing pecking order predicts the magnitude of negative valuation effects of public security issuance decisions is larger for common stock offers than for straight debt offers, and that associated with convertible debt offers lies between those associated with other two security types. Previous empirical findings on the stock price reactions to security issuance are consistent with the

predictions of the adverse selection hypothesis. For instance, Dann and Mikkelson (1984), Eckbo (1986), and Mikkelson and Partch (1986) find that stock price reactions to debt offerings depend on the type of debt (straight or convertible) being offered, with convertible debt offerings are associated with significant negative announcement effects on stock prices while there are no significant stock price reactions to straight debt offerings. Recently, Datta, Iskandar-Datta, and Patel (2000) and Cai and Lee (2013) compare the sample firms of initial public debt offerings, i.e., debt IPOs, to the control firms that use no debt. These studies postulate that debt IPO issuers are riskier than non-issuers due to the lack of track record in the public bond market, and find statistically significant negative stock price reactions to debt IPO offerings. To the extent that the adverse selection hypothesis applies to private placements, we expect that there are negative stock price reactions to private placements of convertible debt. Besides, the signaling hypothesis of Miller and Rock (1985) also predicts negative valuation effect of any form of external financing on the common stocks of issuing firms, despite of the security types and the flotation methods.

Wruck (1989) argues that the small number of qualified investors in private placements have stronger incentives to monitor the management of issuing firms. Since the value of convertible debt is also be driven by the performance of the issuer, there is incentive for investors of private convertible debt to engage in monitoring activities. Hence, the monitoring hypothesis predicts positive valuation effects of private convertible bond placements on the stock prices of issuing firms, even though the magnitude could be smaller than that of private equity placements. Besides, firms with more growth options in their investment opportunity sets will benefit from lower contracting costs associated with private debt financing. Further, Leland and Pyle (1977) argue that when there is information asymmetry between borrowers and lenders, adverse selection problems could affect borrowing decisions of issuing firms. Boyd and Prescott (1986) contend that private lenders have an informational advantage over lenders in the public debt markets. While public debt investors base their assessment of the quality of the issuer on public information only, private debt investors gain access to non-public information that improves their assessments of the quality of the issuing firm. Also, Yosha (1995) argues that firms may reveal proprietary, firm-specific information more readily to a small group of private lenders than to a diffuse group of public lenders. This suggests that private lenders have a comparative advantage in producing pre-contract, firm-specific information.

Since private debt investors have an informational advantage over investors of public debt offers, issuing firms that bear higher adverse selection costs (such as firms with favorable private information about future profitability) would prefer private debt to public debt. Hadlock and James (1997) show that if banks are better informed than investors in the public debt markets, then firms with positive private information about their value would use bank debt to avoid the adverse selection costs of public debt. Hence, under information asymmetry, private debt signals positive information about firm value.

Empirical findings on the valuation effects of private placements of equity on stock prices of issuing firms are consistent with the predictions of the monitoring and information explanations. In contrast to the significant negative valuation impacts of public equity offering announcements, Wruck (1989) and Hertzel and Smith (1993) report significant positive stock price reactions to the private placements of common stock. Besides, Kato and Schallheim (1993) and Tan, Chng, and Tong (2002) report similar positive stock price reactions to private placements of equity in Japan and in Singapore, respectively. In this study, we contribute to this literature by examining the stock price reactions to private placements of another equity-based securities, namely, convertible debt.

Using a sample of 423 private placements of convertible bonds in U.S. during the period 1981-2013, we report statistically significant negative cumulative abnormal returns around the offer date of convertible debt private placement. Further, we find that the stock price reaction is more negative for private convertible debt issues than for straight bond offers. This result is consistent with the signaling explanation of Miller and Rock (1985) and the adverse selection explanation of Myers and Majluf (1984).

The remainder of this paper is organized as follows: Section 2 discusses the data and the sample. Section 3 presents the methodology. Section 4 reports the empirical results and Section 5 concludes the study.

SAMPLE SELECTION AND DESCRIPTION

We start by considering all private placements of convertible debt from 1981-2013 reported in the Thomson Financial Security Data Corporation (SDC)'s New Issues Database. We exclude joint offers with other security type, as well as issues that had confounding material events such as dividends and earnings announcements within two trading days of their private convertible debt placements. Besides, we delete firms with insufficient stock returns data reported on the CRSP. Following Barclay and Smith (1995a, b) and Guedes and Opler (1996), we restrict our sample to non-financial firms (SIC codes 2000 to 5999) only. We obtain stock prices and stock returns from the Center for Research in Security Prices (CRSP) database and the financial statement data from the COMPUSTAT. Our final sample includes 423 private convertible bond issues.

Table 1 presents the number of private placements of convertible debt, average issue size, and the total issue volume over the 1981-2013 period. There are extensive variations in the level of private placements of convertible bonds across the sample years. For instance, the number of placements ranges from 0 in 1987, 1990 and 1994 to a high of 51 in 2003, and the total dollar volume ranges from $0 to $15,053 million (in 2001). It is noteworthy that the largest average issue size of $417.7 million is also reported in 2001. There has also been a dramatic increase in the number of private placements of convertible bonds since 2000.

METHODOLOGY

We employ the event study method introduced in Ball and Brown (1968) and Fama et al. (1969). The issue date of the private placements is defined as day 0 (t=0). Daily abnormal return ($AR_{i,t}$) on day t for each private convertible debt placement during the event window is calculated using the market model:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{M,t}),$$

where $AR_{i,t}$=abnormal return associated with stock i on day t, $R_{i,t}$=return of stock i observed on day t, $R_{M,t}$=value-weighted rate of return of the market portfolio at period t; α_i=intercept of stock i, β_i=slope coefficient of stock i.

The estimation period is defined from day t=-200 to day t=-60. We aggregate the abnormal returns over longer holding horizons using the buy-and-hold approach. The buy-and-hold approach provides the actual return that an investor would earn by investing and retaining the stocks over the holding period.

The average abnormal return (AAR) on day t is defined as the average abnormal returns across all sample stocks. It is calculated as follows:

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t}.$$

where AAR_t=average abnormal return on day t; $AR_{i,t}$=abnormal return of stock i on day t; N=total number of private placements.

Following Mitchell and Stafford (1998) and Fama (1988), we compute the cumulative abnormal return (*CAR*) to measure the stock price reaction to the private convertible debt placements. Over an event window [t_1,t_2], we calculate the cumulative average abnormal stock return for issuing firms as:

$$CAR_{t1,t2} = \sum_{t=t1}^{t2} AAR_t.$$

As robust checks, we use various specifications of the return generating models to estimate abnormal returns. We also use both the market model and the mean adjusted return techniques. Results are robust with respect to such changes in the specification. On the basis of extensive

simulations, Brown and Warner (1985) show that, in general, methodologies based on the market model and standard parametric tests are well specified for event studies using daily returns. Thus we present returns using market models.

TABLE 1
FREQUENCY DISTRIBUTION OF PRIVATE PLACED CONVERTIBLE BONDS BY YEAR

This table presents the number of private placements of convertible debts, average issue size, and the total issue volume over the 1981-2013 period.

Year	Number	Average Issue Size (in $ Millions)	Total Issue Volume (in $ Millions)
1981	2	5.6	11.1
1982	2	2.9	5.8
1983	1	25.0	25.0
1984	1	8.3	8.3
1985	2	11.2	22.5
1986	1	7.9	7.9
1987	0	0	0
1988	1	10.0	10.0
1989	2	7.6	15.3
1990	0	0	0
1991	3	48.0	144.0
1992	2	44.0	87.9
1993	3	56.7	170.0
1994	0	0	0
1995	4	92.5	370.0
1996	10	160.0	1600.0
1997	12	105.4	1265.0
1998	15	202.3	3035.0
1999	9	288.9	2600.5
2000	20	360.6	7211.1
2001	36	417.7	15035.9
2002	30	272.5	8174.3
2003	51	211.4	10783.3
2004	43	130.4	5605.6
2005	20	107.7	2154.3
2006	22	160.7	3535.4
2007	32	216.8	6938.2
2008	20	136.1	2722.9
2009	9	129.0	1161.0
2010	11	157.9	1736.8
2011	21	102.4	2151.0
2012	13	215.8	2805.5
2013	25	253.4	6335.0
Total	423	202.7	85728.4

EMPIRICAL RESULTS

Figure 1 plots the average daily abnormal returns of the private placements of convertible debt. The results indicate a timely significant negative stock price reaction around the issue date of the private convertible debt placement.

FIGURE 1
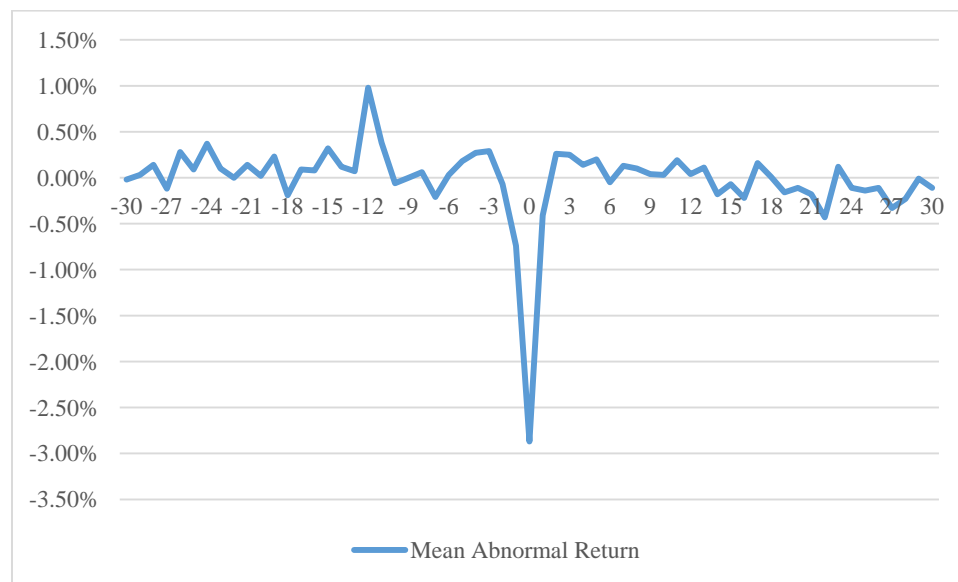**AVERAGE MARKET MODEL ADJUSTED MEAN ABNORMAL RETURN**

Table 2 reports negative and statistically significant cumulative abnormal returns (CAR) for selected event windows. For instance, the average CAR for the 3-day (-1, +1) window is -3.60 percent, and that for the 7-day (-3, +3) window is -3.37 percent. During the (-30,+30) period, the CAR is -3.97%. Overall, the results suggest that the market reaction to the private placement of convertible debt is negative, which is consistent with the signaling explanation of Miller and Rock (1985) and the adverse selection explanation of Myers and Majluf (1984). On the other hand, the negative valuation effect of private convertible debt placements on stock prices of issuing firms contradicts the positive stock price reactions to private equity placements documented in Wruck (1989) and Hertzel and Smith (1993). This suggests that private convertible debt placements may not offer substantial incentive for their investors to participate in the monitoring of the issuers.

Next, we use multivariate regression models to formally examine the impacts of convertible debt private placements on the stock price reactions of issuing firms. We include issue-specific variables that are commonly used in the literature as control variables. *AMT* is the logarithm of the net proceeds of the bond issue in millions of dollars. *MAT* is the logarithm of the issue's maturity in years. *HY* is an indicator variable representing the rating of the issue, which equals one if bonds are rated as high yield, and zero otherwise. *SOX* is a dummy variable that equals one if the bond is issued after the implementation of Sarbanes-Oxley Act (SOX) effective on July 1, 2002, and zero otherwise. *RULE144A* is a dummy variable that equals one if the issue is a Rule 144a issue, and zero otherwise. *NYSEAMEX* is a dummy variable that equals to one for issuing firms listed on the NYSE or American Exchange, and zero otherwise. *OfferYTM* is the bond's offer yield to maturity. *Senior* is a dummy variable that equals to one if the bond is a senior bond, and zero otherwise. *Callable* and *puttable* are dummy variables that equals to one if the bond is callable or puttable, respectively, and zero otherwise.

TABLE 2
UNIVARIATE TESTS

This table reports the average cumulative abnormal stock returns to the private placements of convertible bonds. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Days	CAR_t (%)	t-Statistics	Positive:Negative
(0,+1)	-3.25% ***	-10.30	170:249
(-1,+1)	-3.98% ***	-10.30	113:306
(-1,0)	-3.60% ***	-11.40	104:315
(-3,+3)	-3.37% ***	-5.71	130:289
(-30,+30)	-3.97% **	-2.28	136:283

Table 3 reports the statistics of the control variables for private convertible debt placements. It shows that the average maturity of the private convertible debt issues is about 10 years, which is comparable to the straight bond offers. There is an even split in the issuing firms between listing on organized exchanges (47%) and the OTC.

TABLE 3
KEY STATISTICS FOR CONVERTIBLE PRIVATE PLACEMENT DEBT OFFERINGS

	Mean	Minimum	Maximum	Median	5th percentile	95th percentile
Maturity(Yrs)	10.16	0	32.22	6.81	2.00	30.00
NYSEAMex	0.47	0	1	0	0	1
Amount($M)	203	0	5442	120	2	643
Senior	0.43	0	1	0	0	1
Callable	0.02	0	1	0	0	0
High Yield	0.10	0	1	0	0	0
Offer YTM	5.22	0.25	54.5	4.5	1	10
Rule144a	0.71	0	1	1	0	1
Puttable	0.25	0	1	0	0	1
SOX	0.65	0	1	1	0	1
Callable	0.02	0	1	0	0	1

Tables 4 reports the regression results of the stock price reactions to private convertible bond placements. The dependent variables in models 1 and 2 are CARs over (-30, +30) and (-1, +1), respectively. *PP* is a dummy variable which takes a value of one for private convertible bond placement, and zero otherwise. It captures the stock price reaction difference between private convertible bond placements and non-convertible bond offers after controlling for relevant factors discussed in the previous section. In both models, the coefficient estimates on *PP* are negative and statistically significant at less than 1% level. That is, the immediate stock price reaction to a private convertible bond placement is negative in comparison to a straight bond offer. For example, the coefficient estimate for the *PP* dummy variable is -4.46% (t=-12.66) in model 2, where the dependent variable is the cumulative abnormal three-day returns (one-day before to one-day after the bond issuing date), i.e., *CAR[-1, 1]*. The magnitude of the

PP coefficient is also economically significant. A change from a straight bond offer to a private convertible bond placement (e.g., *PP* switches from 0 to 1) decreases the immediate value-weighted stock return of *CAR[-30,30]* by 1.58% in model 1 and *CAR[-1,+1]* by 1.34% in model 2, respectively. The results suggest that privately placed convertible bonds experience more negative stock price reactions relative to straight bond offers. The results are consistent with Myers and Majluf (1984). Myers and Majluf (1984) predict that the stock price reaction is associated with the riskiness of the security offered. The higher the risk, the more negative is the stock price reaction. Thus, the price decline should be greater for convertible bonds that are riskier than straight bonds.

TABLE 4
MULTIVARIATE REGRESSION ON THE SAMPLE OF PRIVATE PLACEMENTS OF CONVERTIBLE DEBT

This table presents the results from regression analyses. The dependent variables in Models 1 and 2 are CAR(-30, +3) and CAR(-1,+1), respectively. *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively.

	Model 1		Model 2	
	Coefficient	t-stat	coefficient	t-stat
Intercept	-10.75	-4.12	-1.07	-1.69
PP	-6.42	-4.42	-4.46	-12.66
mat	-0.02	-0.95	-0.01	-0.96
NYSEAMex	2.40	5.44	1.35	12.85
amt	0.60	2.13	0.13	1.96
senior	-4.90	-2.76	-0.58	-1.34
callable	-0.29	-0.42	0.13	0.79
HY	0.16	0.34	0.02	0.17
offerYield	0.28	2.84	0.06	2.41
Rule144a	0.33	0.62	-0.36	-0.79
puttable	0.00	-0.01	0.02	0.19
SOX	1.29	1.53	0.08	0.68
Adj R Sq	0.34		0.08	

CONCLUSIONS

This paper investigates the announcement effects of private placement of convertible bonds in U.S for the period of 1981 to 2013. We find a statistically significant negative risk-adjusted cumulative abnormal return of -3.25 percent over the three-day announcement period for the overall sample of 423 private placement of convertible bonds. Further results indicate these convertible bond offers also underperform non-convertible bond offers after controlling for bond characteristics. Our results are consistent with the various hypotheses on the negative effects of seasoned equity issues. This suggests that private placements of convertible bonds constitute unfavorable news about the earnings prospects of issuing firms.

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