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Wealth effects of convertible-bond and warrant-bond offerings: a meta-analysis

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Abstract

The literature on wealth effects associated with the announcements of convertible-bond and warrant-bond offerings is reviewed. The findings of 35 event studies, which include 84 sub-samples and 6310 announcements, are analysed using meta-analysis. We find a mean cumulative abnormal return of−1.14% for convertibles compared with−0.02% for warrant bonds, the significant difference confirming a relative advantage for warrant bonds. Abnormal returns for hybrid securities issued in the USA are significantly more negative than those issued in other countries. In addition, issuing hybrid securities to refund debt does not seem to be favoured by investors. Finally, several factors identified as important by theory or in prior research are not significant within our cross-study models, suggesting that more evidence is needed to confirm whether they are robust.

Keywords:

convertible bonds warrant-bond offerings wealth effects meta-analysis

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Notes

1. In one study, Lewis, Rogalski, and Seward (2003), the significance level of the entire sample is not presented.

2. All these numbers are for firm commitment offerings. Eckbo, Masulis, and Norli (2007) also calculate the average abnormal return for standby equity rights offerings to be −1.33%.

3. La Porta et al. (2000) present an alternative classification based on investor protection. Table 3 of their paper groups countries into high and low protection. In their classification, the USA and Japan are in the same category (high protection). Since the original paper of Kang and Stulz (1996) uses corporate governance differences to try to explain the difference in abnormal returns between the USA and Japan, we felt that it did not make sense to put both countries in the same category. For that reason, we use the classification suggested by Moerland (1995).

4. Almost all early studies were based on US data, leading to a strong association across sub-samples between ‘early study’ and ‘US study’ (χ^2=27.1; p<0.1%). This high correlation means that it is not meaningful to incorporate an ‘early study’ variable to see if there is evidence of the wealth effect associated with hybrid debt issues changing over time.

5. See, for example, Slovin, Sushka, and Lai (2000), Armitage and Snell (2001), and Barnes and Walker (2006) for the UK and Arsiraphongphisit (2008), and Balachandran, Faff, and Theobald (2008) for Australia.

6. Another type of non-typical companies is ‘financials’. Most studies in our sample eliminate financial companies, because they have different considerations when choosing their capital structure compared to industrial companies and utilities.

7. A problem with our analysis is that we treat the choice between CBs and WBs as exogenous. If unobservable factors determining the decision to issue convertibles versus warrant bonds also influence stock price reactions to these offerings’ announcements, then the dummy variable capturing CB versus WB will be biased. Ideally, we would like to use a two-step Heckman (1979) procedure to verify whether our results are robust for controlling for endogeneity of the choice between hybrid instruments. Unfortunately, this procedure is not possible for us since we do not have access to the data used in the original individual analyses.

8. The definition of equity-like, debt-like, and mixed-like is not the same in each paper. Burlacu (2000) uses the factor $N(d_1)$ (delta) from the Black–Scholes model and defines convertibles with a delta between 0 and 0.33 as debt-like, between 0.33 and 0.66 as mixed-like, and between 0.66 and 1 as equity-like. Lewis, Rogalski, and Seward (2003) use the factor $N(d_2)$ from the Black–Scholes model (probability of conversion) and define a bond as debt-like if the probability is less than 40%, as mixed-like (called hedge-like in their paper) if the probability is between 40% and 60%, and as equity-like if the probability is higher than 60%. Suchard (2007) uses the same probability of conversion as Lewis, Rogalski, and Seward (2003), but defines convertibles with a probability less than 0.5 as being debt-like and higher than 0.5 as being equity-like. Loncarski, Ter Horst, and Veld (2008) use the delta and define convertibles with a delta lower than 0.5 as debt-like and a value higher than 0.5 as equity-like. Most studies do not distinguish between equity-like and debt-like and are therefore treated as ‘mixed-like’.

9. The papers that present separate results for large and small firms all divide the total sample into two equal parts: the largest half of the firms are labelled as large firms and the smallest half of the firms are classified as small firms. Kang and Stulz (1996) define firm size as the market value of equity. De Roon and Veld (1998) define firm size as the sum of the market value of equity and the book value of debt.

10. In eight sub-samples, the measures were over a 3-day event window (−1, 1), in two over just the one announcement day (0), and in one for a 4-day window (−2, 1).

11. One very small (n=4) sub-sample with was identified as an outlier during the CAR-based regression diagnostic tests, so is excluded from the CAR regressions; however, it is included in the t-statistic-based regressions.

12. Interestingly, when we use publication in the top-3 finance journals as an alternative proxy for publication bias, we find (in models not reported in the tables) no significant effects. This lack of significance seems to stem partly from a lower mean effect size and partly from reduced power, reflecting smaller sample size for ‘Top 3’.

13. Firm size effects cannot be investigated in the 2-day event window models as the three original studies, investigating the effects use longer than 2-day windows in their analysis (see Section 3.8).

14. However, this result needs careful interpretation as the comparator group (omitted dummy variable) in several comparisons includes studies that do not identify the specific characteristic under test (e.g. high credit rating). This means that the comparator group may actually include an unknown number of companies having the specific characteristic. If true, this would bias the tests against finding significant coefficients.

15. Detailed results on the estimated numbers of unique and overlapping observations are available from the authors on request.

16. The significant difference between USA and network-oriented countries is evident as the coefficient on USA in the models presented within Table 3, as network-oriented countries is the comparator (omitted) variable. Recasting the models with non-US market as the comparator (omitted) variable enables a statistical test of the difference between US and non-US market. This shows that the latter difference is significant at the 10%, 10%, and 5% levels in the CAR-based models 1–3, respectively, but in the t-stat-based Models 4–6 the difference is negative but not significant.

17. De Jong, Dutordoir, and Verwijmeren (2011) study issuance day effects for these announcements and they find that the abnormal return for the combination (0.32%) is significantly higher than for the separate issues of convertible bonds (−3.37%). We are more interested in the announcement day effect. De Jong, Dutordoir, and Verwijmeren (2011) state that the announcement and issuance dates coincide for more than 90% of

their sample. However, to make results completely comparable, we would like to know the exact announcement effect.

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