Convertible bond issuances and equity share price reactions: Evidence from Asian markets

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Abstract

Purpose - The study aims to investigate the equity share price reactions to the convertible bonds (CBs) offerings by Asian firms. It also examines the various factors that contribute to Cumulative abnormal returns (CAR) during the CB issuance.

Design/ Methodology/ Approach - Event study methodology is used to examine the share price reactions to the issuance of CBs. A pooled OLS model is used to examine the various factors that contribute to CAR. Several robustness tests have been performed to check the validity of our regression results viz different CAR windows and industries. The propensity score matching method is used to address the potential endogeneity concerns.

Findings - China, Hong Kong, Korea, Taiwan and Vietnam exhibit positive stock price reactions. This phenomenon suggests that investors are confident that managers are raising funds to maximize the value of the firm by investing in positive NPV projects in these countries. On the other hand, India and Japan show negative share price reactions indicating the firms' issues CBs when their equities are overvalued

Originality / Value - Recent rise in the CB issuances in Asian economies especially in China due to the prevailing high-interest rate environment and geopolitical conditions, this study would help the corporations to understand the investors reactions to such issuances and strategizing to maximise the firm value.

Keywords – Convertible bonds, Asia, Equity markets, Fixed income markets, Event study.

Paper type – Research paper

Introduction

Convertible bonds (CBs) constitute a significant volume in the corporate bond market (Batten et al., 2018). The issuance of CBs has substantially increased in the past years as an alternative financing instrument employed by companies to raise the funds. The CB features both fixed income and an equity instrument. The hybrid nature of CBs makes it attractive to the investors as well as the issuer. It provides the investor an exposure to the upside of stock price and limits the downside risk. To the issuer, it mitigates the costs associated with external financing such as asset replacement (Jensen & Meckling, 1976), financial distress and information asymmetry (Stein, 1992), uncertainty regarding risk (M. J. Brennan & Schwartz, 1988) and the overinvestment problem (Mayers & Anderson, 1998). Following the 1997 Asian financial

crisis, the Asian markets recognized the significance of well-functioning of bond market in this region. The level of development of corporate bond market differs across the region. A well-developed corporate bond market requires robust regulatory and a supervisory framework. The large and high-quality issuers in the region use this form of financing, and the growth companies face substantive barrier to raise funds.[1] Recently companies in this region are opting for CB issuances as alternative method of financing. There is significant increase in CB issuance in the region especially in China and Korea (refer appendix 1). Recently China have experienced yearly growth rates of 22%[2] CB IPOs. Due to the prevailing higher interest rate environment and challenges in raising funds in primary markets, corporates in these regions are finding the CBs as lucrative form of financing. Asian convertibles are presently benefiting from a strong underlying portfolio of shares, a favourable long-term Sharpe ratio compared to stocks and fixed income, and the structural support of the bond floor. The diverse regulatory landscape in Asian nations and a significant increase in CBs requires an understanding of corporate characteristics and equity market reactions to the issuance of CBs in the region.

Past literature has documented the stock prices reactions of the CBs mostly in the developed markets. The stock price reactions were also found to be mixed. In the developed markets like U.S. (Dann & Mikkelson, 1984; Eckbo, 1986;Mikkelson & Partch, 1986) and Japan (Dutordoir et al., 2016a) the studies found a inverse stock price reactions following the issuance of CBs. The studies suggest that announcement of new external financing signals unfavourable information about the firm and hence produces negative stock market reactions in US and Japan. On the other hand, in Korea it was found positive stock price reactions (H. J. Kim & Han, 2019; W. S. Kim et al., 2023) to the issuance of CBs when companies explicitly state the use of proceeds for capital expenditures purposes. This signals strong prospects and potential earnings growth, leading to a favourable response from the stock market. Korea is one the dominant issuer of CB in the Asian region. Given the mixed signal exists in the markets, the study aims to analyse how the investors perceive the issuance of the CBs in Asian region and its reaction on the stock prices.

This study investigates the stock market reactions during the CB issuance in the Asian markets using the event study methodology. It examines the various factors that influence the CAR

[1] https://www.oecd.org/en/publications/corporate-bond-markets-in-asia_96192f4a-en.html - retrieved on 21st October 2024

[2] Our own calculations.

during the CB issuance. Since the use of proceeds are available to the investors during the issuance of CBs, the study also examines the effect of use of proceeds on CAR during issuance.

A sample of 6909 CB IPOs issued in nine Asian nations for the period of year 2000 to March 2024 is considered. CB IPOs data is sourced from SDC Global New Issue database. Stock prices and financial data of these companies is sourced from Refinitiv Eikon database.

The result of the study indicates that China, Hong Kong, Korea, Taiwan and Vietnam exhibit positive stock price reactions. This phenomenon suggests that investors are confident that managers are raising funds for the maximization of firm's value by investing in positive NPV projects in these countries (Kang et al., 1995). On the other hand, India and Japan show negative share price reactions indicating the firms issue CBs when their equities are overvalued. The adverse reaction in share prices is frequently elucidated by theoretical framework of asymmetric knowledge as articulated by Miller & Rock (1985). It was also observed that in India, the companies that issued CBs are those in the stage of financial distress. Further, it was found that firm's leverage, market run-up, and annual stock volatility are the major factors of CAR during the issuance of CBs.

Furthermore, several robustness tests have been performed to check the validity of our regression results. First, the regressions were run with different CAR windows. Second, regression analysis of financial and non-financial firms shows the difference in factors that influence the CAR in the respective firms. Third, propensity score matching (PSM) method is used to address the potential endogeneity concerns (Bae et al., 2011; P. M. Lee & Wahal, 2004). The results are found to be robust.

The study contributes to the existing literature on share market reaction of CB issuance in many ways. First, this is one of the very few studies that captured the stock price reactions of CBs in Asian Markets. Earlier studies examined stock market reactions for the CB issuance in developed markets such as US, Japan, Australia, Canada, France, Germany Switzerland and UK. The study found a negative stock price reactions in these countries during the CB issuance (Dutordoir et al., 2016b). However, a positive stock price reactions to the CB issuance is found in Korea (H. J. Kim & Han, 2019; W. S. Kim et al., 2023). Thus, there exist mixed investors signal about the CBs. Recently, the corporations in China have been augmenting their footprint in this asset class and investor also perceive them positively. This led us to inspect the stock market reactions to the CBs in the Asian economies.

Second, the findings assist investors in understanding share price fluctuations following CB announcements. This study would facilitate investors with the development of trading strategies. The analysis would also assist business entities in understanding on the issue and timing of CBs. Companies ought to furnish more comprehensive disclosures regarding their intended capital utilization, as investors appear to perceive these objectives as signals of prospective cash inflows. Companies can more effectively communicate financial benefits to investors by detailing the allocation of raised funds. Enhanced transparency can augment investor confidence and facilitate decision-making.

Literature review

In the seminal paper Ross (1977) using incentive signalling theory suggest that use of debt maximises the value of the firm. The studies have established a positive relationship between the firm value and the debt level (Masulis, 1983). Smith (1986) analysed the stock price reactions to the corporate bond issuances in US market. The study found that stock prices increased with the issuances of corporate bonds. Aftermath of Global financial crisis 2007-2009 there is substantial increase in the companies raising finance through CBs[3]. The CBs are lucrative due to hybrid nature of fixed income and equity component. Earlier literature in the stock market reactions to issuance of CB is investigated in the US market. The studies found a negative relationship in the stock prices and announcements of CBs issuances. Firms issuing CBs have negative CARs during the period when the announcement of the bonds is made (Dann & Mikkelson, 1984; Eckbo, 1986; Mikkelson & Partch, 1986). Li et al. (2016a) conducted a comparative study of the impact of CB issuance on the share prices of U.S. financial corporations compared to non-financial corporations. The study discovered that the CAR for financial companies was less negative than that of non-financial companies. The CAR for the window (-1, 1) around the issue for financials is -1.31%. This is 1.41% points greater than non-financial companies, and the difference is statistically significant.

Dutordoir et al. (2016) conducted a study on the impact of CB announcements on the returns of stocks in developed countries, specifically Australia, Canada, France, Germany, Japan, the Netherlands, Switzerland, the U.K., and the U.S. The research provides evidence that the CAR (-1, +1) is negative for all developed countries, but significantly negative for Canada, France, Germany, Japan, Switzerland, and the U.S. The study also revealed that Japan had the lowest

[3] https://www.ft.com/content/9b0dbc66-4b4d-11e0-b2c2-00144feab49a Appetite for convertible bond – retrieved on 24 October 2024

negative returns among other developed nations. This can be attributed to their transparent disclosure of the principal use of earnings for capital spending. This study validates the results of research done by Cheng et al. (2005). Further in most of the developed market, there exist a negative relationship between the stock price reaction and CB issuance announcement.

However, Kang et al. (1995) discovered that there was a favourable response in the stock price when the issuance of CBs was announced in Japan between 1985 and 1991. They attribute the variations in equity impact to the disparities in the "organisational structure" between Japan and U.S. corporations. Consequently, U.S. corporations prioritise the optimisation of current shareholders' wealth, whereas corporations in Japan are prioritising investment in projects with positive NPV.

W. S. Kim et al. (2023) conducted a similar study with respect to Korean firms. The study finds the evidence that the impact of both CBs and bonds with the warrants on announcements are significantly positive. However, the CARs are greater for CBs compared to bonds with warrants (W. S. Kim et al., 2023).

The literature review reveals a diverse range of equity market reactions to the issuance of CBs. Recently it was found that Corporations in China has significantly increased the issuances of the CB in this region. Due to its higher interest rate environment and geopolitical conditions, the CBs are found to an attractive option. It also raises the investor confidence as they are backed up by the fixed income support as well as the gaining the upsides of equity returns. This current scenario necessitates this study to explore the relationship between the stock prices and CB issuances in the Asian markets. Thus, our study hypothesize

H1: The equity share prices decreases (increases) with the convertible bond issuances.

Methodology

This section outlines the methods employed to analyse the impact of CB announcements on stock prices. The abnormal returns due to the CB announcements are measured using the event study methodology following Brown & Warner (1985). The stock returns are estimated using the market model (MM) regression calculated over days (-250,-10) before the issuance date (day 0). Equation (1) shows the actual stock returns:

$$R_{it} = \alpha + \beta_i * R_{mt} + \varepsilon_{it} \qquad \textit{Eqn(1)}$$

The variables are defined as follows: R_{it} represents the return on the stock of firm i on day t, R_{mt} represents the daily market return, and ε_{it} represents the residual. Market returns are determined by the respective indices of different countries during the estimation timeframe. The expected return of the stock of company i on day t is estimated using the Eqn (2).

$$\bar{R}_{it} = \bar{\alpha}_{\iota} + \bar{\beta}_{\iota} * \bar{R}_{mt} \qquad Eqn(2)$$

The abnormal daily stock returns is the difference between actual stock returns in Eqn(1) and expected stock returns in Eqn(2) are given in Eqn(3)

$$AR_{it} = R_{it} - \bar{R}_{it} \qquad Eqn(3)$$

Abnormal stock returns across trading days (−1,+1) surrounding CB offering issuance dates are summed to calculate the CAR, thus providing the CARs.

$$CAR_{t1,t2} = \sum_{t=t_1}^{t_2} AR_{it} \qquad Eqn(4)$$

The study extends the analysis by examining the determinants of stock price reactions to the CBs. Following equation depicts the determinants of CAR during the CB issuance.

$$CAR_i = \beta_0 + \beta_1 LnTA_i + \beta_2 DEBT/TA_i + \beta_3 STOCK\ RUN - UP_i + \beta_4 MKT\ RUN - UP_i + \beta_5 STOCKV_i + \beta_6 SLACK_i + \beta_7 PROCEED/TA_i + \beta_8 MATURITY_i + Year\ Control + Country\ control + \epsilon_i \qquad Eqn(5)$$

LnTA refers to the natural log of total asset measuring size of the firm. The firm size acts as an inverse proxy for the magnitude of financing costs related to debt and equity for firms. Firms larger in size are subject to greater analyst coverage (Chae, 2005; Elliott et al., 1984), they tend to have lower levels of information asymmetry regarding their firm's value and risk, along with lower costs associated with financial distress. Thus, firm size (LnTA) may positively affect CB announcement returns. Debt/TA refers to the leverage of the firm and measured as Debt divided by TA. Companies with a larger debt ratio may face higher interest expenses leading to higher costs associated with risk-related adverse selection (M. J. Brennan & Schwartz, 1988; M. Brennan & Kraus, 1987). Therefore, the study anticipate that the introduction of CBs will have a negative impact on stockholder responses. Stock run-up is computed using continuously compounded daily equity return for the window (-60 to -2) prior to the issuance of the CBs. Market run-up is computed by the continuously compounded by the respective country index return over window (-60,-2). Stock return volatility (STOCKV) refers to the annualized volatility of daily equity returns during the trading days from -250 to -10, relative to the date

when the CB was issued. Slack refers to the cash and short-term investment available with the firm scaled by the TA. Proceeds (Proceeds/TA) refers to the amount raised through the issuance of CB IPO and measured by proceeds divided by TA. Dutordoir & Van de Gucht (2007) propose that greater size offerings can lead to increased external financing expenses and a more detrimental effect on CAR. Maturity refers to the time period from the date of issuance to the day when the issued securities can be exchanged into equity of the firm or cash of equivalent value, at the predetermined price. Research conducted by Datta et al. (2000) and Easterbrook (1984) indicates that companies that exhibit strong performance are more inclined to issue CBs with extended maturity terms to postpone the conversion process.

Data

The study examines the plain CB issuances in the Asian economies specifically China, India, Japan, Hong Kong, Singapore, Korea, Taiwan, Thailand, and Vietnam for the period January 2020 - March 2024. The selection of the Asian economy is based on the issuance criterion. A country is included in the sample with a minimum of 15 CB issuances during the sample period. The data was sourced from SDC Platinum's Global New Issues database. The sample consists of convertibles from all industries including financial firms as performed in Li et al. (2016). Consistent with the existing CB literature the study excluded the convertible bond issuances with options.

The following criteria were used to filter the convertible offerings to be included in the sample.

1) The offered bonds must be convertible into stock of the company that issued it. Excluded from this category are exchangeable bonds;
2) The issuance must be an offering made to public;
3) Daily stock price data preceding the issuance of CBs must be available.

Table 1 presents the country wise CB issuances and the total proceeds. The total CB issuance in the selected Asian economies for the sample period was around 6909 issues with the total proceeds of USD 461950 million. Almost half of the CBs (3139 issues, or 45.43%) were issued by Korean companies. China accounts for 2020 issues or 29.23%, followed by Japan (922 issues, or 13.34%), Hong Kong (448 issues, or 6.48%), India (141 issues, 2.04%), Singapore (89 issues, 1.28%), Taiwan (59 issues, 0.85%), Vietnam (57 issues, 0.82%) and Thailand (34 issues, 0.49%). Since the year 2000, Japan has significantly increased its issuance of CBs, a trend that may be attributed to the growing significance of convertible arbitrage hedge funds in the United States (Duca et al., 2012). Since 2008, there is an increase in the issuance of CBs

in Korea and China. China is currently experiencing an increase in the issuance of high-value CBs, driven by the prevailing high-interest rate environment, depressed stock prices of Chinese concept stocks, and the government's supportive policies for overseas financing and outbound business expansion. Firms are utilizing these CBs as a financial strategy to restructure their debt, expand their international operations, and facilitate share repurchase initiatives.[4]

(see appendix 1 for the year wise issuance of CBs across the countries)

Table 1: Country wise distribution of Convertible bond issuance

Country	Number of Issuances	Total Proceeds
Korea	3139	55466
India	141	12510
Japan	922	97892
China	2020	250993
Hongkong	448	21824
Singapore	89	11977
Taiwan	59	7670
Thailand	34	1498
Vietnam	57	2120
Total	6909	461950

Notes: This table present the distribution of convertible bond issuance and proceed in the million US dollars from year 2000 to 2024 for nine sample countries. The data in this table is sourced from SDC Platinum.

Table 2 presents usage of proceeds from CB IPOs. These uses of proceeds are categorized in Capital Expenditure, Debt refinancing, Acquisition, Working Capital and General Purpose. However, the companies during the issuance can categorize the use of proceeds into more than of these categorizations. For example, a company can choose their use of proceeds in both Capital expenditure as well as acquisitions. Due to the multiple categorizations of a single proceeds, the total percentage use of proceeds is greater than 100%.

China uses a major part of its proceeds (85.20%) in capital expenditure that indicates towards the growth strategies of China, with a smaller 9.16% (n=185) allocated to Debt Refinancing. Japan shows a strong emphasis on Debt refinancing (49%) and Capital expenditure with a percentage of 40.78. India, Hong Kong, Singapore, Taiwan and Vietnam majorly focused their proceeds on General purposes, indicating a strategic focus on flexible resource allocation.

[4] https://www.legalbusinessonline.com/features/why-convertible-bonds-are-new-darling-chinese-companies -- retrieved on 21st October 2024

Hong Kong, Singapore, Korea and Thailand have devoted more than 50% of proceeds towards Working capital, highlighting the focus on maintaining liquidity.

Overall, the data reveals that in these countries, 38.99% of total proceeds are allocated to Capital Expenditure, 13.55% to Debt Refinancing, 5.01% to Acquisition, 58.58% to Working Capital, and 53.03% to General Purpose. These distribution patterns highlight the varied strategies across Asian nations, reflecting their unique operational skills.

Table 2: Use of Proceeds from the CB issuances.

Country	Capital Expenditure		Debt Refinancing		Acquisition		Working Capital		General Purpose	
	%	N	%	N	%	N	%	N	%	N
China	85.20	1721	9.16	185	5.25	106	50.54	1021	74.21	1499
India	25.53	36	7.09	10	9.22	13	1.42	2	88.65	125
Japan	40.78	376	49.02	452	11.39	105	37.53	346	10.63	98
Hong Kong	21.65	97	18.30	82	16.07	72	56.47	253	83.48	374
Singapore	37.08	33	19.10	17	19.10	17	55.06	49	86.52	77
Korea	13.35	419	5.45	171	0.92	29	73.88	2319	44.09	1384
Taiwan	1.69	1	18.64	11	3.39	2	16.95	10	66.10	39
Thailand	5.88	2	17.65	6	2.94	1	67.65	23	52.94	18
Vietnam	15.79	9	3.51	2	1.75	1	42.11	24	87.72	50
Total	38.99	2694	13.55	936	5.01	346	58.58	4047	53.03	3664

Note: This table presents the stated uses of proceeds which are obtained from SDC Global New Issue. The total of all the rows across the countries when summed up is greater than 100%, because many offerings include stated used of proceeds that are more than one.

Results and Discussions

Cumulative Abnormal Returns (CAR)

The stock price reaction is quantified by calculating the CARs using the MM. The event-day refers to the specific date when the issuance of the CB IPO is made. The measurement of stock price reactions takes place within the time that spans from one day before the event-day to one day after the event-day. The parameters of the market model are computed using the trading days from -250 to -10 relative to the event day.

Table 3 presents the descriptive statistics of CARs of all the firms (including financial and non-financial). Study also reports t-test and Wilcoxon statistics indicating the mean and median of

the CAR are highly significant at 1%. The results present that the CAR when considered for all the nine countries together show a positive reaction of CB issuance over the stock performances of corresponding firms as our mean (median) CAR is 0.97% (0.063%) which is highly significant.

Table 3: Stock price reactions around CB issuance of all the firms across all the nine Asian countries

Country	N	Mean	Median	Std. dev.	t-Statistics	Wilcoxon-Statistics (P-value)
Asia	6909	0.97%	0.063%	7.57%	10.67***	0.000***

Note: This table reports descriptive statistics of CARs of all the firms around CBs issuance. N indicates the number of observations used to calculate CAR in respective country. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Table 4 presents the descriptive statistics of CARs of all the firms (including financial and non-financial). Study also reports t-test and Wilcoxon statistics indicating the mean and median of the CAR are significantly different from zero.

Table 4: Stock price reactions around CB issuance of all the firms across all the nine Asian countries

Country	N	Mean	Median	Std. dev.	t-Statistics	Wilcoxon-Statistics
India	141	-0.71 %	-0.72%	4.65%	-1.80*	3851**
Japan	922	-0.89%	-1.34%	8.26%	-3.25***	144073***
Hong Kong	448	1.77%	0.00%	12.29%	3.05***	44366
China	2020	1.02%	0.63%	4.28%	10.68***	671528***
Singapore	89	-0.48%	0.01%	4.39%	-1.03	1707
Korea	3139	1.51%	0.04%	8.27%	10.19***	2113012***

Taiwan	59	1.61%	0.96%	5.60%	2.20**	630**
Thailand	34	-0.52%	0.00%	3.905	-0.78	124
Vietnam	57	0.97%	0.40%	4.60%	1.59	647

Note: This table reports descriptive statistics of CARs of all the firms around CBs issuance. N indicates the number of observations used to calculate CAR in respective country. Table also reports mean, median, standard deviation, t test, and Wilcoxon test examining whether the CARs are significantly different from zero. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

The results of analysis found that with the exception of Singapore, Thailand, and Vietnam, all Asian countries exhibit CARs that are significantly different from zero. Notably, in China, Hong Kong, Korea, and Taiwan, the issuance of CB IPOs has a positive impact on stock price returns, as evidenced by the substantial positive CARs. The positive CARs observed in China, Hong Kong, Korea, Taiwan, and Vietnam align with the findings of H. J. Kim & Han (2019) and Wu & Wang (2005) regarding CB offerings and Hong Kong SEOs, respectively. These studies attribute this phenomenon to the monitoring effect. Additionally, the results are consistent with Ross's (1977) signalling theory, which posits that changes in financing policy can alter investor perceptions of a company, thereby generating a positive market signal. The higher leverage associated with CB issuance may lead investors to believe that firms are committed to interest and principal repayments, reflecting confidence in future cash flows. This, in turn, signals to the market that managers are well-informed about their company's prospects and that the firm possesses strong future earnings potential, ultimately enhancing company value. This interpretation is also supported by Kang et al. (1995), who found that the significant positive abnormal return in Japan is due to the absence of asymmetric information, with investors confident that managers are raising funds to maximize overall firm value by investing in positive NPV projects, rather than solely focusing on maximizing shareholders' wealth.

Correlating the results of the China with the existing scenario, Chinese companies raised $14 billion in CB issuance. The Chinese firms use this CB issuance to raise confidence among the international investors to invest in Chinese firms.[5]

In contrast, India and Japan show significantly negative CARs, suggesting that the issuance of CBs adversely affects stock price returns. Japan has slightly higher negative CAR (0.89%) than India (0.71%) but Japan has highly significant than India. These negative results are consistent with the negative announcement returns (Ammann et al., 2006; Billingsley & Smith, 1996;

[5] https://www.reuters.com/markets/rates-bonds/china-firms-issue-record-14-bln-convertible-bonds-market-revives-2024-07-23/ - retrieved on 21st October 2024

Burlacu & Burlacu, 2000; De Jong et al., 2012; Duca et al., 2012; Dutordoir et al., 2016b; Lee & Loughran, 1998; Lewis et al., 2001; Li et al., 2016b; Loncarski et al., 2005; Spiess & Affeck-Graves, 1999). Signalling model of Myers & Majluf (1984) also support these negative results where they explain that firm issues new security when the equity is overvalued. The adverse reaction in share prices is frequently elucidated by theoretical frameworks of asymmetric information, as posited by MILLER & ROCK (1985), and adverse selection, as articulated by Myers & Majluf (1984). These models indicate that when a corporation issues high-risk securities, investors demand a discount due to the asymmetry of information between firm managers and investors.

Table 5 presents the descriptive of CARs results of financial firms (Bank SIC code: 6000-6199, non-bank financial firms SIC code: 6200-6999) in Asian economies. The findings indicate issuance of convertibles by financial firms has the positive and significant impact on the stock prices only in Hong Kong.

Table 5: Stock price reactions around CB issuance of financial firms across all the nine Asian countries

Country	N	Mean	Median	Std. dev.	t-Statistics	Wilcoxon-Statistics
India	9	0.00%	-0.72%	4.15%	0.00	20
Japan	112	0.04%	-1.08%	11.55%	0.04	2229***
Hongkong	86	1.86%	0.18%	9.84%	1.76**	1589
China	127	0.38%	0.10%	3.29%	1.30	3382*
Singapore	17	-1.14%	-0.45%	4.38%	-1.07	62
Korea	72	1.27%	0.00%	6.96%	1.55	1081
Taiwan	6	1.54%	-0.75%	7.03%	0.54	10
Thailand	3	-1.44%	0.34%	6.39%	-0.39	3
Vietnam	15	-0.33%	-0.15%	4.00%	-0.32	53

Note: This table reports descriptive statistics of cumulative CARs of financial firms around CBs issuance. N indicates the number of observations used to calculate CAR in respective country. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Table 6 presents the descriptive of CAR results of non-financial firms. The evidence indicates that the findings from Panel A are consistent when focusing on non-financial firms. Notably, Vietnam, which previously exhibited an insignificant CAR, now shows a significantly positive

CAR when financial firms are excluded from the analysis. Among all the countries, Hong Kong records the highest and most statistically significant positive CAR at 1.77%.

Table 6: Stock price reactions around CB issuance of firms except financial firms across all the nine Asian countries

Country	N	Mean	Median	Std. dev.	t-Statistics	Wilcoxon-Statistics
India	132	-0.76%	-0.72%	4.69%	-1.84*	3347**
Japan	810	-1.01%	-1.37%	7.69%	-3.74***	110599***
Hongkong	362	1.75%	0.00%	12.82%	2.60***	29201
China	1893	1.06%	0.64%	4.33%	10.64***	580211***
Singapore	72	-0.33%	0.05%	4.41%	-0.63	1132
Korea	3067	1.51%	0.04%	8.30%	10.07***	2019688***
Taiwan	53	1.62%	0.96%	5.50%	2.14**	489**
Thailand	31	-0.44%	0.00%	3.73%	-0.65	92
Vietnam	42	1.44%	1.06%	4.75%	1.96**	302*

Note: This table reports descriptive statistics of CARs of all the firms except banking and non-financial firms. N indicates the number of observations used to calculate CAR in respective country. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Determinants of stock price reactions

The issuance of CB has positive/negative impact on the stock market reactions in the Asian economies. However, it is interesting to establish the determinants of the stock price reactions around the CB issuance. Table 7 reports the results of the regression analysis as represented in equation (5) with the CAR window (1,1). In Column (1), study controls for the firm-, issue-, and market-specific characteristics specified earlier. Appendix 2 provides the sources and definition of the explanatory variables used in regression analysis.

Table 7: Determinants of stock price reactions around CB issuance (-1,+1)

Variables	(1)
LnTA	-.000692
	(-1.27)
Debt/TA	-.000023*
	(-1.78)
Stock run-up	.0039086
	(0.59)
Market run-up	.0261476**
	(2.27)
Stock return volatility	-.235906***
	(-4.74)
Slack/TA	-.001037
	(-0.17)
Proceeds/TA	-.0001184
	(-1.38)
Maturity	.0000398
	(0.40)
Constant	.0095282
	(0.61)
Year effect	Yes
Country effect	Yes
N	6321
Adj. R^2	.0209

Note: This table exhibits the outcomes of regression analysis that examines the changes in stock prices following the issuance of CBs. The dependent variable is the CAR determined over the window (−1,+1) relative to the issuance date. The table presents Ordinary Least Squares (OLS) regressions. Year and country dummies are present in the data, but their values are not disclosed. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

The leverage of a firm has a negative and significant effect on the returns associated with the announcement of CBs. The findings indicate that firms with a greater debt ratio may incur substantial costs when raising additional debt financing, primarily due to an increased

likelihood of asset substitution (Green, 1984) and elevated costs linked to risk-related adverse selection (M. J. Brennan & Schwartz, 1988; M. Brennan & Kraus, 1987).

The market run-up exerts a positive effect on CAR. This is due to the correlation between market expansions and increased lucrative growth prospects, which subsequently diminish economy-wide adverse selection costs (Choe et al., 1993).

Our study reveals an inverse relationship between CAR and annual stock return volatility. Previous research (Chang et al., 2004) demonstrates that firms with higher anticipated fluctuations in stock returns are likely to experience greater uncertainty in their cash flows, which leads to elevated financial distress costs and, consequently, a negative impact on CAR. Thus, leverage of the firm, the market run-up and the annual stock volatility contribute a significant role in determining the stock price reactions during the CB issuance.

Propensity score matching analysis

The companies issuing CBs also state the use of proceeds during the issuances. To address the selection bias due to the stating of the use of proceeds during the CB issuance and to address the endogeneity concerns, study uses propensity matching methods to examine the casual relationships. The study runs two propensity score matching analysis viz., first for the use of proceeds in capital expenditure, second use of proceeds in working capital. The firms are divided into treatment and control groups based on the use of proceeds. Firms which have reported their uses of proceeds as capital expenditure constitute the treatment group and remaining firms from the control group. Likewise in the case of firms which have reported their uses as working capital.

Table 8A presents the mean difference between the treated and control groups for each of the use of proceeds. The insignificant result of the treated and control groups provides the evidence of removal of observable differences between the groups.

Table 8A: Summary Statistics of treated and matched control firms for Capital expenditure and working capital

	Capital expenditure				Working Capital expenditure			
	Mean		t-test		Mean		t-test	
Variables	Treated	Control	t	p>|t|	Treated	Control	t	p>|t|
Maturity	5.95	5.9811	-0.07	0.941	4.3387	4.7295	-1.50	0.133
Proceeds/TA	0.16351	0.06484	1.34	0.179	.05044	.09224	-0.88	0.376
LnTA	16.269	16.255	0.24	0.813	17.322	17.385	-1.28	0.201
Debt/TA	0.26963	0.27198	-0.39	0.7	.31687	.32365	-1.27	0.203
Slack/TA	0.19289	0.19161	0.28	0.778	.1768	.17488	0.54	0.591

Note: This table reports treated and control group of firms based on stated use of proceeds which are capital expenditure and working capital. The mean coefficients of control variables for treated and matched control firms are showed above.

Table 8B present the regression estimation for two stated use of proceeds and the determinants of CAR. Given the existence of temporal trends in the market and various nations, it is essential to account for the effects of year and country accordingly (H. J. Kim & Han, 2019). When the firm issues the CBs for the use of capital expenditure as shown in column (1), it was found that stock run up, market run up, stock volatility, slack and maturity are the important factors in determining the CAR. Column (2) shows the results of PSM when run for working capital. It shows that only annual stock return volatility and proceeds significantly determine the CAR.

Table 8B: Post-match regression analysis for Capital Expenditure and working capital

Variables	Capital expenditure (1)	Working capital (2)
LnTA	.0009243	-.0004968
	(1.52)	(-1.02)
Debt/TA	.0014805	.0030598
	(0.30)	(0.82)
Stock run-up	-.0258142***	.0094463
	(-3.07)	(1.35)
Market run-up	.0690207***	.0144519
	(4.85)	(1.29)
Stock return volatility	-.2128443***	-.2360332***
	(-3.38)	(-5.33)
Slack/TA	.0169927***	.0001168
	(2.35)	(0.02)
Proceeds/TA	.0001111	-.0002516*
	(0.84)	(-1.78)
Maturity	.0001278**	.0000496
	(2.12)	(0.66)
Constant	.0044509	.0077655
	(0.24)	(0.59)
Year effect	Yes	Yes
Country effect	Yes	Yes
N	4954	7474
Adj. R^2	.03984	0.031

Note: This table reports the post matched logit regression analysis examining the determinants of CAR around the CB issuance for capital expenditure and working capital. The dependent variable is the CAR determined over the window (−1,+1) relative to the issuance date. Capital expenditure is a dummy variable and assigned a value of one if the stated use of proceeds are capital expenditure and related terms, and zero otherwise. Working capital is a dummy variable and assigned a value of one if the stated use of proceeds is working capital, and zero otherwise. Year and country dummies are present in the data, but their values are not disclosed. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Robustness Test

Further, to check the robustness of the results, we use series of robustness analysis. First, our study considers various CAR windows. Second, separate two regressions have been run for China and Korea together, and remaining seven countries together. Table 9 presents the results of various windows. Third, our study also includes two separate regressions for financial firms and non-financial firms. For brevity concerns, only the result of CAR windows (-9,+1) and (-2,+2) have been reported. The results are found to be consistent with our main study. Column (1) and (2) shows the results of windows (-9,+1) and (-2,+2) respectively. Regression results of column (1) is evident that debt, market run-up, and annual stock return volatility are the factors for determining CAR around the issuance of CBs along with stock run-up. Stock run-up is found to be positively related to CARs which is consistent with the study of Viswanath (1993) where research states that an increase in stock prices might also indicate lower financing costs for companies, as companies with bigger stock price increases may indicate more lucrative growth prospects.

Table 9: Robustness test for window (-9,+1) and (-2,+2)

Variables	(1)	(2)
LnTA	-.0006566	-.0013037*
	(-0.69)	(-1.81)
Debt/TA	-.0000509**	-.0000459***
	(-2.08)	(-2.58)
Stock run-up	.1750201***	.0254601***
	(13.70)	(2.71)
Market run-up	-.0333813*	.0270663*
	(1.74)	(1.80)
Stock return volatility	-1.286516***	-.4503653***
	(-15.66)	(-6.90)
Slack/TA	-.003154	.0025252
	(-0.33)	(0.30)
Proceeds/TA	.0001856	-.0001346
	(0.73)	(-1.04)
Maturity	.0001004	-.0000198
	(0.88)	(-0.20)
Constant	.0052887	.0244198
	(0.21)	(1.36)
Year effect	Yes	Yes
Country effect	Yes	Yes
N	6321	6321
Adj. R^2	.1399	.0301

Note: This table reports regression analysis results that examines the changes in stock prices following the issuance of CBs, checking the robustness of results displayed in table 7. The dependent variable is the CAR determined over the window (−9,+1) and (+2,-2) relative to the issuance date. The table presents Ordinary Least Squares (OLS) regressions. Year and country dummies are present in the data, but their values are not disclosed. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Column (2) also states that our results are consistent with the original study and with the results of CAR window (-9,+1) along with negative and significant LnTA. Wu et al. (2005) contend that the size of a corporation is an effective indicator of the differences in information between investment prospects and asset-in-place. Consequently, the scale of a company is anticipated to have a negative effect on the returns of CB announcements, aligning with the concept of agency cost (R. C. Green, 1984; Mayers & Anderson, 1998) and the comprehensive Myers-Majluf model (Cooney & Kalay, 1993; Wu et al., 2005) which shows our results are consistent as per these studies.

China and Korea vs. other countries

There is significant increase in the issuance of CBs in China and Korea since 2008. The China Securities Depository and Clearing Corporation Limited (CSDC) reported an average value of convertible bonds in China amounting to RMB 990 million between January 2005 (the median) and August 2023. The data peaked at a record high of RMB 84,860 million in March 2019.[6] The rise in IPOs can be ascribed to hedge funds engaged in convertible arbitrage, which stimulate demand by hedging bond acquisitions by short selling of equities. This tendency is expected to continue due to high interest rates and persistent geopolitical concerns, potentially leading to a resurgence of the IPO market as investor confidence improves[7]. In 2023, the issuance of convertible bonds in Korea amounted to approximately $4.1 billion.[8] Table 10 presents the results where regression analysis run for two different sets of countries. Column (1) shows the results of China and Korea, where study shows that market run-up, annual stock return volatility and maturity are the factors determining the CAR in these two countries. Whereas column (2) shows the regression results of all the countries except China and Korea. Our study finds that determinants are consistent with column (1) except for maturity. These results are consistent with our main regression of Table 7 which shows that our results are robust.

[6] https://www.ceicdata.com/en/china/csdc-bond-issued/bond-issuance-csdc-convertible-bond - retrieved on 21st October 2024

[7] https://the-cfo.io/2024/06/18/chinese-firms-are-embracing-convertible-bonds-heres-why/ - retrieved on 21st October 2024

[8] https://www.koreatimes.co.kr/www/biz/2024/09/602_367467.html - retrieved on 21st October 2024

Table 10: Robustness test (-1,+1) for China and Korea vs. other countries

Variables	China and Korea (1)	Other countries (2)
LnTA	.0005757	-.0014871
	(1.15)	(-1.40)
Debt/TA	-.0018548	.0000128
	(-0.30)	(0.63)
Stock run-up	.0046891	.0003776
	(0.66)	(0.02)
Market run-up	.0209593*	.0427685*
	(1.67)	(1.77)
Stock return volatility	-.2650846***	-.2038011**
	(-4.49)	(-2.04)
Slack/TA	-.0014514	-.0087632
	(-0.20)	(-0.60)
Proceeds/TA	-.0004415	-.0002637
	(-0.51)	(-1.57)
Maturity	-.0001712***	.0002901
	(-2.58)	(1.38)
Constant	-.0204554	.036353*
	(-0.71)	(1.72)

Year effect	Yes	Yes
Country effect	No	Yes
N	5004	1317
Adj. R^2	.01467	.02868

Note: This table reports regression analysis results that examines the changes in stock prices following the issuance of CBs, checking the robustness of results displayed in table 7. The regression is run in two different sets of countries. Column (1) presents the regression results of CBs issued in China and Korea, and column (2) presents the regression results of countries other than China and Korea. The table presents Ordinary Least Squares (OLS) regressions. Year and country dummies are present in the data, but their values are not disclosed. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Financial vs. non-financial firms

Column (1) of table 11 shows the regression results for the firms other than financial firms. The results of column (1) are consistent with our original regression results of table 6 which verifies and shows the robustness of our original regression results. However, the results of column (2) states that only market run-up is significant factor in determination of CAR when considers specifically financial and banking companies may be due to the more government restrictions, CAR is less affected by other factors.

Table 11: Robustness test (-1,+1) for financial and non-financial firms

Variables	Firms other than financial firm	Financial and Banking firms
	(1)	(2)
LnTA	-.0005245	-.0030071
	(-0.92)	(-1.32)
Debt/TA	-.0000234*	.0036964
	(-1.61)	(0.47)
Stock run-up	.0035858	.0113041
	(0.51)	(0.51)
Market run-up	.0334461***	-.0993374**
	(2.81)	(-1.94)
Stock return volatility	-.2341361***	-.2514258
	(-4.49)	(-1.60)
Slack/TA	-.0010817	.0002572
	(-0.17)	(0.01)
Proceeds/TA	-.0001254	.0009153
	(-1.32)	(0.33)

Maturity	0.00	.0002789
	(0.04)	(1.55)
Constant	.009961	.0290935
	(0.60)	(0.70)
Year effect	Yes	Yes
Country effect	Yes	Yes
N	5933	388
Adj. R^2	.01964	.02372

Note: This table reports regression analysis results that examines the changes in stock prices following the issuance of CBs, checking the robustness of results displayed in table 7. The regression is run in two different sets of countries. Column (1) presents the regression results of convertible bonds issued in firms others than banking and financing firms, and column (2) presents the regression results of CBs issued by financing and banking firms. The table presents Ordinary Least Squares (OLS) regressions. Year and country dummies are present in the data, but their values are not disclosed. ***, **, * represents the significance at 1%, 5%, and 10% level respectively.

Conclusion

The study analyses the impact of CB issuances on the stock market returns in the Asian economies. The study uses event study methodology to capture the abnormal returns and examines the determinants of the CARs during the CB issuances for the period 2000-2024.

The results of the study found that there are mixed stock market reactions in the Asian economies. China, Hong Kong, Korea, Taiwan, and Vietnam have positive stock market reactions indicating that changes in financing policy can influence investor perceptions, sending a positive market signal. The increased leverage from CB issuance may indicate a firm's confidence in its ability to meet future financial obligations, signaling strong future cash flows and enhancing perceived company value. The study also corroborates with the existing market scenarios where Chinese firms increased the convertible bond issuances to gain the confidence among the international investors to invest in the Chinese firms. On the other hand, Japan and India have negative stock market reactions indicating that in these countries, firm issues convertible bonds when the equity is overvalued.

Further the study extends the analysis by examining the determinants of the CAR during the CB issuance. The results suggest that market run up, stock volatility and leverage play significant role in determination of CARs. The study also segregates the CBs based on use of proceeds and examines it determinants. The study shows that when the firm uses the proceeds for the capital expenditure purpose, stock volatility, market run up, stock run up, slack, and maturity are the important factors that contribute to determine the CAR. The significance of

the variables enhances when companies use their CB proceeds for capital expenditure than any other purpose.

The results have practical implications to investor to understand the share price movements during the CB announcements. It would help them to design the trading strategies. It would also help the corporate firms to understand how the investors perceive about the issuance of CBs and time the issuances. Companies should contemplate providing more comprehensive disclosures regarding their planned utilization of funds, as investors appear to perceive these stated objectives as indicators of potential impacts on future cash inflows. By explicitly specifying how the raised funds will be deployed, companies can offer investors a clearer indication of the expected financial benefits. This enhanced transparency can, in turn, improve investor trust and decision-making (Dutordoir et al., 2016).

Appendix 1: Year Wise Issuance of CBs

Year	Korea	India	Japan	China	Hong Kong	Singapore	Taiwan	Thailand	Vietnam	Total
2000	10	0	42	1	1	0	6	0	0	60
2001	27	0	48	NA	2	1	8	0	0	86
2002	0	0	32	1	0	0	21	1	0	55
2003	2	1	66	2	12	0	3	0	0	86
2004	4	9	148	NA	7	1	3	0	0	172
2005	0	16	133	1	11	0	2	0	0	163
2006	0	17	106	6	13	3	0	1	0	146
2007	1	23	49	11	9	18	0	1	0	112
2008	9	7	28	16	12	7	1	1	0	81
2009	39	16	24	8	34	5	2	0	1	129
2010	29	10	15	16	38	4	2	0	8	122
2011	88	5	8	24	22	3	3	4	12	169
2012	61	15	20	19	19	4	1	2	4	145
2013	68	3	34	34	34	9	2	12	5	201
2014	175	3	36	51	26	6	0	8	5	310
2015	236	0	19	33	49	4	0	1	4	346
2016	315	4	26	47	48	3	2	1	5	451
2017	316	1	9	98	20	8	3	1	1	457
2018	388	5	28	166	20	1	0	0	4	612
2019	221	1	10	299	18	4	0	0	2	555
2020	340	3	8	388	22	4	0	0	0	765
2021	447	1	12	259	17	3	0	1	3	743

2022	195	0	10	286	4	1	0	0	1	497
2023	155	1	9	243	8	0	0	0	1	417
2024	13	0	2	11	2	0	0	0	1	29
Total	3139	141	922	2020	448	89	59	34	57	6909

Note: This table presents year wise issuance of CB IPOs in the sample countries.

Appendix 2: Variable definitions

Variable	Classification	Source	Definition
LnTA	Firm-specific	Datastream	Natural log of total asset
Debt/TA	Firm-specific	Datastream	Total debt scaled by Total assets
Stock run-up	Firm-specific	Datastream	Stock return for the window (-60,-2) relative to the issuance date
Market run-up	Market-specific	Datastream	Return on the respective county index for the window (-60,-2) relative to the issuance date
Stock return volatility	Firm-specific	Datastream	Annualized stock return volatility, computed from daily stock returns for the

			window (-250,-10) relative to CB issuance date
Slack/TA	Firm-specific	Datastream	Cash and short-term investment scaled by TA
Proceeds/TA	Issue-specific	Datastream	Amount raised through issuance scaled by TA
Maturity	Issue-specific	Datastream	CB maturity starting from issue date
Capital expenditure dummy	Use of proceeds	SDC Platinum's Global New Issues	1 if the stated use of proceeds is capital expenditure or related, and 0 otherwise
Working Capital Dummy	Uses of proceeds	SDC Platinum Global New Issues	1 if the stated use of proceeds is working capital or related, and 0 otherwise

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