A Stock Market Reaction Following Convertible Bond Issuance: Evidence from Japan

Wei Cheng[1], Nuttawat Visaltanachoti[1], and Puspakaran Kesayan[2*]

[1]Department of Commerce, Massey University, North Shore Mail Center, Private Bag 102 904, Auckland, New Zealand
[2]Division of Banking and Finance, Nanyang Technological University, Singapore & University Utara Malaysia, Malaysia

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Abstract

This paper examines the stock price reaction to the announcement of convertible bonds (CBs) issuance during the period 1996 through 2002 in Japan. We discover a significantly negative stock price reaction to the announcement of CBs. This result conforms to the negative stock reaction in the U.S. market but is inconsistent with the previous study in Japan. Firm size is evidenced increasing the negative cross-sectional variation of abnormal stock return, while the growth options have positive relationship. There is no evidence of the association between the leverage and the abnormal return. In addition, the long-term performance of the stock prices after the CBs issuance firms are found under-performing the market index and what they should have done given their levels of systematic risks. Coupling with the negative stock price reaction around the issuance announcement period, the Japanese issuance firms under-react to the CBs issuance, consistent with the under-reaction hypothesis that has been explained by the U.S. empirical results.

Keywords: convertible bond, Japan, event study

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*Corresponding author. Address to: Ph.D. Office, Nanyang Business School, S3-01B-73, Nanyang Technological University, Nanyang Avenue, Singapore 639798. Email address: PJ173627@ntu.edu.sg

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1. Introduction

Convertible bonds (CBs) are hybrid instruments with characteristics of both debt and equity. Like straight bonds, convertible bonds receive coupons and principal payments. At the same time, convertible bondholders have the option to convert their bonds into stocks at a conversion ratio. Most convertible bonds have features that the issuer can call the convertibles before maturity. Having the option of being exchanged into equity, a convertible bond has a coupon rate that is lower than that of the straight bond. The equity effects of the issuance of convertible bonds have important implications for financing policy. For the U.S. market, Smith (1986) concludes that stock price reaction is not significant to new debt issuance announcement, but it is significantly negative to new equity issuance announcement. Moreover, the price reaction is significantly negative to CBs issuance announcement with a smaller absolute value than that to the pure equity issuance. Under these different stock price reactions, U.S. corporate managers may make up their minds what type of offerings to choose to avoid harming existing stockholders.

In the U.S. market, it is shown by many researchers that the stock prices are significantly negative to the CBs issuance announcements. Dann and Mikkelson (1984), Eckbo (1986), and Mikkelson and Partch (1986) report negative abnormal returns during the announcement period for the CBs issuance firms. However, Kang and Stulz (1996) find a positive share price reaction to the announcement of the CBs issuance in Japan during period 1985 through 1991. They contribute the differences of the equity effect to the differences of the "organization of firms" between the Japanese and American firms. That means American managers' goal is to maximize the wealth of current shareholders while Japanese managers' goal is to invest in all positive NPV projects. The "bubble economy effects" hypothesis for the positive stock reaction has been rejected by Kang and Stulz (1996). The "bubble economy" in Japan means the phenomenon that the Japanese stock market had large positive returns during the second half of the 1980s and crashed at the beginning of 1990s. Kang and Stulz split the sample into announcements before 1990 and those in 1990 and 1991. They reject the "bubble

economy effects" hypothesis by the result that the difference between the two sub-samples is not significant. However, the result is suspicious as the number of sub-sample in 1990 and 1991 accounts only 9% of the total sample. This forms the major interest of this paper: are there any differences of the abnormal stock returns to the announcement of the CBs issuance between the bull and post-bull market in Japan?

This paper examines the stock price reaction to the announcement of CBs issuance from 1996 to 2002 in Japan. The abnormal returns around announcement dates are examined using standard event study methodology. A significantly negative stock price reaction to the announcement of CBs is found, which is totally different from that in the report by Kang and Stulz (1996). This result conforms to the "bubble economy effects" hypothesis and the negative stock reaction in the U.S. market. Using the cross-sectional regression model, the relationships between short-term stock abnormal return and the firm size, leverage and growth options of the CBs issuance firms are tested. The firm size is evidenced increasing the negative abnormal stock return, which conflicts with the informational asymmetry theory of Myers and Majluf (1984). The result that firms' growth options have positive relationship with the abnormal stock return conforms the prediction of Stein (1992). However, the leverage ratio is found unrelated to the abnormal return. This is not consistent to the prediction of Stein (1992). In addition, the long-term performance after the CBs issuance is examined to see the full information the CBs issuance could convey. The stock prices of the CBs issuance firms are found under-performing the market index and what they should have done given their levels of systematic risks. Coupling with the negative stock price reaction around the issuance announcement period, Japanese issuance firms under-react to the CBs issuance. This is consistent to the under-reaction hypothesis explained by the U.S. empirical results but unexplained in the study by Kang et al. (1999) using the data before 1988 in Japan.

This paper is organized as follows. Section 2 presents the literature review and hypotheses. Section 3 describes the data and methodology. Section 4 gives the results. Summary and conclusions are in section 5.

2. Literature Review and Hypotheses

2.1. U.S. Market

Early studies of stock price reaction to the CBs issuance are focused on the U.S. market. The examination of stock price reaction to CBs is always accompanied by the examination of other offerings. To test the abnormal return, the event study methodology is normally used in U.S. market. The evidence indicates that most of the announcement period investigated is the two-day (day –1 to day 0) trading period. The motivation under this behavior is that "it cannot be determined from published sources whether the initial post-announcement market transaction preceded or followed the close of trading on the trading day prior to the published announcement in the Wall Street Journal" (Dann and Mikkelson (1984 pp.162)). Some studies also calculate the abnormal returns for the issuance date. The reason for this is that some details such as conversion ratio and coupon rate are afforded on the issuance date. In general, abnormal returns are significantly negative in the CBs offerings announcement period and less negative in the issuance period for the U.S. market.

Dann and Mikkelson (1984) examine the equity valuation effect of the issuance of convertible debts together with the straight debts in the U.S market. They find that the stock price of the CBs issuance firms is significantly negative both in the two-day announcement period and two-day issuance period for CBs issuance during the years 1970 through 1979. They find that the leverage-related information hypothesis can't explain the negative results because their evidence shows that CBs issuance increases the issuer's financial leverage. This finding contrasts with Ross's (1977) study of capital structure change that there is positive relationship between leverage changes and stock price reaction. However, the result is consistent with the Myers and Majlur(1984)'s theory that the new external financing conveys unfavorable information about the firms investment opportunity. In the end, the negative stock price reaction can not be attributed to the original issue under-pricing theory. This means that negative stock returns at the announcement for new issue is due to the systematic under-pricing of

public offerings (Ibbotson (1975)). Mikkelson and Partch (1986) investigate the stock price effects of different offerings including convertible bonds during the period 1972 through 1982. They find the stock price reaction to the convertible debt offerings is significantly negative both in the two-day (day -1 to day 0) announcement period and at the issuance date. The result is similar to that reported by Dann and Mikkelson (1984). Their further study indicates consequence of CBs issuance (completion or cancellation) can affect the stock price reaction after the announcement. The effect that CBs with higher quality rating have more negative stock price reaction does not support Myers and Majluf (1984), moreover, the stock price of CBs issuance firm is inferred overvalued when the issuance of CBs is announced. Eckbo (1985) studies the stock effect to corporate debt offerings including the convertible debts during the period through 1964 through 1981. He finds the two-day (day –1 to day 0) abnormal return to the initial announcement of the CBs issuance is significantly negative. With the analysis of cross-sectional regression, the negative stock price reaction is found having no relationship with the tax shield, size and the rating of the new CBs issuance. The result of no relationship with the tax shield conflicts with the findings of Masulis (1983), who investigated exchanging debt for common stock. The result of no relationship with the issuance size is inconsistent with the Asquith and Mullins (1986) model in which the offerings size has a negative correlation with the stock abnormal return. The result of no relationship with bonds rating is also inconsistent with the theory of Myers and Majluf (1984).

Lewis et al. (2003) also find significantly negative stock price reaction to the CBs issuance announcement during the two-day (day –1 to day 0) trading period. They further indicate the stock price reaction has relationship with the decisions of security design. A logistic regression model is employed in the paper by Lewis et al. (2003) to compare the characteristics between the CBs issuance firms and the industry "composite" firms. The results show the relationship between security choice decisions and firm size, financial leverage, investment opportunity and future growth rate is much more complex for CBs.

By reviewing the relevant literatures for U.S. market, Smith (1986) concludes that: 1) stock price reaction is not significant to new debt issuance announcement, 2) stock price reaction is significantly negative to new equity issuance announcement, and 3) stock price reaction is significantly negative to CBs issuance announcement with a smaller absolute value than that to the pure equity issuance. The results in the U.S. market confirm the hybrid debt and equity nature of the CBs.

2.2 Non-U.S. Market

In recent years, studies on stock price reaction to CBs issuance have been extended to markets outside the U.S. The results are mixed in the non-U.S. markets. Some studies use the three-day (day –1 to day +1) or two-day (day 0 to day +1) announcement period to test the abnormal return, which is different from the two-day announcement period normally adopted in the U.S. market.

Kang and Stulz (1996) investigate the stock price effects of different offerings including convertible bonds during the period 1985 through 1991 in Japan. They find a significant positive stock reaction for the three-day (day -1 to day +1) trading period surrounding both the announcement date and the issuance date. The reason that the three-day trading period is chosen is that Day +1 is actually the first day that investors could learn the announcement information due to the time-zone differences, and the announcement may be made in Japan on day –1. The results also show that Japanese firms do not issue CBs after a period of positive abnormal returns as what happens in the U.S. In order to explore different stock reactions between the U.S. and Japanese market, Kang and Stulz (1996) examine some potential explanations. The evidence shows that the "deregulation effects" during 1980s can explain part of the positive results of CBs issuance. The "bubble economy effects" cannot explain the positive stock reaction to CBs issuance during the bull market from 1985 to 1989. The differences of the "organization of firms" between the Japanese firms and the American firms can fully explain the positive abnormal return to CBs issuance in Japanese market. Managers' behavior in Japan is

different from that in the U.S. This reason is also adopted by Kang et al. (1995) to explain the non-negative abnormal return to CBs issuance for Japanese firms in the offshore market. The cross-sectional regression model is used in the paper by Kang and Stulz (1996) to test the relationship between the positive abnormal return and the characteristics of the issuing firm. It is found that larger (smaller) firms have smaller (larger) positive abnormal return, which is consistent with the informational asymmetry theory of Myers and Majluf (1984).

The positive stock reaction is also found in the Dutch market. De Roon and Veld (1998) investigate the announcement effect of convertible bonds as well as warrant bonds in period 1976 through 1996 in Netherlands using the event study methodology. The average abnormal returns for day –1 to day +1 surrounding the CBs announcement date are insignificantly positive. These results are consistent with those in Japan, but in contrast to those in the U.S. De Roon and Veld (1998) also indicate Dutch firms issuing CBs after a period of positive stock return, which means, like American firms, Dutch firms issue convertible bonds after the stock is overvalued. De Roon and Veld (1998) reject the probability that the difference of the abnormal return around the announcement date between the U.S. and the Netherlands is due to the difference of the managers' goals between these two countries.

In the U.K. market, Simon (1999) examines the data of CBs issuance as well as other offerings in the period 1980 through 1998. The common stock returns in the two-day (day 0 to day +1) announcement period of CBs issuance are significantly negative. The result is consistent to that of the U.S. Simon (1999) contributes this consistency to the similar underlying financial factors between the U.K and U.S. firms.

Another research for the U.K. market is reported by Abhyankar and Dunning (1999). They investigate stock price to the announcements of issues of three different types of convertible securities using the U.K. data during the period 1986 through 1996. The abnormal return is found significantly negative during the two-day (day 0 to day +1)

trading period for the announcement of CBs issuance, which is similar to that of Simon's (1999). In addition, they employ a cross-sectional regression model to test the relationship between abnormal return and the firms' characteristics. It is found that, in the U.K., announcement abnormal return is unrelated to firm size, issuance size and market-to-book ratio.

2.3 Offshore Market

Since 1992, the study of stock reaction to the announcement of CBs issuance has been developed to the offshore market. The CBs data for Japanese firms and American firms are examined by different person in the same Eurobond market. However, the results are totally different.

Kim and Stulz (1992) examine the CBs issuance effect on equity in offshore market in the period 1965 through 1987 as well as the domestic market for U.S firms in the period 1970 through 1987. They find that before 1984, the stock price reaction during the two-day (day –1 to day 0) trading period in the offshore market is insignificant negative, which is much smaller in absolute value than that in the domestic market. After 1984, the abnormal return is nearly the same in the domestic and offshore market. The explanation for the difference before 1984 is that American firms can benefit from the tax advantage in offshore market before the change in U.S. withholding tax in July 1984. By comparing the U.S. issuers' characteristics between the two markets, it is found that the offshore offering size is smaller than the domestic offering, while the issuance firms are larger and riskier than those in the domestic market.

Kang et al. (1995) use the data in the period 1977 through 1989 to investigate the Japanese convertible bonds as well as warrant bonds issuance in the offshore market. The evidence indicates that most convertible bonds were issued before the mid-1980s. Comparing with the offshore market CBs issuance for American firms reported by Kim and Stulz (1992), the offshore market CBs offerings for Japanese firms are always insured by banks. The stock price reaction during the three-day trading period (day –1

to day +1) is insignificantly different from zero. No evidence is found that the abnormal return for the Japanese offshore market is negative as that for the U.S. offshore market. Kang et al. (1995) attribute different abnormal return results to the different managers' goals between these two countries. It is indicated that the American managers' goal is to maximize the wealth of current shareholders while the Japanese managers' goal is to invest in all positive NPV projects. Therefore, the CBs issuance in Japan does not convey information that stock is overpriced.

2.4 Long-term Effect

Other than investigating stock returns to the CBs issuance during short-term announcement period, some recent studies after 1997 show the interests of examining the long-term performance of CBs issuance firms. According to Loughran and Ritter's (1995) examination of initial public offerings and Spiess and Affleck-graves's (1995) investigation of seasoned equity offerings, it is believed that the market prices may not fully reflect the information of corporate events during the announcement period, sometimes they under-react to the events.

Lee and Loughran (1998) examine the long-term performance of CBs issuance firms from 1975 to 1990 in the U.S. market. They find that the CBs issuance firms significantly under-perform the market index and the matching firms. Evidence indicates that the poor performance cannot be explained by initial public offerings or seasoned equity offerings. Upon a further investigation, Lee and Loughran find that the CBs issuance firms have a declined operating performance following the offering, which is not the case for the matching firms. Spiess and Affeck-Graves (1999) investigate the convertible data for the American firms during the period from 1975 to 1989. They compare the long-run performance of CBs issuance firms to that of the matching sample of non-issuance firms. Like the result of Lee and Loughran (1998), the CBs issuance firms under-perform the matching firms during the long-term period after the offerings. The long-run underperformance of the CBs issuance firms accompanied with the negative stock price reaction during the short-term announcement period in the

U.S. market is consistent to the under-reaction hypothesis.

The study of long-run CBs issuer performance has also been extended to the market outside the U.S. Ho and Abhyanker (2002) investigate the long-run performance for convertible security issuance firms before and after the issuance over the period 1982 through 1996 in the U.K. market. Comparing with the market index and the matching portfolio, a positive pre-offer abnormal performance and negative post-offer abnormal performance are found. Kang et al. (1999) also examine the long-run performance of the convertible debts issuance firms following the offerings during period 1980 through 1988 in Japan. The underperformance of the CBs issuance firms is found even though the abnormal stock price return is not negative during the short-term issuance announcement period for these firms. These underperformance results outside the U.S. are consistent to that in the U.S. market. Hence, the U.K. evidence conforms to the under-reaction hypothesis while the Japanese case dose not.

2.5 Hypotheses

Previous empirical results of the stock price reaction to the announcements of CBs issuance are mixed in different market. Dann and Mikkelson (1994) report negative results in the U.S., and Simon (1999) has similar negative results in U.K. In Netherlands, de Roon and Veld (1998) report the same positive stock reaction as that in Japan by Kang and Stulz (1996) using the data before 1991. It is hard to say that the stock reaction to the announcements of CBs in Japan after 1995 is positive or negative. This may leads to:

Hypothesis 1: The stock price significantly reacts to the announcement of CBs issuance in Japan during the periods 1996 through 2002.

In the United States, it is often stated that small firms have greater informational asymmetries than large firms. Myers and Majluf (1984) suggest a greater stock price drop for small firm equity issues than for large firm equity issues. Kang and Stulz (1996) and de Roon and Veld (1998) indicate a less stock price increase against the CBs

issues for larger firms than for smaller firms. The greater volume of public information about larger firms should cause larger firms to have less degree price reactions to the announcements of CBs issuance. Additionally, stockholders may like high leverage ratio because the tax shield can magnify the expected earnings. Stein (1992) finds that the convertible bonds are mostly used by high-leveraged firms and predicts that the leverage ratio of CBs issuance firms has positive relationship with the abnormal returns during the announcement period. Moreover, the equity book value to equity market value BM ratio implicates the future growth opportunities for a firm. Stein (1992) finds that CBs tend to be used by the firms with high growth options. He predicts the growth options will have positive relationship with the stock abnormal return during the CBs issuance announcement period. Given that higher BM ratio means less growth options, a firm with higher BM ratio will have negative impact on the abnormal return. As a result, we expect the following hypothesis to hold.

Hypothesis 2: The stock reaction to the announcements of CBs should be negatively associated with firm size and BM ratio and positively associated with the leverage.

3. Data and Methodology

3.1 Data Description

We collect the information of convertible bond announcements from the Bloomberg Financial Markets database for the period of January 1, 1996 to December 31, 2002. The announcement date is the first date on which the announcement date appears in the Bloomberg database. Our sample consists of the firms listed on the Tokyo Stock Exchange (TSE). These firms issue the convertible bonds and the exact announcement of each convertible bond issue is publicly available. Totally there are 172 announcements, which is less than previous Japanese study, i.e., Kang and Stulz (1996) have 561 announcements for the period from Jan. 1, 1985 to May 31,1991. In 1996, the number of announcements accounts 59.3% of the total sample or 102 announcements. The number of sample announcements drops largely after year 1996. In 1997, 1998,

there are only 11 and 3 announcements. From 1999 to 2002, there are 21, 12, 10, and 13 announcements respectively.

The data of the market values of equity, book value, total debt and total asset before the announcement are used in this paper. These data are derived from the Datastream as well. They are the corresponding values at the last day of the year before each announcement date. From the Datastream, altogether 172 issuance announcements have the corresponding data of market values, and 142 issuance announcements have the corresponding data of total debts and total assets. The average firm size for the total sample is 240.04 billion yen, while the leverage ratio for the total sample is 0.34. The mean book-to-market ratio is 1.21. Comparing with the mean firm size of 346 billion yen and mean leverage ratio of 0.36 in Kang and Stulz's (1996, pp. 116) report, the firm size of the CBs issuance firms has dropped while the firm leverage ratio are similar. This comparison indicates that if there are some differences of the stock reaction in Japan between these two different periods, the firm size might be one of the reasons while the leverage ratio might not.

3.2 Event Study Methodology

The short-term stock reaction associated with the announcements of CBs issuance is computed by the EVENTUS 7.0, run on SAS program. The estimation period ranges from day –240 to day –31, a period of 210 days. The abnormal return is computed by the ordinary least square regression using the Datastream Japanese market index, which is a value-weighted stock market index that includes all the companies listed on the TSE. Abnormal returns are computed for the 172 samples for a period of 61 trading days (day –30 to day +30) around each announcement date. The differences between actual and expected daily returns for firm i are the abnormal returns during these 61 trading days. Then the abnormal returns will be averaged against the total number of announcements and cumulated over multiple sub-event windows. Thus the reaction of the stocks to the announcements could be tested as whether it happens gradually or over different days for different firms. The null hypothesis is that the abnormal return is zero.

Standard t-tests are used to examine whether the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) are significantly different from zero. The statistical inference is done using the standardized cross-sectional test (SCS Z), introduced by Boehmer, Musurnesi and Poulsen (1991), and the rank test, recommended by Corrado (1989).

The announcement date for the issuance of CBs is defined as day 0 for the event study. The event period is defined as day -30 to +30. The three-day event window used is the period day -1 through day +1 as indicated by Kang and Stulz (1996) and Kang et al. (1995). The AAR on day 0 and day +1 are important as they indicate the announcement impact on and one day after the event date. If the average abnormal return is significantly different from zero at the 5% level on day 0 or day +1, the market has reaction to the announcement of CBs issuance. If the average abnormal return is not significantly different from zero, the market has no reaction to the CBs issuance.

3.3 Cross-sectional Analysis

The cross-sectional analysis is conducted to examine the relationship between abnormal returns and characteristics of CBs issuance firms. It is used to test hypotheses 2. Three variables are examined in this paper: the size, leverage ratio, and book of the equity to the market value of the equity of the CBs issuance firm. The cross-sectional regression model is given as follows:

$$CAAR_i = \beta_0 + \beta_1 Size_i + \beta_2 Leverage_i + \beta_3 BM_i + \varepsilon_i$$

Where $CAAR_i$ is the cumulative average abnormal return for firm i from day –1 to day +1; $Size_i$ is the logarithm of the market value of equity for firm i; $Leverage_i$ is the ratio of total debt to total asset for firm i; BM_i is the ratio of book value of equity to market value to equity for firm i. Firm size is included to examine whether stock reaction to the CBs issuance announcement is related to firm size as in Kang and Stulz (1996) and de Roon and Veld (1998). The greater volume of public information about larger firms should cause larger firms to have less degree of stock price reactions to the

announcements of CBs (Myers and Majluf (1984)). Hence, if the stock market reaction is positive, the sign of β_1 should be negative; if the stock market reaction is negative, the sign of β_1 will be positive. Leverage ratio tests the financial leverage on corporate performance as in Kang and Stulz (1996). Stockholders may like high leverage ratio because the tax shield can magnify the expected earnings. Stein (1992) finds that the convertible bonds are mostly used by highly-leveraged firms and predicts that the leverage ratio of CBs issuance firms has positive relationship with the abnormal returns during the announcement period. Hence, the sign of β_2 should be positive. The equity book value to equity market value (BM) ratio implicates the future growth opportunities for a firm. Note, however, very low BM ratios may also indicate irrationally high stock prices. As shown in the data description mentioned above, the mean BM of the total sample is around 1, which indicates that the Japanese firms' stock prices are rational. BM variable is included to examine the relationship between the firm's growth opportunity and the stock price reaction. Stein (1992) finds that CBs tend to be used by the firms with high growth options. He predicts that the growth options will have positive relationship with the stock abnormal return during the CBs issuance announcement period. Given that higher BM ratio means less growth options, a firm with higher BM ratio will have negative impact on the abnormal return. Therefore the sign of β_3 should be negative.

4. Results

4.1. Short-Term Market Reaction To Announcements of CBs Issuance

The market model is employed to examine hypothesis 1: market abnormal returns to the announcement of CBs issuance for Japanese firms during period 1996 through 2002. Abnormal returns are calculated for 61 days during the event window. A cumulative average abnormal return is also calculated to test cumulative effect of information for the market reaction. The average abnormal return (AAR) is 0% with t-statistic of –0.911 on day 0 and –0.92% with t-statistic of –5.732 on day +1. The Rank Z-test is –0.630 on day 0 and –5.170 on day +1. The abnormal return is significant on day +1 but

not on day 0. Figure 1 shows AAR during the 61-day event window. The market abnormal return has a downward negative trend till day +1. After day +1, the negative trend goes up. The day +1 abnormal return is the largest of these 61 days, and it is significant at the 1% level. Possible reasons could be that the announcement of CBs in Japan was made after the close of the stock market and the first trading day after the announcement is day +1, or the news from Bloomberg comes earlier than the announcement.

[Insert Table 1 and Figure 1 around here]

The cumulative average abnormal returns (CAAR) for different sub-periods are shown in Table 1. The three-day (day –1 to day +1) period CAAR is –1.24% with a t-statistic of –5.593. The Rank Z-test is –4.389. Both tests are significant at 1% level. All the CAAR during the sub-periods expect day –1 to day 0 (significant at 5% level) have the significant t-statistics at 1% level. The results confirm hypothesis 1 that the stock market has significantly negative reaction to the announcement of CBs issuance in Japan during period 1996 through 2002. The negative effect conflicts with Kang and Stulz (1996) for domestic CBs market in Japan before 1991 and de Roon and Veld (1998) in Netherlands, but consistent with Dann and Mikkelson (1984), Eckbo (1986), and Mikkelson and Partch (1986) in U.S and Simon (1999) and Abhyankar and Dunning (1999) in U.K. The negative reaction results indicate that investors in Japan during period 1996 through 2002 considered the CBs issuance more like equity issuance. Equity issuance conveys unfavorable information as the theory of Myers and Majluf (1984). The CAAR for sub-period day –30 to day –2 is significantly negative at level 1%. This may imply that the market had forecasted the announcements or that the companies tended to issue convertible bonds after a period of negative stock price performance. This preannouncement result is similar to that of Kang and Stulz (1996).

What is the reason that the abnormal stock returns to the announcement of the CBs issuance during different period are totally different? In order to explore the answer, Figure 2 plots the Japanese market index from January 1, 1980 to November 5, 2003.

The market index went up from around 250 in 1985 to the peak 780 in 1990 and staggered up and down from 1996 to 2002. It is obvious that investors in Japan before 1991 were strongly optimistic about the equity market. The convertible bonds issuance provides the opportunity to convert the debt into equity in the future. So the market in Japan reacted positively to the announcement of CBs issuance before 1991. During the period from 1996 to 2002, the up and down stock market performance had shaken the optimism of the investors. The probability that the CBs issuance conveys unfavorable information caused the negative stock reaction. The results indicate the consistency to the "buble economy effect" hypothesis, which has been rejected by Kang and Stulz (1996).

[Insert Figure 2 around here]

4.2. Long-Term Stock Price Reaction After The CBs Issuance Announcements

The CAAR for sub-period day +1 to day +30 is also significantly negative at level 1%. Does this mean that the stock market under-react to the CBs issuance announcement after the bull market in Japan? In order to explore the full information that a CBs issuance could suggest, we examine the long-term stock price reaction after 3 months, 6 months, 1 year and 3 years after the CBs issuance announcements date. The Jensen alpha model (Jensen 1968, pp393) is used here to test the performance of those CBs issuance firms after the announcements:

[Insert Table 2 around here]

Table 2 presents the summary of the performance of the CBs issuance firms during the four periods after the announcements date. As can be seen in the table, during the period of 3 months after the CBs issuance announcement, average return of the CBs issuance firms is –0.00075 with a minimum value of –0.00978 and a maximum value of 0.00808. The corresponding average market return during the same period is –0.00026 with a minimum value of –0.00334 and maximum value of 0.00381. The mean return of the market is 0.00049 larger than that of the CBs issuance firms. The average Jensen alpha is –0.00052 with a minimum value of –0.00969 and a maximum value of 0.00482,

showing that on average the CBs issuance firms earn about 0.052% less per day than they should have earned given their level of systematic risk.

Analogically, the mean returns of the market are 0.00047, 0.00040 and 0.00035 larger than that of the CBs issuance firms respectively during the period of 6 months, 1 year and 3 years after the CBs issuance announcements. The average Jensen α are –0.00052, -0.00048 and –0.00039 during the 6-month, 1-year and 3-year periods, which means that on average the CBs issuance firms earn about 0.052%, 0.048% and 0.039% less per day than they should have earned given their level of systematic risks during these three periods. The results indicate that after the announcement of CBs issuance, firms perform poorer than the market and what they should have done given their level of systematic risks. The CBs issuance announcements are considered conveying unfavorable information of the firms and the stock price under-perform even during the long-term after the announcements of the CBs issuance. Coupling with the negative stock price reaction around the issuance announcement period, the Japanese issuance firms during the post-bull market under-reacted to the CBs issuance, which is consistent to the under-reaction hypothesis explained by the U.S. empirical results but unexplained by the study by Kang et al. (1999) using the data before 1988 in Japan.

4.3. Results For The Cross-Sectional Regression Analysis

The cross-sectional regression of the three-day (day –1 to +1) and two-day (day –1 to day 0) cumulative average abnormal returns (CAAR) are presented in Table 4. The R^2 and adjusted-R^2 for three-day CAAR regression is 0.101 and 0.082 respectively, which means the variables in three-day regression model can explain 8.2% variation of the CAAR. The R^2 and adjusted-R^2 for two-day CAAR regression is 0.075 and 0.055 respectively, which means the variables in two-day regression model can explain 5.5% variation of the CAAR. The F-statistic for the three-day and two-day CAAR is 5.201 (t-test at 1% level) and 3.723 (t-test at 5% level) respectively. The results indicate that although both models make sense for us to analyze the relationships between CAAR and the independent variables, the three-day cross-sectional regression model can better

explain the relationships than the two-day regression model.

[Insert Table 3 around here]

Firm size is statistically significant at the 1% level based on the T-test (2.777) for the three-day model and significant at 5% level (T-test of 2.388) for the two-day model. However, the negative sign of the coefficient of the size variable does not support the expectation in Hypothesis 2. It means that the larger the firm size, the greater the stock market reacts negatively. This result is inconsistent with the theory of Myers and Majluf (1984) in United States and the results by de Roon and Veld (1998) in Netherlands and Kang and Stulz (1996) in Japan using the data before 1991. Though the sign of the leverage coefficient is consistent with our expectation in Hypothesis 2, it is not statistically significant with the T-test of 0.057 for the three-day model and with T-test of 1.492 for the two-day model. This result shows that the negative abnormal return during the post-bull market period in Japan is not related to the leverage of the CBs issuance firms. The firm growth option is statistically significant at 1% level with the T-test of –3.133 for the three-day model and with the T-test of –3.583 for the two-day model. The sign of coefficient is negative, which conforms to the expectation in Hypothesis 2. Firms with low growth options (larger BM) have more negative stock reaction to the CBs issuance announcement in Japan during the period 1996 through 2002.

5. Summary

This paper examines the stock price reaction to the announcement of CBs issuance during the period 1996 through 2002 in Japan. First, the average abnormal return and cumulative abnormal returns around announcement date are examined using standard event study methodology. The average abnormal return is significantly negative on day +1 but not on day 0. The day +1 abnormal return is the largest during the 61 days event windows. The possible reason could be that the announcement of CBs in Japan was made after the close of the stock market and the first trading day after the announcement is day +1, or the news from Bloomberg comes earlier than the announcement. The

cumulative abnormal return during the three-day (day –1 to day +1) trading period is significantly negative. The negative effect is consistent to the studies in the U.S. market but conflicting with Kang and Stulz (1996) using the CBs data during period 1985 through 2002 in Japan. This result conforms to the "bubble economy effects" hypothesis, which has been rejected by Kang and Stulz (1996).

Second, the relationships between short-term stock abnormal return and the firm size, leverage and growth options of the CBs issuance firms are tested by the cross-sectional regression. The firm size is evidenced increasing the negative abnormal stock return, which is conflicting with the informational asymmetry theory of Myers and Majluf (1984). Growth options of issuance firms are found having positive relationship with the negative abnormal stock return, which conforms to the prediction of Stein (1992). However, the issuance firms' leverage ratio is unrelated with the abnormal return, which is not consistent with the prediction of Stein (1992).

In addition, the long-term performance after the CBs issuance is examined to see the full information the CBs issuance could convey. Stock prices of the CBs issuance firms are found under-performing the market index and what they should have done given their level of systematic risks. Coupling with the negative stock price reaction around the issuance announcement period, the Japanese issuance firms under-react to the CBs issuance, which is consistent with the under-reaction hypothesis explained by the U.S. empirical results but unexplained by Kang et al.'s (1999) study using the data before 1988 in Japan. The different results of the abnormal stock return to the CBs issuance announcements between the bull market and post-bull market in Japan have the implication that the same market may behave differently to external offerings during different time periods. Some more formal model should be used to further examine the long-term performance of the CBs issuance firm in Japan during the post-bull market in future studies.

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Table 1: Cumulative Average Abnormal Returns to CBs Announcement

Table 1 presents the cumulative average abnormal returns to convertible bond issuances announcement.

Day	CAAR	Pos:Neg	SCS Z	Rank Test
(-30, -2)	-3.28%	53:119	-5.19***	-2.62***
(-1, 0)	-0.32%	74:98	-2.30**	-1.72*
(-1, +1)	-1.24%	58:114	-5.59***	-4.39***
(0, +1)	-0.92%	60:112	-4.78***	-4.10***
(+1, +30)	-4.62%	50:122	-7.16***	-3.83***
(-30, 30)	-8.23%	39:133	-8.12***	-4.80***

*, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively, using a 2-tail test.

Table 2: Summary of The Performance of The CBs Issuance Firm During 3-month, 6-month, 1-year and 3-year Periods After The Announcements

This table presents the mean, medium, minimum and maximum cross-sectional value for the total firms in different periods. Number is the observations test in different periods. Pos:Neg is the positive to negative sign of the observations for different parameters. Mean(Ri) is the parameter for the mean return of each firm in different period after the announcement. Mean(Rm) is the parameter for the mean return of market in different period after the announcement. Alpha is value of the Jensen α for each firm after the announcement. The Jensen alpha model is used to compare the performance of the CBs issuance firms after 3-month, 6-month, 1-year and 3-year periods after announcements.

$$R_{jt} - R_{ft} = \alpha_j + \beta_j(R_{mt} - R_{ft}) + \varepsilon_{jt}$$

Where R_{jt} is return for security j at time t; R_{ft} is the risk free rate at time t; R_{mt} is the market return at time t; α_j is the non-zero constant for security j; β_j is the systematic risk for security j;

Parameter	Mean	Median	Minimum	Maximum	Number	Pos:Neg
Panel A: 3 Months Performance						
Mean(Ri)	-0.00075	-0.00071	-0.00978	0.00808	162	54:108
Mean(Rm)	-0.00026	-0.00055	-0.00334	0.00381	162	64:98
Alpha	-0.00052	-0.00039	-0.00969	0.00849	162	63:99
Panel B: 6 Months Performance						
Mean(Ri)	-0.00087	-0.00079	-0.00664	0.00689	162	40:122
Mean(Rm)	-0.00040	-0.00057	-0.00204	0.00284	162	30:132
Alpha	-0.00052	-0.00044	-0.00637	0.00482	162	49:113
Panel C: 1 Year Performance						
Mean(Ri)	-0.00073	-0.00071	-0.00412	0.00409	157	35:127
Mean(Rm)	-0.00033	-0.00034	-0.00158	0.00201	157	24:133
Alpha	-0.00048	-0.00038	-0.00332	0.00260	157	47:110
Panel D: 3 Years Performance						
Mean(Ri)	-0.00046	-0.00050	-0.00179	0.00175	138	28:110
Mean(Rm)	-0.00011	-0.00002	-0.00101	0.00045	138	68:70
Alpha	-0.00039	-0.00043	-0.00181	0.00172	138	38:100

Table 3 Cross-Sectional Regression Results

This table shows the cross-sectional variation of the cumulative average abnormal return (CAAR). The dependent variable is the cumulative average abnormal return (CAAR) during the three-day (day –1 to day +1) period and two-day (day –1 to day 0) respectively. Size is the natural logarithm of market value of equity. BM is the book value of equity to market value of equity. Leverage is the ratio of total debt to total asset. T- test is the statistical test for the significance of the variable coefficient. F is the statistical test for the significance of the regression model. Adjusted-R^2 are the proportion that the independent variables could explain the dependent variable.

	Window Event (-1, 0)			Window Event (-1, +1)	
	Coefs	T-stats		Coefs	T-stats
Intercept	0.051	2.39**		0.081	2.78***
Size	-0.004	-2.52**		-0.007	-2.96***
BM	-0.006	-3.58***		-0.010	-3.13***
Leverage	0.017	1.49		0.001	0.06
F-stats	5.20***			3.72**	
Adjusted R^2	0.08			0.06	

*, **, and *** represent the 90%, 95%, and 99% confidence level respectively.

Figure 1. The Average Abnormal Return (AAR) during The 61-day Event Window

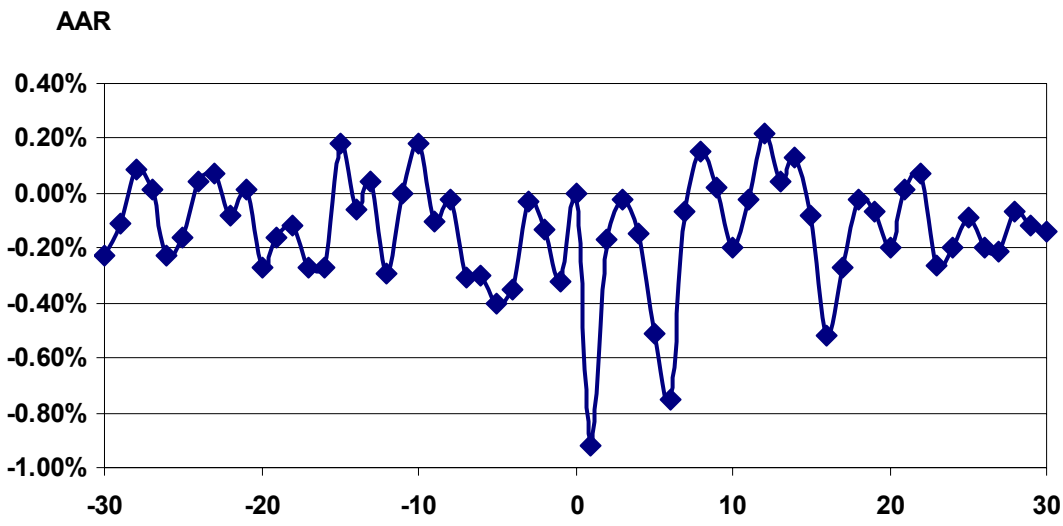

Figure 2: Market Index in Japan from January 1, 1980 to November 5, 2003