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The Effect of Disclosure for Issuing Convertible Bonds On Chinese Firms Listed on the Shanghai and Shenzhen Stock Market

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Abstract
Convertible bonds have become an important financing vehicle in many countries (i.e., United States, Europe, and Japan) and in local financial markets because they have both stock profitability and bond stability. Many listed and unlisted enterprises have issued convertible bonds inside and outside China. Accordingly, related laws and regulations have been legislated since convertible bonds were first issued in China in August 1991. This study conducts an empirical analysis to understand whether previous theories on the announcement effect of convertible bond issuance in foreign countries are still effective in the Chinese capital market. The cumulative average residual of the stock prices of 83 sampled enterprises, which issued convertible bonds among those listed on Chinese stock exchange from 2002 to the end of 2013, was measured in a case study. The analysis shows the following: First, the announcement effect of convertible bond issuance in China was observed as a significant (+) value to stock price. The cumulative average residual of the whole sample period (i.e., (-1, 1), (-5, 1), (-30, 1)) showed a significant (+) value at 1%. Second, an analysis was conducted on whether significant differences were present in the average residual among small samples that were classified according to issuing enterprises' legal characteristics (i.e., state-owned enterprise and private enterprise), systematic characteristics (i.e., before and after stock share division reform), and market characteristics (i.e., Shanghai Stock Exchange and Shenzhen Stock Exchange). Results showed that the announcement effect of convertible bond issuance was found more in state-owned enterprises than in private ones. The stock price cumulative average residual had a more significant (+) value after the stock share division reform than before it. No notable difference was found between stock exchanges. Third, in the regression analysis that took stock price cumulative average residual as a dependent variable, enterprises' growth perspective positively and significantly influenced the announcement of convertible bond issue. That is, as enterprises' growth perspective is high, the possibility of increasing finances by issuing convertible bonds is greater and can positively influence stock price. Moreover, the stock price cumulative average residual was not significantly influenced by the size of enterprises, debt ratio, propensity to dividend, issuing size, and relative issuing size. Therefore, the significance of convertible bond issuance increases with the improvement of the system. Problems that may arise at the time of private enterprises' convertible bond issuance are decreased, and even more high-tech growing enterprises are encouraged to issue convertible bond.

Key Words: Convertible Bonds, Announcement Effect, Event Study, CAAR[1]

Introduction

Convertible bonds are a type of bond in which the holder has the right to convert them into a stock of equal value in the issuing company under specified conditions. The holder can obtain interest when the bonds are corporate bonds, whereas the holder can receive dividends when the bonds are converted into stocks (Mook-Won Jung and Myung-Jun Cha, 2009). Convertible bonds guarantee both profitability of stock and safety of bond, and they enable the issuing company to increase capital easily and the investor to secure fixed income from interest, convert income into stocks, and acquire income from dividends while exercising the rights of a stockholder. Therefore, convertible bonds are an attractive compound type of financial derivative and have continuously been popular since they appeared in the financial market.

The first convertible bond was issued by the New York and Erie Railroad in 1843. The bond has a history of over 170 years. The contents of convertible bonds have become more structured since the 1970s with the introduction of new articles such as “call option,” which enables the issuing company to recall convertible bonds that have not been converted with previously set conditions and prices, and “put option,” which enables the buyer to sell back bonds on previously set conditions and at previously set prices emerge.

The convertible bond market has grown rapidly for three decades. Convertible bonds have taken up an important part of financial market in many countries or regions, such as the United States, Europe, and Japan (Yi-Ping Wang, 2005).

In China, Hainan New Energy, an unlisted firm, issued its first convertible bond in August 1991. China Baoan, a listed firm, issued its convertible bond in the Chinese stock market in 1992. However, convertible bonds in those days were mainly issued by unlisted firms or in foreign markets. Moreover, the number of cases was small, and finding related sources was difficult. Related laws and regulations were made as many unlisted and listed firms had issued convertible bonds at that

[1] "This paper is developed from the master’s thesis of Zhang Xue Dong."

time. Systematic studies on the procedure of deciding prices of convertible bonds, motive of issuing them, effect of announcement of convertible bond issue, investment strategy, and laws and regulations have been found in other countries (i.e., the United States). The number of research on convertible bonds has increased in China in recent years.

Earlier studies on convertible bonds in China (Yao-Liang Qi, 1994; Zhuo Yao, 1995) have dealt with basic concepts and characteristics of convertible bonds and the basic information on domestic and foreign convertible bond markets. Empirical studies on convertible bonds have also increased as domestic convertible bonds developed. Xi-Quan Shi and Li-Xi Liu (1999) and Dian-Chun Jiang and Xin Zhang (2002) examined the price decision of convertible bonds, and Hong-Ping Zhao and Zi-Qiang Zhao (2002) and Yi-Ping Wang and Liang He (2005) studied the motive of issuing convertible bonds. Studies on public notice effect of issuing convertible bond have also been conducted (Ke Tian and Lan-Jun Lao, 2004; Kang-De Tang, Xin-Ping Xia, and Yi-Xia Wang, 2004; E-Ping Liu, 2005).

Research has attempted to analyze the public notice effect of issuing convertible bonds. The research objects are the convertible bonds of firms listed in the Shanghai Stock Exchange and the Shenzhen Stock Exchange from 2002, when the laws and rules on convertible bonds were established and firms began to issue convertible bonds until the end of 2013.

The present study aims to examine the following:

First, it aims to analyze the influence of the public notice effect of issuing convertible bonds on cumulative average residual. The event study method, in which the event day is the date when the public notice on convertible bonds is released for the first time, is used. The effect of public notice is analyzed. Moreover, firms are classified into different categories according to their legal characteristics (state-owned or private), institutional characteristics (before and after equity division), and market characteristics (Shanghai or Shenzhen). Whether any meaningful differences in cumulative average residual are found among firms in different categories is examined.

Second, the effect of public notice of convertible bond issuance on cumulative average residual is analyzed by regression analysis.

2. Development of convertible bonds in China and the current situation

2.1 Background of the development of convertible bonds in China and its developmental process

China adopted a socialist economic system called reform and opening up in late 1978 and started reforming its capital market to make an economically rich country while practicing communist ideals. The reform of its financial market led the Chinese economic and social mechanism and played an important role in making the Chinese financial market market-oriented, rule-bound, and internationalized. However, the regulations on bank loans and raising capital from stock issuance became stricter and more complicated than before because of the reform and development of capital market. Moreover, Chinese firms needed a new way of raising capital (Wei Yang, 2010).

The Chinese financial market pursued liberalization and internalization, and convertible bonds became another important means of raising money. Convertible bonds were a new financial good that had the characteristics of both bond and stock. They were first issued in China in August 1991 by an unlisted firm called Hainan New Energy. China Baoan then openly issued convertible bonds in the Chinese stock market. Related laws and rules were then established as an increasing number of listed and unlisted firms had issued convertible bonds in the domestic and foreign markets.

Unlike the cases of other countries, Chinese financial capital market is combination of planned economy and market economy, issuance of all the financial products are closely related with related laws and rules. With the emergence of convertible bond-related laws and rules, the Chinese convertible bond has gone through the following four periods.

(1) Search period (1991–1997)

Hainan New Energy first issued convertible bonds in August 1991, and many listed firms began to use convertible bonds ever since to raise the needed capital. Many companies (i.e., China Baoan, Chendu Gongyi Metallurgy, China Textile Machinery, and CSG Holding) issued convertible bonds in domestic and foreign markets in this period. Although the issuance, trade, and conversion of convertible bonds of firms resulted in conflicting outcomes for various reasons, such outcomes provided various experiences to develop convertible bonds. The Securities Commission of the State Council (i.e., the current China Securities Regulatory Commission) suggested various laws and rules after 1997 to promote the issuance of convertible bonds, and these suggestions led to the institutional support on the issuance of convertible bonds.

(2) Enforcement period (1998–2000)

The China Securities Regulatory Commission established the Temporary Enforcement Regulations of Convertible Bond in March 1997. The regulations focused on the stipulations on issuance, trade, conversion, and redemption of convertible bonds. The regulation (i.e., Article 2) enabled national core firms that could not be listed to issue convertible bonds.

Listed firms began to issue convertible bonds, and the holders of these bonds tended to convert them as the bonds entered the conversion period too soon. The State Council experimentally issued convertible bonds from some of the 500 unlisted state-owned firms, and the total issuance scale was 4.7 billion yuan. Convertible bonds issued by state-owned firms were not the type that could be converted to stocks but were required to be converted. This period was unlike the case in the enforcement period; convertible bonds were issued following the laws and rules on convertible bonds established for the first time in Chinese history.

(3) Development period (2001–2002)

The China Securities Regulatory Commission established the Issue of Convertible Bonds by Listed Companies Implementing Procedures in April 2001. According to the procedures, the entities that would like to issue convertible bonds should be listed companies. Some rules on the issuance and articles on early redemption were added. The issuance period was three to five years, the debt ratio of the issuing

company should not exceed 70%, and the scale of issued bonds should be over 100 million yuan after issuing the convertible bonds. The rules of redemption consist of "conditional early redemption" and "unconditional redemption." The laws and rules made in this period stimulated the development of convertible bonds. The government guaranteed the issuance of convertible bonds and secured the market. Many listed companies in China began to use convertible bonds to raise funds.

(4) High tide period (2003–present)

The China Securities Regulatory Commission promulgated in January 2002 the notice about the issuance of convertible corporate bonds by listed companies doing well. The notice stipulated that the listed companies that had issued convertible bonds could not change the use of capital raised by convertible bonds. Moreover, the decision should be approved by a general meeting of stockholders if they wanted to change. Furthermore, the notice divided the rules on the issuance of convertible bonds into more detailed categories and loosened the conditions on the scale of issuance. This loosening of conditions triggered the "zeal for convertible bonds" in China. The number and scale of convertible bonds of listed companies increased rapidly. About 16 companies issued such bonds at the amount of 18.55 billion yuan in 2003 and 14 companies at the amount of 20.93 billion yuan in 2004.

However, the reform of non-tradable shares in 2005 made the convertible bond market sluggish. The Chinese stock market had a "split-share structure" when China opened the stock exchange. The split-share structure divides the stocks issued by companies into two types, circulating stocks and non-circulating stocks, and enables only a part of the stocks of listed companies to be traded. The rest of the stocks cannot be traded. The structure is designed to protect the right of stockholders possessing stocks of state-owned and other corporations. The reform aimed to revise the system. The government announced in April 2005 the reform to change all non-tradable stocks to tradable ones because of the conflict of interest between holders of circulating stocks and holders of non-circulating stocks, vulnerable corporate governance, unstable stock prices, and difficult evaluation of relative values of companies. The reform was experimentally applied to 48 companies initially. The reform expanded by August 2005 to all listed companies. About 97% of all companies in the A stock market completed the Reform of Non-tradable Shares by 2007 (Chi-Song Lee, 2014).

The China Securities Regulatory Commission promulgated administrative measures for the issuance of securities by listed companies in June 2006. The measures relaxed the conditions on the issuance of stocks and bonds and on the financial situations of issuing companies. Moreover, the measures stipulated that a company should obtain approval from 2/3 or over of the stockholders and that the total balance of corporate bonds should not exceed 40% of the net asset of the company (i.e., the measures reduced the requirement from 80% to 40%) if the company wanted to change its conversion price to protect the interest of the middle and small stockholders. The issuance period of convertible bonds was changed to one to six years, lowered the limits on issuance of bonds, and simplified the investigative procedure on the issuance of bonds.

The development process of the issuance of convertible bonds in China per period is summarized in Table 1.

period	year	Issuing number	Company name (issuing size, one hundred million yuan)	Issuing size (one hundred million yuan)	Note
(1) Search period (1991~ 1997)	1991	2	HAINAN NEW ENERGY (0.3), CHENGDU GONGYI METALLURGY (0.59)	0.89	*unlisted company
	1992	1	CHINA BAOAN(5)	5	*failure in converting bonds into stocks
(2)Enforcement period (1998~ 2000)	1998	2	NANNING CHEMICAL INDUSTRY(1.5), WUJIANG SILK(2)	3.5	*unlisted company
	1999	1	SINOPEC MAOMING REFINING&CHEMICAL(15)	15	*unlisted company
	2000	2	SHANGHAI INTERNATIONAL AIRPORT (13.5), ANGANG NEW STEEL(15)	28.5	
(3)Development period (2001~ 2002)	2002	5	NANJING TANKER CORPORATION (3.2), WUJIANG SILK(8), CHINA VANKE(15), BEIJING YANJING BREWERY(7), JIANGSU SUNSHINE(8.3)	41.5	
(4)High tide period (2003~present)	2003	16	CHINA MINSHENG BANKING CORP(40), YUNNAN YUNTIANHUA (4.1), XINING SPECIAL STEEL(4.9), YOUNGOR GROUP (11.9), SHANGHAI FOSUN PHARMACEUTICAL GROUP(9.5), GUANGXI GUIGUAN ELECTRIC POWER(8), AN HUI SHAN YING PAPER INDUSTRY(2.5), HUADIAN ENERGY(8), GD POWER DEVELOPMENT(20), HANDAN IRON &STEEL(20), SHENZHEN OVERSEAS CHINESE TOWN(4), PANZHIHUA NEW STEEL &VANADIUM(16), TONGLING NONFERROUS METALS(7.6), ANHUI BBCA BIOCHEMICAL(5), JIANGSU HUAXICUN(4), BEIJING SHOUGANG(20)	185.5	*CHINA MINSHENG BANKING CORP
	2004	12	INNER MONGOLIA BAOTOU STEEL UNION(18), CHINA MERCHANTS BANK(65), BEIJING GEHUA CATV NETWORK(12.5), SHANDONG NANSHAN ALUMINIUM(8.83),YINGKOU PORT LIABILITY (7), ANHUI JIANGHUAI AUTOMOBILE (8.8), TIANJIN CAPITAL ENVIRONMENTAL PROTECTION GROUP(12), SHANDONG CHENMING PAPER INDUSTRY(20), SHANDONG HAIHUA (10), HUNAN VALIN STEEL (20), HEBEI JINNIU ENERGY RESOURCES(7), CHINA VANKE(19.9)	209.03	*CHINA MERCHANTS BANK
	2006	7	SHANGHAI ELECTRIC POWER(10), ZHEJIANG GOLDEN EAGLE(3.2), ZHUHAI HUAFA INDUSTRIAL(4.3), CANAL	43.87	

			SCIENTIFIC& TECHNOLOGICAL(4.3), LIUZHOU CHEMICAL INDUSTRY(3.07), TIANJIN TIANYAO PHARMACEUTICAL(3.9), CHINA MERCHANTS PROPERTY DEVELOPMENT (15.1)		
	2007	10	CHINA SHIPPING DEVELOPMENT(20), JIANGSU CHENGXING PHOSPH-HEMICALS(4.4), GUIZHOU CHITIANHUA(4.5), AN HUI SHAN YING PAPER INDUSTRY(4.7), HEILONGJIANG AGRICULTURE(15), ANHUI HENGYUAN COAL INDUSTRY AND ELECTRICITY POWER(4), HEBEI IRON AND STEEL(3), SGIS SONGSHAN(15.38), YUNNAN TIN(6.5), GREATOO INC (2)	79.48	
	2008	5	SHANDONG NANSHAN ALUMINIUM(28), XINYU IRON& STEEL(27.6), GUANGXI WUZHOU COMMUNICATIONS(5.4), GUANGXI LIUGONG MACHINERY(8), HAIMA AUTOMOBILE GROUP(8.2)	77.2	
	2009	6	XIAMEN XGMA MACHINERY(6), SICHUAN ATLANTIC WELDING CONSUMABLE(2.65), ZHEJIANG LONGSHENG GROUP(12.5), SHANDONG BOHUI PAPER INDUSTRIAL(9.75), BEIJING WANGFUJING DEPARTMENT STORE GROUP (8.21), ADVANCED TECHNOLOGY& MATERIALS(7.5)	46.61	
	2010	8	SHUANGLIANG ECO-ENEYGY SYSTEMS(7.2), BEIJING GEHUA CATV NETWORK(16), *BANK OF CHINA(400), *INDUSTRIAL AND COMMERCIAL BANK OF CHINA(250), SICHUAN MEIFENG CHEMICAL INDUSTRY(65), TONGLING NONFERROUS METALS(20), BEIJING YANJING BREWERY(11.3), GUANGDONG TAPAI GROUP(6.3)	775.8	*BANK OF CHINA *INDUSTRIAL AND COMMERCIAL BANK OF CHINA
	2011	9	NINGBO MARINE(7.2), SDIC POWER HOLDINGS(34), *SINOPEC GROUP(230), SICHUAN CHUANTOU ENERGY STOCK (21), CHINA SHIPPING DEVELOPMENT(39.5), GD POWER DEVELOPMENT(55), SHENZHEN AIRPORT(20), ANHUI ZHONGDING SEALING PARTS(3), GREATOO INC (3.5)	413.2	*SINOPEC GROUP (issuing convertible bonds on a large scale)
	2012	5	MUDANJIANG HENGFENG PAPER(4.5), SHANDONG NANSHAN ALUMINIUM(60), BEIJING TONGRENTANG(12.05), CITIC OFFSHORE HELICOPTER (6.5), CHINA SHIPBUILDING INDUSTRY(80.5)	163.55	
	2013	8	*CHINA MINSHENG BANKING CORP(200), SHANGHAI TUNNEL ENGINEERING(26), *PINGAN INSURANCE GROUP(260), SHENZHEN GAS CORPORATION(16), XCMG CONSTRUCTION MACHINERY(25), TAIER HEAVY INDUSTRY(3.2), *DHC SOFTWARE(10), TIANSHUI HUATIAN TECHNOLOGY(4.61)	544.81	*CHINA MINSHENG BANKING CORP *PINGAN INSURANCE GROUP *DHC SOFTWARE (after issuing convertible bonds, traded only 21days and stop trading stocks because of important event(M&A))
Total		99		2633.44	

** (3)Development period(2001~2002) and (4)High tide period (2003~present) shows the sum of issuing convertible bonds in Shanghai and Shenzhen Stock Exchange*
source: data acquired in guide book for subscribing convertible bonds in Shanghai and Shenzhen Stock Exchange

2.2 Conditions for issuing convertible bonds in China

Convertible bonds are one of the important means by which listed companies in China raise capital given that convertible bonds have the characteristics of both stock and bond. The Chinese government demands stricter conditions from companies on the issuance of convertible bonds than on stocks. The laws and rules promulgated by the China Securities Regulatory Commission (i.e., the Temporary Enforcement Regulations of Convertible Bond and the Issue of Convertible Bonds by Listed Companies Implementing Procedures) indicate that listed companies of China should satisfy the following requirements:

(1) Profit making capacity should be demonstrated for three consecutive years. The rate of return on equity should be 10% on average. However, the rate is relatively lower (i.e., over 7%) for companies related to energy, raw materials, and infrastructure.
(2) The debt ratio should not exceed 70% after the issuance of convertible bonds.
(3) The total balance of corporate bonds should not exceed 40% of the net asset of the company.
(4) The raised capital should be invested corresponding to national industrial policies.
(5) The interest rate of convertible bonds should not exceed the average interest determined by the State Council.
(6) The total amount of convertible bonds issued should be over 100 million yuan.
(7) Listed companies should abide by other conditions prescribed by the State Council.

Moreover, the China Securities Regulatory Commission refuses to receive applications for the issuance of convertible bonds of the company if an issuing company comes under one or more of the following conditions.

(1) The company has committed a serious illegal act in the past three years.
(2) The company has recently changed its use of capital raised by issuing convertible bonds.
(3) The company falsely entered, fabricated, or omitted important financial information in the document.
(4) The management of the company managed improperly and caused serious damage.
(5) The company has not grown properly and has a big safety risk.

(6) The China Securities Regulatory Commission judges that the company greatly harms the interests of investors.

The above requirements prove that the Chinese authorities are strict in allowing companies to issue convertible bonds to make sure that the companies are "excellent companies" that manage profitable businesses and have a sound capital structure. The convertible bonds of China can be guaranteed to be of good quality, and investment risk becomes low by demanding such requirements.

3. Literature Review and Hypotheses

3.1 Literature Review

Studies on the public notice on the issuance of convertible bonds by Ke Tian and Lan-Jun Lao (2004); Kang-De Tang, Xin-Ping Xia, and Yi-Xia Wang (2004); and Ru-Yan Yang, Hui Meng, and Feng Xu, (2006) did not find any significant effect. However, studies by Hui-Yu Wang and Xin-Ping Xia (2004) and Cheng-Yan Liu and Qi-Wen Wang (2005) found positive effects. Studies by E-Ping Liu (2005); Yi Luo, Guo-Sheng Wang, and Zong-Cheng Zhang (2006); Wei Yang (2010); and Hui Mou, Li-Yan Han, Duo Xie, and Zhi-An Chen (2006) found negative (-) effects.

Studies by Wei Chen and Hui Tao (2011) and Peng Zhang (2012) analyzed the effect of the public notice on the issuance of convertible bonds before and after the Reform of Non-tradable Shares in 2005.

Ke Tian and Lan-Jun Lao (2004) analyzed 20 convertible bonds issued in the Chinese market until April 29, 2004. They found that the average excess return rate was −0.98% and that the cumulative average residual during the whole event period was −0.58% when companies announced the issuance of their convertible bonds; however, the values were not statistically significant. They argued that the strict regulation of the Chinese government on companies that wanted to issue convertible bonds did not encourage large-sized, well-managed, and fast-growing companies to issue convertible bonds. Moreover, they found that investors did not understand well the effect of issuance of convertible bonds on firm value because China has a short history of convertible bonds. Therefore, the effect of public notice of such issuance is unclear unlike in the case of foreign markets.

Kang-De Tang, Xin-Ping Xia, and Yi-Xia Wang (2004) analyzed the effect of public notice of the issuance of convertible bonds using the 21 convertible bonds issued in the Shanghai Stock Exchange and the Shenzhen Stock Exchange from 2000 to 2003. They found that the average excess return rate on the day of public notice was −0.66%, the cumulative average residual during the event period (−1, 0) was −0.14%, and the cumulative average residual during the whole event period (−30, 30) was 1.53%; however, all the percentages were insignificant. The researchers explained that the public notice of convertible bond issuance had no negative effects on the stock prices of companies issuing such bonds in China. Regression analysis did not reveal any meaningful relations among cumulative average residual and company size, amount of bonds issued, and debt ratio. They argued that the existing theories in foreign countries on the effect of public notice of convertible bond issuance (i.e., information asymmetry theory, redistribution of wealth theory, and signaling theory) did not apply to the cases in China. They added that the public notice itself did not have a significant effect on the market because information on the issuance of convertible bonds by specific companies had already been leaked to and absorbed by the stock market through the related news of the meetings of board of directors and general meetings of stockholders.

Ru-Yan Yang, Hui Meng, and Feng Xu (2006) analyzed 31 convertible bonds issued until the end of 2004. They found that public notice did not affect stock prices on the date of such notice and that all cumulative average residuals (CARs) during the event periods (−15, 15), (−7, 7), (−5, 5), and (−1, 1) were insignificant. The authors divided and analyzed the convertible bonds of the selected companies into bond and stock characteristics. The CARs of the stock prices of firms with convertible bonds that have bond characteristics during the event periods (−15, 15), (−7, 7), and (−5, 5) were all negative (−) values significant at the 1% level. Those for firms with convertible bonds that have stock characteristics during the event periods (−15, 15), (−7, 7), and (−5, 5) were all positive (+) values significant at the 1% level. The authors explained that the outcomes were insignificant because of the mutual offsetting of the two effects. This result supports the signaling hypothesis that assumes that the effect of the public notice of convertible bond issuance differs depending on the purpose of raising capital. Moreover, the regression analysis showed that growth potentials and debt ratio had a significant positive effect on CARs and supported the leverage hypothesis of Ross (1977).

Hui-Yu Wang and Xin-Ping Xia (2004) analyzed 20 convertible bonds issued in the Chinese market from January 1992 to December 2003. They found that the residuals continue to increase from the day of public notice and afterwards display positive (+) CARs, although the CARs of selected companies are negative (-). Thus, the researchers explained that the public notice of convertible bond issuance has positive effects on the stock prices of related companies. Moreover, investors have optimistic attitudes on the issuance of convertible bonds and are willing to invest on them. The regression analysis showed the positive relationships between CARs and company size on one hand and between the amount of convertible bonds issued and information favorable to the company on the other hand when the issuance of convertible bonds is announced. These results support the signaling hypothesis, which assumes that companies issuing convertible bonds send information favorable to firms by announcing company size, amount of convertible bonds issued, and public notice of important events during the public notice period.

Cheng-Yan Liu and Qi-Wen Wang (2005) analyzed 20 convertible bonds issued in the Chinese market from April 2001 to December 2003. The analysis revealed that CARs became significantly positive one day after the announcement, although no significant CARs were found before and on the day of the announcement of issuance. CARs were significantly positive during the event periods (1, 5) and (1, 20). This finding shows that the public notice of issuance of convertible bonds in the Chinese market has positive effects on the stock prices of firms. Moreover, the effect of public

notice is greater for companies with a larger ratio of circulating stocks than for those with a smaller ratio. The results show that investors send negative messages to the market for companies with a large ratio of non-circulating stocks. Investors issue convertible bonds to encourage large stockholders (i.e., the state or corporations) to lower stock prices. Regression analysis showed that the CARs of selected companies have a significantly negative relationship with company size and a significantly positive relationship with debt ratio, thus supporting the leverage hypothesis of Ross (1977). However, no significant relationships were found between CARs and the relative amount of issued bonds and between CARs and Tobin's Q.

E-Ping Liu (2005) selected and analyzed 88 listed companies in China that announced the issuance of convertible bonds from April 2001 to December 2003. The analysis revealed that CARs of all the companies during the event periods (0, 1) and (−5, 5) have significant and negative values. The values are insignificant in other event periods. Regression analysis showed that CARs of selected companies have a significant and negative relationship with a dilute variable; that is, convertible bonds issued in the Chinese market are highly likely to be converted into stocks. Moreover, converted bonds increase the amount of stock supply and lead the stock prices to decline. Such bonds do not have a significant relationship with company size, relative amount of issued bonds, and Tobin's Q, although CARs have a significant and negative relationship with debt ratio.

Yi Luo, Guo-Sheng Wang, and Zong-Cheng Zhang (2006) analyzed 28 listed companies in China that announced the issuance of convertible bonds from January 1, 2000 to August 31, 2004. The analysis showed that the CARs of these firms are positive during the event period (−5, 5) but are negative during the event periods (−1, 0), (−10, 10), and (−20, 20). The result is consistent with the signaling hypothesis (Hui-Yu Wang and Xin-Ping Xia, 2004) that 18 out of 28 companies announced information that is favorable to these companies before and after the public notice of issuance of convertible bonds.

Their regression analysis showed that CARs have a significant and positive relationship with company size and debt ratio. The relationship between the two variables is positive and can be explained in the specific structure of stocks of listed companies in China. Medium and small shareholders have difficulty in participating in the decision-making process of listed companies in China. A higher debt ratio corresponds to a stronger influence of creditors on large shareholders and a more rational capital structure. Therefore, large shareholders have difficulty invading the interests of medium and small shareholders. Moreover, a company is representative of each area, and an increase in debt ratio gives good signals to the market, given that the government gives strict requirements to firms when issuing convertible bonds.

Wei Yang (2010) analyzed 78 listed companies in China that announced the issuance of convertible bonds from April 2001 to June 30, 2009. The analysis revealed that the CARs of these firms have significant and negative values during the event period (−1, 1). The cases were categorized into smaller sets of countries depending on whether an important public notice was made on the day that could affect the stock price of the day. The CARs of companies that did not announce information favorable to the companies during the public notice period recorded significant and negative values during the event period (−1, 1). Conversely, the companies that announced information favorable to the companies during the period recorded significant and negative values during the event periods (−1, 1) and (−30, 30). Given that the companies announce information favorable to them (i.e., the case of public notice of issuance of convertible bonds of listed companies), the negative effect of convertible bonds is cancelled (Xue-Fang Zhang, 2008).

Moreover, the analysis of average excess return rates of the cases, which were categorized into different groups based on before and after the Reform of Non-tradable Shares, showed that the average excess return rate of the date of public notice after the Reform of Non-tradable Shares was adopted is insignificant (−0.69%). Conversely, the average excess return rate of the date of public notice before the Reform of Non-tradable Shares was adopted is significant and negative (−1.16%). The effect of public notice of issuing convertible bonds became weaker after the reform was adopted because the reform remedied the conflicts between large and small shareholders.

Hui Mou, Li-Yan Han, Duo Xie, and Zhi-An Chen (2006) analyzed 33 convertible bonds issued from 1992 to 2004. The analysis showed that the average excess return rate on the date of public notice is significant at the 1% level and negative (−0.7%). That is, the issuance of convertible bonds has a negative effect on companies. Information between company managers and investors (M & M, 1984) is asymmetric. Therefore, the issuance of such bonds works as unfavorable information to investors who accept the issuance that the company values have been excessively evaluated, thus negatively affecting stock prices. Regression analysis showed that public notice has a positive effect on debt ratio and stock price.

Wei Chen and Hui Tao (2011) analyzed 69 convertible bonds issued in the Chinese market from April 2001 to October 2009. The researchers divided the cases into two groups: the group before the Reform of Non-tradable Shares was adopted and the group after the reform was adopted. The analysis showed that the public notice of the issuance of convertible bonds has a negative effect on stock prices before the reform was adopted and a positive effect on stock prices after the reform. Regression analysis showed that CARs before the reform have a negative effect on company size, comparative amount of issued bonds, growth potential, and credit ratings, and a significant and negative effect on company size. Therefore, the Reform of Non-tradable Shares actively promotes the development of convertible bonds in China.

Peng Zhang (2012) analyzed 64 convertible bonds issued in the Chinese market from April 2001 to October 2011. The results show that CARs are insignificant before the Reform of Non-tradable Shares was adopted. However, CARs for 30 days before the date of public notice (-30, -1) have a significant and positive effect (9.26%) on stock prices after the reform was adopted because of the improvement in the conflicts of interests between large and small stockholders. Regression analysis demonstrated a significant and negative relationship between the CARs and dilute of circulating stocks

because investors convert their bonds to stocks if future stock prices are higher than conversion prices. This conversion increases the supply amount and lowers stock prices. Table 2 summarizes the literature on announcement effect of issuing convertible bonds in china

[Table 2] Literature on Announcement Effect of Issuing Convertible Bonds in China

Literature	sample	observations	Empirical Results(announcement effect)
Ke Tian; Lan-Jun Lao(2004)	~2004. April 30th	20	did not find any significant effect
Kang-De Tang; Xin-Ping Xia; Yi-Xia Wang(2004)	2000~2003	21	did not find any significant effect
Ru-Yan Yang; Hui Meng; Feng Xu(2006)	~2004	31	did not find any significant effect
Hui-Yu Wang; Xin-Ping Xia(2004)	1992. January ~2003. December	20	positive(+)
Cheng-Yan Liu Qi-Wen Wang(2005)	2001. April ~2003. December	20	positive(+)
E-Ping Liu(2005)	2001. April ~2003. December	88	negative(-)
Yi Luo; Guo-Sheng Wang; Zong-Cheng Zhang(2006)	2000. January 1 ~ 2004. August 31	28	negative(-)
Wei Yang(2010)	2001. April ~ 2009.June	78	negative(-)
Hui Mou; Li-Yan Han; Duo Xie; Zhi-An Chen(2006)	1992 ~ 2004	33	negative(-)
Wei Chen; Hui Tao(2011)	2001. April ~ 2008. October	69	reform of non-tradable shares (1) before: negative(-) (2) after: positive(+)
Peng Zhang(2012)	2001 ~ 2011	64	reform of non-tradable shares (1) before: positive(+) (2) after: positive(+)

3.2 Hypotheses

Various empirical analyses have been conducted on the effect of public notice of convertible bond issuance. Ke Tian and Lan-Jun Lao (2004) argued that the effect of public notice is not clear because China has a short history of issuing convertible bonds, the financial market does not fully understand the new means of raising capital, and issuing such bonds affects company values.

Kang-De Tang, Xin-Ping Xia, and Yi-Xia Wang (2004) found no significant relationship between public notice and stock prices because information on issuing such bonds has already leaked to and been absorbed by the market through news on the meeting of board of directors and general meeting of stockholders.

Ru-Yan Yang, Hui Meng, and Feng Xu (2006) demonstrated that the insignificant effect of public notice on stock prices is due to the offsetting effects of the negative effects of the bond and stock characteristics of convertible bonds. Hui-Yu Wang and Xin-Ping Xia (2004) argued that the information favorable to companies (i.e., the issuance of convertible bonds) sent to the market makes investors have optimistic attitudes on the issuance of convertible bonds and leaves a positive effect on stock prices.

Cheng-Yan Liu and Qi-Wen Wang (2005) found that the public notice of issuing convertible bonds for firms with a large ratio of circulating stocks has a significant and positive effect on stock prices. E-Ping Liu (2005) and Peng Zhang (2012) used the dilute variable to prove that convertible bonds issued in the Chinese capital market increase the amount of stocks supplied and decreases the stock prices if they are converted to stocks. Wei Yang (2010), Wei Chen and Hui Tao (2011), and Peng Zhang (2012) argued that public notice of issuing convertible bonds after the reform has a positive effect on stock prices because the Reform of Non-tradable Shares resolved the conflicts between circulating and non-circulating stocks.

Large-sized, well-managed, and fast-growing firms can issue convertible bonds because the government applies strict rules on what companies can issue the convertible bonds. Therefore, the issuance of convertible bonds provides a positive signal to the market (Ke Tian and Lan-Jun Lao, 2004; Hui-Yu Wang and Xin-Ping Xia, 2004; Yi Luo, Guo-Sheng Wang and Zong-Cheng Zhang, 2006).

The present study sets the following hypotheses based on the research findings.

Hypothesis 1: The public notice of the issuance of convertible bonds may have a positive (+) effect on cumulative average residual.

Companies issuing convertible bonds can be classified into "state-owned companies" and "private companies" based on legal characteristics. "State-owned company" (國有企業) has been used since 1992. A "state-managed company" (國營企業) is a company the state owns and manages. A state-owned company is owned by the state but is managed by the company itself.

State-owned companies monopolize major industries in the following areas: national defense, transportation, communication, electricity, hydraulic power, bank, and mining. As they produce products and take charge of social functions for providing workers with welfare (i.e., housing, medical care, and education), they are major pillars of the national economy of China. Private companies consist of individual companies (個體企業) and privately managed companies (私營企業) that respond to the demand of the market economy on the principles of 自籌資金, 自主經營, 自負盈虧, and 自擔風險.

Private companies have emerged as major components of the national economy of China, played a major role in economic growth by driving foreign export and creating jobs, and served

as a major source of tax revenues due to the privatization of state-managed companies of China. Therefore, the share of private companies in the national economy of China has become large. However, the leadership of state-owned companies cannot be challenged. State-owned companies and private companies have many differences in terms of capital structure, company size, and debt ratio. Therefore, we hypothesize the following:

Hypothesis 2: The effect of the public notice of convertible bond issuance on state-owned companies is positive unlike that on private companies.

The Chinese government announced the Reform of Non-tradable Shares in April 2005. The reform aimed to change all non-circulating stocks to circulating stocks. Dividing convertible bonds into those issued before the reform was announced and those issued after it was announced became possible. Conflicts between circulating stocks and non-circulating stocks, corporate governance structure, and instability of stock prices could be solved through the reform (Wei Chen and Hui Tao, 2011; Peng Zhang, 2012; Chi-Song Lee, 2014). Therefore, we hypothesize the following:

Hypothesis 3: The effect of public notice of issuing convertible bonds after the Reform of Non-tradable Shares was announced is positive unlike that before the reform was announced.

Unlisted companies that issued convertible bonds were found in the early days of the convertible bond market. However, the China Securities Regulatory Commission established the Issue of Convertible Bonds by Listed Companies Implementing Procedures and other measures, which indicates that only listed companies could issue convertible bonds. Consequently, the companies that issued convertible bonds in the Chinese capital market belong either to the Shanghai Stock Exchange or the Shenzhen Stock Exchange. The Shanghai Stock Exchange is similar to the Korean KOSPI market, and it is mainly formed by state-owned big companies. The Shenzhen Stock Exchange is similar to the Korean KOSDAQ market and is mainly formed by high-tech growth companies.

The Shanghai Stock Exchange recorded 905 listed companies, 1540 listed securities, 949 listed shares, and a total market value of 9,004.17 billion yuan as of April 15, 2011 (Ying Jin, 2011). Given the differences in the two stock exchanges in terms of the characteristics of listed companies and company sizes, this study sets the following hypothesis:

Hypothesis 4: Differences in the effect of public notice of issuing convertible bonds are found between the Shanghai Stock Exchange and the Shenzhen Stock Exchange.

A company that has a good investment idea can use a large amount of debt because it has the ability to pay debt back. However, a faltering company that uses the same amount of debt will soon be bankrupt. Most existing literature on the topic (Cheng-Yan Liu and Qi-Wen Wang, 2005; Ru-Yan Yang, Hui Meng and Feng Xu, 2006; Yi Luo, Guo-Sheng Wang and Zong-Cheng Zhang. 2006) have argued that company managers who are optimistic about the future of their companies tend to increase debt ratio and that external investors to those companies evaluate positively the increase of debt ratio. Therefore, debt ratio and cumulative average residual have a significant and positive relationship. The following hypothesis is set:

Hypothesis 5: The debt ratio of a company that issues convertible bonds has a positive (+) relationship with its cumulative average residual.

4. Sample and Research Methodology

4.1 Sample

Many unlisted companies issued convertible bonds or issued such bonds in foreign markets during the Search Period (1991–1997) or the early time of the convertible bond market in China. China Baoan was listed in the Shenzhen Stock Exchange, but it failed to convert (i.e., only 2.7% was converted until the end of the conversion period) and had difficulty finding data. Most companies that issued convertible bonds were unlisted companies in the Enforcement Period (1998–2000).

Therefore, this study excluded the initial stage of the Chinese convertible bond market and selected companies that issued convertible bonds in the Shanghai Stock Exchange or the Shenzhen Stock Exchange A shares market from 2002 when the system was established on December 31, 2013. The research objects of this study were 83 cases of 73 companies (i.e., 10 companies issued convertible bonds two times). Some financial companies (i.e., Bank of China, Industrial and Commercial Bank of China, China Minsheng Banking Corp., China Merchants Bank, and Pingan Insurance Group) and other companies (i.e., SINOPEC Group and DHC Software) were excluded.

The cases were classified into small groups: the group of companies not belonging to those that issued bonds two times, state-owned companies, private companies, companies before the Reform of Non-tradable Shares, companies after the Reform of Non-tradable Shares, companies listed in the Shanghai Stock Exchange, and companies listed in the Shenzhen Stock Exchange. Data were analyzed using the statistical analysis program STATA12.

The event period of this study was from 150 days before the companies publically announced the issuance of convertible bonds to 30 days after the public notice. The materials used for analysis are data on stocks and traded amounts. All financial data used in this study were from the site of the Guo Tai An Database (國泰安數據庫) (http://www.gtarsc.com). Data on actual public notices, explanations to convertible bonds provided by companies, and other materials provided by companies were from the documents available from the sites of the Shanghai Stock Exchange (http://www.sse.com.cn) or the Shenzhen Stock Exchange (http://www.szse.cn).

4.2 Research Methodology

This study used the event study method proposed by Brown and Warner (1985) to measure the effect of public notice of the issuance of convertible bonds on stock prices and test whether such responses of stock prices are related to the internal characteristics of convertible bond and characteristics of issuing companies. The event study analyzes the effect of a specific event (i.e., merge and announcement of interests) using data in the financial market.

The effect of an event is reflected immediately in stock prices if the market is ideal. Therefore, measuring the economic effect of an event using the trend of stock prices observed for

a relatively short period of time is possible. The changes in stock prices following the public notice of convertible bond issuance are measured as CAR from t days before the public notice to t days after the public notice. This study used the market adjustment model to measure the average residual.

This study first examines the effect of public notice of convertible bond issuance on stock prices using the event study method. The standardized trade volumes are then calculated to examine whether the significant plus (+) or minus (-) responses of stock prices before and after the public notice (−30 days, 30 days) are caused by abnormal increase or decrease of trading volume. The standardized trade volume of $i$stock on $i$day is acquired by calculating the average of all trade volumes from −30 days to + 30 days of $i$stock on $i$day (i.e., 61 observations). No excess trade volume is assumed if the standardized trade volume is equal to 1.

The cases are classified into small groups of companies along the characteristics of issuing companies, and the group differences in CAR on the date of public notice are analyzed to examine whether the stock prices by public notice of convertible bond issuance are influenced by the characteristics of the issuing company. Moreover, regression analysis is conducted by including the control variables. The basic test model can be identified using the following equation.:

5. Empirical Results

5.1 Effect of public notice of convertible bond issuance

This study measured CAR within the period 30 days before and after the public notice to examine the effect of public notice of convertible bond issuance. The results are shown in Table 3.

[Table 3] CAAR of Announcement Effect of Issuing Convertible Bonds

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	Whole sample	Excluding firms issuing twice or more	State-owned company or not		reform of non-tradable shares		Stock Exchange	
			State-owned	Private-owned	before	after	Shanghai	Shenzen
observations	83	73	60	23	31	52	50	33
(-1, 1)	0.013***	0.013***	0.018***	0.001	-0.002	0.022***	0.015***	0.010**
	(4.16)	(3.83)	(4.86)	(0.14)	(-0.46)	(5.01)	(3.03)	(2.17)
(-5, 1)	0.020***	0.024***	0.022***	0.012	0.001	0.031***	0.025***	0.012
	(4.01)	(4.54)	(3.95)	(1.31)	(0.19)	(4.49)	(3.22)	(1.62)
(-30, 1)	0.042***	0.054***	0.052***	0.017	0.017	0.057***	0.057***	0.020
	(4.03)	(4.92)	(4.27)	(0.85)	(1.33)	(3.91)	(3.47)	(1.26)
(-30, 30)	0.009	0.027*	0.035**	-0.059**	0.025	-0.000	0.011	0.007
	(0.63)	(1.79)	(2.11)	(-2.18)	(1.37)	(-0.01)	(0.47)	(0.32)

- number in the parenthesis is t-value
*- *** p<0.01, ** p<0.05, * p<0.1*

First, the measurement of all companies shows that the values are all significant and positive (+) during the event periods (−1 day, 1 day), (−5 days, 1 day), and (−30 days, 1 day). The results are consistent with the findings of other research that shows positive CARs after the issuance of convertible bonds (Hui-Yu Wang and Xin-Ping Xia, 2004; Cheng-Yan Liu and Qi-Wen Wang, 2005; Yin-Xiang Wang and Juan Yang, 2011). Therefore, Hypothesis 1 is supported. CARs are significant and positive for the cases of companies that issued convertible bonds two times (Model 2). The CARs are similar to those of the cases in which all companies are included (Model 1).

Second, the public notice of convertible bond issuance among state-owned companies (Model 3) also causes significant and positive CARs. However, CARs in the case of private companies (Model 4) are significant and negative during the event period (−30, 30) but are not significant for other event periods. Therefore, Hypothesis 2 is supported. CARs for Model 4 are significant and negative during the event period (−30, 30). This outcome may be due to the activities of large bond-holders selling them 20–30 days after the public notice of the convertible bonds in large quantities being interpreted in the market as a signal that the growth potential of the companies is uncertain; thus, the stock prices are brought down. The share of internal bond-holders can be a useful signal under information asymmetry (Leland and Pyle, 1977).

Third, Model 5, which involves convertible bonds issued before the Reform of Non-tradable Shares, was adopted in April 2005, and Model 6, which involves convertible bonds issued after the Reform of Non-tradable Shares was adopted, are compared. The public notice before the reform of Model 5 has no significant effect on CARs and has a significant and positive relationship in the cases in Model 6. This result is consistent with the argument (Peng Zhang, 2012) that the reform solved the problems of interest conflicts between circulating stockholders and non-circulating stockholders, weakness of the corporate governance structure, unstable stock prices, and difficulty in evaluating company values. The public notice leads to more significant and positive CAR values; hence, Hypothesis 3 is supported.

Fourth, the comparison between two exchanges, the Shanghai Stock Exchange (Model 7) and the Shenzhen Stock Exchange (Model 8), does not reveal any differences. CAR values are significant and positive in both exchanges. Therefore, Hypothesis 4 is supported.

The results are summarized in Figures 1 and 2. Figure 1 shows the CARs for all cases, excluding companies that issued convertible bonds two times and state-owned companies that had already began to rise even before the public notice was given, thus indicating that information about public notice had already been spread in the market. CAR values continued to rise significantly, but those for private companies declined by as much as (−0.06) after public notice.

Figure 2 shows the CAR values for the group of cases before the reform, the group of cases after the reform, the group of cases listed in the Shanghai Stock Exchange (Model 7), and the group of cases listed in the Shenzhen Stock Exchange (Model 8). CARs began to rise before public notice, and the values continued to rise until 20 days after public notice.

Verifying whether the significant rise or fall of stock prices before and after the public notice on the issuance of convertible bonds is from an abnormal rise or fall of trade volume is necessary. Thus, the standardized trade volume during the event period (−30, 30) was calculated. Figure 3 shows that the group of all the cases has a 95% standard deviation from the standardized trade volume. The figure presents that 1.2 and 1.5 times of standardized trade volumes were found on the date of public notice and the day after the date, respectively. However, standardized trade volumes were around 1, which indicates that the trade volumes were consistent. Trade volumes reached up to 1.5 times of standardized trade volumes near the day of public notice

because the public notice of convertible bond issuance attracted investors, thus boosting the trade volumes.

Figure 4 explains that standardized trade volume values of 1.5 or above on the date of public notice and after the date for the group of private companies do not prove that trade volume has significantly increased. This finding presents another evidence for the continuous negative values of CARs for this group of companies after the day of public notice.

5.2 Public notice of convertible bond issuance and regression analysis

Cross-sectional regression analysis was performed to determine the elements affecting the relationship between public notice on convertible bond issuance and company values. The dependent variable was CAR (−1, 1). The independent variables were dividend payout ratio, company size (SIZE), debt ratio (DEBT), and growth potential (Tobin's Q).

Table 4 shows the technical statistical values for the independent variables. The following is the comparison of the financial characteristics of the companies selected in the analysis and average listed companies in China: The average company size of selected companies is 12.48 billion yuan, debt ratio is 53.60%, dividend payout ratio is 26.8%, and Tobin's Q value for growth potential is 1.418. The data provided by the China Securities Regulatory Commission indicate that the size of average listed companies in China is 12.38 billion yuan, debt ratio is 59.95%, dividend payout ratio is 30%, and Tobin's Q value is 1.084. The comparison of the two groups of companies shows that companies selected for this study are comparatively larger in size, have higher growth potential, and have lower debt ratio and dividend payout ratio.

The correlation values among independent variables are summarized in Table 5. SIZE and DEBT are significantly and positively correlated at 1%, and SIZE and Tobin's Q are significantly and negatively correlated at 10%. The variance inflation factor values were verified to test whether correlations among the selected independent variables affect the regression analysis. This model is proper because the values are between 1.06 and 1.26.

Table 6 compares the independent variables by categorizing cases into different small groups based on legal characteristics (i.e., state-owned/private), institutional characteristics (i.e., before and after the Reform of Non-tradable Shares in 2005), and market characteristics (i.e., Shanghai/Shenzhen). SIZE and DEBT of state-owned companies are larger than those of private companies, and no differences in DIV and Tobin's Q values are found. The Reform of Non-tradable Shares is not relevant in the independent variables of DIV, SIZE, and DEBT. However, companies that issued convertible bonds after the reform show significant and high Tobin's Q values. The independent variable values for the companies listed in the Shanghai Stock Exchange are high but insignificant for DIV, SIZE, and DEBT. The Tobin's Q values of the companies listed in the Shenzhen Stock Exchange are high but insignificant. No significant differences exist among companies in different exchanges.

Table 7 shows the outcome of the regression analysis on factors that can make the public notice of convertible bond issuance affect CARs. This study performed regression analysis by selecting companies that issued convertible bonds from among companies listed in the Shanghai Stock Exchange and the Shenzhen Stock Exchange, and by choosing CAR (−1, 1) as the dependent variable and company characteristics as the independent variables. The analysis showed that the regression coefficients for DIV and SIZE are negative but insignificant and that those for DEBT are positive but insignificant. The results are consistent with the argument that CARs are not related to company size, amount of issued bonds, and debt ratio (Kang-De Tang, Xin-Ping Xia and Yi-Xia Wang, 2004). Therefore, Hypothesis 5 is rejected. Tobin's Q value is significant and positive at the 5% level. Therefore, the higher the growth potential of a company is, the more positive the effects of the issuance of convertible bonds on the increase in company value.

The effect of public notice of convertible bond issuance on CARs is different from that on company characteristics. The change in CAR values is significant and positive for state-owned and private companies. The Reform of Non-tradable Shares also affect CAR values significantly and positively. Therefore, Hypotheses 2 and 3 are supported. The fact that no difference in CAR values exists among companies listed in different exchanges rejects Hypothesis 4. The requirements for issuing convertible bonds are strict in China. Only large and well-managed companies can issue such bonds (Ke Tian and Lan-Jun Lao, 2004; Hui-Yu Wang and Xin-Ping Xia, 2004; Yi Luo, Guo-Sheng Wang and Zong-Cheng Zhang, 2006). Consequently, no significant differences in size, debt ratio, dividend payment ratio, and growth potentials exist among companies that issued convertible bonds even if some differences exist in company characteristics and total market values between Shanghai and Shenzhen.

Regression analysis was also conducted using CARs during the event period (−5, 1); the results are presented in Table 8. CARs are significantly and positively related to the growth potential of companies and the Reform of Non-tradable Shares, similar to the case in Table 7. The amount of convertible bond issuance of companies has a significant effect on CARs; this amount was tested. The relative scale of issuance is made into a variable by dividing the amount of convertible bonds issuance of companies by the total assets of companies at the end of a year. A regression analysis was conducted, but the outcome was insignificant.

[Table 4] Sample Statistics for the independent variables

Variable	DIV	SIZE	DEBT	Tobin's Q
Observations	83	83	83	83
Mean	0.268	22.682	0.536	1.418
Standard Deviation	0.228	1.093	0.128	0.565
Minimum	0	20.637	0.251	0.910
Maximum	1.051	25.928	0.840	3.685
Median	0.249	22.450	0.541	1.177

[Table 5] Correlations between Independent Variables

변수	DIV	SIZE	DEBT	Tobin's Q
DIV	1.000			
SIZE	0.106	1.000		
DEBT	-0.146	0.385***	1.000	

Tobin's Q	0.119	-0.185*	-0.073	1.000

, **, * shows significance level 10%, 5%, 1%.*

[Table 6] Results of t-test by Company Characteristics

Model	(1)	(2)	t-test	(3)	(4)	t-test	(5)	(6)	t-test
	State-owned	Private-owned		Before reform of non-tradable shares	After reform of non-tradable shares		Shanghai Stock Exchange	Shenzhen Stock Exchange	
Observations	60	23		31	52		50	33	
DIV	0.275	0.251	-0.024	0.330	0.249	0.051	0.287	0.239	0.048
SIZE	22.871	22.190	-0.681**	22.435	22.829	-0.394	22.727	22.613	0.115
DEBT	0.552	0.494	-0.058*	0.520	0.546	-0.026	0.553	0.511	0.042
Tobin's Q	1.364	1.558	-0.194	1.160	1.571	-0.410***	1.364	1.499	-0.135

[Table 7] Regression Results of CAAR on Announcement of Issuing Convertible Bonds Ⅰ

	CAR(-1, 1)				
Model	1	2	3	4	5
DIV	-0.025	-0.027	-0.018	-0.027	-0.021
	(-1.132)	(-1.254)	(-0.774)	(-1.226)	(-0.928)
SIZE	-0.002	-0.004	-0.005	-0.002	-0.007
	(-0.629)	(-1.183)	(-1.067)	(-0.588)	(-1.610)
DEBT	0.067	0.057	0.067	0.062	0.056
	(1.551)	(1.350)	(1.580)	(1.450)	(1.341)
Tobin's Q	0.020**	0.022**	0.014	0.021**	0.016
	(2.074)	(2.377)	(1.239)	(2.093)	(1.475)
State-owned/ Private-owned		0.022*			0.022*
		(1.867)			(1.896)
Reform of non-tradable Shares			0.018*		0.018*
			(1.846)		(1.900)
Exchanges				-0.007	-0.003
				(-0.709)	(-0.304)
constant	0.012	0.041	0.058	0.012	0.089
	(0.141)	(0.517)	(0.612)	(0.144)	(0.995)
Observations	83	83	83	83	83
R^2	0.120	0.166	0.150	0.125	0.200
F-value	1.60	2.27*	2.07*	1.34	1.99*

- number in the parenthesis is t-value
*- *** p<0.01, ** p<0.05, * p<0.1*

[Table 8] Regression Results of CAAR on Announcement of Issuing Convertible Bonds Ⅱ

	CAR(-5, 1)				
	1	2	3	4	5
DIV	0.021	0.019	0.033	0.016	0.028
	(0.572)	(0.511)	(0.898)	(0.435)	(0.728)
SIZE	-0.006	-0.008	-0.010	-0.006	-0.011
	(-1.020)	(-1.211)	(-1.415)	(-0.963)	(-1.543)
DEBT	0.051	0.044	0.051	0.040	0.038
	(0.754)	(0.636)	(0.762)	(0.582)	(0.539)
Tobin's Q	0.019*	0.021*	0.008	0.021*	0.011
	(1.751)	(1.825)	(0.582)	(1.873)	(0.788)
State-owned/ Private-owned		0.017			0.017
		(1.000)			(1.056)
Reform of non-tradable Shares			0.030*		0.030*
			(1.730)		(1.690)
Exchanges				-0.014	-0.009
				(-0.896)	(-0.583)
constant	0.101	0.123	0.179	0.101	0.200
	(0.736)	(0.878)	(1.137)	(0.727)	(1.241)
Observations	83	83	83	83	83
R^2	0.046	0.058	0.085	0.056	0.101
F-value	1.56	1.34	2.01*	1.31	1.43

- number in the parenthesis is t-value
*- *** p<0.01, ** p<0.05, * p<0.1*

6. Conclusion

This study chose a sample of 83 companies that issued convertible bonds from 2002 to the end of 2013 among firms listed in the Shanghai Stock Exchange and Shenzhen Stock Exchange to examine the effect of public notice of convertible bond issuance on the Chinese capital market. This study applied the event study method and measured the CARs of stock prices of firms.

CAR values in the analysis of all companies were significant and positive during the event periods of (−1, 1), (−5, 1), and (−30, 1). This finding is consistent with those of other research that shows a positive (+) effect of convertible bond issues on CAR values in China (Hui-Yu Wang and Xin-Ping Xia, 2004; Chengyan Liu and Qiwen Wang, 2005; Yin-Xiang Wang and Juan Yang, 2011). That is, the issuance of convertible bonds in the Chinese capital market has a positive effect on the stock market.

Moreover, this study classified firms into smaller groups based on the following: legal characteristics (i.e., state-owned/private), institutional characteristics (i.e., before and after the Reform of Non-tradable Shares), and market characteristics (i.e., Shanghai Stock Exchange/Shenzhen Stock Exchange). This study then examined whether significant differences were found between the smaller groups and CARs. The study also examined what variables determine CARs using regression analysis. The analysis showed that the public notice of convertible bond issuance of state-owned companies has a significant and positive effect on CARs but does not have such effect on private companies. However, public notice has a significant and negative effect at 5% on CARs for the event period (−30, 30). Large bond-holders tend to sell in large amounts the bonds they hold for private companies 20–30 days after the date of public notice of issue of those bonds, which signals the market that the firms are not promising.

The comparison of cases by dividing them into smaller groups based on whether the bond was issued before the Reform of Non-tradable Shares was adopted in April 2005 shows that public notice after the reform led to significant and positive CARs, whereas public notice before the reform did not result in significant and positive CARs. The result supports the idea that the reform remedied the conflict between circulating and non-circulating stockholders, vulnerable corporate governance structure of companies, and unstable stock prices (Peng Zhang, 2012). No difference was found in the relationship among variables in company groups that belong to different exchanges. Therefore, minimal difference is seen among firms that issue convertible bonds in Shanghai and Shenzhen

because the Chinese government strictly regulates requirements for issuing convertible bonds.

The outcome of regression analysis shows that the public notice of convertible bond issuance does not significantly affect dividend payoff ratio, company size, relative amount of issued bonds, and debt ratios; existing theories in foreign countries are not accepted. CARs have a significant and positive relationship at 5% with Tobin's Q, which reflects the growth potentials of companies. That is, a higher company growth potential corresponds to a greater likelihood that capital will be raised through convertible bonds and that stock prices will be affected positively.

This study has the following implications :

First, CARs and growth potential have significant and positive relations based on the public notice on convertible bond issuance. Given that the Chinese capital market is strict with its requirements for issuing convertible bonds, firms that issue such bonds are large-sized and well-managed and have fast growth potential.

Second, public notice of convertible bond issuance for state-owned companies has a significant and positive effect on CARs. However, the relationship for private companies is significant and negative. Some large bond-holders for private companies sell off their bonds, and this act of selling gives bad signals to the stock prices of those companies. Therefore, revising related institutions is necessary. This problem should be considered in the privatization process of state-owned companies.

Third, public notice of convertible bond issuance has significant and high positive values for firms that issued bonds after the Reform of Non-tradable Shares was adopted. The reform remedied such problems as the conflicts between circulating and non-circulating stocks and corporate governance structures. Moreover, institutional remedy can increase the significance of the issuance of convertible bonds and reduce the problems that can occur when private companies issue such bonds.

Fourth, no difference was found in the effect of public notice of convertible bond issuance on firms listed in the Shanghai Stock Exchange and the Shenzhen Stock Exchange. However, companies listed in Shenzhen are comparatively smaller but higher in growth potential than those listed in Shanghai. Consequently, allowing more high-tech companies to issue convertible bonds by alleviating the requirements for issuing convertible bonds is necessary.

This study has some limitations. First, the number of cases is relatively small, as the issuance of convertible bonds began only in the 1990s in China. Therefore, examining the cases by dividing them into small groups per industry per year is difficult. Second, setting additional variables is challenging because the available materials related to convertible bonds in the Chinese market are insufficient.

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