Empirical Study on the Relationship Between Stock Repurchase and Stock Return of Chinese Companies Listed in China Mainland, Hong Kong, and the U.S.

Le GONG

ANR: 391796

Supervisor: Dr. Fabio Castiglione

Aug 2014

1. Introduction

Stock repurchase began in the US since 1980s and became increasingly popular among American companies. Professionals and researchers also are attracted to study the stock repurchases deeply and thoroughly and the research subjects are mostly of American companies. Then lots of researchers began to focus on repurchases in other countries, such as the UK, Canada, and Germany, etc., to further understand repurchase effect on the global capital markets. Compared with those mature stock markets in the developed countries, stock repurchases in mainland China are still in an start-up stage and not put much importance on by most Chinese corporations which prefer to use other dividend payout policies. Although still start-up phase, stock repurchases in China present some characteristics quite different from those in the developed markets. On the other hand, as international capital flows more conveniently, and domestic legislation and supervision are stricter than those of developed countries, an increasing number of Chinese companies choose to go public outside mainland stock markets—Shanghai and Shenzhen Stock Exchange—to obtain financing in other countries and regions.

However, there is little research about the stock returns of Chinese repurchased companies on different regions. Although some researchers study the stock repurchases in China, the time period is mostly before 2010. Thus, I decide to extend the time period of my study on China mainland stock repurchases to 2013. Moreover, I will also research and compare the market reactions on three different regions—China mainland, Hong Kong and the U.S.

In this thesis, firstly I try to find out the relationship between stock return and stock repurchases in China during the time period of 2003 and 2013. But if anyone tries to understand the market performance in China, it had better begin from knowing the legislation and regulations behind it. Thus, before I start empirical research on the stock return and stock repurchases, I will summarize the legislative development and qualitatively analyze the effects of development on the stock repurchases. After that, the research will focus on the quantitative relationship between stock prices and stock repurchases announcements in China mainland.

Next, I will further find out market reactions on repurchases announcements in three different regions. I expect to obtain the different market reactions on the relationship because of the different regulations and market efficiency (both considered as regional effect) in mainland China, Hong Kong and the United States. Moreover, the stock returns calculated and obtained will be compared with one another and analysis of the differences will focus on the regional effect. Through comparison between China mainland market and developed markets, I can get the idea that to what extent the share repurchases have developed in China and whether investors could earn abnormal returns using the message of repurchases announcements. China stock markets are well-known as government-controlling or policy-oriented. “Invisible hand” is almost impossible to play its own part in China. Thus, through this part study, I may know whether the government intervention or loosening will twist or support the market and to what extent.

To study the two questions put forward above, I need to collect three subsamples to composite a whole sample. The first subsample subjects will be on Chinese companies listed in mainland stock exchanges, including Shanghai, Shenzhen, Second Board (also known as growth enterprise board, abbreviated as GEB) and SME Board (abbreviated for small-to-medium enterprises), and will be used in both questions. I collected all the data that companies repurchased their own securities between 2003 and 2013 from SDC Platinum database and their corresponding daily stock prices are obtained from DataStream from 20 days before announcement dates to 10 days after announcements, lasting one month. The second subsample is about Chinese mainland companies listed in Hong Kong Stock Exchange (abbreviated as HKSE). Considering the complicated classification of these listed companies in Hong Kong, I will use the companies in the index of Hang Seng Composites 100 of China Mainland as representatives of this second subsample because this Hang Seng index has strict requirement to include the company into the index, such as trading volume, capitalization, operation performance, etc. Corresponding daily stock prices can also easily obtained from DataStream just as those in the first subsample. The third and last subsample puts its subjects on the Chinese mainland companies listed in

American stock markets, only those in New York Stock Exchange (abbreviated as NYSE) and NASDAQ contained, because most Chinese firms went public in these two exchanges and also because it is difficult to obtain information from other market. The stock prices are obtained using the same way as before.

After processing the statistics obtained, firstly I expect to find significantly positive abnormal returns in all three regions and the results just match my expectation. Moreover, the repurchased companies and announcements in the U.S. market should outnumber those in Hong Kong and in mainland China. Considering the inefficiency of China capital market, I also predict that it might take longer to react to the new information on the market according to the effective market hypothesis and the abnormal returns from China mainland should be higher than those of Hong Kong and America. Moreover, the stock returns are more likely to overreact or underreact to repurchases announcements. The results I obtained indicate that the abnormal returns in mainland China indeed last longer than those in Hong Kong and America. In addition, as to the abnormal returns in China, they are the lowest of all three regions rather than the highest ones. On the other hand, it is Hong Kong stock market that tends to overreact to the stock repurchase announcements rather than mainland market. What's more, the results I get also indicate that information leak and insiders transactions both present in China incomplete mainland capital market.

In the previous literature about stock repurchases, Vermaelen (1981) proposed the signaling hypothesis and pointed out that the firm might hope to signal positive information to investors through share repurchase plan. The positive abnormal returns I obtain in the paper can justify this hypothesis. Chan, et al(2001) put forward the underlying key belief that buybacks can enhance stockholders value. Actually, this belief is also a major motivation for the enterprises to repurchase their own securities. Regards to the research into the other countries, Seifert, et al(2003) confirm that in Germany the announcement day return(12%) is considerably higher than that in the US(3%) and that return is higher in Germany's "Neuer Markt" than in the traditional market segment. In this paper, there is no separation between traditional and novel markets, but the abnormal returns of 1.27% in China mainland is lower than 3% in the

US instead of higher than that. The most relevant literature to this thesis on the research about other regional market stock repurchases is that Zhang(2005) studied on Hong Kong stock market who found not only that repurchasing firms do not experience abnormal performance over the long horizon in Hong Kong, but also that the price performance of repurchasing firms varies across firm size and market-book value ratios. However, I focus on short-term effect of repurchase announcements in this paper and in Hong Kong capital market transient abnormal returns present.

The main conclusion of this thesis is that abnormal returns are all positive on the stock repurchase announcement days in all three regions—China mainland, Hong Kong and the United States. After regression analysis with other variables, the abnormal returns in China mainland exhibit significant relationship with the company's sales growth rate, size and the largest shareholder's stock-holding rate. Moreover, while abnormal returns are more likely to be significantly positive before the repurchase announcement dates in mainland China than those in Hong Kong, both these two markets take longer time to absorb in the new information and reflect to stock prices. In the American market, only abnormal returns of three days on day t=-1, t=0 and t=1 are positive and significant, which demonstrate that American capital market is more efficient than two Asian regions exchanges.

Nevertheless, the limitation in this thesis should also be introduced and considered in the future research on this topic. I did not separate the listed Chinese companies into classification according to their industries, no matter where they were listed. The companies in different industries might also have different preferences to choosing stock repurchases and different market reactions. In this thesis I only centered on the short-term market reactions, later research might consider to test the long-term effect.

The structure of the rest of this thesis is arranged as follows: Section 2 and 3 are about literature review and some basic theories about securities repurchases related to the paper and the legislation development about regulating the repurchases procedures and requirements in China. Section 4 focuses on the relationship between stock return and stock repurchases in mainland China, while Section 5 compares the stock returns of three different regions after announcing repurchases plans. Section 6 concludes the

thesis and gives limitation of this thesis and some suggestion about repurchases development in China and about future research.

2. Basic Theories of Stock repurchases of listed companies in China

1). Stock repurchases

Normal repurchase is one of firm payout policy, and can be replaced by cash dividend. Firms with adequate cash and cash equivalents may use stock repurchase to decrease the number of outstanding shares and increase the earnings per share when they do not have better investment opportunities. The listed companies in the US are more inclined to use stock repurchase as dividend payout method rather than paying the cash to their shareholders. The companies can be in a more flexible position to buyback shares according to the scale in the announcement. The opposite situation applies to the Chinese companies which prefer to use cash dividends. However, the cash dividend is usually considered a long-term firm policy, and once cancelled or suspended, stockholders might be unsatisfied and vote by foot. In addition, cash dividends always bring shareholders extra tax burden.

Strategic repurchase is a part of firm strategic policy. In a strategic repurchase, the company may use cash reserves, debt financing, or obtain capital through selling the company's assets or subsidiaries to repurchase their own securities.

2). Classification of repurchase methods

- Open market repurchase

Open market purchases involve a gradual process of buying back small quantities of stock day by day on the open market through a broker. The firm pays the normal commission rates and the sellers of the stock are not aware that they are trading with the corporation. It is not uncommon that repurchase plans take place over several years and the amounts repurchased are generally smaller than those via tender offers. The data shows that more than 90% of American companies use this repurchase method. However, in China there exist two main kinds of stocks for listed companies: **public shares** listed and traded in the exchanges and **state-owned shares**

not listed in the public. The difference between open market repurchase and agreement to acquire shares is that, repurchased stocks in the open market are mainly listed public shares, while those in the agreement to acquire are state-owned shares.

- Tender offer

In a tender offer, the company offers to buy a specified amount of stocks at a given price (typically above the market price) until the expiration date (usually three weeks to one month after the offer date). The company generally reserves the right to buy more than the amount specified, to extend the offer time period or to purchase the shares from their stockholders pro rata. It can set maximum or minimum limits on the amount sought. Minimum constraints are typically designed for control purposes (often to stop an outsider from gaining control). Moreover, if fewer shares are tendered than planned by the firm, the firm may withdraw the offer. However, the vast majority of tender offers are 'maximum limit' offers: management agrees to buy all the shares tendered if fewer than the amount specified are tendered. A peculiar type of limit is set in tender offers designed to eliminate small stockholdings in order to reduce shareholder servicing costs. Because these offers are executed at the market price and extended over a long time-period, they are very similar to open market purchases.

- Dutch auctions

The listed companies announcements the price scope of repurchased stock and the number of planning repurchased stocks. The shareholders will bid voluntarily, and state their expected price and number of shares willing to sell. Then the company will determine the final repurchased price level according to the whole bids. Dutch auction gives the company more flexibility to buy back stocks and the premium to the market is quite low.

3). Pricing of stock repurchases

The table below shows the usual repurchased costs under the different repurchased methods.

Table1. Cost Comparison Based on the Different Shares Repurchase Ways

repurchase method	pricing method	repurchase cost
open market repurchase	the market price	Cost=market price* numbers of repurchased stocks
tender offer	repurchase price is usually higher than the market price, i.e. premium	repurchase cost is higher than that of open market repurchase
Dutch auction	final price determined by the actual repurchase number of shares	might be higher or lower than that of open market repurchase

There are two pricing methods of stock repurchase in China. The first one is based on net assets value (abbreviated as NAV), which is used to value state-owned shares. In determining the repurchase price of state-owned stocks, the company usually considers the status quo of market, the firm performance and its own net asset value per share. State-owned Assets Supervision and Administration of China stipulates that the transfer price of state-owned assets cannot be lower than its NAV and should be based on the NAV plus a premium. Moreover, NAV demonstrates the current value of state-owned shares, and the premium shows the future profitability of the company and is the present value of the future cash flows.

The other pricing method is based on market price, which is mostly used by valuing the public stocks. The company usually takes into consideration repurchase motivations, repurchase time period, current market price, and the fluctuation of stock market together.

4). Motivations of stock repurchase

Before 2008, repurchased companies mainly buy back their securities to reduce state-owned shares and cooperate with shares segregation reform (which will be explained in more detailed in the next part). In 2008, China Securities Regulatory Commission (abbreviated as CSRC) requires every listed company that intends to repurchase its own stocks to disclosure the motivations of repurchase in the announcement. I collected and summarized the reasons, besides the two mostly-used

reasons mentioned above, in the announcement as following.

- To stabilize the stock price: if the stock price is too much low, it will damage the shareholders' interests and cannot reveal the intrinsic value of the company. Thus, the company could improve the company image and support the price level through repurchase and attract investors to focus on the operation performance and future development of the company. Moreover, firms could also have more possibility to obtain capital because of the potential going-up price.
- To maximize the shareholders' benefits: repurchasing stock through debt financing could increase the debt ratio and optimize the capital structure using financial leverage and maximizing the company's value. Besides, securities buyback could convey to investors the message that the more debt, the better the company. Thus, this information could change the expectations of the investors and increase the stock price. So do the shareholders' interests.

In a word, the motivations of Chinese companies exhibited in their repurchase announcements, at least to the recent motivation of repurchases, are quite the same as those researchers study about the American corporations. Ikenberry, et al(1995) showed that undervaluation of the firm value offers firms a large probability to repurchase shares, the event more likely to occur in the value firms. There is rich literature on this view of "undervaluation hypothesis". Moreover, Vermaelen (1981) proposed the signaling hypothesis and pointed out that the firm might also signal positive information to investors through share repurchase plan. Furthermore, Chan, et al(2001) put forward the underlying key belief that buybacks can enhance stockholders value. Last but not least, another reason that a survey of chief financial officers gave is to return surplus cash. A rich literature, starting with Jensen(1986), has developed around the notion that agency costs are imposed on firms with unnecessarily high free cash flow.

3. Comparison of regulations between developed market and Chinese stock repurchases

1) Stock repurchase in two developed countries

Stock repurchase is a common financial strategy used by many companies in developed markets. Stock repurchase originated in the US and is rather common among American corporations. The firms choose to buy back their securities to circumvent the government control over the cash dividends. In the 1980s, the government loosened the supervision and encouraged corporate acquisitions and takeovers, leading to drastic increase in the hostile takeovers among companies in America. In order to defend against hostile takeover, many companies chose to repurchase their outstanding shares. In the 1990s, stock options were invented and introduced to the market, so many corporations repurchased stocks to execute stock options. According to the data looked up on the Bloomberg, the percentage of expenditures on stock repurchase to the total revenue went up from 4.8% in 1980 to 41.8% in 2000. In 1999, total 1243 companies repurchased their own securities in New York Stock Exchange, and total amount was 181 billion dollars. During the period from 1980 to 2000, the total amount of stock repurchases has grown 26.1% annually, while the annual growth of cash dividends is 6.8%. Moreover, the repurchased expenditures of the stocks of industrial companies was more than that of cash dividends in 2000, the first time stocks repurchase becoming more popular than cash dividends. Furthermore, American companies repurchased about 708 billion dollars of their own stocks in 2010 and 2011 according to the statistics shown on S&P 500 and Bloomberg. However, the scale of repurchasing shares decreased slightly in the following 2012, almost reaching the minimum level since 2009. This can be explained by the fact that these listed firms were increasing expenditures on the plants and equipment investments, and they prefer to hold the capital to reinvest in companies, especially during and after the depressed market.

Another country needed to put forward is also an Asian country, Japan. Before 2001, Japan exerted strict control over the stock repurchases. After that year, Japan amended commercial law which allowed listed companies to repurchase their own stocks. Stock repurchase has also been quite popular in Japan recently. The total repurchased amount reached a breaking-record high level of 4,620 billion Japanese Yen in 2007. In 2008, the subprime crisis swept the whole globe and the total

repurchased amount of the first six months in Japan still reached 2,077.4 billion JPY. However, most companies suspended the repurchase plan in the last six months of 2008 in order to assure the liquidity and solvency of the company to go through the crisis. In 2009, the number of repurchased stocks continued to go down significantly because many companies considered the liquidity of capital as their primary goal at that moment. Thus, when the stock market is depressed, there also appears one possibility—companies stop to repurchase their stocks. The reason is that companies choose to hold the capital in hand to maintain solvency during the crisis. After the crisis, they may also utilize the capital to reproduce and reinvest in the companies instead of repurchasing their own securities.

2) The development of stock repurchase in China

The stock repurchase initiated quite late in China compared with the developed markets. Basically, the development went through three main phases in China:

- Phase one: Preliminary phase (1992-2000)

The first time of stock repurchase in China took place in 1992 when Large Yuyuan Co. repurchased all the shares of Small Yuyuan Co. as the largest shareholder, both belonged in Shanghai Yuyuan Tourist Mart (code:600655), through the agreement to acquire and then cancelled all the shares repurchased. Moreover, Shanghai Lujiazui (600663) Co. Ltd announced to repurchase all the state-owned shares through agreement to optimize the capital structure in September, 1994. Thus, Lujiazui utilized the shares buyback as a strategic capital management tool and gained more capital.

Yunnan Yuntianhua (600096) Co. Ltd repurchase plan is a typical case among all the repurchases of Chinese firms. Yuntianhua determined to repurchase the number, which occupied 35.2% of the total outstanding shares, of 200 million state-owned shares at the price of net assets value per share in an announcement in April, 1999. This repurchase improved its capital structure, increased earnings per share, and activated the securities in the secondary market. After Yuntianhua, several companies

followed its practice and repurchased their own stocks in the open market. In December, 1999, Shenergy (600642) Co. Ltd repurchased one billion state-owned shares through agreement, the shares taking up 37.98% of the total company shares and the largest scale of state-owned shares repurchasing ever. Changchun High & New Technology (code:000661) Inc. completed 70 million state-owned shares buyback in December, 2000. Shanghai Chlor-Alkali Chemical Co.Ltd. (600618), Sanlian Commerical Co.,Ltd (600898), and Tsingtao Brewery Co. Ltd (600600) all repurchased their securities between 1999 and 2000. The same motivation of them is to cooperate with the domestic share segregation reform—reduce the number of state-holding shares.

In a word, this preliminary stock repurchase phase mainly focuses on the unlisted state-owned shares through agreement.

- Phase two: Transitional phase (2000-2008)

  The stock repurchase in China stagnated until 15th June, 2005. Then the development of stock repurchase in China went into the second phase. On 16th June, 2005, CSRC issued *Administration of Repurchase of Public Shares by Listed Companies Procedure,* which formulates listed companies could repurchase through the open market, not just through agreement, and promotes the public shares repurchase. The second day of this act, Handan Steel Co. (600001) immediately announced its repurchase plan and became the first company to buyback public stocks. There were 35 repurchases in 2005 and 2006, the companies such as Ingenious Ene-carbon New Materials Co. Ltd (000511), Anhui Shanying Paper Industry Co., Ltd (600567), Jiuzhitang Co. Ltd (000989), and Jiangsu Sunshine Co. Ltd (600220). At the beginning of 2006, CSRC issued *Measures for the Administration of the Issuance of Securities by Listed Companies* which allowed the company to get the shares which are used in stock options through repurchase outstanding shares. Until 2007 Huangshan Novel Co.,Ltd (code:002014) first repurchased its own securities out of stock options.

  This interim phase is more like a transition stage during which the remaining problem in China stock market still needs to be fixed, such as share segregation

reform, and the listed companies began to fumble and learn the repurchase practices in developed markets.

- Phase three: Development phase (2008-until now)

CSRC published *Supplemental Regulation* in October, 2008 to ease restricts on the stock repurchases. It prescribes that the announcement made by the firms to buyback securities needs not to be licensed by administration, but to be put in record. On 1st April, 2013, Shanghai Stock Exchange issued *Guidance to Repurchase Shares of Listed Companies* to protect investors and companies benefits.

3) Legal comparison between China and developed markets

There are two main jurisdiction modes about the stock repurchase system in the global countries and regions. One mode is so-called “principle of the prohibition, the exception allowed", which in principle allows the company to repurchase its own shares outstanding, but the provisions that can repurchase shares are also given based on some special purposes. This kind of mode is represented by Germany, Japan, France and other civil law countries.

The other legislative mode is the "principle allows, exceptions to prohibit", entitling the company to repurchase its own general outstanding shares, but provides exceptions under which cannot repurchase. The United States and other countries are the representative of this mode.

To sum up, loosening the control over the stock repurchase is an international legislative trend. However, regulations and laws as following are made to prevent from negative effects of stock repurchase:

- Procedures of stock repurchase: shareholders meeting must approve the repurchase plan and determine the repurchase price and period.
- Limits of repurchase capital: generally speaking, the company is allowed to use only the annual remained earnings to buyback its own shares to protect the debtholders.
- Disposal of repurchased shares: the company will usually transfer or cancel the repurchased shares within a time limit after repurchasing.

- Disclosure of repurchase plan: companies are required to disclose the repurchase plan and detail in a timely and fair manner. Otherwise, some insiders may use this information to earn abnormal return to affect the fair dealing in the market.
- Legal status of repurchased shares: in the US, repurchased shares are deemed as authorized to issue but not issue, meaning that repurchased securities cannot have the stock dividends or vote rights.

China's legal system for the company's share repurchase belongs to the former--“principle of the prohibition, the exception allowed". The table below summarized the developments of all the regulations and laws related to stock repurchases in China.

Table2. Chinese Regulations on Stock Repurchases

Time	Regulations or Laws	Requirements in the Law
Before 1997	Company Law Rule149	1.Conditions to repurchase: repurchase not allowed in principle, but in the case of reducing capital or merge with company having its own shares 2.repurchased shares can only be cancelled
Dec, 1997	Guidance to Listed Companies	Formulate the repurchase method
2005/6/16	Administration of Repurchase of Public Shares by Listed Companies Procedure	Formulate the companies could repurchase public shares and set specific requirement on the repurchase procedures, methods, prices and disclosure
2005/10/27	Revised Company Law Rule143	1.Conditions to repurchase (added conditions): previous requirement made plus employees encouragement, merging companies, or shareholders disagree to determinations to repurchase;2.repurchased shares can be cancelled or transferred;3.specifc requirement on the repurchase plan such as repurchase capital and repurchase methods used on employee encouragement
2006/1/4	Measures for the Administration of the Issuance of Securities by Listed Companies	set the requirements on the stock sources used in the equity incentives

2008/10/9	Supplemental Regulation	replace the regulation issed on 2005/6/16 on centralized competitive bidding and give more detailed requirement on the disclosure requirement
2013/4/1	Guidance to Repurchase Shares of Listed Companies	Focus on conditions that could encourage the stock repurchase; specify the procedures of stock repurchase; increase the rule of internal control and unnormal dealing

In the early edition of Company Law Rule 149 formulates that companies cannot repurchase their own securities. After continuous development, the stock repurchase has improved significantly in China since 2005. CSRC published *Guidance to Repurchase Shares of Listed Companies* (abbreviated as New Guidance below) on 1st April, 2013. The New Guidance focuses on conditions and requirements that encourage the companies to use stock repurchase more frequently; specifies the procedures of stock repurchase in a more detailed manner; increases the rule of internal control and unusual transactions.

4. Empirical study on the relationship between stock repurchase and stock return in China

1) Single-factor Regression Analysis

I collected all the Chinese companies repurchased their own securities during the period between 2003 and 2013, which contain the development phases of two and three mentioned above. There are total 2,518 companies listed in China mainland (until 31st, December, 2013), i.e. in Shanghai or Shenzhen Stock Exchange, also including those listed in second board and small- to medium- companies board. Only 119 companies once repurchased shares during this decade beginning from 25th June, 2003 to 31st December, 2013. The percentage of repurchased companies to the total number of companies is 4.72%, indicating that most companies in China have chosen other payout policies rather than stock repurchase and repurchase plan is not popular among Chinese corporations. Moreover, these 119 companies announced 185

repurchases during this decade, and the average repurchase of each firm is 1.55. This number indicates that some firms may repurchased shares more than once.

Moreover, I collected corresponding daily stock returns of each company in different event windows from 20 days before repurchase to 10 days after repurchase, total one month. The cumulative abnormal returns (CARs) are calculated on the collected data and also on the different time period bases. But given the confounding effect of long-term period, this paper only focuses on the short-term announcement effect of stock buybacks.

The basic methodology used in this section and next one involves computing the daily stock returns of the repurchasing firms, around the event date.

$$\hat{R}_{it}=\alpha+\beta R_{mt}$$

$$AR_{it}=R_{it}-\hat{R}_{it}$$

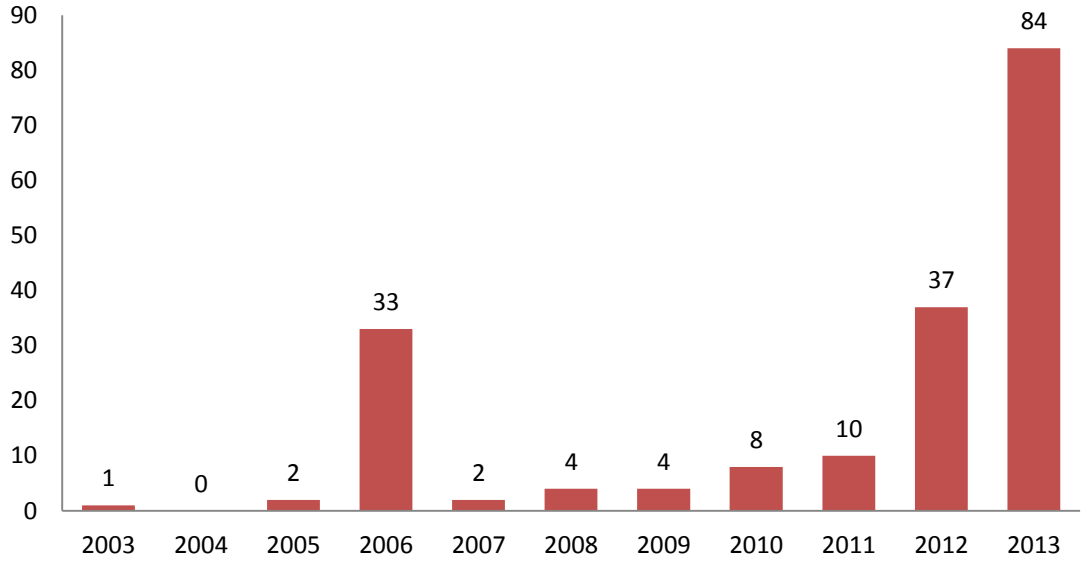
$$AAR_t=\frac{1}{N}\sum_1^N ARit$$

$$CAR_{t1,t2}=\sum_{t1}^{t2} AARt$$

Where $\hat{R}_{it}$ is the calculated required rate of return of company i at day t based on CAPM, AAR is the average abnormal return on day t, and $CAR_{t1,t2}$ is the cumulative abnormal return during the time period of t1 and t2.

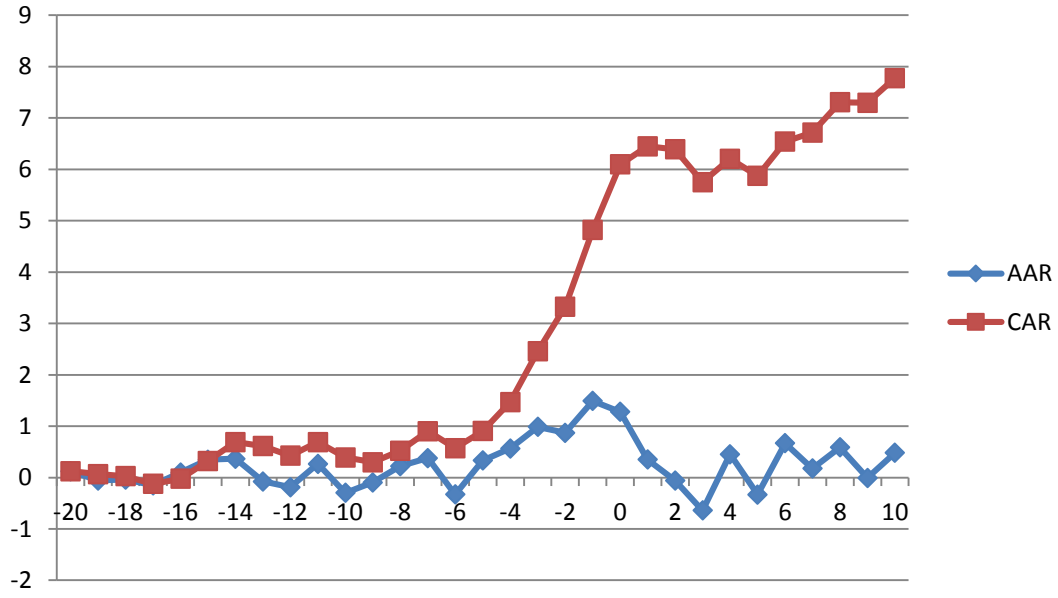
Firstly, I picture Figure1 to demonstrate the specific number of repurchases each year from 2003 to 2013. It is obviously seen from the figure below that the regulations published in 2006 and 2013 did stipulate the stock repurchases of Chinese firms. The repurchases announcements were 33 and 84, respectively, and the latter breaks the most repurchase ever since. Moreover, Figure1 exhibits the effects of regulation development on stock repurchase. Because CSRC published regulations which loosen the restriction on the stock repurchases, an increasingly number of corporations determine to repurchase their own securities on the open market.

Figure1 Specific Times of Repurchases Each Year



Next, I picture Figure 2 to describe the average rates of return and cumulative abnormal returns of the whole sample during the event window of (-20,10).

Figure2. AAR and CAR during event window of (-20, 10)



From the figure above, the investors can gain the abnormal returns of up to about 6.5% since the 20 days before repurchase announcement to the event day. After a little price adjustment downward, CARs can reach almost 8% until 10 days after the

announcement day. As to the average abnormal return, it reaches the highest level the day before event day. The abnormal return on event day t=0 is the second-highest, about 1.3%. Moreover, it is worth paying attention from the Figure2 that the AARs go through consecutive upward since the day t=-6 and remain positive until the second day after the repurchase announcement day.

Then the daily average abnormal rates of return and CARs under different event windows are given in Table 3 and Table 4. Additionally, the significance levels can also be seen from the tables. I need to analyze the significance of abnormal returns during this one month.

Table3. Corresponding ARR on Each Date

Event day	AAR	t-value	Event day	AAR	t-value
-20	0.1234	0.2974	0	1.2787	1.3704
-19	-0.0564	-0.1861	1	0.3511	0.6054
-18	-0.0394	-0.1233	2	-0.0574	-0.1524
-17	-0.1498	-0.3769	3	-0.6409	-1.2154
-16	0.0998	0.3001	4	0.4548	0.7739
-15	0.3463	0.9246	5	-0.3329	-0.4617
-14	0.3657	1.0202	6	0.668	0.9794
-13	-0.0768	-0.2094	7	0.1775	0.3058
-12	-0.1881	-0.6105	8	0.5868	1.4448
-11	0.2655	0.7242	9	-0.008	-0.002
-10	-0.2979	1.2497	10	0.4809	1.7139
-9	-0.0954	-0.9562			
-8	0.2239	0.905			
-7	0.3803	1.4863			
-6	-0.3298	-0.9563			
-5	0.333	0.905			
-4	0.5663	1.4863			
-3	0.9858	2.2182**			
-2	0.8709	1.9558*			
-1	1.4917	3.1373***			

Note: *, **, and *** indicate the significance levels under 10%, 5%, and 1%, respectively.

From the table above, we can know the value of each day during this one-month period and the corresponding t-test values. During the period of (-20,-8), most of the abnormal returns are negative except that the positive values during

(-16,-14). However, in the time period of (-7,-1), only the value on day t=-6 is negative, and the other else are all the positive ones. This statistics indicates that the stock price of the company did go through a downturn before the repurchase and the firm may actually buyback outstanding shares to prevent the price from decreasing deeper. On the other hand, investors have a positive reaction towards the repurchase plan. Takeshi Nishikawa(2003) pointed out that management try to deliver two messages to investors through stock repurchase: expected increase in remained earnings and undervalued in stock price. Those are why repurchase announcements may bring positive abnormal returns and the result obtained above justifies the second reason.

Furthermore, the AARs during t=-3, -2, and -1 are significantly positive, and AAR on t=-1 is significant under 1% significance level. The abnormal returns two days before the event date are much higher than those two days after the event date, meaning that information **is** disclosed before announcement and may be used by some insiders who have taken actions before the market. This result is consistent with the research of Liangliao Tung, Mei-chu Ke, Hsing-Tai Yu (2005).

Table4. CARs under different event windows

Event Window	CARs(%)	t-value
(-20, -1)	4.8191	3.1597***
(-10,-1)	4.1289	3.0936***
(-1,1)	3.1215	2.5814**
(-5,5)	5.3012	3.3344***
(-10,10)	7.0948	3.0804***
(-20,10)	7.785	3.442***
(0,1)	1.6298	1.4614
(0,2)	1.5724	1.4251
(0,3)	0.9315	0.7948
(0,5)	1.0535	0.8004
(0,10)	2.9658	1.6431

Note: *, **, and *** indicate the significance levels under 10%, 5%, and 1%, respectively.

Through analysis of Table4, it can be seen that CARs are positive during the period of repurchase announcement, at least at the chosen event window. These CARs

under (-1,1), (-5,5), (-10,10), and (-20,10) are 3.1215%, 5.3012%, 7.0948% and 7.785%, respectively. They are all significantly positive under significance levels of 5%, 1%, 1%, and 1%. This result again indicates that repurchase announcement may stipulate the stock prices to go up and management convey positive and valuable information about their firms to the investors who consider the message "good news".

Moreover, the CARs before and after repurchase announcement dates are exhibited as well. The abnormal returns before the announcement days are significantly positive under 1%. This statistics show that insiders dealing and advance transactions are indeed present in Chinese stock markets. On the other hand, though the CARs after the repurchase announcement are positive, but not significant. This can be explained by that the market reaction towards announcement would not last long and the stock prices after announcement tend to stabilize.

2) Multi-factor Regression Analysis

After the single-factor analysis on the relationship between stock repurchase announcement dates and stock returns around the event days of Chinese companies, then I include other variables into the regression model to test other factors that may affect the abnormal returns during the event window. These variables include sales growth rate (abbreviated as SGR below), return on equity (ROE), liabilities-to-assets rate (LAR), company size (SIZE), price-to-earnings rate (PE), and the largest shareholder's stock-holding rate (LSSR). As to these variables added into the regression model, I need to explain them in a more detailed manner as follows:

- SGR: sales sometimes fluctuate significantly from year to year, not as stable as expected, so I use the average grow rate of the past two years. This variable is assumed to have positive relationship with the dependent, i.e. the cumulative abnormal returns.
- ROE/ LAR/ PE: these three variables are chosen or calculated from the last quarterly report since the announcement dates. ROE indicates the past profitability of the corporation, and should have positive relation with the dependent. If the company repurchases the securities to increase the leverage

ratio, LAR will have negative relationship with CAR(-5,5). If the company determines to buyback shares in order to deliver the message of stock price undervaluation, then the CAR(-5,5) should be negative with the independent, PE.

- SIZE: the data is also obtained from the last quarterly report and logged. The larger the company, the more transparent of the information about that company. Thus, SIZE independent here actually is a quantitative representative of information asymmetry.
- LSSR: I include this variable to indicate the change of internal shareholders, but considering the complication of stock structure in China and the largest shareholder of most companies being country, I actually use the top-five largest shareholders' stock-holding rate as a representative. Because the increase or decrease of internal shareholders share-holding rate could signal the positive or negative expectation about the company to market, LSSR should be positive to the dependent.

All the statistics mentioned above all can be obtained from SDC Platinum.

Furthermore, I could get the equation of the stock return with these six independents.

$$CAR(-5,5)_i = \beta_0+\beta_1 SGR_i+\beta_2 ROE_i+\beta_3 LAR_i+\beta_4 SIZE_i+\beta_5 PE_i+\beta_6 LSSR_i+\varepsilon_i$$

The choice of event window between 5 days before and after the announcement dates is on the basis of the significance obtained in the single-factor analysis above. The table below exhibits the regression result of the equation and indicates the significance level of each independent.

Table5. Regression Relationship between Stock return and other variables on announcement day

	CAR(-5,5)		
	expected relation	β_i	t-value
SGR	+	0.014	2.814
ROE	+	0.406	-0.857
LAR	-	0.924	-0.097
SIZE	-	-0.068	-1.976

PE	-	0.219	-1.288
LSSR	+	0.065	1.999
β0		0.084	1.859
Adjusted R square		29.30%	
F		2.383	
p-value		0.000	

From the table above, variables of SGR, ROE, SIZE, and LSSR are all consistent with assumed results. Take SGR as the first example. The coefficient β_1 is 0.014, which significantly positive relations mean the high level of sales growth rates will lead to higher CARs. 1% increase in the sales growth rate of the company may lead to 0.014% increase in the cumulative abnormal returns. The same to ROE, the accounting profits which can be calculated from the financial reports, it also has the positive β value, but this coefficient is not significant. Taken the significant levels of SGR and ROE together, the result indicates that China stock market puts more importance on the variable which can predict the future growth and profitability rather than the past performance. As to the variable SIZE, it is consistent with expectation—negative and also significant. The smaller the company is, the bigger the repurchase announcement effect. LSSR demonstrates that more shares internal investors hold, the more confident they are about the future development of the company, and the higher abnormal return could be earned. As to the remaining LAR and PE, they are neither consistent with the assumed relation with CARs, nor significant to the dependent. Therefore, only 3 of 6 variables have expected and significant effects on the cumulative abnormal returns.

3) Conclusions

The capital market in China reacts positively and significantly to the stock repurchases announcements of companies, although this reaction might not last long enough. Moreover, the average abnormal return of 1.28% on the event day is not as much as that of about 3% in the US market, the result studied by Vermaelen (1981). One reason might be the information leak in China that helps insiders obtain abnormal returns before announcements and weaken the announcement effect on event dates.

Investors can still achieve abnormal returns on announcement date. Thus, the problem that needs to pay attention is insider transaction which twists the market reaction. Only more mature and complete legislation might prevent this phenomenon. Furthermore, it might be helpful to level up the professional ethics of management in China.

In addition, multi-factor regression analysis about the stock return and other variables tell us that SGR, SIZE and LSSR all could impact the abnormal returns during the event window of (-5,5) significantly. In other words, the higher growth rate, smaller the size of company and higher rate of largest shareholders stock-holding will bring higher abnormal returns.

5. Empirical study of the regional regulation effect on the relationship between stock repurchase and stock return

1) Background

An increasing number of Chinese companies thought about going public outside China mainland, such as in Hong Kong or in the US, after 2001. Admittedly speaking, several advantages of foreign markets may seem attractive to those companies: more transparent system; more convenient refinancing, such as issuing debts or additional shares; less government or policy impacts.

In this section of the thesis, I decide to include these companies into the sample and study whether the stock repurchase effect is significantly different with that in China mainland companies. Under the same cultural and religious backgrounds, Chinese companies may share the same entrepreneurship, though personal preferences still present. However, I will study the different announcement effects in different regional stock exchanges, that is Shanghai and Shenzhen Stock Exchange which represent China mainland, Hong Kong Stock Exchange (abbreviated as HKSE), and New York Stock Exchange (NYSE) and NASDAQ which represent American market. In other words, this sector will focus on the regional effect on the relationship between stock repurchase and stock returns.

Given the complicated stock structures of companies which have been

explained in section 2, Chinese companies listed in mainland exchanges repurchase their own securities mainly to reduce state-owned shares and join shares-trading reform (also reform of non-tradable shares). Moreover, those companies which have shares-trading reform resolve the problem of complex stock structure and improve the capital quality through securities buyback. The companies deliver the message of both undervaluation of the stock prices and value of public shareholders' interests.

Those Chinese companies listed in HKSE repurchase stocks mostly in order to increase investors' confidence, stipulate stock prices and improve company images. The stock prices of many companies are even below net asset values per share. Some companies with sound profitability and stable cash flows choose to buy back shares to promote financial situation and support for future financing. On the other hand, Chinese firms listed in the US are more likely to repurchase securities because managements are not satisfied with the long-lasting undervalued prices.

2) Sample and Modeling

I collected all mainland Chinese companies listed in Hong Kong or America from SDC platinum database. Their corresponding stock returns are also obtained from DataStream. The China mainland data is still the sample used in the section above.

As to the sample of American market, there are total 187 Chinese companies listed in NYSE or NASDAQ. However, I dropped 39 companies because they went public less than one year, i.e. listed in 2013, or delisted, or not operated continuously (relisted during 2003 and 2013). Among the remaining firms, 78 companies completed 96 repurchases of securities during the period of 2003 and 2013. Regards to the companies listed in HKSE, I selected the companies in the index of Hang Seng Composites 100 of China Mainland as representatives because HKSE has strict requirement to include the company into this index, such as trading volume, capitalization, operation performance, etc. These requirements indicate the sound financial situation and operational performance of companies chosen, which could be good representative of Chines firms listed in Hong Kong. 25 companies among total

100 repurchased their shares 175 times. Two companies need to be mentioned: Lenovo Group Ltd. (code: 00992) and Hopewell Holdings Limited (code: 00054) had 38 and 36 repurchases, respectively, the two most buybacks corporations. The Table5 gives a whole description of these three subsamples.

Table5. Statistical Description of Chinese Companies Listed in Different Regions

Listed Regions	Listed Exchanges	Number of Total listed companies	Number of Repurchased Firms	Number of Repurchases	Percentage of Repurchased Firms
China Mainland	Shanghai	951	35	49	3.68%
	Shenzhen	465	12	22	2.58%
	Second Board	382	17	19	4.45%
	Small to Medium Enterprises Board	720	40	51	5.56%
	Subtotal	**2518**	**119**	**185**	**4.72%**
Hong Kong	**HKSE**	**100**	**25**	**175**	**25.00%**
the U.S.	NYSE	63	30	37	47.62%
	NASDAQ	85	48	59	56.47%
	Subtotal	**148**	**78**	**96**	**52.70%**

It can be obviously seen from the table above that the more developed capital market is, the more stock repurchases take place. While only 4.13% of Chinese companies listed in mainland utilize stock repurchases as a payout policy, a quarter and more than half Chinese companies which went public in Hong Kong or in America repurchased their securities from 2003 to 2013.

Considering the abnormal returns and corresponding significance values in mainland China I have got in the last section, I determine to shorten the event windows to 5 days before and after announcement day, i.e. event date.

On the other hand, in order to analyze multi-factor regression relations of abnormal returns with other firm characteristics just like the part above, I also collect corresponding statistics of all the companies listed in Hong Kong and the US. I use the same independents as those in the section above—SGR, ROE, LAR, SIZE, PE, and LSSR. The equation used in the section 4 will also be utilized and analyzed in this

section, that is

$CAR(-5,5)_i = \beta_0+\beta_1 SGR_i+\beta_2 ROE_i+\beta_3 LAR_i+\beta_4 SIZE_i+\beta_5 PE_i+\beta_6 LSSR_i+\varepsilon_i.$

This regression analysis will help me to further understand what extent these firm characteristics affect the cumulative abnormal returns in three different regions, whether they are consistent with expected results and significant to the result.

Moreover, I use the same methodology which has been mentioned in Section 4. I calculated the abnormal returns based on CAPM model and CARs of different markets are also obtained and compared.

3) Results

- **Single-factor analysis results**

First, I calculated the average abnormal returns of each region from 5 days before the announcement to the 5 days after announcement, and corresponding t-values are obtained. Table6 exhibits the results of this calculation.

Table6. Abnormal Returns and T-values of A-shares, H-shares, and N-shares under during the event windows

A-shares, H-shares, and N-shares represent securities listed in China mainland, Hong Kong and America, respectively.

Event Date	A-shares (%)	t-value	H-shares (%)	t-value	N-shares (%)	t-value
-5	0.333	0.905	-0.670	-0.808	-0.530	-1.205
-4	0.566	1.486	0.760	0.650	-0.200	-0.350
-3	0.986	2.218**	0.480	1.401	0.980	1.475
-2	0.871	1.956*	0.190	0.287	-2.530	-1.128
-1	1.492	3.137***	-0.890	-1.948	0.600	0.580
0	1.279	1.370	1.490	1.364	3.050	2.407**
1	0.351	0.605	2.420	2.066	-0.660	-1.291
2	-0.057	-0.152	-0.430	-0.709	0.120	0.072
3	-0.641	-1.215	-0.460	-0.482	-0.900	-1.569
4	0.455	0.774	1.240	2.210	0.160	0.259
5	-0.333	-0.462	0.920	0.841	0.100	0.226

Note: *, **, and *** indicate the significance levels under 10%, 5%, and 1%, respectively.

It can be seen from Table6 that positive abnormal returns on the announcement dates can all be achieved in three regions. The abnormal return of

Chinese companies listed in the US can reach 3.05% and be significant at 5% significance level, while returns in China mainland and Hong Kong are much lower than that in the US, 1.27% and 1.49%, respectively. As to the t-values of A-shares, the abnormal returns on day t=-3, -2 and -1 are significant and the significant level reaches the highest level on the day of t=-1. As to H-shares, the abnormal return gets to the highest level of 2.42% the day after announcement date significantly. At the same time, N-shares reach significantly highest abnormal return of 3.05% on announcement date during the event window of (-5,5).

Furthermore, the cumulative abnormal returns can be calculated on the basis of abnormal returns presented in the table above. Figure3 exhibits the relationship of CARs of A-shares, H-shares and N-shares during the event window. It is obvious from the figure below that repurchased shares in the US usually are undervalued before announcement and stock returns are negative. In other words, companies in the US are more likely to repurchase stocks because of undervaluation than companies listed in mainland China which might have specific policy to follow or government-affecting reasons and repurchase determination may have nothing to do with stock prices. Another result can be obtained from the figure below is that the longer the positive abnormal returns can be gained through the event window, the lower abnormal returns would get on the announcement date. For example, A-shares have positive abnormal returns from day t=-5 to t=+1, and the abnormal return on the day t=0 is the lowest among three abnormal returns. N-shares have the shortest positive returns which can be observed from Figure3 but have the highest abnormal returns on the event day.

Figure3. Cumulative Abnormal Returns (CARs) of Three Different Regions During the Event Window

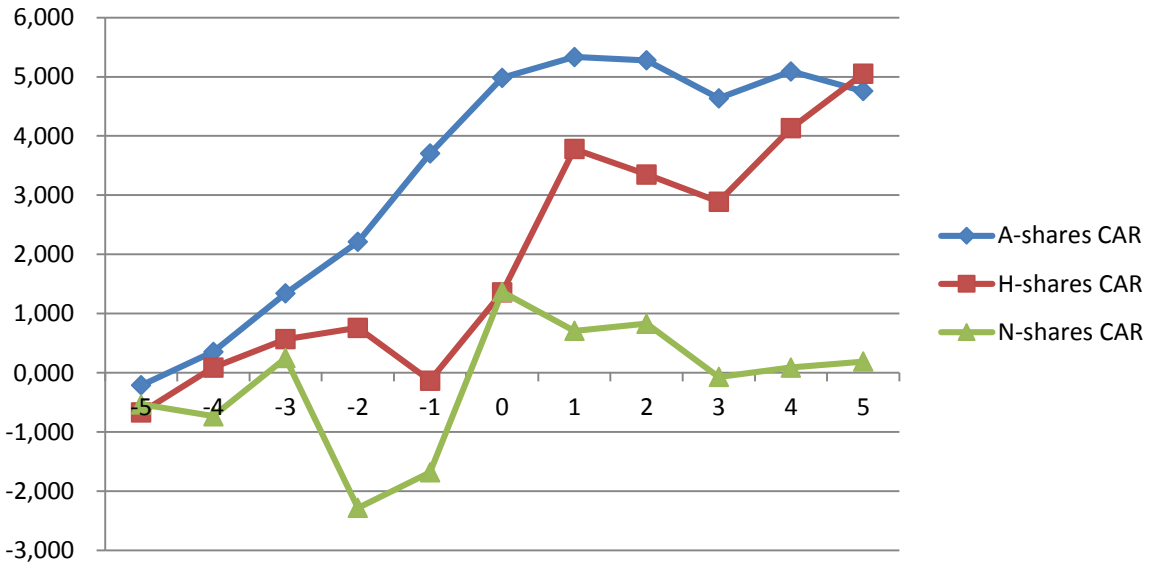


Table7. CARs under Different Event Windows

Event Window	A-shares (%)	t-value	H-shares (%)	t-value	N-shares (%)	t-value
(-5,0)	5.526	3.83***	1.360	-0.34	1.370	0.115
(-3,0)	4.627	4.786***	1.270	2.088*	2.100	0.658
(-1,0)	2.770	2.897***	0.600	0.531	3.650	1.945*
(0,1)	1.630	1.461	3.910	1.787*	2.390	2.356**
(0,3)	0.932	0.795	3.020	1.697*	1.610	0.698
(1,3)	-0.347	0.133	1.530	1.587	-1.440	-0.555
(0,5)	1.054	0.800	5.180	2.077*	1.870	0.974

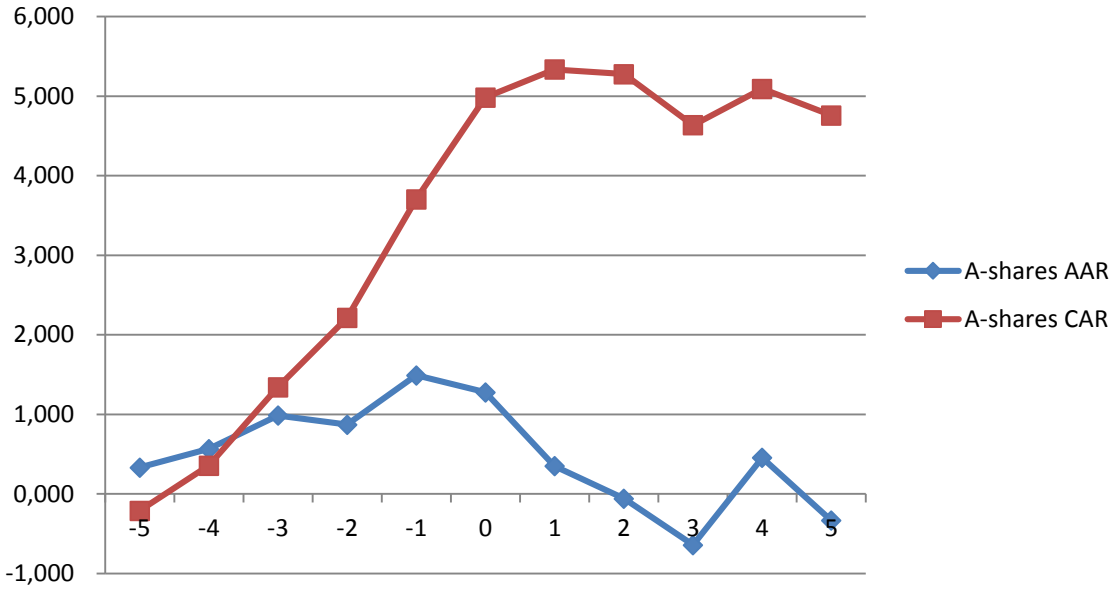
Note: *, **, and *** indicate the significance levels under 10%, 5%, and 1%, respectively.

From the table above, it can be clearly seen that A-shares may have significantly positive abnormal returns since 5 days before announcement day. As to H-shares, the positive abnormal return will last to 3days after event date from announcement day. In addition, the abnormal returns are significant in the event windows of (-3,0) and (0,5). Regards to N-shares, only CARs during (-1,0) and (0,1) are significantly positive. This result indicates that American stock market will have effective and instant reaction towards new information—stock repurchase announcement. The effective market can absorb and resolve the new information.

Next, I compare the different market reactions towards repurchase plan

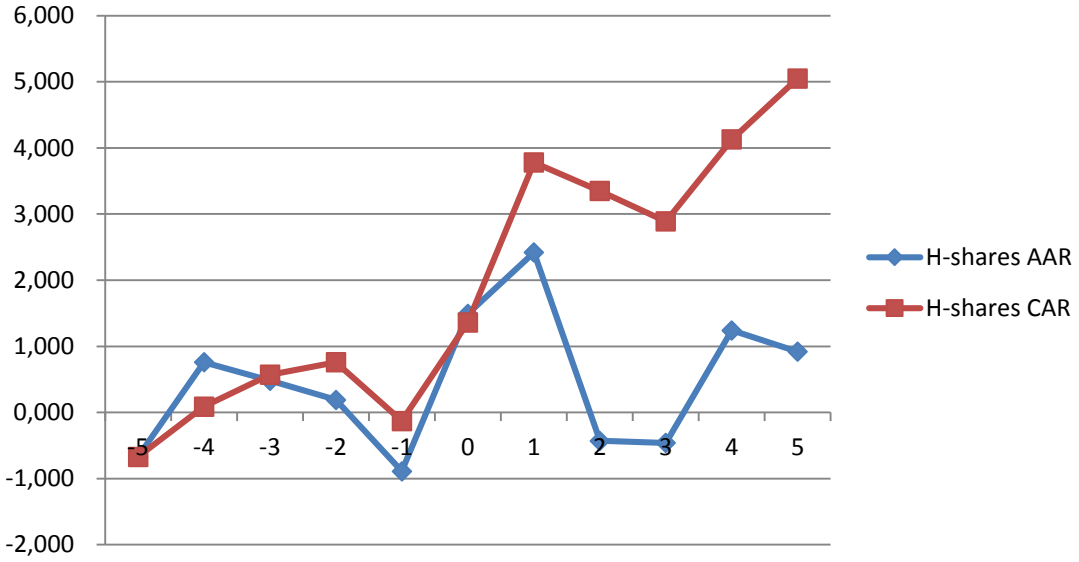
announcement based on the data in Table6.

Figure4. the AAR and CAR of A-shares during the event window of (-5,5)



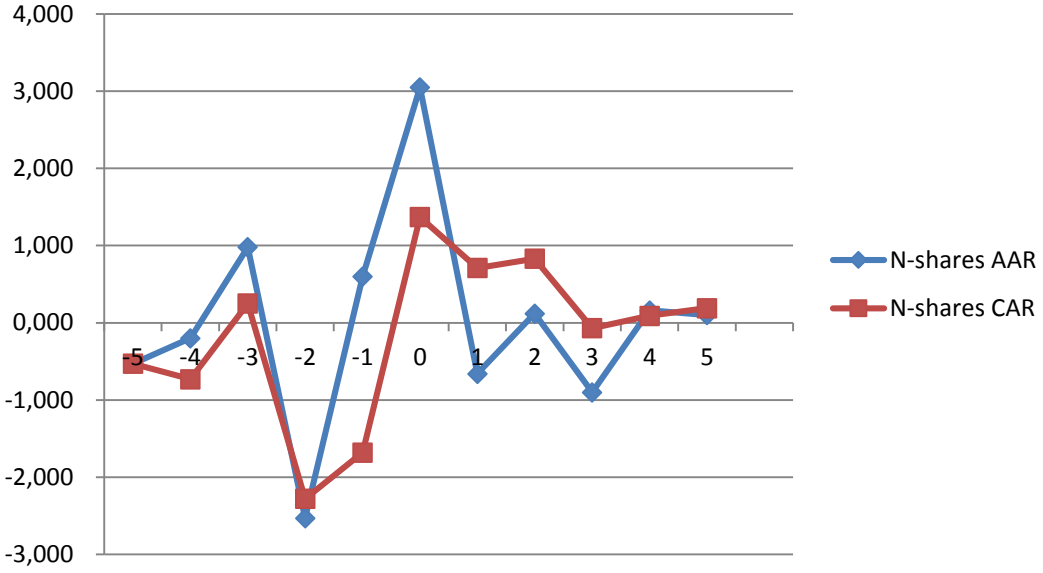
From Figure4, positive abnormal returns are significant since 5 days before the announcement, until 2 days and 3 days after announcement there are negative returns to adjust the stock prices. In the Table7, we can also find that positive abnormal returns are present before and after the announcement. However, the abnormal returns are larger and more significant before repurchase announcement than those after announcement. This consequence demonstrates that advance disclosure of information exists in China mainland stock market and insiders may use this advance news to make moves ahead of the market to earn extra returns. At the same time, the market is not effective enough to react to the news and it takes too long to digest information.

Figure5. the AAR and CAR of H-shares during the event window of (-5,5)



Combined Figure5 and Table7, it can be found that the abnormal returns 4 days to 2 days before repurchase announcement are positive, but not significant. However, abnormal returns on day t=0 and t=1 are significantly positive and AR reaches the highest level on the day after announcement day. At the same time, CAR turns into positive on the event day. After negative abnormal returns on the second and third days, the abnormal returns are positive again and CAR continues to increase after a little adjustment of going down. Thus, we can safely conclude that H-shares can have positive abnormal returns during the whole event window. Opposite to the situation of A-shares, the abnormal returns are larger and more significant after the announcement than those before the announcement. So there is no information leak ahead of announcement in Hong Kong stock market, but overreaction to the new information might exist.

Figure6. the AAR and CAR of N-shares during the event window of (-5,5)



The significant and positive abnormal return takes place on the announcement day and CAR gets to the highest level during the whole event window. CAR turns into positive from negative dramatically on day t=0. In addition, the abnormal return decreases drastically to become negative on the day after announcement and there no appear significantly positive abnormal returns after the event day. Besides, Table7 tells us that the CARs are only significant on the event windows of (-1,0) and (0,1). Therefore, compared with A-shares and H-shares, N-shares have more effective market reaction towards stock repurchase announcement and the stock prices can reflect the new information instantly.

- **Multi-factor analysis results**

In this part, I will have regression analysis results, like the regression part in section 4, of Chinese companies listed in different exchanges to test whether firm characteristics in the same country will have same expected effect on the abnormal returns of three different regions.

The table below exhibits the regression relation between CARs from before 5 days to 5 days after the repurchase announcement days in three different regions. As A-share has been analyzed in the section above, first focus on the H-share and N-share. As to H-share, the coefficients of ROE, LAR, PE, and LSSR are consistent with expected relations. The higher ROE, the higher abnormal returns. Instead, the

SGR coefficient is negative and insignificant. It can be seen that the investors put more importance on the past operation performance in Hong Kong. LAR coefficient is negative, which means that the higher liabilities-to-assets ratio, the lower the abnormal returns will be. But this leverage ratio is not significant to the dependent. Moreover, PE is negative and significant, meaning that lower price-to-earnings, higher CARs. This result is consistent with the argument put forward in the section above: companies repurchase securities out of undervaluation, then abnormal returns should be negative to PE. This is to say, many Chinese companies listed in HKSE determined to buy back their shares because of the undervaluation of their stock prices. The last variable, LSSR, to indicate the large shareholders' confidence level about the future development of the company is positive and significant to the CARs. The intercept here is 0.058, lower than that of A-share.

As to the regression relationship in N-share, SGR, ROE, LAR, PE and LSSR are consistent with the expectation. SGR is not significant to the dependent, while the other two are significant, meaning that the past performance of the company and the leverage are both important to CARs. SIZE variable is significant to the dependent, but is negative which is not consistent with the expectation. SIZE here is a representative of information asymmetry. The larger the company, the more transparent information of that company, then the CARs should be lower. As to PE is consistent to the expected relation, but not significant. The last one, LSSR, is significant and positive to the dependent. The intercept of N-share is 0.072, a bit lower than that of A-share.

In a summary, in A-share, SGR, SIZE and LSSR all could impact the abnormal returns during the event window of (-5,5) significantly—the higher growth rate, smaller the size of company and higher rate of largest shareholders stock-holding will bring higher abnormal returns. In H-share, ROE, PE, and LSSR have significant and expected relation with the dependent—the better past operation performance, the lower stock prices before repurchase(the more likely undervaluation of stock prices), and the more confident large shareholders about the future development of that company will lead to higher CARs. As to N-share, ROE, LAR, and LSSR all play a

part in CARs—the better past performance, the lower leverage, and the more confident of large shareholders about the company will give higher abnormal returns. In addition, from the adjusted R square indicate that the equation gives better explanation of the abnormal return in H-share and N-share. The adjusted R^2 are 63.3% and 79.9%, respectively.

Table8. Regression Relationship between Stock return and other variables of three regions

Independents	expected relations	CAR(-5,5) A-share	H-share	N-share
SGR	+	0.014 (2.814)	-0.444 (-1.279)	0.086 (1.092)
ROE	+	0.406 (-0.858)	0.247 （1.996）	0.283 (2.031)
LAR	-	0.924 (-1.976)	-0.039 (0.961)	-0.198 (-2.893)
SIZE	-	-0.068 (-1.976)	0.295 (2.498)	0.702 (2.391)
PE	-	0.219 (-1.288)	-0.18 (-2.034)	-0.2 (1.239)
LSSR	+	0.065 (1.999)	0.354 (2.154)	0.418 (-2.618)
β_0		0.084 (1.859)	0.058 (2.293)	0.072 (1.925)
Adjusted R square		29.30%	63.30%	79.90%
F		2.383	2.67	4.34

4) Conclusions

Based on the results obtained above, I have the conclusions as follows regards to market reactions of the three regions.

All the repurchased shares of Chinese companies listed in different exchanges of three regions—mainland, Hong Kong and NYSE or NASDAQ—could have positive abnormal returns. The repurchase announcements convey to the markets the message that stock prices of corporations are undervalued and should be higher than those before announcing stock repurchase plan. At the same time, the markets accept and digest the repurchase message as “good news”, and give active and

positive reaction.

However, considering the large differences of three markets, such as transparency, legislation and efficiency, market reactions of these three regions also exhibit quite different characteristics which cannot and would not be neglected or ignored. A-shares are more likely to have abnormal returns before the announcement dates than H-shares, which reflects the common phenomenon of information leak in China mainland. Stock returns in NYSE or NASDAQ are significantly larger than those in mainland stock exchanges and HKSE. Compared with efficiency of dealing with information in NYSE or NASDAQ, the stock market in mainland China is till inefficient and not mature.

On the other hand, from the multi-factor regression analysis, I can safely conclude that other firm characteristics could affect the abnormal returns investors could get to different extent in different regions. SGR, SIZE and LSSR affect A-share, ROE, PE, and LSSR influence investors in HKSE, and ROE, LAR, and LSSR will affect N-share.

6. Summary

Retrospecting the thesis, I have the conclusion that abnormal returns are all positive on the stock repurchase announcement days in all three regions—China mainland, Hong Kong and the United States. Moreover, while abnormal returns are more likely to be significantly positive before the repurchase announcement dates in mainland China than those in Hong Kong, both these two markets take longer time to absorb in the messages and reflect to stock prices. In the American market, only abnormal returns of three days on day t=-1, t=0 and t=1 are positive and significant, which demonstrate that American capital market is more efficient than two Asian regions exchanges. In addition, multi-factor regression analysis about the stock return and other variables in China mainland stock market tells us that SGR, SIZE and LSSR all could impact the abnormal returns during the event window of (-5,5) significantly. In other words, the higher growth rate, smaller the size of company and higher rate of largest shareholders stock-holding will bring higher abnormal returns. Moreover,

ROE, PE, and LSSR influence investors in HKSE, and ROE, LAR, and LSSR will affect N-share.

Furthermore, as to the future repurchase regulation development, I suggest three respective needed to improve and consummate. The first improvement is the further ease of the supervision on the stock repurchases to enhance the motivations, such as simplifying the repurchase procedures. It is regulated that it will take 30 days from the repurchase announcement to the shareholders' meeting approval. After repurchase, companies must apply for the shares changes (increase/decrease) to the administration. The complicated and redundant procedures in mainland China prevent Chinese companies from choosing securities buyback as their payout policy. Another one is to lift the restrictions on the repurchase methods and motivations in China. The repurchase methods are confined to tender offer and open market repurchases right now in China. Increasing the repurchase methods and motivations available will encourage enterprises to utilize securities buyback. The last improvement should be supervision on the information leak and insiders transaction. I propose that simplifying the procedures will promote the improvement in this aspect because insiders will have no chance to trade based on the information they get.

Nevertheless, the limitation in this thesis should also be introduced and considered in the future research on this topic. The thesis just gave a general and brief relationship between stock return and stock repurchase announcements in mainland China, so do other two regional exchanges form a short-term perspective. I did not separate the listed Chinese companies into classification according to their industries. Nor I analyze the long-term effect. Besides, I did not give deeper analysis about the relationship between stock returns and company characteristics listed outside China mainland stock exchanges.

7. References

Banyi, M. L., Dyl, E. A. & Kahle, K. M., 2008. Errors in estimating share repurchases. Journal of Corporate Finance, Volume 14, pp. 460-474.

Bargeron, L., Kulchania, M. & Thomas, S., 2011. Accelerated share repurchases. Journal of Financial Economics, Volume 101, pp. 69-89.

Bohman, L., (2006). Economic action and inter-firm relations: Diffusion of stock repurchases on the Stockholm Stock Exchange 2000-2003. European Sociological Review, 22(4), 283-6.296.

Brav, A., Graham, J.R., Harvey, C.R., & Michaely, R. (2005). Payout policy in the 21st century. Journal of Financial Economics, 77, 483-527.

Chan, K., Ikenberry, D.L., & Lee, I. (2001). Do firms knowingly repurchase stock for good reason? Rice University working paper, August 2001, Rice University

Chan, K., Ikenberry, D., & Lee, I. (2004). Economic sources of gain in stock repurchases. Journal of financial and quantitative analysis, 39(3), 461-480.

Chan, K., Ikenberry, D.L., Lee, I., & Wang, Y. (2006). Share repurchases as a tool to mislead investors: Evidence from earning quality and stock performance. University of Illinois working paper, August 2006, University of Illinois.

Dann, L.Y., (1981). The effects of common stock repurchase on security holders' returns. Journal of Financial Economics, 9(2), 113-138.

Dereeper, S., & Romon, F. (2003). The use of open-market repurchase programs in France. Université d'Artois working paper, June 2003, Université d'Artois.

Dittmar, A.K. (2000). Why do firms repurchase stock? Journal of Business, 73(3), 331-355.

Dobbs, R., & Rehm, W. (2005). The value of share buybacks. The McKinsey Quarterly, 2005 (3).

Elton, E., & Gruber, M. (1968). The effect of share repurchase on the value of the firm. The Journal of Finance, 23(1), 135-149.

Floyd, E., Li, N. & Skinner, D. J., 2011. Payout policy through the financial crisis:The growth of repurchases and the resilience of dividends. Chicago Booth Research Paper No. 12-01, October.

Gangopadhyay, P. & Yook, K., 2010. Free Cash Flows and the Wealth Effects of Stock Repurchase Announcements. The Johns Hopkins University Carey Business School Working Paper Series.

Ginglinger, E., & L'Her, J.F. (2002). Ownership structure and open market stock repurchases in France. Working paper, February 2002, Université Paris.

González, V.M., & González, F. (2004). Stock repurchases with legal restrictions. Evidence from Spain. The European Journal of Finance, 10, 526-441.

Grullon, G., & Ikenberry, D.L. (2000). What do we know about stock repurchases? Journal of Applied Corporate Finance, 13(9), 31-51.

Grullon, G., & Michaely, R. (2004). The information content of share repurchase programs. The Journal of Finance, 59(2), 651-680.

Guarino, D. R., 2013. S&P 500 Stock Buybacks Decrease in Fourth Quarter of 2012. [Online] Available at: http://online.wsj.com/article/PR-CO-20130327-909789.html [Accessed 7 June 2013].

Hackethal, A., & Zdantchouck, A. (2006). Signalling power of open market share repurchases in Germany. Financial Markets and Portfolio Management, 20(2), 123-151.

Ikenberry, D.L., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. Journal of Financial Economics, 39, 181-208.

Ikenberry, D.L., Lakonishok, J., & Vermaelen, T. (2000). Stock repurchases in Canada: Performance and strategic trading. The Journal of Finance, 55(5), 2373-2397.

Isagawa, N., 2002. Open-market Repurchase Announcements, Actual Repurchases, and Stock Price Behavior in Inefficient Markets. Financial Management, Volume 31, pp. 5-20.

Jagannathan, M., Stephens, C. P. & Weisbach, M. S., 2000. Financial flexibility and the choice between dividends and stock repurchases. Journal of Financial Economics, Volume 57, pp. 355-384.

Lakonishok, J., and Vermaelen, T. (1990). Anomalous Price Behavior Around Repurchase Tender Offers. Journal of Finance, 45, 455-477.

Lee, Y.G., Jung, S.C., & Thornton, J.H. Jr. (2005). Long-term stock performance after open-market repurchases in Korea. Global Finance Journal, 16, 191-209.

Lie, E. (2005). Operating performance following open market share repurchase announcements. Journal of Accounting and Economics, 39, 411-436.

McNally, W.J., Smith, B.F., & Barnes, T. (2006). The price impacts of open market repurchase trades. Journal of Business Finance & Accounting, 33(5)&(6), 735- 752.

Oswald, D., & Young, S. (2004). What role taxes and regulation? A second look at open market share buyback activity in the U.K. Journal of Business Finance and & Accounting, 31(1) & (2), 257-292.

Otchere, I. & Ross, M., 2002. Do share buy back announcements convey firm-specific or industrywide information? A test of the undervaluation hypothesis. International Review of Financial Analysis, Volume 11, pp. 511-531.

Rau, P.R., & Vermaelen, T. (2002). Regulation, taxes and share repurchases in the United Kingdom. Journal of Business, 95(2), 245-282.

Råsbrant, J., 2011. The Price Impact of Open Market Share Repurchases. Working paper series Royal Institute of Technology, Stockholm, March.

Rees, W. (1996). The impact of open market equity repurchases on UK equity prices. The European Journal of Finance, 2(4), 353-370.

Seifert, U., & Stehle, R. (2003). Stock performance around share repurchase announcements in Germany. Working paper, September 2003, Humboldt Universität zu Berlin.

Sinha, S. (1991). Share repurchase as a takeover defense. Journal of Financial and Quantitative Analysis, 26(2), 233-244.

Stonham, P. (2002). A game plan for share repurchases. European Management Journal, 20(1), 37-44.

Tsetsekos, G. P., Kaufman, D. J. & Gitman, L. J., 1998. A Survey of Stock Repurchase Motivations and practices of Major U.S. Corporations. The Journal of Applied Business Research, 7(3), pp. 15-21.

Vermaelen, T. (1981). Common Stock Repurchases and Market Signalling: An Empirical Study. Journal of Financial Economics, 9, 139-184

Vermaelen, T., 2005. Share Repurchases. Foundations and Trends in Finance, 1(3), pp. 171-268.

Weston, F. J. & Siu, J. A., 2003. Changing Motives for Share Repurchases.. Working Paper, Anderson Graduate School of Management, UCLA, Los Angeles.

Zhang, H. (2005). Share price performance following actual share repurchases. Journal of Banking and Finance, 29, 1887-1901.