Thesis and Evidence…
The Effect of
Government Intervention
on Stock Synchronicity in China

by

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Abstract

China's stock market crashed in the summer of 2015. The value lost in the crash equals to the GDP of Grace. There is a prodigious argument about whether the government should intervene or let the free market power play a bigger role in determining the stock prices. The government did intervene directly and indirectly. This thesis is trying to prove that there are side effects of government intervention during the stock market crash by focusing on the change of stock synchronicity. The research employed two methods to measure the stock synchronicity and stock informativeness during the crash: max fraction and regression based measurements. The result shows that compared with 2014, stock synchronicity increased in 2015. The thesis also builds an events timeline and observes the change of max fraction, systematic risk, idiosyncratic risk and R squared on days when government made direct or indirect intervention. The results illustrate that government interventions increase stock synchronicity and weaken firm-specific information's role in determining stock prices. According to previous literature, stock informativeness is highly and positively correlated with investment efficiency. Thus, government intervention decreased the investment efficiency and the value of stock market by trying to stabilize the market. Regulators should pay attention to the side effects of government intervention.

Acknowledgement

First I want to give my greatest gratitude to my advisor, Professor Robert Whitelaw for his constant support and guidance through all the stage of the program. Many thanks for helping me with this thesis and teaching me so many things beyond research. He is one of the smartest people that I have ever met. Thanks again for generous help and inspiration.

Secondly I would like to express my sincere gratitude to our faculty adviser Professor Marti Subrahmanyam for building this wonderful program and giving me the opportunity to work with Professor Robert Whitelaw. He has been so helpful and accessible during this entire academic year and is always willing to offer us help. It is my honor to be part of this program. I want to thank my peers in this program. They inspire me a lot.

Finally, I would like to acknowledge my internship supervisor Mr. Sun Jianfeng, who got me interested in Chinese stock market and the topic of Chinese stock market crash happened in 2015..

TABLE OF CONTENTS

I. Introduction

Figure 1

China's stock market had fallen 30 percent in three weeks before the government suspended trading of some stocks. The entire stock market devalued trillions of dollars. China's stock market crash was one of the hottest topics in finance area last year. People started worrying about that China would cause another global financial crisis or become another Japan. China's stock market crash also brings the battle between capitalistic economy theory and socialistic economy theory back to the stage. Argument's major focus is on the choice between government intervention and free market power. Western media and most of western scholars believe that government should not intervene. Instead, government should believe in the power of free market and let the stock market crash. The stock market was just adjusting itself and trying to reflect the real value of these stocks. On the other hand, Chinese people and local media, the majority of which, supports the government's intervention. The government did intervene. Chinese government used both monetary and fiscal policy to stop stocks from falling and successfully stabilized the market. However, was it really the right thing to do?

A. Background: China's stock market

China's stock market includes Shanghai stock exchange(SSE) and Shenzhen Exchange(SZSE). SSE and SZSE were both founded in 1990, and are fifth and eighth largest stock market in the world[1]. Both of them are still young compared with stock markets in the US and Europe. They are not entirely open to foreign investors due to the strict monitoring of Chinese government. However, China's stock market still has attracted many foreign investors including Mr. Warren Buffet due to the fast development of economy in China.

China's stock market is different from western stock market in many ways. Unlike US stock market, China's stock market is lack of institutional investors. In fact, insurance companies and other financial institutions are forbidden to invest in stock market. Firms are also reluctant to give cash dividends. People do not invest in the stock market for the future cash flow of dividend. Instead, there is a speculative trend in China's stock market. Investors invest in certain stock based only on the belief that other investors will buy these stocks at a higher price instead of the belief that the firm value will go up.[2] Thus, the weight of firm-specific information in determining the stock price was relatively small in China, even before the crisis.

Let's get back to crash. 2015 stock market crash is not the first big crash SSE and SZSE has encountered. During the global financial crisis in 2008, SSE composite index fell 70% from 6120.04 to 1664.93[3], more severe than the US stock market's crash. Chinese government merely did anything to stop the stock market from crashing. However, the 2008 crash had been spreading for over a year. The stock market crash in 2015 happened in only three months, which terrified the common equity holders in China. After 2008 crash, SSE climbed back to 5000 in the

[1] http://english.sse.com.cn/
[2] Douglas J. Elliott and Kai Yan, "The Chinese Financial System, An Introduction and Overview", John L. Thorton China Center, July 2013
[3] Yahoo Finance https://beta.finance.yahoo.com/quote/000001.SS/news

beginning of 2015, then the market started falling on June 12th 2015. Stock holders wanted the government to intervene and the emotion of hatred towards government spread through social media for government's not taking any actions. Chinese government intervention stabilized SSE composite index at 3000. Most of Chinese citizens were happy with the government intervention and believed that these actions were right and effective.

B. Anecdote of Stock Synchronicity

Anecdotally, the stock market performance during crash suggests that the increase of stock synchronicity. After the stock market crashed on June 12th, it took 3 weeks for the government to make a choice between intervention and free market power. The government chose to intervene at last. On June 29th, the state-backed provider of margin financing, China Securities Finance Corp, publicly says that the risk of margin trading is controllable and margin calls are relatively small. Later in the day, China said it would allow pension funds managed by local governments to invest in the stock market for the first time, potentially channeling more than 1 trillion RMB ($161 billion) into the equity market. On the next day, June 30th, the CSI 300 index went up 6.731%. Almost over 90% of the stocks in the market went up no matter how they had performed. They went up simply because Chinese government intervened.

Through all kinds of interventions including direct investment and indirect central bank's action, the government mainly focus on the blue chip stocks and especially the finance industry. The bank's and securities' banks all went up and pulled up the entire market. On the other hand, the middle sized and relatively small company which have good returns in their quarter report went down because the government policy does not cover them.

II. Hypothesis

If the stock prices are only determined by the government intervention, in other words, market factor, the firm-specific information becomes insignificant. The stock market lost its function of information gathering and thus cannot reallocate capital optimally. The present research is trying to figure out whether the concern is true by focusing on the change of stock synchronicity during the crash.

The study is interesting because it will provide a valuable reference to investors on whether China's stock market is worthy of investing. If the stock synchronicity indeed increased according to government's actions, the hypothesis is true. The stock prices only reflect government policy instead of firm-specific performance. Stocks also all move in the same direction. China's stock market becomes riskier and less informative, and thus less worthy of investment.

The study will also provide investors a reference on which stocks they should invest in. If the hypothesis is true, the investors should focus on the market information instead of firm information to make investment. For example, if investors believe that Chinese government is going to incorporate positive policies, investors will invest in the stocks that are more sensitive to government's interventions during the crash. On the other hand, if the policy will be tightened, investors will invest in the stocks that are more independent on bigger policies.

III. Data Collection

To measure the stock synchronicity of Chinese stock market, the analysis needs prices, returns, trading volume of stocks. Nevertheless, if the sample include all stocks listed on SSE and SZSE, it will be too big to measure. Thus, the research picked CSI 300 as the sample. CSI 300 is a free-float weighted index that contains stocks both from the A share and B share, and includes various industries. Statistics summary of CSI 300 index is included in the Appendix II.

It can represent China's stock market well enough. The analysis collected the price, return, and trading volume of the 300 stocks listed on CSI 300 index from Jan. 1st 2014 to Oct. 13 2015 and the index returns from Bloomberg. The analysis includes the data in the year of 2014 because we want to use the 2014 year as a reference. There are other factors such as country's economy power that can affect the stock synchronicity and the regression model. To clear the noise, the research uses 2014 as a comparison since these other factors do not change that much from 2014 to 2015. The only main factor that may affect the stock synchronicity in China stock market will be the government's intervention.

A. 10 Percent Limit

Before using the data to calculate R-squared, the research still needs to examine the accuracy of the data. Two major things that can affect the result are the frequent suspension of trading and the 10 percent limit of the China's stock market. First, after examining the data, the suspension of trading does not affect the result that much. Suspensions of one stock per day are only 5.61% of the entire data volume. Nevertheless, the 10 percent limit policy hinders the prices from reflecting the real returns. China has implemented the 10 percent limit policy in its stock market for over ten years. When a stock's price increases, or decreases 10%, it stops trading. It is called, "zhangting" or "dieting" in Chiniese. The problem caused by the policy is that the data may not be accurate because the return has this upper and lower limit of 10 percent. The return might be much lower or much higher without this 10 percent limit. To examine the effect of the 10 percent limit policy, the research calculates the correlation between returns with lag 1 day to five days. The correlation with lag1 is supposed to be near zero because the returns of two consecutive days should be sporadic, not correlated with each other. However, in the table below, it is noted that the correlation with lag 1 in 2015 is much higher than 2014. Compared with 2014, there are more

stocks that should fall or rise more than 10 percent during the crash in 2015. The excess negative or positive return was carried to the next day, which causes the higher correlation between consecutive days' returns. The change of correlation is significant enough to affect the result, so we need to adjust the data.

Table 1

CSI 300 Index	2014	2015
Correlation lag 1	0.025617997	0.136360714
Correlation lag 2	0.195877427	-0.187937789
Correlation lag 3	-0.076462105	-0.068874506
Correlation lag 4	0.192591659	0.139464668
Correlation lag 5	-0.081037632	0.085905751

B. Adjustment

To reflect the real return, it is needed to adjust the returns. The first step is to find all the stocks that hit 10 percent limit daily. In fact, the return does not necessarily need to be 10 percent or -10 percent sharp to be suspended trading because the 10 percent limit prices are rounded up. For example, if the closing price yesterday is 4.54, today's 10 percent up limit of the stock will be 4.54×10%+4.54=4.994. After the rounded up, the limit price will be 4.99, which is only 9.91% up. Thus, the research selects the returns that range from +9.9% to +10.1% and -10.1% to -9.9%. The next step is to eliminate all the returns that hit 10 percent limit and calculate a cleansed market returns. The final step is to aggregate the returns that hit the 10 percent limit and the return of the consecutive day and adjust them by the market return calculated in step 2. For example, if the stock should fall 9.98% on Monday, it will only fall 9.96% on Monday according to the policy. We cannot just add the return on Next day back to 9.96% to reflect the real return

on Monday because the next day's return is also affected by the market return. For example, the return on Next day may not be 0.02% but is 1.83% because the market return is 1.85% on Tuesday. So after the returns are aggregated, it also need to adjust the sum by the market return.

Table 2

Date	Return for 0000027	Market Return	Adjusted Return
8/18/15	-0.099659632	-0.061391741	-0.099805956
8/19/15	0.018297293	0.018453617	NA
8/20/15	-0.084496584	-0.037060733	-0.084496584

-0.009965969632+(0.018297293-0.018453617)=-0.099805956

Besides the stock price, return and trading volume, to find the effect of government intervention, it is also needed to collect data on government's interventions. For this part, the research collected data from news, government official site and other official announcement from government posted on social media. From the data collected, the research constructed an event timeline (Appendix I) which recorded government direct and indirect intervention to stock market from the start of year 2015.

IV. Measures

After adjusting the data, the research needs to examine if the degree of stock price synchronicity changes over time, i.e., the extent to which stocks move together, perhaps as a function of government intervention. To do this, two measures that are used in the Morck, Yeung and Yu paper are applied:

$$F=\frac{max[n1,n2]}{n1+n2}$$

Where: f=the fraction of stocks that move at the same direction

n_1=the number of stocks whose prices rise

n_2=the number of stocks

1. The fraction of stocks that move in the same direction.

This is defined in equation above. The numbers of stocks that go up and numbers of stocks that go down on a daily basis were counted. Take the max of these two numbers and divided by the total number of stocks. To avoid the noise of daily series, the research calculated the average of 10 days on a rolling basis instead of every 10 days. For example, day 1 to day 10 and then day 2 to day 11 instead of day 11 to day 20 were calculated.

2. Regression based measure (R-squared).

Run a market model regression for each stock, as shown below.

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it}$$

The research starts by running it using 20 days of data on a rolling basis. The market return is the return on the adjusted CSI300 index. To prove the hypothesis, Values that need to be calculated are the R-squared of the regression, the residual (idiosyncratic) volatility, and the systematic (explained) volatility.

$$rsq = \frac{\beta_i^2 \sigma_m^2}{\sigma_i^2}$$

$$\sigma_{sys} = \sqrt{\beta_i^2 \sigma_m^2} = \beta_i \sigma_m$$

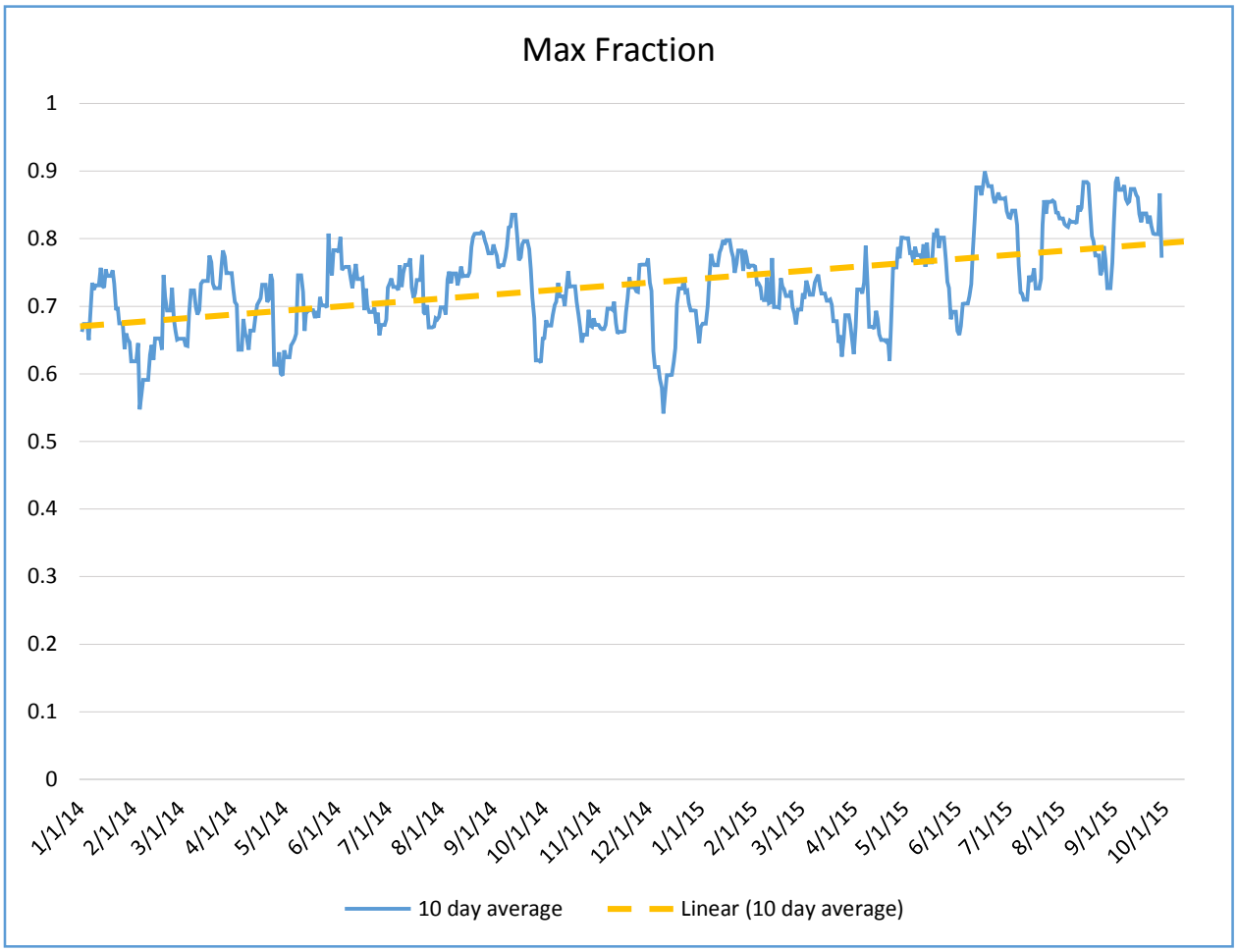
$$\sigma_{idio} = \sqrt{\sigma_i^2 - \beta_i^2 \sigma_m^2}$$

After calculating the numbers for each firm for each day, the next step is calculating the average across firms, and plotting the series over time.

V. Results

a. Max Fraction

Figure 2



After calculating the max fractions daily, the research calculates the average of 10 days. The result is shown in the graph above. Although the value of the fraction has been fluctuated constantly, the graph exhibits a clear rising trend. The average of 10-days-average in the year 2014 is 0.705225. The average of 10-days-average in the year 2015 is 0.767051, much higher than that in 2014.

b. R-Squared

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it}$$

Figure 3

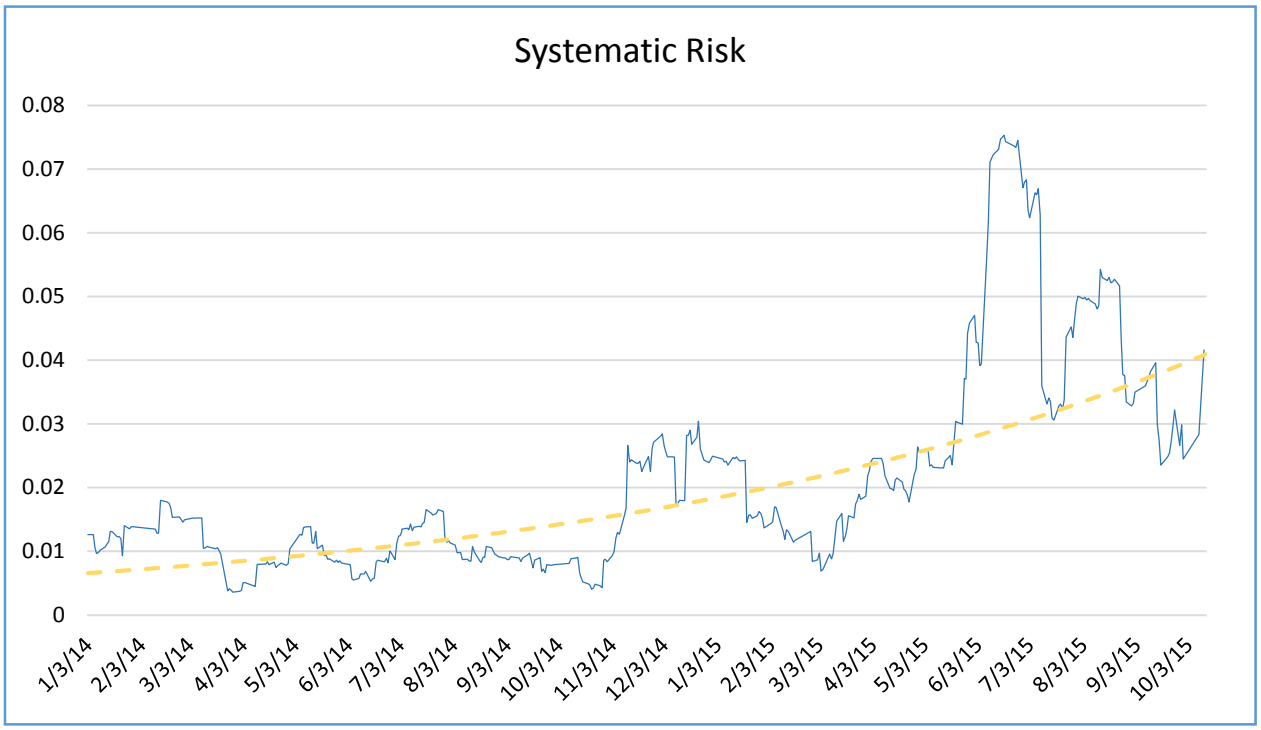
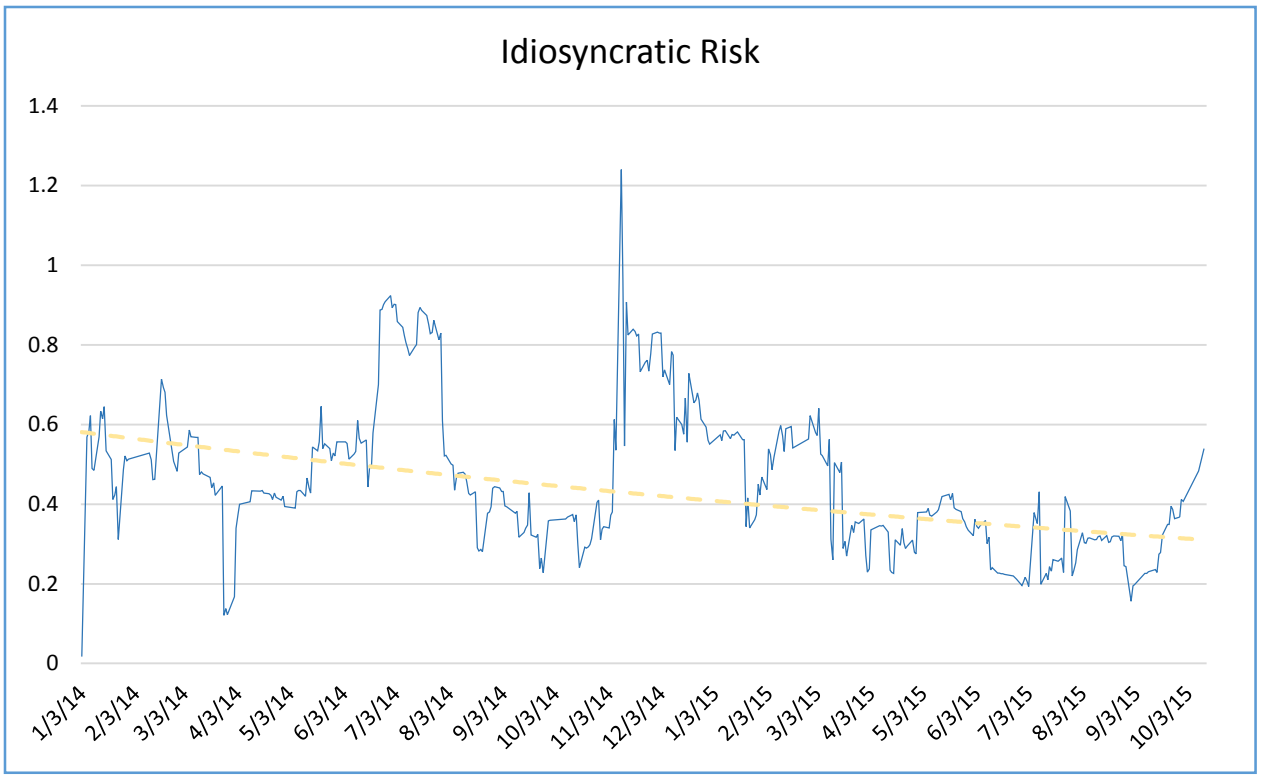


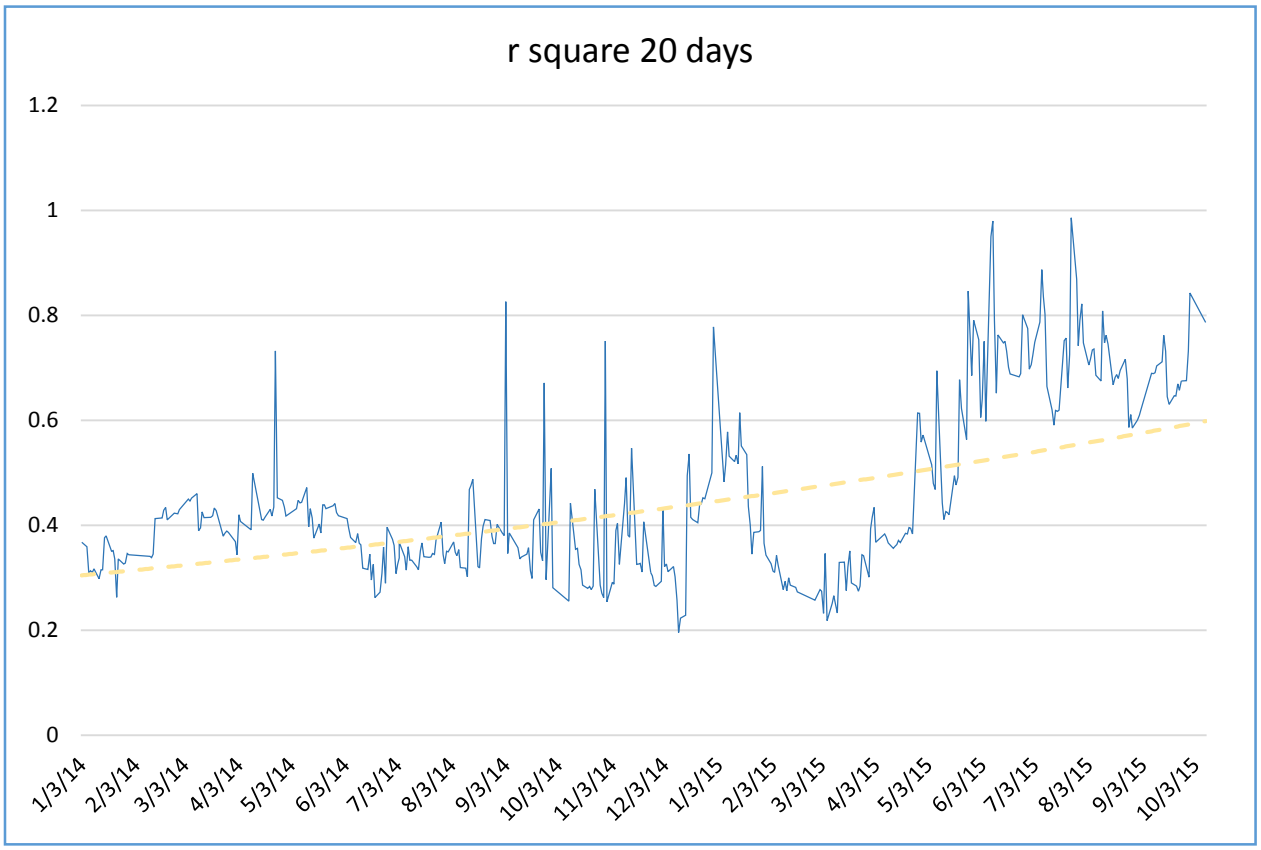
Figure 5



For the second measure, the systematic risk, idiosyncratic risk and regression were calculated. Systematic risk is a measure of market information's influence on stock returns. On the other hand, idiosyncratic risk is a measure of firm-specific information's influence on stock returns. The systematic risk started rising in March during the acceleration of the stock prices' increase. At that time, more stocks moved up due to the blooming of the entire market, so the market risk increased. The systematic risk steeply increased after the stock market crashed and peaked when the "national team" entered the market on June 29

On the other hand, Idiosyncratic risk started declining in March. It declined again as the market began to fall and the government intervened. During the stock market, the idiosyncratic dramatically fell. Whereas, the systematic risks increased a lot since June 12th 2015 compared with the values in 2014. This illustrates that the returns are more determined by the market information, instead of firm-specific information.

Figure 6



The time series of R-squared as a measure of stock synchronicity were also plotted. Due to the decline of idiosyncratic risk and increase of systematic risk, R-squared rises steeply as the market rises than plateaus at a high level. It really peaked after the stock market crashed and the government intervened, from June to August. The R squared measures how the stocks returns is correlated with the market return. Higher R squared means that the stocks move in a more similar direction. According to the Roll paper in 1988, "Low R^2 is potentially due to firms' returns capturing unique firm-specific information or reflecting greater idiosyncratic noise." In other words, an increasing R squared represents that the returns capture less firm-specific information. The graph shows that the R squared of the CSI 300 index increased significantly during the stock market crash, compared with R squared in 2014, which illustrates the increase of stock synchronicity during the stock market crash.

VI. Discussion

Although the results have shown general trend that supports my hypothesis, it needs to observe the change of values calculated above when government intervened to determine the government's effect on stock synchronicity and informativeness. The table below includes four major interventions' dates, contents, and max fraction, systematic risk, idiosyncratic risk and R-squared values.

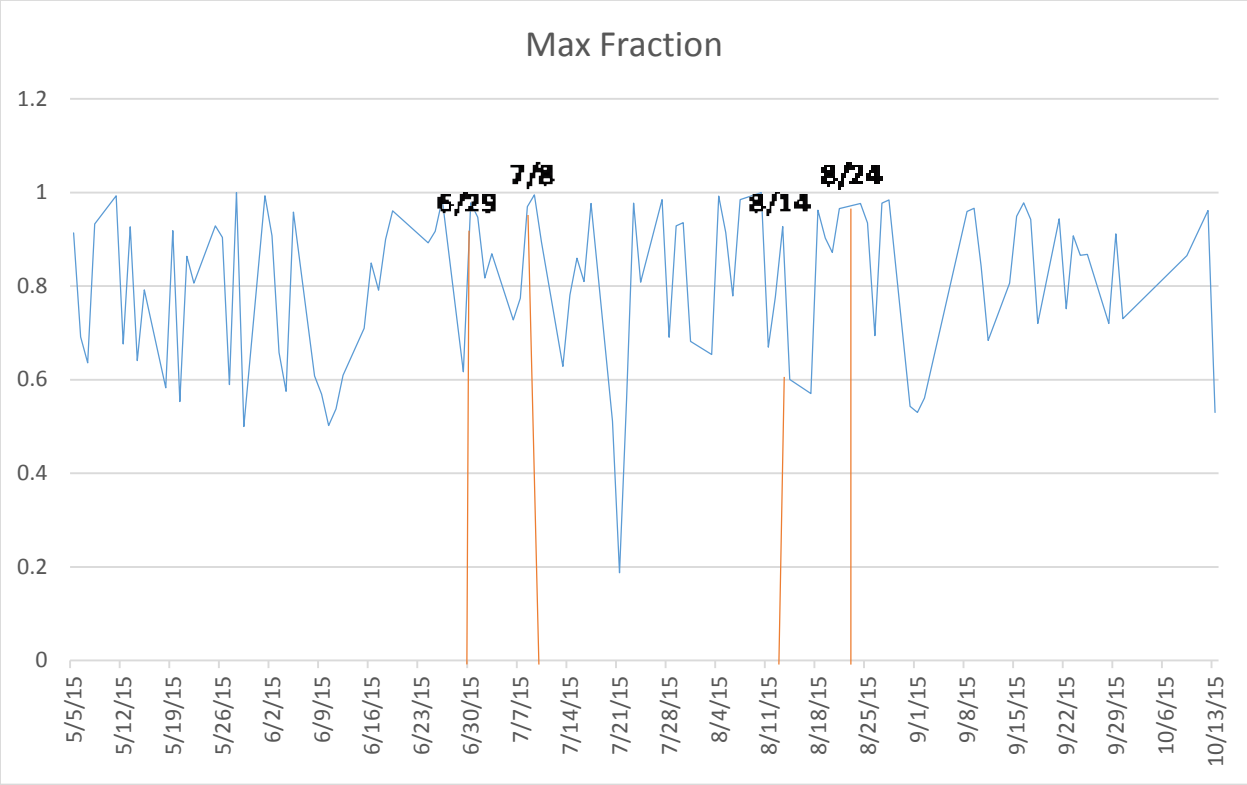
Table 3

Date	Events	Max Fraction	Systematic Risk	Idio-syncratic Risk	R squared
2014 Average		0.705255	0.0125	0.5403	0.37772
June 28-June30	China's central bank cut guidance lending rates by 0.25% and trimmed the amount of cash that some banks must hold as reserves, in a move widely interpreted as mainly a step to support the slumping stock market. China's central bank lowered the interest to 2%. The state-backed provider of margin financing, China Securities Finance Corp, publicly said that the risk of margin trading was controllable and margin calls were relatively small. Later in the day, China said it would allow pension funds managed by local governments to invest in the stock market for the	0.978022	0.679432	0.20543	0.77498

	first time, potentially channeling more than 1 trillion Yuan($161 billion) into the equity market				
July 8- July 9	SSEC announced that China securities Corporation provide sufficient capital to purchase public offering fund, and increase the liquidity. SSEC also stated that China Securities Corporation will buy more middle and small sized firms' stocks, while maintain the stability of blue chips. China Securities Corporation provides 260 billion credit to securities companies through stock pledge On 8th evening, China banned stock sales by major shareholders for six months. Chinese authorities have also suspended initial public offerings, restricted bearish bets via stock-index futures and encouraged financial firms to buy shares. In perhaps the most dramatic effort to prevent investors from selling, local exchanges have allowed at least 1,331 companies to halt trading in their shares.	0.994898	0.6274884	0.1990358	0.82757
August 14	The CSRC surprised the market by announcing that Beijing would allow market forces to play a bigger role in determining stock prices, the first official signal that Beijing was moderating its efforts to prop up stocks.	0.600775	0.5295262	0.3140357	0.74431
August 24	The PBOC cut interest rates and RRR for the second time in two months in another twist of	0.976738	0.5168687	0.282345	0.71626

	policies, ratcheting up support for the stumbling economy and the plunging stock market.				

Figure 7



To illustrate the observation more clearly, the thesis plots the time series of the four values from May 2015 instead of January 2014, and mark the dates when the four major interventions occurred. As for max fraction, the thesis uses daily value instead of 10-day average to observe the government intervention's effect. Although 10-day average can avoid noises and reflects the general trend of the data, it is not suitable for studying data of specific dates. In figure 7, after the government sent the "national team" to stabilize stock market by directly investing 161 billion dollars on June 29th, the max fraction value increased sharply. On July 8th, China's government further indirectly invested 260 billion into the stock market. The daily fraction value

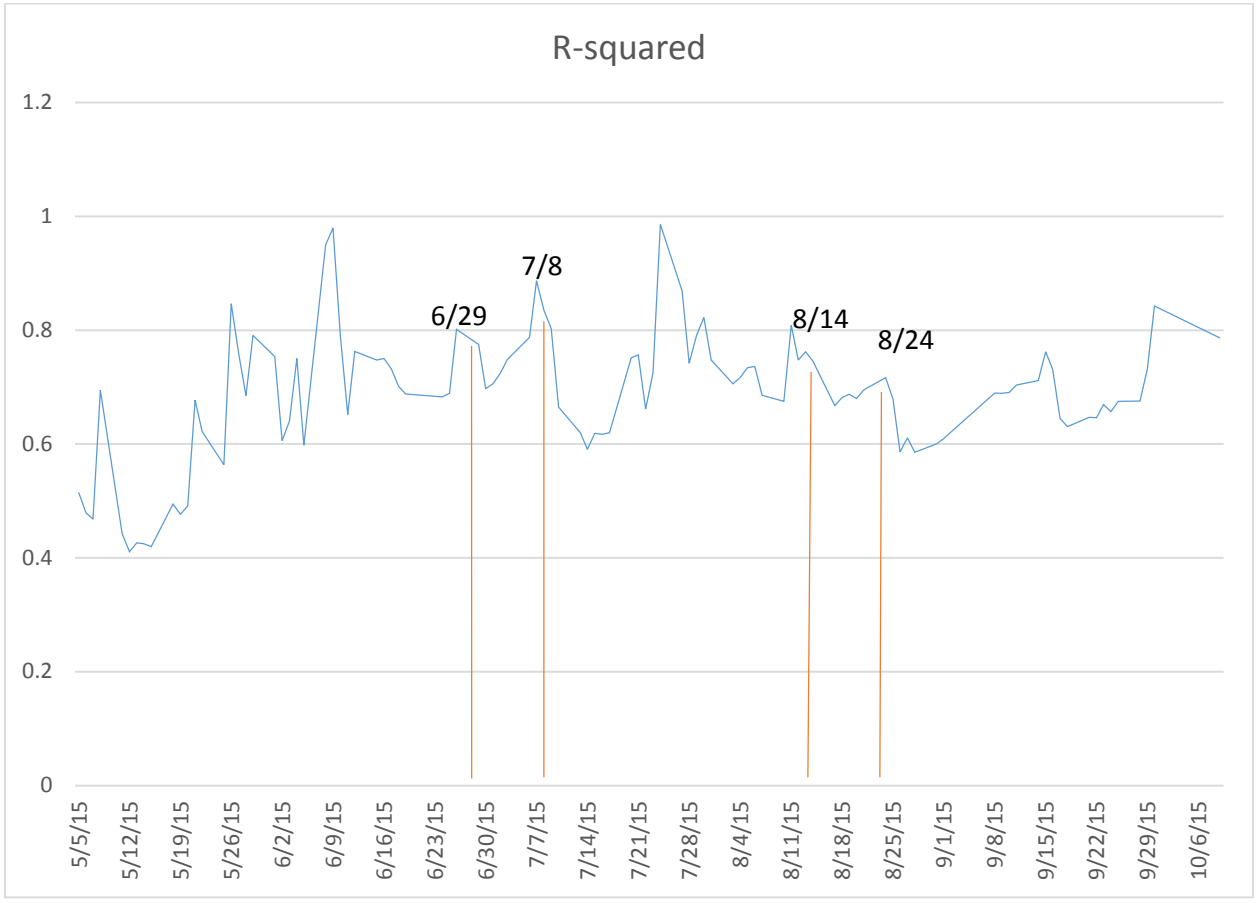
is 0.9688 on July 8th, and 0.994898 on July 9th, increased 25% from the fraction value on July 7th, 0.774059.

Table 4

7/6/15	7/7/15	7/8/15	7/9/15	7/10/15
0.727678571	0.774058577	0.969879518	0.994897959	0.894736842

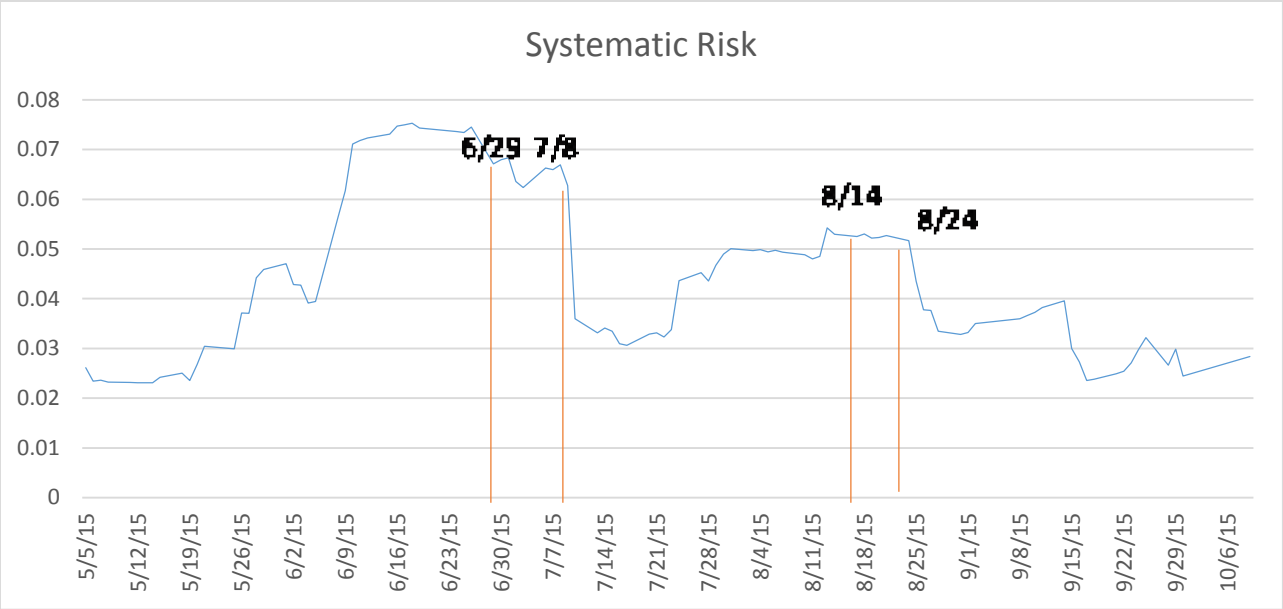
On August 14th, CSRC announced the start of withdrawing the "national team", the max fraction value dropped to 0.60, which is even lower than the average of year 2014. On August 24th, however, the government intervened again through central bank's actions, the max fraction value increased again.

Figure 8



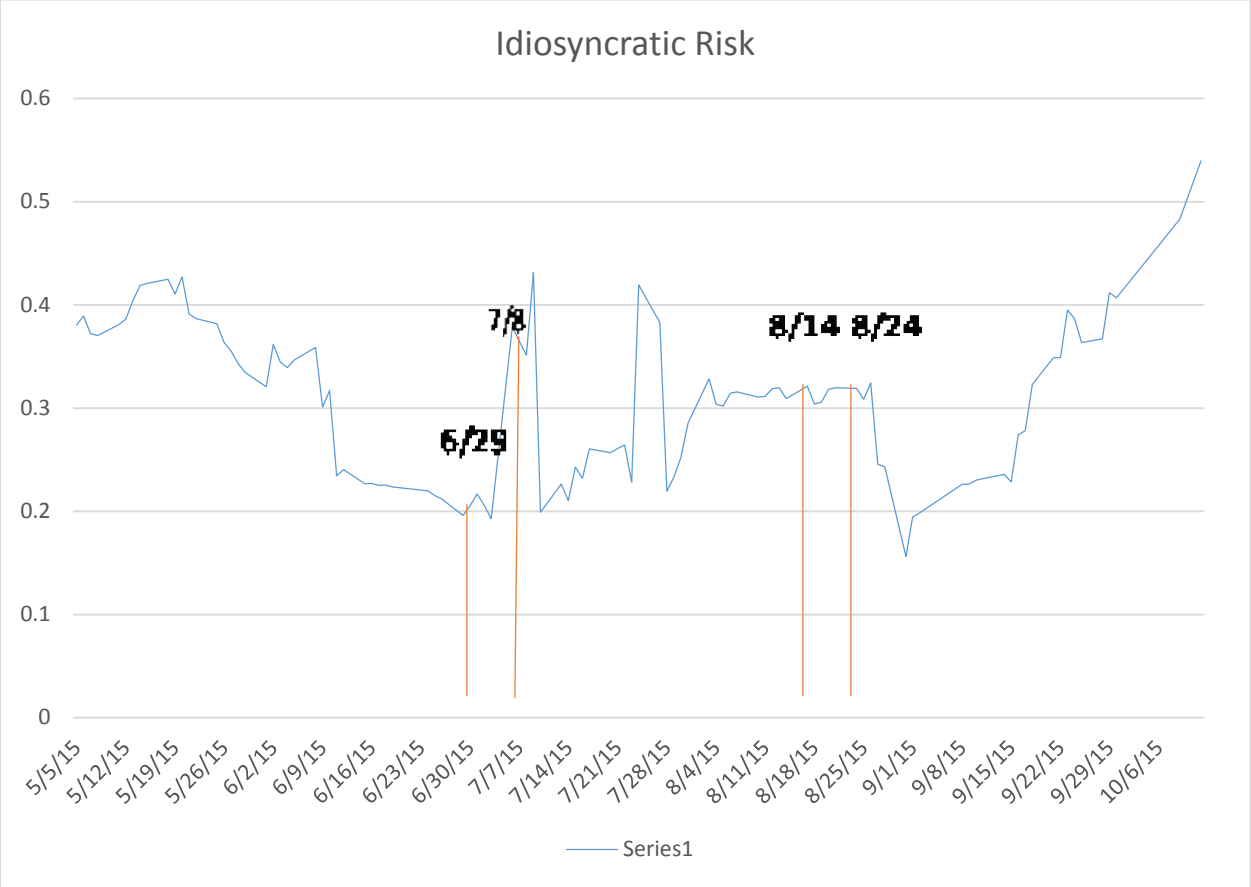
Besides max fraction, R-squared, as another measurement of stock synchronicity generally fit in the story. R-squared kept increasing as the "national team" held more and more stocks and decreased on August 14th. R-squared then reached its short-term minimum 0.6675 on August 17th and increased to 0.71626 when the central bank announced the cut of interest rate.

Figure 9



Systematic risk, on the other hand, does not follow the trend as the hypothesis predicted. It decreased when the government increased investment in the stock market on July 8th. Systematic risk also decreased when PBOC cut the interest rate. One explanation could be the negative short-term effect of government intervention on systematic risks. Since the government interventions are against the market, they can reduce market risk in a short term. For example, when the market falls, government tries to prop up the market when it falls, which decreases the systematic risk. Additionally, there are factors that can affect the systematic risks, other than government intervention. The bad performance of economy, uncertainty about future economy or future reform in the stock market can all affect the systematic risk.

Figure 8



The idiosyncratic risk almost reached its short-term minimum on June 26th. The government's investment almost diminished the determining stock price function of firm specific information. But the idiosyncratic risk did not keep declining from June 29th to July 8th. Instead, it increased and peaked around July 7th. After the government announced more capital supply for the stock market, it dropped back to the floor. As government introduced the free market power back, idiosyncratic risk slightly increased and fell again after the PBOC cut the interest rate.

Overall, from the above observation, it is proposed that government intervention does have effect on stock synchronicity, which reflects severe side effects of government interventions. High stock synchronicity means that the stock price does not reflect firm-specific information. Thus, the stock market loses the function of information gathering. In *Real Value of*

China's Stock Market by Professor Robert Whitelaw and Professor Jennifer Carpenter, it is stated that the efficiency of investment is likely to be higher in a stock market with better stock informativeness. The paper defines the efficiency of investment as the "unexpected change in equity value associated with a unit of unexpected investment, measured in a cross-sectional regression." The research plots the time series of measure of investment efficiency $ß_t$ and found out that it follows the trend of the informativeness of China's stock market. The high correlation between investment efficiency and informativeness proves the important role of firm-specific information in determining the value of a stock market. Is it really worthy of stabilizing the market by damaging the value of the market ?

VII. Conclusion

This paper uses max fraction and regression based methodology to measure the stock synchronicity. The results show inclining trend of R-squared, max fraction and systematic risk , and the declining trend of idiosyncratic risk. This does not only illustrate the increase of stock synchronicity, but also suggests that the weight of firm-specific information in deciding the stock prices is diminishing. The informativeness of the stock market decreased. As discussed above, informativeness is highly correlated with the investment efficiency and thus the value of a stock market. The government interventions not simply increase the stock synchronicity, it make the stock market lose the function of information gathering as well, as a consequence, the capital will not reallocate effectively. Certainly there might be other aspects that had been considered when the Chinese government made the decision. However, the thesis should attract the attention of regulators and reformers in China by illustrating the side effects of government intervention focusing on the change of stock synchronicity.

Appendix I
Events Timeline

date	event	index	return
Feb 26	*Real Estate Registration Rules* has been published		
March 1	China's central bank announced that the interest rate decreased 0.25%, from 2.75% to 2.50%, and expanded the range of financial institutions' interest rate to 1.2 to 1.3 times. The guidance-lending rate decreased to 5.35%.	3601.26	0.7957%
March 30	Treasury allowed citizens sell houses that they had owned for over two years without paying the business taxes. China Banking Regulatory Commission (CBRC) made the announcement about developing financial service in the rural area China published the policy of deposit insurance system, which would be implemented after May 1st.		
April 12	Chinaclear (China Security Clear LLC) abolished the "one account for one person" policy . One person can have up to 20 accounts.	4421.07	1.7646%

April 20	China’s Central bank lowered the financial institutions reserve rate by 1%.	2451.41	-1.6746%
April 26	China’s central bank lowered the interest rate to 1.75% and cut the guidance-lending rate to 4.6%.	4807.59	2.2317%
May 11	China’s central bank announced that interest rate decreased to 2.25%. The guidance-lending rate decreased to 5.1%. It also extended the upper limit of financial institutions’ interest to 1.5 times from 1.3 times.	4690.53	2.8986%
June 28	China's central bank cut guidance lending rates by 0.25% and trimmed the amount of cash that some banks must hold as reserves, in a move widely interpreted as mainly a step to support the slumping stock market. China’s central bank lowered the interest to 2%.	4191.55	-3.3353%
June 30	The state-backed provider of margin financing, China Securities Finance Corp, publicly said that the	4473	6.7381%

	risk of margin trading was controllable and margin calls were relatively small. Later in the day, China said it will allow pension funds managed by local governments to invest in the stock market for the first time, potentially channeling more than 1 trillion Yuan($161 billion) into the equity market		
July 1	After markets close, the Shanghai and Shenzhen stock exchanges announced plans to lower securities transaction fees by 30 percent from August.	4253	-4.8941%
July 2	The CSRC announced relaxation of rules on margin trading before market open, lowering threshold for individual investors to trade on margins and expanding brokerages' funding channels. The CSRC announced setting up a team to look into illegal manipulation and investigate cases if needed.	4107.99	-3.4083%
July 3	China Financial Futures Exchange (CFFEX)	3885.92	-5.1906%

	suspended 19 accounts from short-selling for one month, sources with direct knowledge tell Reuters.		
July 5	China state-owned investment company Central Huijin Investment Ltd said it had recently purchased exchange-traded funds (ETFs) to support the market and would continue to do so. Guided by the government, China's top 21 securities brokerages pledged to invest at least 120 billion yuan ($19.33 billion) collectively to help stabilize the country's stock markets. The CSRC announced that People's Bank of China (PBOC) would inject liquidity directly to the state-backed margin finance company to stabilize the tumbling stock market.	3998.54	2.9200%
July 8	SSEC announced that China securities Corporation provide sufficient capital to purchase public offering fund, and increase the liquidity. SSEC also stated that China Securities Corporation will buy more middle and small sized	3897.63	6.4042%

	firms' stocks, while maintain the stability of blue chips. China Securities Corporation provided 260 billion credit to securities companies through stock pledge		
July 9	On 8th evening, China banned stock sales by major shareholders for six months. Chinese authorities had also suspended initial public offerings, restricted bearish bets via stock-index futures and encouraged financial firms to buy shares. In perhaps the most dramatic effort to prevent investors from selling, local exchanges had allowed at least 1,331 companies to halt trading in their shares.	4106.55	5.3602%
July 31	Regulators said that it had restricted 24 stock trading accounts for suspected trading irregularities.	3816.70	0.0352%
Aug 11	The central bank surprised the world by devaluing the yuan by nearly 2 percent, a move that was	4066.67	-0.4331%

	followed by further weakening of the currency in trading in the following days. Policymakers described the move as part of ongoing reforms but markets suspected political pressure was growing to weaken the yuan to boost ailing exports.		
Aug23	China allowed pension funds managed by local governments to invest in the stock market for the first time.	3257.53	-8.7479%
Aug 24	The PBOC cut interest rates and RRR for the second time in two months in another twist of policies, ratcheting up support for the stumbling economy and the plunging stock market.	3257.53	-8.7479%
Aug 31	The yuan depreciated 2.7 percent in August in the aftermath of the unexpected devaluation on Aug. 11. The yuan also depreciated against a trade-weighted basket.	3366.54	0.7256%
Sept 2		3365.83	0.1115%

	China's foreign exchange regulator issued new rules relaxing restrictions on multinational firms' management of their foreign currency-denominated debt in China, allowing them to pool debt from their subsidiaries for central management.		
Sept 11	The PBOC had asked banks to strengthen supervision of foreign exchange purchases by foreign-held non-resident accounts (NRA) to tighten loopholes in its managed capital account, sources told Reuters.	3347.19	-0.3089%
Sept 14	Data showed the PBOC and commercial banks had sold a net 723.8 billion yuan ($113.69 billion) of foreign exchange in August, reflecting the size of the PBOC's interventions.	3281.13	-1.9736%
Sept 17	The State Administration of Foreign Exchange said it	3237.00	-2.1833%

	would conduct checks on firms' foreign exchange buying to prevent speculation on yuan depreciation and stepped up a crackdown on illegal cross-border money transactions.		
Sept 18	The People's Bank of China (PBOC) had ordered banks to tighten supervision of clients' foreign exchange deals and strictly check the authenticity of clients' forex purchases and sales to prevent cross-border arbitrage, sources told Reuters.	3251.27	0.4408%

Appendix II

Average	0.001770011	0.000313782
Standard deviation	0.011731917	0.025113975
Skew	0.402473174	-0.753971167
Kurt	2.37918672	1.94396802