Impact of the 2008 Sichuan Earthquake on China's stock market: As an example to the "Chenyu Plate" of China

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Abstract: The stock market ont only meet with the macro-economic impact, but also with a number of unexpected events' influences. May 12 Wenchuan earthquake had a short-term impact on the stock market. Some companies' stocks suspended and significantly increased. It caused 66 listed companies' stocks with effect from the suspension, 45 listed companies suspended. Medicine, agriculture and cement stocks rose overall, more than 40 pharmaceutical stocks raised limit. For long-term impact, we use GARCH model and analysis the long-term impact on stock mark. The result shows that the earthquake has not changed the basic level of China's stock market, the time of continuity and fluctuations are short and the long-term impact on China's stock market is limited.

1. Introduction

There are a lot of natural disasters in the history and the three representatives of major natural disaster which impacted the stock market over the past 20 years are Kobe earthquake in Japan in1995, China Taiwan 921 earthquake in 1999 and Hurricane Katrina in United States in 2005. The three natural disasters have caused large impact on the stock market and macro-economic (see table 1).

Table 1 Three major natural disasters' impact on the stock market

Time and place	Disaste'status	Impact on the stock market
January, 17, 1995, Great HanshinEarthquake in Japan	Magnitude 7.2. 5,466 peoplewere dead, more than 140 million people were affected and more than 100,000 houses were destroyed.	Nikkei 225 Index had been down from 19,241 points of January to 17,785 points of January 23. The index decreased 7.6% during the four trading days.Japan index reboundedfor a short time and ultimately continued tofall. During this time, the well-known Barings declared bankruptcy.
September 21, 1999, China Taiwan 921 earthquake	Magnitude 7.3. 2378 people were dead and 40,845 housescollapsed.	After the earthquake, the Taiwan stock market suspend trading until September 27. the Taiwan weighted index declined from 8016 points in September 20 to 7599 points in 30 September. The index decreased 5.2% during the five trading days. The indexalso experienced a rebound and decline then showing consolidation patterns.
August 12, 2005,the United StatesHurricane Katrina	The levee breaked and 80% of the city were eroded by water, 1,200 people were dead, millions of people were displaced and the economic losses amounted to more than 340 millions.	Alabama, Florida, Louisiana, Mississippi andother states experienced this natural disasterand the GDP of disaster areas accounted for about 2.2% of U.S.GDP. The hurricane caused 100 billion dollars lost,accounting for 0.3% of U.S GDP and reduced 400,000 job opportunities. However, the hurricanes led to high oil prices and could push up the current level of inflation.

Annotation: http://www.douban.com/group/topic
                 http://baike.baidu.com/view/
                 http://www.people.com.cn/GB/historic/

The outbreak of earthquake 8.0 at Wenchuan County in Sichuan province in May 12, 2008 shook the whole China. After heared the news, China Securities Regulatory Commission held a party committee meeting in order to study emergency measures, and set up an emergency leading group which guided the stock market after the earthquake. In the next day, the Shanghai Stock Exchange decided that 66 listed companies suspended until the noticed day. According to statistics, Sichuan Changhong, * ST East Carbon, China Jialing, Gaojin Food Etc 16 listed companies disclose that the Earthquake caused their Companies and Affiliated companies certain loss, but more than half of other companies declared that they did not suffer loss in this disaster. Wenchuan earthquake also caused a large number of casualties, had seriously undermined the economic base of Sichuan province. The more import is that the reconstruction would be a very long-time task which will bring a lot of uncertainty to China's stock market.

Contrast with the three major natural disasters above-mentioned in recent years, Wenchuan earthquake' impact on economic is the same as Hurricane Katrina influence in the U.S. But it was lower than Japan and Taiwan's earthquake, Therefore, the Wenchuan earthquake' impact on economic (include short-term and long-term economic as well as nvestment growth, etc.) and stock market shuld be quite limited.

What was the relationship between Wenchuan earthquake and China's stock market? In this paper, By analyzing the macroeconomic and stock market's impact of the earthquake disaster and using GARCH models, we Empirically analysis the Relationship between Shanghai A-Share Index and the Chengyu Index before and after the earthquake.

2. The analysis of Wenchuan Earthquake Disaster on the Economic Impact
2.1 Impact on the macro level
2.1.1 Earthquake affected the basic mechanism of macroeconomic

We can analyze the seismic impact on economic activity by analyzing the total supply, demand and its components. In the view of the total supply, the earthquake declined capital stock (based facilities, equipment and machinery were destroyed) as well as reduce the size of the population (a large number of sudden deaths and more number of the disabled). The technological advance little relation with earthquake. So the total supply curve left moved due to the reduction of capital stock and population by earthquake caused.

From aggregate demand interview, the export demand wich is decided by foreign economy is not directly affected by the earthquake. So seismic impact on the domestic demand can be divided into two parts: investment and consumption, and two stages: disaster relief and reconstruction. In the disaster relief phase, the normal investment demand should be downward and in the reconstruction phase, investment demand would be relatively large increase due to the demand of capital stock and the normal investment activities for the economic gradual recovery of. In the disaster relief phase, the normal consumer demand should be inhibited, but the government's public expenditure is growing (such as medical aid, military mobilization, etc.).The donation of residents in other parts should inhibit consumption and investment activities in their areas. However, the donation almost used for disaster relief. So the result should be activity. On the whole, the impact on the consumer demand had to balance the three factors above mentioned and the direction is not clear. In the reconstruction phase, the normal consumer demand in the affected areas should be restored, and even a certain degree of acceleration, because government would invest the necessary public funds for the reconstruction. So the impact of the consumption in the reconstruction phase should be positive.

By analyzing changes of the two aspects of supply and demand, it is sure that the earthquake will rise inflationary pressures, but we can't observed the rise in inflationary pressures systemic in most of the time because the price was decided by the global and the seismic impact is a short-term. Hurricane Katrina in United States and the earthquake in Taiwan caused the price of refined oil and electronic chip rising respectively. It is a classic example of exacerbating inflationary pressures by the earthquake, but this is not common. Earthquake also can   slowdown the economic and investment activities in a short period, but economic growth and investment will soon rebound to the position which is higher than normal levels, followed by a gradual return to near trend.
2.1.2 The discussion about Wenchuan earthquake on the impact of macro-level

Many experts and scholars put forward different points on this question.

Argument 1, Did the earthquake affect the whole or partial? Liu Jipeng, from Economic Research Center of China University of Political, believed that the earthquake affected areas was small, and because the local economy was not very developed, earthquake only affected the transport system. Therefore, the substantive economic impact was limited. Ou Minggang , from international financial center of Diplomatic Academy, believed that the local economy had been devastated seriously

by Wenchuan earthquake, but the influences were not much significant to national and Sichuan economic, and it would not change Chinese macroeconomic development. Yi Xianrong, from Institute of Finance and the Chinese Academy of Social Sciences, believed that the seismic impact on the economy was limited in general. But judging from the current situation, the seismic impact on the local economic impact was fatal. Jing Xuecheng, from China International Economic Relations, believed that the earthquake resulted in casualties and building collapse, from this sense, the earthquake on the Chinese economy impact was huge. Yuan Gangming, from Economic Research Institute of Chinese Academy of Social Sciences, believed that the earthquake impact on Chinese was certainly comprehensive. If someone says that the impact of the earthquake was only limited to the part, it was referring to the geographical. But it was the destruction of the whole of China from an economic points to talk about the impact.

Argument 2, whether the earthquakes impact adjustment of monetary policy? Yuan Gangming believed that rate hike was inevitable even if there was inflationary pressure. King Xuecheng believed that the central bank's interest rate policy was not directly related to the earthquake in Sichuan. Guo Tianyong, from Central University of Finance and Economics, believed that the central bank interest rate increase was a very outdated behavior when after the earthquake and earthquake relief time.

Argument 3: the impact of earthquakes on the grain price? Guo Tianyong believed that, in terms of food, the food were faced with a certain rising pressure after the earthquake, But it was not necessarily representative of the food reduction. Yuan Gangming believed that food prices would certainly rising, but Changed slightly. Liu Jipeng believed that the good momentum of agricultural production this year would not be affected fundamentally, and the prices of agricultural products in general was able to maintain stability.

To sum up, the experts and scholars from different research angles, drawn very different conclusions. First, the earthquake impact Chinese economy. From the long-term perspective, this article the same opinion with Ou Minggang and Liu Jipeng, believed that earthquakes on the impact of Chinese

economy is partial, did not change the development of macro-economic situation. The Second, seismic impact on monetary policy, Yuan Gangming and Jing Xuecheng and Guo Tianyong have considered monetary policy as a whole, an integral handle, lack of flexibility. This article think that monetary policy can be treated differently by draw-lessons from "one country, two systems" approach. The third is the impact of earthquakes on the grain price. From the characteristics of the earthquake disaster, the earthquake damage to the vegetation were limited, the paper endorsed Guo Tian yong's view that the earthquake's impact on food production was limited.

2.2 The impact of fundamentals on the stock market

Wenchuan Earthquake in Sichuan Province has a small impact on majority of listed companies. There are more than 60 listed companies which can be divided into three parts in Sichuan Province. The first category is basically not affected to the production and operation, including Chengdu and southern Sichuan's most companies. These companies accounted for 60 percent of the total number. The second category are these which can be resume production soon after a brief shutdown. These companies accounted for 32 percent of the total number. The third category are those seriously damaged companies. The total number of such companies only account for 8%.

Meanwhile according to statistics, the output of Sichuan Province accounts for 3.9 percent of Chinese GDP, manufacturing accounts for only 2.5% of the country, and most disaster towns lie in the remote mountainous areas. Thus, the loss will be very limited and the impact on the macroeconomic is not great. It will not wave the fundamentals of the stock market.

There are different effects on the stock plate by the earthquake. Such as the medicines plate is expected to increase sales. However, because in such a special time, the state was likely take a special form for the important goods and materials, such as non-market-oriented to large-scale centralized purchasing. which may affect the enterprises.

Table 2. earthquake's impact on the stock plate

Plate	Middle of the earthquake	After the earthquake	Reasons
nsurance	Limited	Limited	Earthquake insurance is usually classified as the middle of the exclusion. The smaller the scope of the disaster, so it will not risk spending a lot of compensation.
Pharmaceutical industry	positive	Limited	Pharmaceutical companies get super is unlikely. Because in such a special time, the state is likely take special form of control, uch as non-market-oriented methods which means the state may take cost plus method to purchase and requisition in a large scale. These may fect related businesses day-to-day production and marketing
Food & Beverage	Negative	Limited	Earthquake for the impact of food production is also executed in the earthquake affected area, but should not affect a more limited view.
Building Materials	positive	positive	After the beginning of post-disaster reconstruction, the short term and maintenance of large-scale new housing will increase local demand for construction steel.
Tourism industry	Negative	Negative	Earthquake damage to a lot of tourism resources. A long period of time is needed to recover.
Power industry	Negative	Negative	Hydropower accounts for a large proportion and coal production is small in Sichuan Province and coal outsourcing usually limited. Therefor electricity demand will be driven, when large-scale disaster occur if the water station due to maintenance or other reasons can not be normal (including the possible geological disasters) work. It would be possible to form a tight power supply situation in the province.
Non-ferrous metals	positive	positive	Post-disaster reconstruction will increased demand.

As we can see from the Table 2, seismic impact on the major industry reflected in the following aspects. First, Sichuan is a major agricultural province and food, oil, tea and silkworm cocoon's output occupies an significant proportion of the country. If the actual impact is a larger, it may increase the upward pressure of related products. Second, taking into account the factors of post-disaster reconstruction, the positive aspects are construction materials, such as cement, iron and steel and so on.

3. Empirical Analysis
3.1 The research methods of Wenchuan earthquake impact on China's stock market.

In general, there are two research methods about emergencies impact on the stock market. One is "abnormal fluctuations in point". In other word, we can look for the law of the fluctuations in stock by a major event. "Abnormal fluctuations in point" method is put forward by Wichern Miller and Hsu in 1976, when they tested stock price behavior through using first-order autoregressive time-series change. [1]

Another is GARCH model. Engle (1982) firstly proposed the ARCH model (Autoregressive Conditional Heteroskedasticity Model).[2] He provided a new way of resolving such issues. Bollerslev (1986) made a direct linear extension to the application of heteroskedasticity and formed a wider range of GARCH models on the basis of Engle.[3] In the ensuing decades, economists had also expanded and improved the following model to form GARCH-M, TARCH, EGARCH model, etc, and then formed GARCH model family. In this paper we use GARCH model as a tool to analyse stock price fluctuations in A-share index on behalf of the Shanghai Stock Exchange and Chengyu index on behalf of Sichuan Province.

3.2 The analysis of seismic impact on the stock market.

According to Fama (1965) theory,[4] the behavior of investors in financial market lead the stock market price. But investor's behavior affected by many factors including the macro-economic environment, financial environment and market

environment. The Wenchuan earthquake had changed investment environment. In this paper, we use GARCH model[5] to analyze the impact of China's stock market by Wenchuan earthquake.

3.2.1 data and research method

In this paper, we use ShangHai A-Share Index and the Chengyu index as study sections and select closed index data of 243 exchange days from 4th January, 2006 to 4th July, 2008. The information in this article come from the "great wisdom" software and data analysis software is Eviews5.0. The yield rate of stock price index is showed by the number which calculated logarithm to index in two adjacent days:

$$R_t = \ln(P_t) - \ln(P_{t-1})$$

Where: R_t is the rate of return in the trading day,

P_t is the closed price in the t trading day. The basic idea is that we make a descriptive statistical analysis of the stock yield first, then analyze the characteristics of yield sequence, and the last we do the autocorrelation test to the model residual. If there is residual autocorrelation, correct the autocorrelation. Then test the residual heteroscedasticity. if there is heteroskedasticity, made the asymmetry model. We can study the characteristics of stock index yield fluctuations by using GARCH model and use Granger to tests correlation between Shanghai A shares index and the Chengyu plate index, in order to analyze the relationship between them.

3.2.2 The descriptive statistical analysis on the yield

Calculate the above data by Eviews5.0 software, and summarize the statistical characteristics of yield rate in Figure 1 and Figure 2
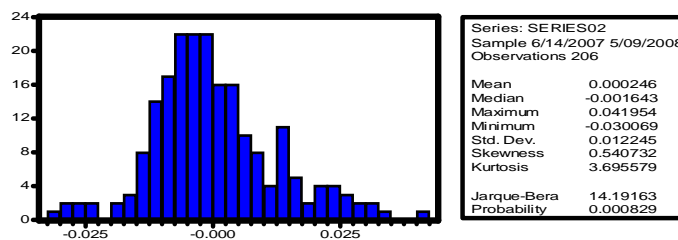

Figure 1   the statistical analysis of Shanghai A Share Index yield rate
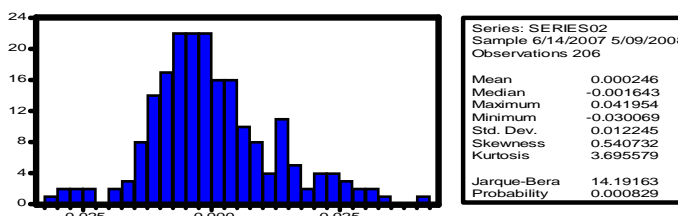

Figure 2   the statistical analysis of Chengyu Index yield rate

The above chart was based on the statistics from ShangHai A Share stock index and Chengyu plate index before the Wenchuan earthquake. According to the statistics graphs, we can get the following results: the average yield in current stock market is lower than proceeding of the bank deposits in the same period. Of course, the risk of stock market is much higher; the above charts showed positive skewness at the same time, indicating yield obviously on the right side. It also can be seen from the chart that kurtosis is much larger than the normal distribution kurtosis

value, indicating that the day yield compared with the normal distribution showed a distribution of "peak and fat tail", wich reflects the problem of the stock market surge is very serious; Jarque-Bera Normality test statistic was so large than we can refuse to assume the original normal distribution.

The Statistical characteristics of Shanghai A-Share Index and the Chengyu plate index are Figure 3 and Figure 4 in 30 days after the Wenchuan earthquake.

```
Series: SERIES01
Sample 1 21
Observations 21

Mean          0.004859
Median        0.002851
Maximum       0.041831
Minimum      -0.012599
Std. Dev.     0.011778
Skewness      1.318228
Kurtosis      5.826189

Jarque-Bera  13.07096
Probability   0.001451
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Figure 3   the statistical analysis of Shanghai A Share Index yield in 30 days

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Series: SERIES02
Sample 1 21
Observations 21

Mean          0.005730
Median        0.003507
Maximum       0.038077
Minimum      -0.013226
Std. Dev.     0.011671
Skewness      0.987301
Kurtosis      4.253739

Jarque-Bera   4.787052
Probability   0.091307
```

Figure 4   the statistical analysis of Chengyu Index yield in 30 days

Through the above analysis, we can see that Chengyu plate average yield is 0.005730, which is higher than the Shanghai A-share yield index 0.004859 after the earthquake 30 days later. The yield difference between them is 0.000871, which indicated that investors have confidence in post-disaster reconstruction in Sichuan.

The Statistical characteristics of Shanghai A-Share Index and the Chengyu plate index are Figure 5 and Figure 6 in 60 days after the Wenchuan earthquake.
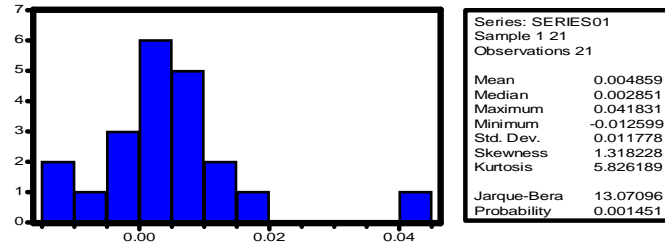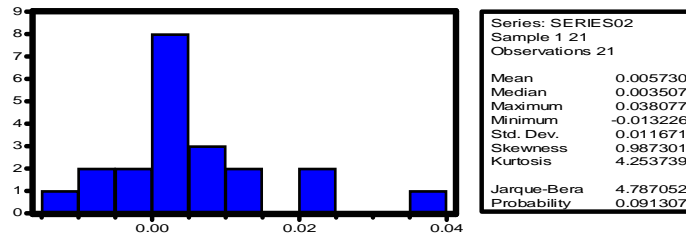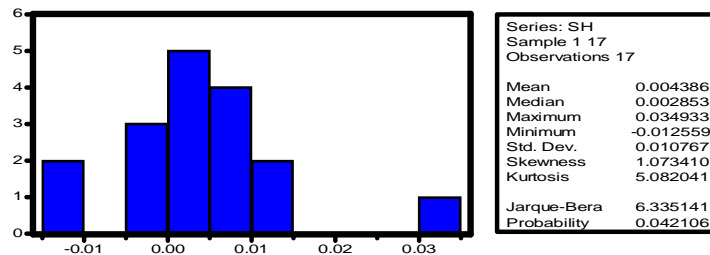
```
Series: SH
Sample 1 17
Observations 17

Mean          0.004386
Median        0.002853
Maximum       0.034933
Minimum      -0.012559
Std. Dev.     0.010767
Skewness      1.073410
Kurtosis      5.082041

Jarque-Bera   6.335141
Probability   0.042106
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Figure 5   the statistical analysis of Shanghai A Share Index yield in 60 days

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Series: SC
Sample 1 17
Observations 17

Mean          0.008345
Median        0.004891
Maximum       0.038077
Minimum      -0.013226
Std. Dev.     0.012658
Skewness      0.730757
Kurtosis      3.434536

Jarque-Bera   1.646765
Probability   0.438945
```
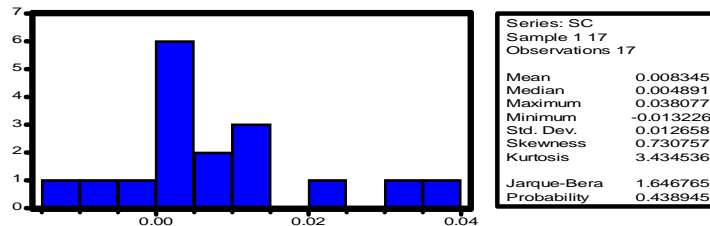
Figure 6   the statistical analysis of Chengyu Index yield in 60 days

Through the above analysis, we can see that Chengyu plate average yield is 0.008345, which is higher than the Shanghai A-share yield index 0.004386 after the earthquake 60 days later. The yield difference between them is 0.003959. Chengdu plate index is significantly stronger than Shanghai Stock Index, which indicate that the market enhance the expect of post-earthquake reconstruction in Sichuan.

The Statistical characteristics of Shanghai A-Share Index and the Chengyu plate index are Figure 7 and Figure 8 in 10 months after the Wenchuan earthquake.
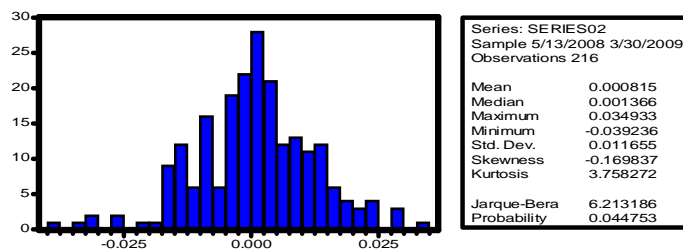
Series: SERIES02
Sample 5/13/2008 3/30/2009
Observations 216

Mean	0.000815
Median	0.001366
Maximum	0.034933
Minimum	-0.039236
Std. Dev.	0.011655
Skewness	-0.169837
Kurtosis	3.758272
Jarque-Bera	6.213186
Probability	0.044753

Figure 7   the statistical analysis of Shanghai A Share Index yield

Series: SERIES02
Sample 5/15/2008 3/30/2009
Observations 195

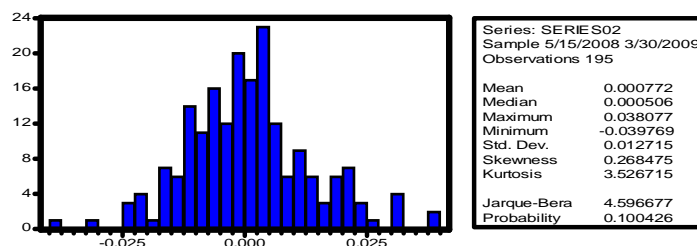|	
Mean	0.000772
Median	0.000506
Maximum	0.038077
Minimum	-0.039769
Std. Dev.	0.012715
Skewness	0.268475
Kurtosis	3.526715
Jarque-Bera	4.596677
Probability	0.100426

Figure 8 the statistical analysis of Chengyu plate index yield

Through the above analysis, we can see that Chengyu plate average yield is 0.000772, which is lower than the Shanghai A-share index 0.000815 after the earthquake 10 months later. The yield difference is only 0.000043. Difference between them is smaller. Both significantly lower than pre-market rate of return, indicating that China's economy have a significant drop in yield by the international financial crisis.

We can find the changes of Shanghai A-share index rate and Chengyu plate index rate in the following table 3 and figure 9 as well as figure 10.

Table 3 The yield of Shanghai A-share index and Chengyu plate index

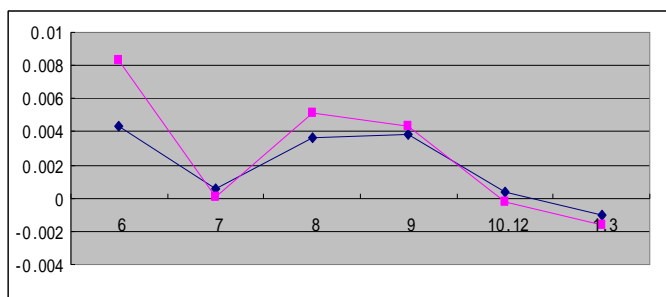| time yield rate	2008.6	2008.7	2008.8	2008.9	2008.10~ 2008.12	2009.1~ 2009.3
The Shanghai A-share index	0.004386	0.000536	0.003599	0.003862	0.000347	-0.001053
Chengyu plate index	0.008345	0.000062	0.005087	0.004328	-0.000226	-0.001664
Index difference between the rate of return	-0.003959	0.000474	-0.001488	-0.000466	0.000573	0.000611

Figure 9   The curve of yield rate of Shanghai A-share index and SAR Chengyu index plate
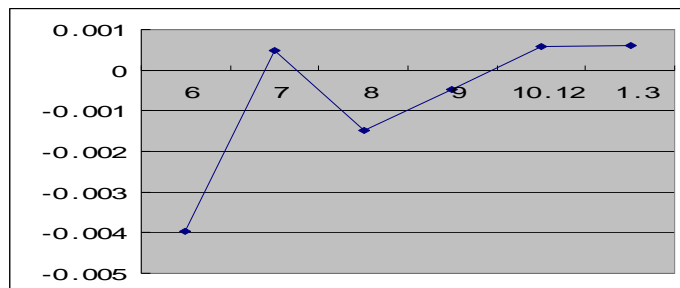
Firure 10 the curve of the difference yield rate between Shanghai A-share index and SAR Chengyu index plate

From the above figure, we can see that after Whenchun earthquake 1~2 months later, the change of Shanghai A-share index and SAR Chengyu index plate is significant. But both of them are convergence afte 4 months, the difference become small.

3.2.3. Analysis of fluctuations in stock index yield

Figure 11 and 12 are the fluctuations of stock index yield. From the linear description in Figures 11 and 12, we can see great fluctuations in yield, showing a very significant feature of volatility clustering, that is, there is a larger fluctuation after large fluctuations, and vice versa. At the same time, the Shanghai A-share and Chengyu plate index yield are similar trends in the overall volatility.
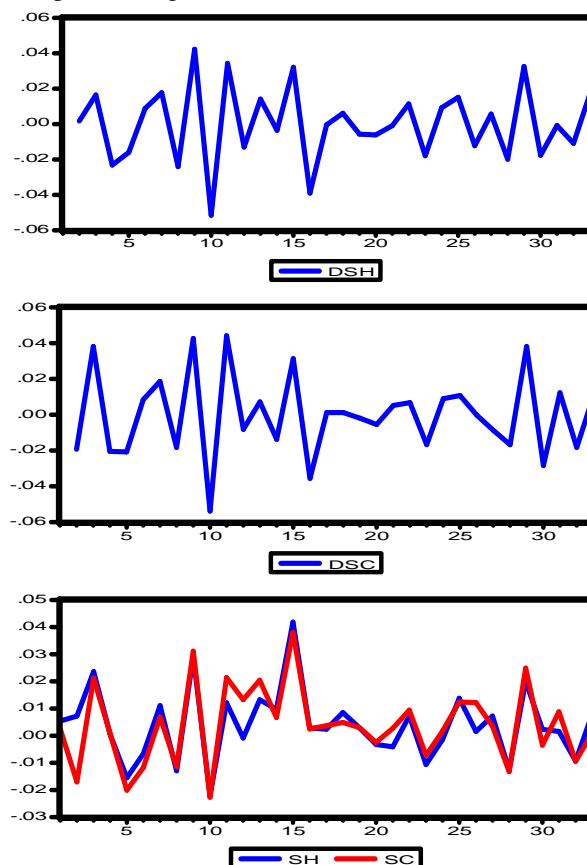

Figure 11   Fluctuation curves of Shanghai A-Share and Chengyu plate index yield
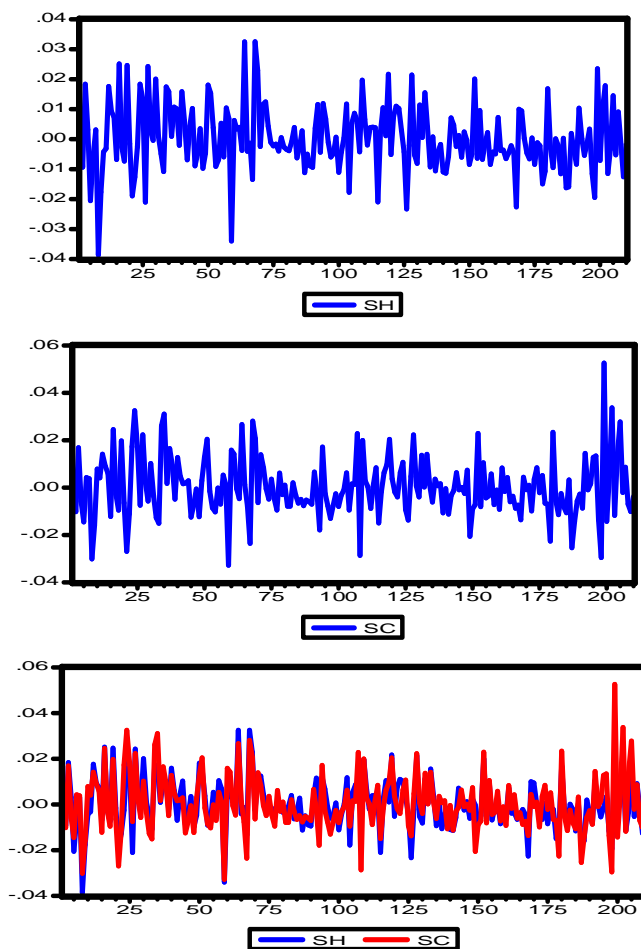
Figure 12   fluctuation curves of Shanghai A-Share and the Chengyu plate index yield

3.2.4 The model's residual autocorrelation test

Do unit root test of yield sequence of the sample (using Augmented Dickey-Fuller test). Test results listed in tables 3 and 4 below, shows that in the 1% significance level, the ADF test statistics t value of the Shanghai A-share index yield sequence is -16.16053 and Chengyu plate index yield is -16.83628, which are far less than the MacKinnon critical value to reject the original hypothesis. That is, the Shanghai A shares yield index sequence does not exist unit root, and residual sequence is stable (Figure 13 and Figure 14).

Table 3   Shanghai A Share Index ADF test

Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-16.16053	0.0000
Test critical values:	1% level	-3.457286	
	5% level	-2.873289	
	10% level	-2.573106	

Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-16.16053	0.0000
Test critical values:	1% level	-3.457286	
	5% level	-2.873289	
	10% level	-2.573106	

Table 4   Chengyu plate index ADF test

Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

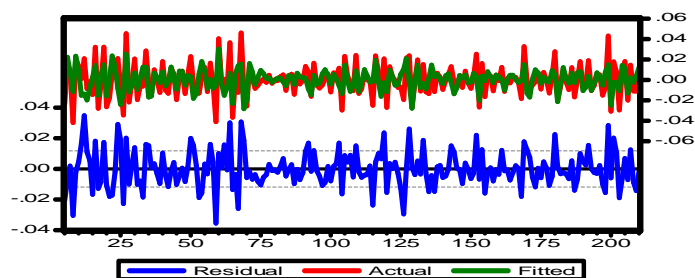|		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-16.83628	0.0000
Test critical values:	1% level	-3.457286	
	5% level	-2.873289	
	10% level	-2.573106	

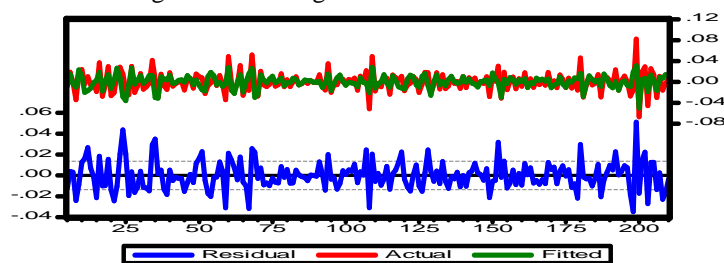Figure 13   Shanghai A-share index residual

Figure 14   Chengyu plate residual

3.2.5 The establishment of GARCH model

Based on the Akaike Information Criterion, the the lag order of model is defined as 3, which can accurately measure the heteroscedasticity of Shanghai A-share index yield. then it can Use ARMA (3,0) to estimate regression of Shanghai Composite Index yield rate sequence, and do the autocorrelation test of residual sequences. The results show that at the majority of time-delay, auto-correlation function and partial autocorrelation function values of yield sequence residuals are very small, which indicates that yield sequence residual does not exist autocorrelation. Do autocorrelation test on Square of the residual sequences and find that there is an obvious residual square sequence autocorrelation. At the same time, do the ARCH-LM test behind 3. The test results indicate that the accompanied probability of P is near zero, and thus it can refuse to the original hypothesis which residual sequences do not exist ARCH effects. All these shows that the Shanghai Composite index yield sequence exists significant ARCH effects and using GARCH model is

appropriate.

Applying GARCH (1,1) to describe the fluctuations of the statistical indicators, the form is following:

$$y_t = c + \varepsilon_t$$
$$h_t = a_0 + a_1 + \theta_1 h_{t-1}$$

The volatility of each form of indicators can be seen in the table 5 and 6.

Table 5 Shanghai A-share index time series tables

Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.769774	0.068552	-11.22912	0.0000
AR(2)	-0.644756	0.074603	-8.642456	0.0000
AR(3)	-0.212802	0.068311	-3.115200	0.0021
R-squared	0.426183	Mean dependent var		-2.46E-05
Adjusted R-squared	0.420529	S.D. dependent var		0.015518
S.E. of regression	0.011813	Akaike info criterion		-6.024859
Sum squared resid	0.028326	Schwarz criterion		-5.976395
Log likelihood	623.5605	Durbin-Watson stat		2.050416

Table 6   Chengyu plate index time series tables

Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.825263	0.067449	-12.23532	0.0000
AR(2)	-0.669767	0.075437	-8.878491	0.0000
AR(3)	-0.272598	0.067278	-4.051812	0.0001
R-squared	0.444891	Mean dependent var		1.02E-05
Adjusted R-squared	0.439422	S.D. dependent var		0.018200
S.E. of regression	0.013626	Akaike info criterion		-5.739176
Sum squared reside	0.037692	Schwarz criterion		-5.690712
Log likelihood	594.1351	Durbin-Watson stat		2.073064

Tables 5 and 6 show that the mean dependent var of Shanghai A-share index and Chengyu plate index yield is nearly 0, conditional variance of regression are more obvious, the other parameters are established under significant 0.05 levels. this means that the conditional variance parameters of the regression equation can explain the reasons for these two index of the conditional variance rate.

Through GARCH model, we can see that the recent downturn in China's stock market which is a continuing process of bottom. It is mainly affected by the recent international market and domestic factors.

After Wenchuan earthquake, we can clearly see that the Chengyu plate index gains the extreme fluctuation in the yield residuals, but the Shanghai A Share index doesn't gain abnormal fluctuations.

3.2.6 Granger causality test

Through the analysis of Shanghai A Share index and Chengyu plate index, it shows that Shanghai A Share index and Chengyu plate index sequences are smooth, hence, we can do the Granger causality test on the Shanghai A shares and Chengyu plate (Table 7).

Table 7   Granger causality test table

Lags: 5

Null Hypothesis:	Obs	F-Statistic	Probability
SC does not Granger Cause SH	28	1.76819	0.17325
SH does not Granger Cause SC		2.22438	0.09927

The probability of the table is defined as following:

P F 1.76819 =0.17325   Means that F = 1.76819 in the left side of the threshold

P F 2.22438 =0.09927   Means that F = 1.76819 in the left side of the threshold

Therefore, the original assumption is accepted. That is, Shanghai A share index is not the reason which Chengyu plate index changes and vice versa. This show that there isn't a causality relationship between Shanghai A Share index and Chengyu plate index.

4. The Conclusions
Wenchuan earthquake happened in the value return process of China's stock market and the empirical results of the analysis to some extent, support the conclusion that Wenchuan earthquake has no observable impact on China's stock marke. We can list the following main reasons: First, during the first four months, Chengyu SAR plate average earnings in Shanghai A shares slightly higher than the average earnings index, indicating that the market is full of expection of post-disaster government fiscal and monetary policy's tilt and believe these policies will pull the financial expenditure. Second, 10 months later, the difference of yield rate of Shanghai A Share Index index andChengyu SAR plate index was not significantly. This indicate that the seismic impact on economic has nearly been eliminate and the stock market is affected only by macro-economic evrionment and government' methods and measures. Third, whether the earthquake could exacerbate inflation, it is still need to wait until after a certain period of time, but it miainly depends on the government's macro-control methods and means. Last, there isn't a causality relationship between Shanghai A Share index. Both are no significantly dramatic fluctuations and continuated the early trend from start to finish, because the residuals are relatively stable. So we can conclude that the seismic impact on China' economic is limited and does not change the fundamentals of China's economy. The last, whether the earthquake could exacerbate inflation, it is still need to wait until after a certain period of time, but it mainly depends on the government's macro-control methods and means.

The inadequacies of this article is that there is no more considering the current volatile market environment when conduct empirical analysis on the market; we did not conduct an in-depth analysis of the stock index before and after the earthquake when did data analysis, which need to improve further.

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