STOCK MARKET AND CONSUMPTION: EVIDENCE FROM CHINA

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Abstract

Despite the rapid development of the Chinese stock markets in recent years, relatively little is known on its characteristics and relations with other macroeconomic variables. Thus, for example, in contrast to more developed markets, relationships between stock market movements and consumer expenditure are less documented for China. In this paper, I would first show that the Shanghai Stock Exchange (SSE, 1999-2010) has a higher average returns and variability than the Standard and Poor's 500 Index (S&P 500). The General Autoregressive Conditional Heteroscedasticity (GARCH) model also shows that SSE has high volatility clustering. The applicability on the relationships between consumer expenditure and stock market effects was then tested against our prior theoretical predictions. Firstly, following the stock market "wealth effect," one would expect higher (lower) stock returns would lead to higher (lower) consumer expenditure. Secondly, the uncertainty hypothesis predicted that high volatility in the stock market would create higher uncertainty in consumption spending. My analyses using the Vector Auto-regression (VAR) model showed that private consumption expenditure in both rural and urban areas had no relationship with and was not affected by the market returns. Analyses also showed that the volatility of the Shanghai Stock Exchange had a small lagged effect on private consumption expenditure. Results suggest that the Chinese stock market is relatively immature with higher volatility. At this stage, stock markets in China are still inefficient and do not serve as good leading indicators of future economic activities for Chinese consumers.

Section I. Introduction

While the relationship between stock market and consumer expenditure has been well documented for the United States and other major developed economies, we have relatively little

theoretical knowledge or empirical research on these issues in China. Despite China being the World's third-largest national economy, its stock market is still at an immature developmental level and its financial system is rather fragile (Goldstein & Lardy, 2005). In this paper, I would compare the stock market returns of the Shanghai Stock Exchange (SSE) to the Standard & Poor's 500(S&P 500). I would also apply the General Autoregressive Conditional Heteroscedasticity (GARCH) model to capture the conditional variance as a measure of the volatility in the SSE market. Then, I would test the relationship between stock market returns, volatility, and the urban and rural residents' private consumption expenditure. The analysis would inform us whether China's stock market variability would affect China's consumer expenditure similarly to that observed in more developed countries.

A. The Stock Market "Wealth Effect"

The stock market in China has developed rapidly since the early 1990s. Within two decades, the Chinese stock market has become one of the largest Asian stock markets in terms of her market capitalization (over $500 billion as in 2004). This also explains its marked dramatic surge of influence on China's financial market. The growing importance of the Chinese stock market suggests that any fluctuation in the stock prices in China might have direct and significant effect on the real economy. One proposed popular mechanism is the stock market "wealth effect," which suggests that a stock market boom would increase consumption pressure, whereas a decline in stock market wealth would cause a slowdown in economic activities (Deaton, 1992). Especially in 2008, the international financial crisis led to tremendous loss to investors around the world, including those in the Chinese stock markets. While developed countries' real economy has been shown to be seriously affected, it is still uncertain and worth examining whether the

stock market crash in developing countries such as China, has similar negative effects on their investors' consumption expenditure.

B. Urbanization in China

Importantly, at present, China has approximately 53.4% and 46.6% of her total population residing in rural and urban areas respectively (CPIRC, 2009). While the urban per capita net annual income was 17,175 yuan in 2009, it was only 5,153 yuan in the rural areas (National Bureau of Statistics of China, 2009). Clearly, the rural area still has a wide income gap as compared to those living in the urban areas. Despite the economic prosperities in China, not everyone in the whole country is experiencing the same changes and benefits. Thus, it would be meaningful to examine whether the rural residents who have low living standards and segregated economic activities are affected by the returns or movements in the stock market. It would also be interesting to test whether the stock market has the same effect on rural and urban areas consumption expenditure in China.

C. Stock Market Volatility vs. Consumer Behaviors

The Chinese stock market has not been stable. The volatility in the Shanghai Stock Exchange has been shown to be greater as compare to that of the S&P 500. In fact, the stock market crash in China that started in October 2007 has wiped out more than two thirds of its market value (Schmidt 2009). How would the damage in this financial sector (i.e., stock market) spill over to the Chinese real economy?

The effect of stock market value on consumer behavior is well established. Romer (1990) first argued that the Great Crash in 1929 has generated individuals' temporary uncertainty in their future income, which consequently postponed their consumption of durable goods (e.g., cars) and

ultimately led to the well known Great Depression. The stock market "wealth effect" might have altered the investors' consumption as predicted and explained above. It is less clear whether extreme stock market movements, such as the 2008 financial crisis, might affect individuals' consumption similarly. It is possible that the higher risks in the market may create a much wider uncertainty effect even to individuals who do not hold stocks.

D. The Present Study

In this paper, specifically I examined the above possible linkages of China stock market on China consumer behavior. I first compared the market returns of the Shanghai Stock Exchange returns from 1999-Jan to 2010-Dec against that of the S&P 500. Secondly, the GARCH model was used to examine the volatility clustering in SSE. I then investigated whether Shanghai Stock Exchange, with a higher average market returns and volatility, would affect both the consumption in rural and urban areas through the wealth effect and uncertainty effect. I would inspect the correlation between urban and rural residents' consumption expenditure and the stock market from 1999: Quarter I to 2010: Quarter III. The purpose of these examinations is to see whether the China stock market returns and volatility had any effect on China consumer expenditure in both rural and urban areas.

This paper is organized as follows. In Section II, the relevant literature on the relation between the stock market and consumer spending would be reviewed. This is followed by Section III, in which an analysis of the Shanghai Stock Exchange returns variability against the S&P 500 and an analysis of the conditional variance in the Shanghai Stock Exchange using a GARCH model are provided. In Section IV, I would use a VAR model to reveal the relationships among

Shanghai Stock market returns, its volatility, and urban and rural residents' consumption expenditure, while further discussion is presented in Section V.

Section II. Literature Review:

Stock Markets and Consumer Spending

A. The Stock Market "Wealth Effect"

The traditional economic theory suggests that stock market returns change the wealth of the investors which subsequently and directly affects their spending. According to Deaton (1992), a stock market boom increases investors' consumption, while a stock market crash causes a slowdown in economic activities such as consumer spending. Poterba (2000) further suggests that the stock market wealth effect would be strongest and most obvious among the small set of households who own the majority of corporate stock. In contrast, this effect for the other households should be modest. This is supported in most empirical studies in developed countries, which showed a positive correlation between stock price and macro-economic growth rate. For example, Johansen (1990) found a long-term equilibrium relationship between the securities prices in the U.S.A. stock market and macroeconomic variables. Studies on this linkage in developing countries are, however, non-conclusive. Funke (2004) found a small, but statistically significant, link between private consumption growth and stock returns in most developing countries. In contrast, Harris (1997) showed that the effect of stock market on economic growth in developing countries is hardly observed.

B. The Uncertainty Hypothesis

The above analysis focused exclusively on the direct effects of the changes in stock market wealth on consumer expenditure. It is, however, possible that the changes in stock prices affect consumer confidence and hence their spending even for households not holding stock. In recent decades, different economists have pointed out the importance of uncertainty on consumer expenditure. According to Katona (1975), consumption decision depends not only on ability to buy but also on willingness to buy, with consumer optimism or pessimism being the key determinant of willingness. Similarly, Garner (1990) further defines that consumer confidence about future business and financial conditions could be an important determinant of consumer expenditure. Specifically, an increase in consumer confidence about the future of the business and financial conditions should increase the present consumption, while a decrease in confidence should lead to the opposite effect.

The validity of this theory has been examined by Romer (1990) using both quantitative and qualitative methods on the linkage of the 1929 Great Crash to the onset of Great Depression. Her results suggest that the extreme stock market uncertainty may make economic agents feel uncertain about the future income. This consumer uncertainty causes consumers to put off their desire in purchasing durable goods until they are certain about their future income. This subsequently leads to a significant decline in the demand of durable goods. Furthermore, an increase in the stock market uncertainty may stimulate the demand of non-durable goods. This is because consumers who are not purchasing durable goods will purchase perishable (non-durable) goods instead as a substitute. In sum, stock market variability should have a negative effect on durable goods and a potential positive effect on non-durable goods.

C. The ARCH/GARCH Model

In order to estimate the Shanghai Stock Exchange volatility, it is essential to introduce the GARCH model here. In the domain of finance, data of time sequence usually suffers from heteroscedasticity in which the error terms and variances are expected to be larger or smaller for some points than the others. Although the regression coefficients for an ordinary least squares regression are still unbiased, the standard errors and confidence intervals estimated will be too small and not precise. Engle (1982) puts forward the Autoregressive Conditional Heteroscedasticity (ARCH) model which treats heteroscedasticity as a variance to be modeled. As in Equation 1 below, the theory postulates that the conditional variance of the t-th term is a function of the residual error from the (t-1)-th term to the (t-q)-th term, i.e. the fluctuation is self-correlative, and the form of ARCH (q) becomes

$$\sigma_t^2 = \propto_0 + \sum_{i=1}^{q} \propto_i \varepsilon_{t-i}^2 \qquad (1)$$

with the non-negative condition that $\propto_0 > 0, \propto_i \geq 0$ $(i = 1,2, \dots, q)$.

The theoretical advancement in the domain of conditional heteroscedasticity developed very quickly and many variations of ARCH model have been proposed. The most representative model is the generalized ARCH (GARCH) model proposed by Bollerslev (1986). In the GARCH model, the conditional variance depends not only on the squared error term in the previous time period (as in ARCH (1)), but also on its conditional variance in the previous time period.

$$\sigma_t^2 = \propto_o + \sum_{i=1}^{q} \propto_i \varepsilon_{t-i}^2 + \sum_{j=1}^{p} \beta_j \sigma_{t-j}^2 \qquad (2)$$

where $p \geq 0, q > 0$ *and* with the non-negative conditions that $\propto_0 > 0, \propto_i \geq 0$ $(i = 1,2,\dots,q), \beta_j \geq 0$ $(j = 1,2,\dots,p)$.

The above model is called the GARCH (p,q) process. I will use the GARCH (1, 1) model to estimate the conditional variance of the stock market. With the conditional variance as a measure of volatility, I will be able to test its effect on consumer expenditure. The (1,1) in parentheses is a standard notation in which the first number refers to the number of autoregressive lags, or ARCH terms, appearing in the equation, while the second number refers to the number of moving average lags specified, which is often called the number of GARCH terms.

Section III: Empirical Evidence from the Shanghai Stock Exchange

(Part I – Variability of the Market)

A. Shanghai Stock Exchange Rates of Return against the S&P 500

In this section, the Shanghai Stock Exchange rates of return in the Chinese stock market were estimated. The Shanghai Stock Exchange was chosen to represent the stock market in China. The Shanghai Stock Exchange was re-established only about 20 years ago. Apart from the Hong Kong Stock Exchange (HKEX) and Shenzhen Stock Exchange (SZSE), SSE is one of the three stock exchanges operating in China and is currently the world's sixth largest stock market in terms of its market capitalization (at US$2.4 trillion as of Aug 2010, World Federation of Exchanges, 2010). In the analyses, the monthly reports of the SSE real closing prices adjusted for dividends and splits from January 1999 to December 2010 were obtained from the Global Financial Data (2010), with the S&P 500 real closing prices in the same period being used as the reference. First, we took the first difference forms of the Shanghai Stock Exchange and S&P500

stock prices using the equation $r_t = 100 * ln(index_t - index_{t-1})$, where r_t is the natural logarithm of market returns and $index_t$ is the real closing price in the $t - th$ day.

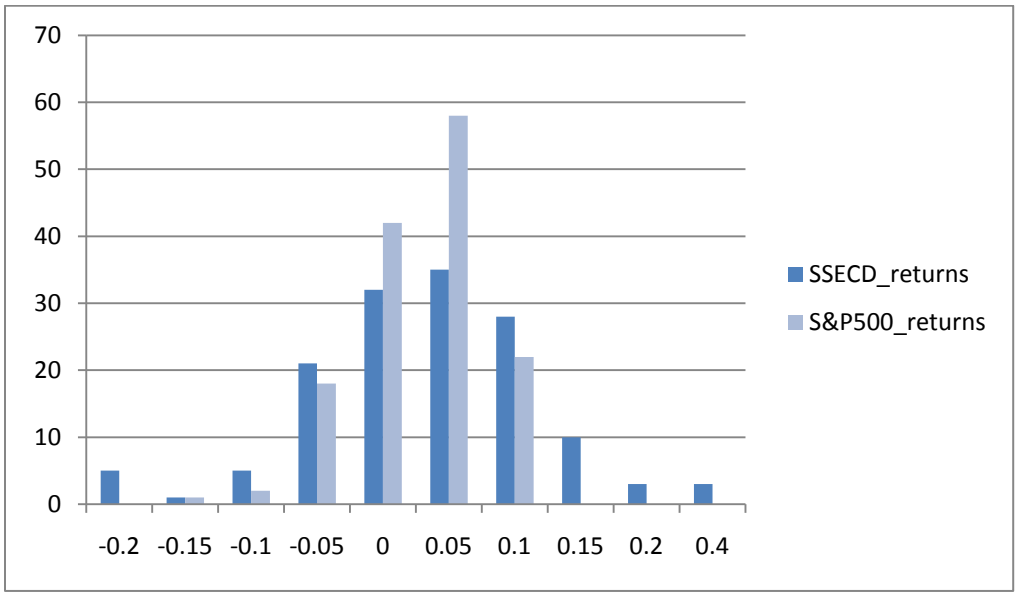

Figure 1 Frequency distributions of rates of return of Shanghai Stock Exchange (SSE) and S&P 500 for 2000-2010

As can be seen from Figure 1 above, the range of the S&P 500 is only from -0.15 to 0.1, while the range of Shanghai Stock Exchange spreads widely from -0.2 to 0.4. We can see that the amount of variability or dispersion around the average has been much higher for Shanghai Stock Exchange than for S&P 500. Generally as can be seen from the graph, the larger this dispersion is, the higher the standard deviation σ will be. I have compiled the average rates of return and their standard deviations in Table 1 below. This simple statistics reveals the general picture of the nature of the market returns. The Shanghai Stock Exchange with a much higher variability (standard deviation) has also provided higher average returns than that of the S&P 500 during the period from 1999 to 2010. This is quite the common feature in most of the emerging markets.

Another interesting observation is that the nature of returns seems to have reversed during the 2008 financial crisis. Although the Shanghai Stock Exchange has lower average returns than

that of S&P 500, we do not see a lower risk with the Shanghai Stock Exchange. Instead, Shanghai Stock Exchange has been much more volatile with a high σ than that of S&P 500. This shows that the Shanghai Stock Exchange is still an immature and emerging market despite its rapid development in recent years. Especially in times of the extreme securities price fluctuations, investors were clearly not prepared to react to such changes in the market.

Table 1 Statistic comparing the Shanghai Stock Exchange and S&P 500

Market	Statistic	Jan 1999-Dec 2010	Jan2007-Dec2008
Shanghai Stock Exchange	Arithmetic average	0.088468	-0.01052
	Standard deviation	0.008942	0.129067
	Geometric average	0.043525	0.090427
S&P 500	Arithmetic average	0.04677875	-0.01736
	Standard deviation	0.00045212	0.048519
	Geometric average	0.02215401	0.01586

B. Measuring the Conditional Variance in Shanghai Stock Exchange

As explained in Section II, financial time series such as stock prices often exhibit large swings, suggesting the volatility of financial time series varies over time. In this section, by capturing this conditional variance in SSE using the GARCH model, we can use it as a measure of risks in the SSE and hence test if it would create uncertainty in individuals.

As a further illustration of the ARCH effect, figure 2 below presents the monthly percentage change in the S&P 500 Index and the SSE index for the period 1999-2010. It is evident from the graph that the changes in the SSE exhibit a higher considerable volatility, with more wide swings even during the 2008 financial crisis, than the S&P 500. From the graph, we

can see that for both indices, generally low volatilities are followed by low volatilities while high volatilities are followed by high volatilities. This suggests that there are time varying variances which might suffer from heteroscedasticity. This result supports our use of the GARCH model.

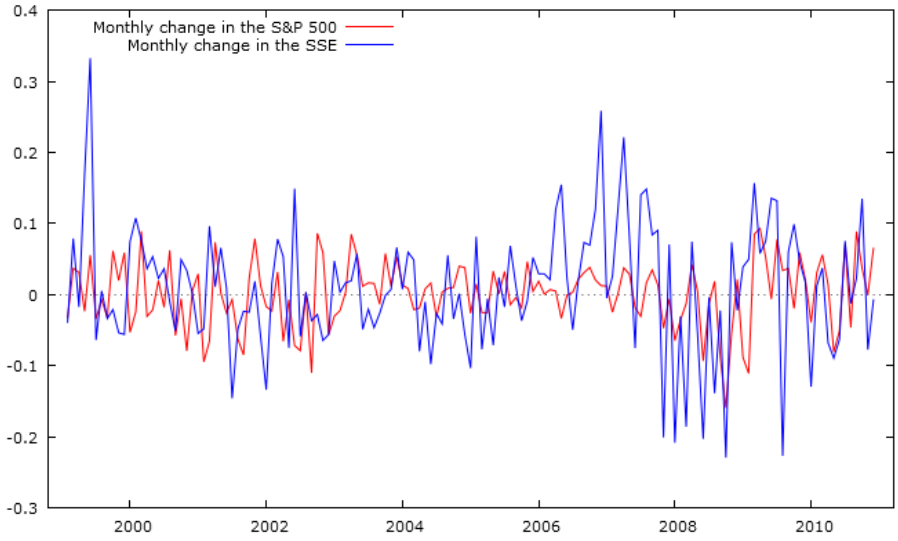

Figure 2 Time series Plot showing the percentage change in the both SSE and S&P 500 Price Index from 1999-2010

In this GARCH(1,1) model, the conditional variance is

$$\sigma_t^2 = \propto_0 + \propto_1 \varepsilon_{t-1}^2 + \delta_1 \sigma_{t-1}^2 \qquad (3)$$

Table 2 below shows the results from the analyses using the GARCH (1, 1) model from equation (3) for the Shanghai Stock Exchange returns. Since $\propto_1$ is positive, the results suggest that if volatility was high in the previous period, it would continue to be high in the current period, indicating volatility clustering. δ_1 was statistically significant ($p < .01$) indicating the stock price fluctuation possessed "long-term memory." Specifically, it means the fluctuation of past price is correlated with the fluctuation of future term price. Also with such a high value, if there is an expected shock in this market, the fluctuations will not die out in the short run. This result is

important because it is an indicator for high fluctuating risk. In addition, the persistence measure, $\propto_1 + \delta_1 = 0.971175$, is high indicating the permanent shocks to volatility. It means that the reaction to stock fluctuation to the exterior concussion is digressive by a relatively slow speed. This GARCH model suggests that the Shanghai Stock Exchange has high volatility clustering. And that we would capture the results of the conditional variance as a measure of the volatility and link with the consumer expenditure in the next section.

Table 2

GARCH (1,1) Model Analyses of Stock Market Volatility

$$y_t = 0.0145531 + \varepsilon_t \quad (4)$$

$$\sigma_t^2 = 37.7325 + 0.149799^{*}\varepsilon_{t-1}^2 + 0.719683^{***}\sigma_{t-1}^2 \quad (5)$$

(27.5560) (0.124496) (0.0920396)

$$\propto_1 + \delta_1 = 0.869482$$

$^{***}p < .001$, $^{*}p < .01$; Heteroskedasticity-consistent standard errors are shown in brackets.

Section IV: Empirical Evidence from Shanghai Stock Exchange

(Part II –Relation between Shanghai Stock Exchange and Consumer Expenditure)

A. Data and Preliminary Analyses

In this section, the relationship between Shanghai Stock Exchange and consumer expenditure was examined. In the computation, the quarterly reports of the SSE real closing prices adjusted for dividends and splits from 1999: Quarter I to 2010: Quarter III were obtained from the Global Financial Data (2010).

For the private consumption expenditure data set, I have collected separated data sets for the private consumption expenditures in rural and urban China which were measured per capita. Both private consumption expenditure of the urban residents and rural residents were quarterly data from the first quarter of 1999 to the third quarter of 2010 obtained from the National Bureau of Statistics of China (2010). The private consumption expenditure in urban China was the average consumer expenditure of thirty-two urban districts in China. While for the private consumption expenditure in rural China, those who have homesteads are defined as rural residents upon birth by the Chinese government. Figure 3 below presents the time series plot of the data collected. The urban data consistently keeps a growth rate of few percents even during the 2008 financial crisis. While there are more fluctuations for the rural data, especially an unknown boom in early 2008. We will empirically test the data in the next section.

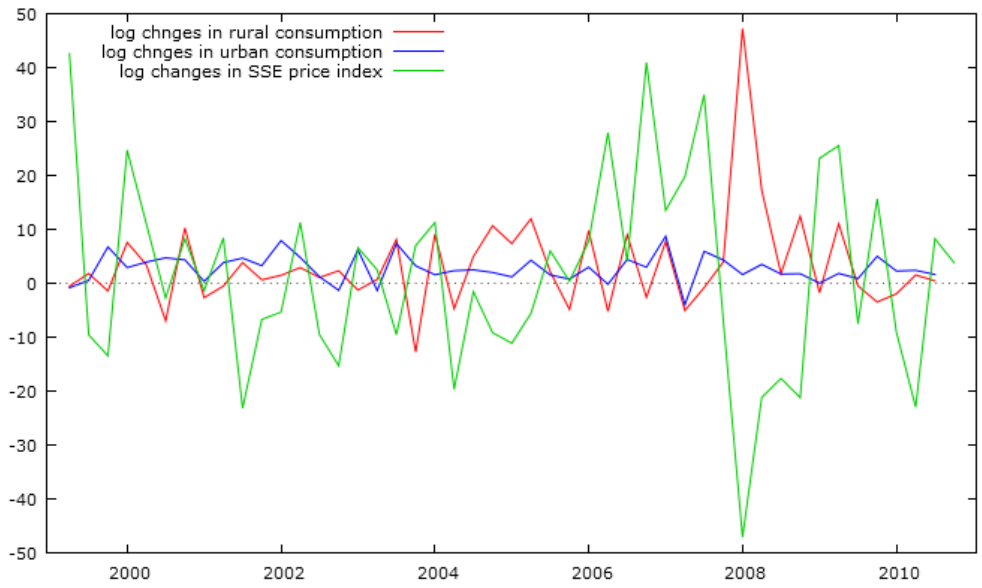

Figure 3 Log changes in rural consumption, urban consumption, and SSE during 1999:1st -2010:3rd quarterly data

C. Robustness Checks

Before these consumption expenditure data could be used, it is necessary to make two further adjustments. Firstly, as shown in Figure 1, we can clearly see that both the urban and rural original series are with obvious seasonal trend. To prevent seasonal factors interfere the empirical analyses, X12-ARIMA, the software developed by the U.S. Census Bureau (2011), is used to for seasonal adjustment. We can see that seasonally adjusted series become smooth. Secondly, to make the data across years to be on a comparable metric, the consumption data were adjusted with the consumer price index[1].

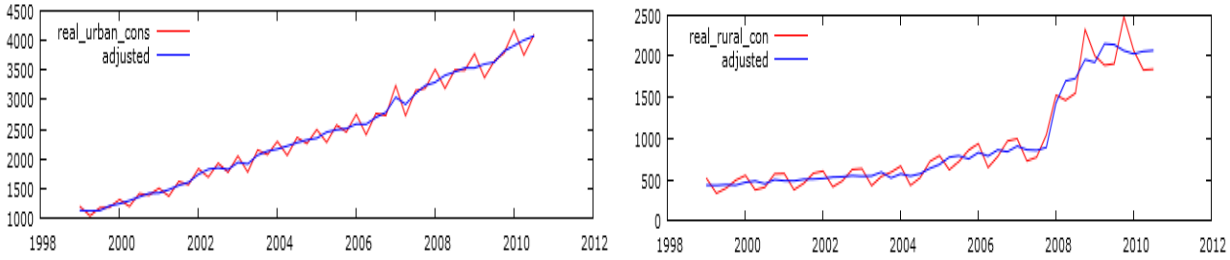

Figure 4 shows the seasonally adjustment before and after the X-12 ARIMA

D. Empirical Results with a VAR model

In this section, we tested to see whether the China Stock market returns and volatility affected the private consumption expenditure in the rural and urban area. A Vector Auto-Regression (VAR) model was used to examine the interdependence. Christopher Sims (1980) first advocates the use of VAR models as a method to estimate economic variables relationships. VAR model is then popularly used to capture the interdependencies between multiple time series variables. Each variable in a VAR model is tested on an equation against its own lags and the

[1] The consumer price index that I used is for urban area in China taken from the National Bureau of Statistics of China.

lags of all the other variables in the model. The equation below illustrates the standard form of the VAR model:

$$X_t = \propto + \sum_{j=1}^{k} \beta_j X_{t-j} + \sum_{j=1}^{k} \gamma_j Y_{t-j} + u_t \qquad (6)$$

where the equation tests the effects of X, by comparing against the k lag values of X and Y; u is the stochastic error term, called shocks in the language of finance.

In the preliminary analyses, we had to determine the number of lags (k) required in the test because intuitively one would expect stock variability to have a rapid but not instantaneously effect on consumer behavior. The optimal lag length in each regression was determined by minimizing the Schwarz Bayesian criterion (BIC)[2]. In the tests for urban and rural private consumption data, the number of lag was set to one (k=1). Whereas, for the volatility series, the number of lags applies was set to three (k=3).

E. Empirical Results

In the analyses, I use the simple model that relates the change in the natural logarithm of consumption to the natural logarithm of SSE market rates of return and the conditional variance in the market. This specification is terms of the first differences would make the unit root processes unnecessary. Specifically the analyses became an estimation of the following regression:

$$\Delta\, lnC_{it} = \propto_0 + \propto_1 \Delta\, lnC_{it-1} + \beta_1\, lnr_t + \beta_2\, lnr_{t-1} + \delta_1 ln\, v_t + \delta_2 ln\, v_{t-1} + \delta_3 ln\, v_{t-2} + \delta_4 ln\, v_{t-3}\,, \qquad (7)$$

[2] Starting with the maximum length of 12 lags, I choose the number of lags with the lowest value of BIC.

Consumption (C) refers to the real urban/rural private consumption expenditure per capita, C_{it-1} is the private consumption expenditure at lag 1. The term r_t is the Shanghai Stock Exchange rates of return as discussed in Section III while r_{t-1} is its value at lag 1. The term v_t is the volatility in SSE as measured in Section III while v_{t-1}, $v_{t-2}, and\ v_{t-3}$ is its value at lag 1, 2, and 3 respectively.

Table 3 presents the statistical results. As can be seen from the table, the SSE rates of return were statistically non-significant even at the 10% level in explaining urban private consumption expenditure. Both β_1 and β_2 had the expected positive signs due to the wealth effects for the urban data but not for the rural data. For the volatility coefficients, δs, only δ_2 and δ_4 were statistically significant at 10% in explaining the urban private consumption expenditure but not for the rural. As expected, the negative signs indicated higher volatility would lead consumers to have lower consumption. The Shanghai Stock Exchange rates of return were statistically significant at 10% level in explaining rural private consumption expenditure, and a negative sign was observed which was opposed to our expectation. Both rural and urban private consumption expenditure own first lagged value, $\propto_1$ coefficients, had the expected negative signs and was significant at the 10% significance level which proved both time series data to be stationary. Both results implied that relations between both urban and rural private consumption growth and SSE rates of return were not in line with the existence of a stock market wealth effect. While the SSE volatility explains the urban private consumption expenditure at a delayed time (k=1 and k=3). The coefficients however are small and only significant at 10% level which is weak acceptations.

Table 3

SSE market returns and volatility on consumer expenditure

	Δ *Urban consumer expenditure*	Δ *Rural consumer expenditure*
Shanghai Stock Exchange(SSE) market returns	*0.006480* *(0.019064)*	*-0.240040** *(0.141376)*
SSE market returns(-1)	*0.016834* *(0.017937)*	*-0.051592* *(0.061517)*
SSE volatility	*0.006427* *(0.004794)*	*0.027609* *(0.014414)*
SSE volatility (-1)	*-0.004007** *(0.006427)*	*-0.010417* *(0.023852)*
SSE volatility (-2)	*0.003548* *(0.005498)*	*0.017854* *(0.013913)*
SSE volatility (-3)	*-0.006669** *(0.003750)*	*-0.0192265* *(0.012073)*
Δ *urban consumer expenditure(-1)*	*-0.318863*** *(0.167896)*	-----
Δ *rural consumer expenditure(-1)*	-----	*-0.232004 ** *(0.134872)*
R-Squared	*0.214716*	*0.171173*

The dependent variable is the change in the natural logarithm of real urban/rural private consumption expenditure per capita. Values in the parentheses are White heteroskedasticity-consistent standard errors. ***$p < .001$, *$p < .01$.

Section V: Discussion and Conclusion

A. Seemingly Conflicting Observation

Our empirical research showed that China being the world third largest economy, her Shanghai Stock Exchange market average returns were higher than that of the S&P500. Her stock market as reflected by Shanghai Stock Exchange, however, had a high volatility clustering. It is generally assumed that higher market returns boost household wealth and hence encourage consumers to spend more. It is also logical to expect that with such higher risks in the market, such as the time during the Financial Crisis in 2008, should create uncertainty about future economic growth and hence affect consumer spending. The results of the current empirical analyses on Shanghai Stock Exchange however did not show a stock market "wealth effect." The analysis also showed that the SSE volatility had a very small, but significant, effects on the urban private consumption expenditure at a delayed time of three months. The empirical findings suggest that the Shanghai Stock market index might not be a leading indicator of China's future economic activity. There could be alternative explanations of this seemingly conflicting observation.

Firstly, a unique characteristic of China's stock market is that approximately 69% of all shares in the Shanghai and Shenzhen exchanges were non-tradable (Yao & Yueh, 2009). Those shares are held by the central government, local governments and state-owned enterprises. The stock values are therefore prescribed rather than market determined. The government can easily manipulate the market performance as their orders are mandatory, influential and thus determining the market-prices. The stock market performance is thus hardly reflecting their real

economic competence. China consumers may be fully aware of this and thus will not use the stock market performance as an indicator of the economy seriously.

Secondly, since the stock market in China has been in operation for only twenty years, it is still immature and developing. Only a very small fraction of individuals in China today own stock and therefore we might not observe the stock market wealth effect. Also, unlike most well-developed market economy countries, financing provided by banks and by the stock market are both substantial. For example, the majority of individuals in the U.S. often invest through employer schemes or through buying managed funds. In contrast, most investors in China have no similar prior experiences. They are buying shares without much experience and advice from financial consultants. The dominant Chinese financial support is from commercial bank loans with credit regulated by the government. As a result, it has weakened the role played by the stock market in the Chinese real economic growth.

Thirdly, although the Chinese stock market has fallen dramatically from 2007 to 2008, the Chinese economy still kept growing though admittedly at a slower rate. The real GDP growth in 2008 was 9%, and higher per capita GDP normally means higher incomes. Therefore, as Chinese consumers still see an increasing income even though at a rate slower than before, they may not perceive the drop in the stock market as a sign of economy downturn as their western counterpart investors have been suffering. Also, the 2008 Beijing Olympic should have helped in boosting the economy by substantially increasing the demand of goods and services.

B. Shortcomings of Data and Limitations of the Model

The findings and conclusion derived in the research presented in this paper may be limited by the data we analyzed. Firstly, it is possible that the range of potential effects of the 2008 stock

market crash on consumer spending might not been fully revealed and surfaced yet, and thus follow up observation for a much longer time is needed . As explained above, a few episodes such as the Beijing Olympic 2008 may give a false and illusory healthy impression of the Chinese economy. The uncertainty effect on income may prolong and gradually surface and impact on consumer expenditure in the near future. Importantly these speculations have to be re-examined in the coming years.

Secondly, the private consumption data we have been using in the analyses in this research may not fully reflect the true picture. Though the literature suggested that the Chinese official data are by large reliable, certain official estimates of output growth rates might contain errors (Chow, 2005). The quarterly data is also already the best we can obtain at this point. Also, if we can have data to the amount of spending by the top income set of household, we might capture the wealth effect better. With the Chinese economy continues to develop, we will expect to see more new data sets available, which might perhaps reflect monthly statistics.

Thirdly, the data we used may be too general and broad as they have aggregated consumer spending in all Chinese urban cities. Understandably, stock market performance information may not be equally accessible across cities, and thus its impact on consumer spending may vary across cities. Thus, for example, while newspapers in Shanghai may report stock market performance frequently as a much larger proportion of Shanghai population are stocks holders, people in another province Shandong are not and have little access as well as pay little attention to the Shanghai stock market. If we had examined expenditure data specifically limited to metropolitan cities such as Shanghai, Shenzhen and Beijing, it is more likely that we would have captured a stronger causal relationship between stock market variability and consumer spending.

C. Future Research

Future research should investigate important factors other than stock market that may have greater impacts on consumer spending in China. For example, China's exports have substantially decreased in recent years especially after the 2008 U.S. Financial Crisis. The fact that the U.S. dollar further weakened against the China Yuan has put strong pressure on uplifting the China's exchange rate. Thus, it may be interesting to test whether the change in exports or exchange rate plays a stronger role in predicting consumer spending.

In the future, it is expected that the Chinese government will gradually improve the efficiency of the stock market and reform her financial system. It is useful therefore to continue testing and monitoring the causal relationship between stock market variability and consumer spending. This information will serve as a useful indicator of the maturity of the stock market as well as whether people in China have changed their views on stock market.

D. Conclusion

This paper provides empirical evidence that the Shanghai Stock Exchange indeed has higher market average returns than that of the S&P 500. Findings from my empirical results, however, showed that the Shanghai Stock Exchange market returns did not exhibit wealth effect. Analysis with the GARCH model also shows the Shanghai Stock Exchange has high volatility clustering. Following Romer's (1990) argument, one would expect to see a larger effect on consumer spending when the stock market movements are more extreme or have higher risks. In congruence, the present study provides some evidence that volatility has a very small, but statistically significant, effect on urban private consumption growth at a delayed time of three months. This suggests that despite the rapid growth of China's stock market, it is still undergoing

important structural changes. Observations in terms of governmental economic policy and the basic health characteristics of the economy are used to explain possible differences as found in the present research on a China stock market.

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