The Impact of Macro-Economic Factors on Banking Industry Stock Return in China

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Abstract

This study examines the impacts of macroeconomic factors which including inflation rate, exchange rate, money supply and interest rate on banking industry stock return in China by using generalized least squares (GLS) model. The research covers 16 banks which listing on both Shanghai stock exchange and Shenzhen stock exchange as a whole banking sector be the dependent variable and moreover, the return of Shanghai stock market and the return of Shenzhen stock market are the control variables. The sample of data is from September 2007 to June 2012 and all data is collected by monthly data. The regression results indicate that both the change of inflation rate and the growth rate of money supply (M2) are positive but insignificant to the banking industry stock return, the exchange rate is positive and significant to banking industry stock return and interest rate is negative and significant to banking industry stock return. But when put the control variables into the model, it shows that all macroeconomic factors have no impact on the banking industry stock return.

Keywords: Banking industry stock return, Inflation rate, Exchange rate, Money supply, Interest rate, Shanghai stock market return, Shenzhen stock market return.

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Introduction

Chinese stock market is very different from other, especially according to the extent of government regulations and investor composition. The development of Chinese stock market is a milestone in china's economic reform process. From 1990 to 1991, China set up two stock exchange markets, Shanghai stock exchange and Shenzhen stock exchange. These two stock markets have been growing fast over time (Seddighi and Nian, 2004). So Chinese stock market has be an attracting market that can attract both foreign investors and local investors to invest. But not much is known about the Chinese stock market behavior. Moreover, some of investors who with little investment knowledge or experience, they only are speculators. Stocks buy and sell on historical price trends or on markets rumor, the last lead to stock market mania (Liu and Shrestha, 2008). But now, most of investors have a great interest in searching for variables that can help them to analyze and forecast stock prices. They also focus on macroeconomic news that can help them to analyze the trend of stock prices, so that can increase the returns and reduce the investment risk. So this study can be a document which offers this kind of knowledge.

In recent years, China banking industry is development and innovation on and on, the whole banking industry have taken place a historic changes, played an important role in supporting and promoting the economic and social development, strongly support to the China's national economy development. At present there are 16 Banks in the a-share listed, the banking sector as one of the most important part in the Shanghai index, the tendency will make a significant influence to the market.

Many studies have researched about how macro-economic factors, such as interest rate, exchange rate and money supply influence to stock prices. For example, some people studied the

impact of individual factors such as real activity and inflation, interest rate on stock prices. And some examined the relationship between stock prices and a wider financial variety and macro-economic variables (Liu and Shrestha, 2008).

Besides of these studies which are all related in the developed countries, it also have some studies analyzed the impact of different kinds of macro-economic variables on stock market in emerging market. But less to study give more details the impact of macro-economic factors on some sectors in the stock market and less empirical studies have yet been published that examine the joint interaction of interest rate, inflation rate, exchange rate and money supply on banking industry stock return. So this study investigates the level of closeness and the impact of the macro-economic factors, such as interest rate, exchange rate, inflation and money supply on the Barking industry stock return in China.

Literature review

Stock market development and the role of banks in China

The development of the stock market is a milestone in China's economic reform process (Liu and Shretha, 2008). There are two stock exchanges in Chinese stock market. One is Shanghai stock exchange which was formally established in 1990, the other is Shenzhen stock exchange which was formally established in 1991. And one of Chinese stock market's characteristics is: high return and high volatility, and this characteristic are related to the corporate governance, government interferences, and over speculation (Seddighi and Nian, 2004).

Banking system is a very important part for the economic growth. It is an essential part to complete the financial system. (Jeyanthi and William, 2010). There is a uni-directional relationship between Shanghai Stock Exchange (SSE) Index and bank stock price, the movement of SSE composite index will trigger the movement of almost all bank stock prices (Shujie, Dan and Stephen, 2008).

Bank stock returns

Jeyanthi and William (2010) indicated that return is a motivating factor that stimulated the investors to invest money into stock market. Return is a profit that earned from the stock's prices. Fama (1981) said that stock prices reflect earnings, dividends and interest rate expectations and future economic activity behavior. And stock returns affect the wealth of investors which in turn affects the level of consumption and investment.

Rebel, Fariborz and Wu (2007) indicated that banking industry stock return reflects the performance of a country's banking sector. The position of bank to the economy and the investment opportunities are two important issues that reflect the bank stock's performance, so it is very important to know the risk factors that may influence the returns. (Girard, Nolan and Pondillo, 2010)

There are many strong evidences supports that bank stock returns generating process is dependent by time-varying. And the risk measurement should also have timeliness (Yourougou, 1990; Elyasiani and Mansur, 1998). Menike (2006) shows that stock prices have a negative relationship with interest rate, inflation rate and exchange rate, and it has a positive relationship with money supply.

The impact of inflation on bank stock returns

There are four variables lead to inflation: employment, consumption, production and unexpected increase in money supply. Increasing inflation rate can raise the nominal risk-free rate and discount rate in the equity valuation model. Unexpected inflation has a negative relationship with stock price (Liu and Shrestha, 2008). Tan and Floros (2012) found that there is a positive relationship between bank profitability, cost efficiency, banking sector development, stock market development and inflation in China.

Eita (2012) revealed that stock market returns and inflation in South Africa are positively related. The results also indicate that when all-share index is used as the measure of stock market returns, the causality is bi-directional. Lajeri and Dermine (1999) concluded that there was a negative impact of inflation on the market value of banks and the real economic activity and it would reduce the expected returns. Modigliani, Franco and Cohn (1979) suggest that stock market investors are depended on the inflation illusion in the inflation illusion hypothesis. Feldstein (1980) explain that the relationship between the higher inflation and lower stock prices in the tax hypothesis. Fama (1981) also get the result about a negative stock return-inflation relation. Unexpected changes in expected inflation would affect to the nominal contracts through discounting the cash flow.

The impact of exchange rate on bank stock returns

Exchange rate becomes more and more important for the China stock market. Renminbi appreciates will attract the hot money flow into china stock market. Then will raise the stock prices (Wang 2010). Choi, Elyasiani and Kopecky (1992) found that the exchange rate can affect to the bank's profit though exposure to foreign translation risk.

Joseph and Vezos (2006) indicated that exchange rate has a directly affect to the financial institutions revenues and costs. Economic theory suggests that the exchange rate has a very important influence in stock market by affecting cash flow, investment and profitability of the firms (Aydemir and Demirhan, 2009). Granger, Huang and Yang (2000) found that exchange rate lead stock price in Korea, however, stock price lead exchange rate in Hong Kong, Malaysia, Thailand and Taiwan. Mishra et al (2007) also get the result that due to the various and changeable international business and capital inflow and outflow, these changes would increase the investment decision uncertainly and the risk of the investment increasing as well.

Exchange rate lead to stock prices and it also is determined by marketing principles. It means that changes in stock prices would impact on exchange rate also (Granger et al, 2000). Exchange rate changes have impact on the import and export price for the firms (Joseph and Vezos, 2006). Pan et al. (2007) use the data of seven East Asian countries to study, over the period 1988 to 1998, and found that the exchange rate and the stock prices have a bidirectional causal relationship. Ajayi et al. (1998) study the relationship between exchange rate and stock market.

The impact of money supply on bank stock returns

Seyed, Zamri and Wah (2011) got the result that in the long run, money supply has a positive impact on the Chinese stock market and negative impact on the India stock market; but in the short run, money supply have negative and insignificant impact on the Shanghai stock exchange market. The loose monetary policy is good for stock market, which will increase the stock price. Otherwise, tight monetary policy has a negative influence on stock market. Generally, the stock price will decrease (Thorbeke, 1997). Ehrmann and Fratzscher (2004) report that capital-intensive industries and the firms which are more financially constrained both are affected by the changes in monetary policy. Zatul and Mohamed (2009) found that with the competitive bank market structure situation, there is a positive relationship between money supply and bank stock returns.

There are different impacts on bank industry and individual bank stock returns by changing money supply (Zatul and Mohamed, 2009). Lee (2010) said that there is a long-run equilibrium relationship between stock prices and money supply. Muradoglu and Metin (1996) indicate that money supply and stock returns has a positive relationship in short-run dynamic model. Yildirtan (2007) reveals that an increase in money positively and strongly affects ISE 100 Index. Al-Sharkas (2004) shows that money supply (M2) has a positive influence on stock returns and

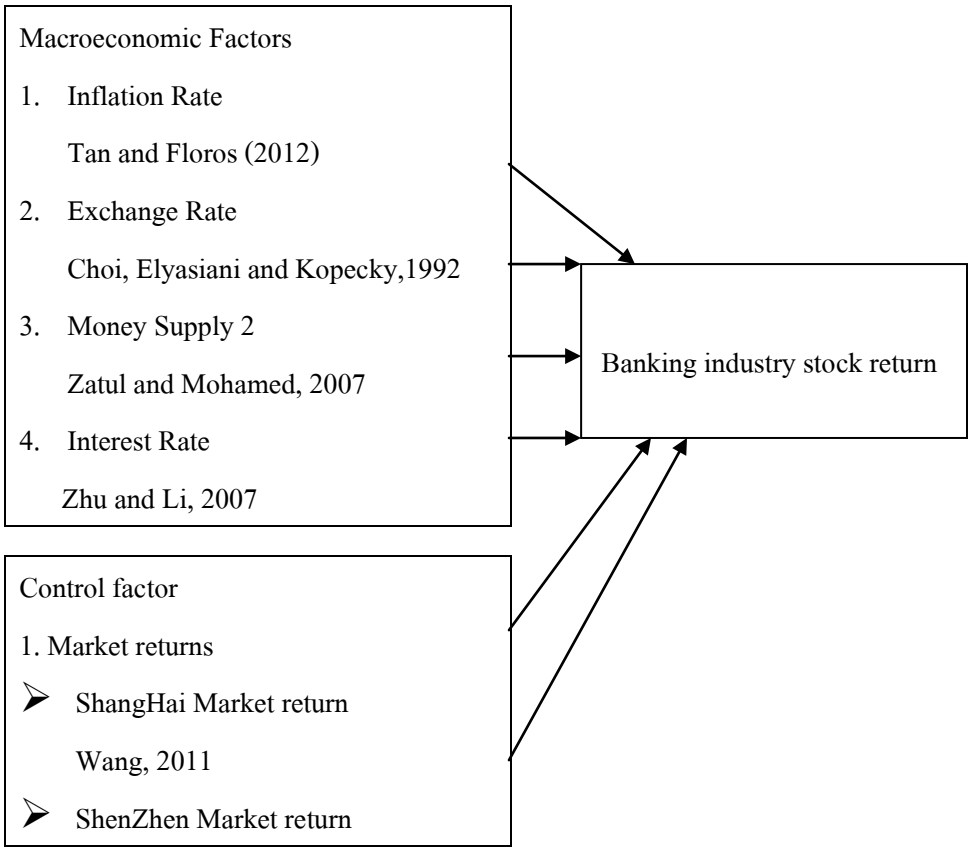
Maysami et al. (2004) also point out that the positive relationship between changes in money supply (M2) and Singapore's stock returns.

The impact of interest rates on bank stock returns

Interest rate is one of the important macroeconomic factors which are directly influence to economic developing. Generally, interest rate is considered as the cost of capital, it means that the price paid for the use of money in a period of time (Joseph and Vezos, 2006). Vaz, Ariff and Brooks (2008) get the result Australian bank stock returns are not negatively impacted by the announced increase in official interest rate. Choi, Elyasiani and Kenneth(1992) get the result that interest rate has an important impact on bank stock return because it is a factor for the valuation of common stock of financial institutions while the returns and costs of financial institutions are directly dependent on interest rate.

There is a negative influence on bank stock return by interest rate change and the sensitivity of interest rate on bank stock return is different over the time.(Kwan,1991). Yourougon (1990) point out interest rate has a significant impact on common stock of financial institutions, including banks. Akella and Chen (1990) said that bank stock returns just sensitive to long-term interest rate but not to short-term interest rate. However, Mansur and Elyasiani (1998) find out whatever long-term, medium-term or short-term interest rate has significant affect to bank stock returns. Mahmudul (2009) interest rate has significant negative relationship with share price, changes of interest rate and changes of share price both determined by time series and panel regressions. Kasman, Vardar and Tunc (2011) pointed out interest rate volatility is a main determinant in the bank stock returns volatility.

Conceptual Framework



Data and Methodology

The data used in this study consist of the monthly closing of stock indices, Such as monthly Shanghai Stock Exchange (SHSE) composite index, monthly Shenzhen Stock Exchange (SZSE) composite index and monthly banking sector index price, monthly Shanghai Interbank Offered Rate (SHIBOR) be the interest rate, monthly average real effective exchange rate; and the change of inflation rate is measured by the monthly consumer price index (CPI), monthly money supply which is measured by monthly growth rate of M2. All data cover September 2007 to June 2012 and sample size has 58 observations. And these data are obtained from

International Financial Statistics of the International Monetary Fund and Financial Statistics of the Federal Reserve Board and Statistics and Analysis Department of The People's Bank of China and State Statistics Bureau of China.

This study will use logarithmic method that come from Jeyanthi and Willian (2010) to calculate each return of Shanghai stock market, Shenzhen stock market and return of banking industry sector. The generalized least squares (GLS) regression analysis estimates the effect of interest rate(INT), inflation rate(INF), exchange rate(EX) and money supply(MS) change on banking industry stock return:

$$R_t = a_0 + a_1 INF_t + a_2 EX_t + a_3 MS_t + a_4 INT_t + e \qquad (1)$$

Where:

R_t = Banking industry sector stock return at the period t, a_0 = the intercept term, $a_1 \ldots a_4$ = the coefficient of each variable for period t, INF_t= monthly inflation rate at time t, EX_t = exchange rate at time t, MS_t = money supply at time t, INT_t= monthly interest rate at time t, e = error term.

Data Analysis and Results

This section shows the descriptive analysis and the empirical results for the stock return of banking industry sector, Shanghai stock exchange market and Shenzhen stock exchange market in China, and the macroeconomic variables that found to be affecting the stock return.

Table 1 Descriptive Information of Macroeconomic factors impacting stock returns in period 9/2007-6/2012

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
R (%)	-0.701	1.001	25.203	-32.658	10.403	58
MRSH (%)	-1.470	0.343	14.234	-28.278	9.696	58
MRSZ (%)	-1.090	0.724	16.713	-25.816	10.533	58
INF (%)	-0.068	-0.095	1.494	-2.574	0.723	58
EX	100.103	100.120	109.400	88.670	5.375	58
MS (%)	1.520	1.340	4.720	-1.010	1.214	58
INT (%)	2.300	2.290	4.560	0.830	0.994	58

Note: R, MRSH, MRSZ, INF, EX, MS, and INT stand for banking industry sector stock return, Shanghai stock exchange market return, Shenzhen stock exchange market return, inflation rate, exchange rate, money supply and interest rate.

Table 3 the correlation between MRSH, MRSZ, INF, EX, MS, INF

	MRSH	MRSZ	INF	EX	MS	INT
MRSH	1.000000					
MRSZ	0.967839	1.000000				
INF	0.062185	0.055263	1.000000			
EX	0.183810	0.193566	-0.274795	1.000000		
MS	0.115516	0.091355	-0.04259	0.218778	1.000000	
INT	-0.196444	-0.23025	-0.088381	0.084616	-0.308027	1.000000

Note: MRSH is Shanghai exchange stock return; MRSZ is the Shenzhen exchange stock return. INF is inflation rate, EX is exchange rate, MS is money supply, and INT is interest rate.

Table 4 the results of the GLS estimation about the impact of macroeconomic factor on the banking industry stock return (R)

Variable	Coefficient	P-value.
C	-37.17145	0.1067
INF	0.99556	0.5979
EX	0.402124*	0.0907
MS	0.843772	0.4978
INT	-2.187996*	0.085
R-squared	0.142875	

Note: C, INF, EX, MS, INT stand for the intercept term, inflation rate, exchange rate, money supply and interest rate. ***, ** and * indicates significant at 1%, 5% and 10% significant level.

Table 5 the results of the GLS estimation about the impact of both macroeconomic factor and MRSH on the banking industry stock return (R)

Variable	Coefficient	P-value.
C	5.97074	0.6143
MRSH	0.938366***	0.0000
INF	-0.915199	0.3768
EX	-0.055194	0.6520
MS	0.281899	0.6883
INT	-0.060773	0.9261
R-squared	0.730689	

Note: C, MRSH, INF, EX, MS, INT stand for the intercept term, Shanghai exchange stock return, inflation rate, exchange rate, money supply and interest rate. ***, ** and * indicates significant at 1%, 5% and 10% significant level.

Table 6 the results of the GLS estimation about the impact of both macroeconomic factor and MRSZ on the banking industry stock return (R)

Variable	Coefficient	P-value.
C	5.759303	0.6721
MRSZ	0.811057***	0.0000
INF	-0.944351	0.4226
EX	-0.072285	0.6093
MS	0.725314	0.3522
INT	0.262814	0.7301
R-squared	0.675974	

Note: C, MRSZ, INF, EX, MS, INT stand for the intercept term, Shenzhen exchange stock return, inflation rate, exchange rate, money supply and interest rate. ***, ** and * indicates significant at 1%, 5% and 10% significant level.

Conclusions and Discussion

This study undertakes a research to seek the impact of the macroeconomic variables namely inflation (INF), exchange rate (EX), interest rate (INT) and money supply (M2) on Chinese banking industry stock return. The data is collected over the period of Sep. 2007 to Jun. 2012 and Generalized Least Square (GLS) method is applied to examine whether the banking industry stock return is sensitive to the macroeconomic variables changes. From the result, we can see that these four macroeconomic factors have a relationship with banking industry stock return. Such as the inflation rate has a positive but insignificant impact with the banking industry stock return; the exchange rate is the most significant variable in explaining the fluctuation of Chinese banking industry stock return though it gives positive effect on the stock return. For money supply (M2), there is a positive and insignificant

impact on the banking industry stock return. And the interest rate has a negative and significant impact on the banking industry stock return, due to the increase the interest, people will saving money more than do the investment. It is found that the changes of market return are statistically significant and positively affecting the banking industry stock returns in overall.Regarding the Shanghai stock market return and Shenzhen stock market return as control variables, there is a very strong significant impact of both these two stock market returns on the banking industry stock return.

Implication of the Study

This research indicates that in Chinese stock market, banking sector return is depended on the market returns. If market return increase, the banking stock return also increases, if market return decrease, the banking stock return also decreases, it has a positive relationship between them. So for the investors, they can use this document to analyze the trend of stock prices, so that can increase the returns and reduce the investment risk. The policymakers also can pay attention to the situation of the stock market that can be regarded as a leading indicator of future macroeconomic activity. They can better control the stability of the stock market by using macroeconomic tools.

Recommendations and Future Research

In order to make a more precise and exact research, it is a need to improve and overcome those constraints. Since there are three major limitations stated on the above sections, hence, we would suggest the solutions for each of them.

To overcome the data constraint, we may be get a try on using the data series extracted on daily basis. As some of the researchers found that, the result has shown more exact by using daily data on carry out the relevant empirical studies.

To improving the empirical result, it is better to apply Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) model rather than Generalized Least Square (GLS), as this economic model is more advance in addressing and solving for econometric problems.

Other than these, future researchers may try to extend the study on other plate in the Chinese stock market.

Conclusions

As a conclusion, this study could be more extended by employing more informationfrom different aspects. As now Chinese is in building up a strong and convinced enough economy rapidly, especially in banking and financially sectors, thus research on these banks' stock returns need to be carry on in deeper way in order to provide more improvement spaces to this sector.

Like what suggested by Muneeret. al (2011), this would be an indications for future researchers and academicians to examine more on the inference of economic growth in stock market development, particularly the inter-relationship between economic indicator and stock market performance should be taken into investigations to plan on an improved economic policy as well as to undergo the economic growth in China. The result of the study could be a useful mechanism in understanding the characteristic and roles of economic indicators and stock returns variations in forming the soundness economy in China.

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