# Empirical Analysis of Interaction between Securities Market, Banking System and Nation's Economic Growth

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**Abstract**    This paper discussed financial structure and economic growth using Granger Causality test method. The results are: the financial deepen and economic growth interacted in China; economic growth is the cause of capital market development and BANK function is limited in economic growth..

**Key words**    Economic growth, financial structure, Financial deepen

## 1 Introduction

Romar (1986) and lucas (1988) discussed that the economic growth is due to the endogenetic factors of economic systems, and it means that the indogenetic changes of technology is the key factor. In 1990s, from the view of efficient function some researchers have set up some models on microview foundation. In their models, they introduce some factors such as uncertainty, asymmetric information and monitor cost to explain the formation of financial intermediate and financial market. Then rationality of financial intermediate and financial market is discussed.

Greenwood and Jovanovic (1990), Greenwood and Smith (1993) and Levine (1993) applied fixed enter fee or fixed trade cost in their models to show that how financial intermediate and financial market develop with per-capita income and per-capita wealth. In Levine's model, he proved that fixed enter fee or fixed trade cost increased with the complexity of financial services. And the investment banks have functions that it can use the resources totally and chances. But the condition is that per-capita income must reach to some high level.

In 1990s, research is not limited in pure financial theory, more research focus on the empirical relationship between financial and economic development. Among the researchers, Ajit and Jovanovic (1993), De Gregorio (1992a), King and Levine (1993b) and Sussman (1993) applied theoretical and empirical method, but King and Levine (1993a), Levine (1997), Levine and Zervos (1996；1998) and Rajan and Zingales (1998) applied empirical method only.

In China, Ruyong Tan (1999) discussed the empirical relationship between financial intermediate and stock market and economic growth. Qi Zhang, Fan He and Mingxin Liu (2003) argued the relationship between financial and economic development from the view of financial freedom and policy restrain and financial frangibility. Feng Lu and Yang Yao (2004) found that financial deepen doesn't influence the economic growth or it influences economic growth just in coastal area of open economy based on the 1991-2001 data of 29 provinces in China. Jun Zhang and Huang Jin (2005) tested empirically that the financial reformation has a positive influence to productivity greatly, but it has regional differences based on 1987-2001 panel data of 29 provinces in China.

In many counties, private financial asset accumulate very rapidly after their financial freedom, and banks also increased the lending ratio to private departments. For example, in Korea, the ratio of private lending to GDP is reached 68%, and ration of real GDP increased to 9.5%. But they are soon exposed to financial crisis and leaded to decrease the real GDP greatly. The theory of financial deepen is challenged in practice.

## 2 Relationship Between Chinese Financial Structure and Economic Growth

FIR is the ratio of financial asset to GDP, it explains that how to use financial instrument to increase economic growth. With economic developed, the rate of M2 will be slowly. Non-money financial instruments will increase quickly. In figure 1, it shows the trend of FIR from 0.54 to 3.6 in the
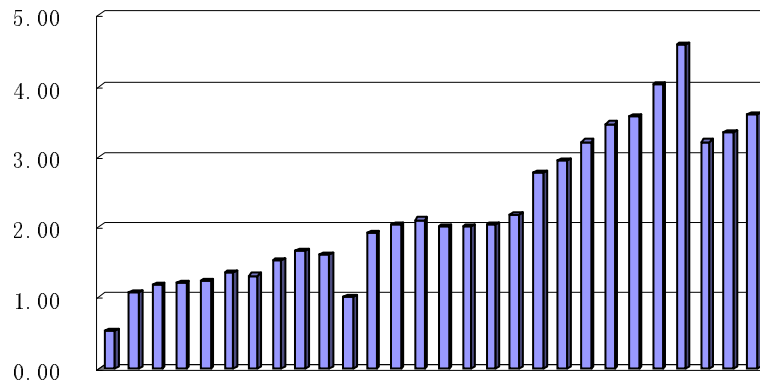
period of 1979-2006.



**Figure 1    Chinese FIR form 1979 to 2006**

The change of financial asset structure is the mainly symbol of financial deepen and the proportion of money and other financial asset to gross domestic product. The increase of this proportion means that social exchange and investment works through money or financial asset. In the past 20 years, the Chinese gross financial asset increased rapidly, from 3417.5 billion ￥ in 1978 to 512523.6 billion ￥ in 2004. Although the amount of financial asset, currency, deposit and securities increased rapidly, the structure ratio is still small. In the end of 2004, for example, the currency compared to GNP is 13.4%, but the value of securities compared to GNP is not more then 40%.

## 3 The Improved Method

In this paper, we use EViews5.0 software to analyze the data of Chinese economic growth and financial structure by Johansen cointegration test and Granger causality test. The result shows that economic increasing is the mainly cause of financial deepen.

### 3.1 Variable and data

The most widely used variables in financial development and economic increasing research are the ratio of M2 to nominal GDP proposed by Mckinnon in 1973 and Financial Internal Ratio (FIR) proposed by Goldsmith in 1969. With the development of financial market, M2 can not indicate the level of financial development. Some financial instruments are not classified to the money supply. So M2/GDP can not measure the level of financial deepen. In this paper we use gross financial asset/GDP to instead M2/GDP to measure financial deepen.

The gross financial asset is consisted of three parts: currency, bond and stock. The currency is summed by namely money supply of central bank, bond is summed by the balance bonds value in the end of the same year, stock is summed by market value in the last day of the year. The economic increasing index is expressed by the nominal GDP ratio (LGDP), and the financial development index is expressed by gross financial asset/GDP (LFIR). The section data are from 1994 to 2006. In the following empirical test, Chinese financial system is divided two parts: financial intermediate which is expressed by BANK (the distribution ratio of bank), capital market which is expressed by SECG (the ratio of Shanghai security index).

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### 3.2 Method

Before cointegration, each series is tested through unit root test method in order to assure time

series is stationarity. The result is listed in table 1. the LGDP、LFIR、BANK、SECG variables are not stationarity，but the 1th difference of DLGDP、DLFIR、DBANK、DSECG haven't unit roots，so they are I(1) time series.

**Table 1　unit root test**

| variable | t-Statistic | 5% level | 1% level |
| --- | --- | --- | --- |
| LGDP | -1.1747 | -3.1753 | -4.2010 |
| DLGDP | -4.4461 | -3.933 | -5.1249 |
| LFIR | -1.622 | -3.1449 | -4.1219 |
| DLFIR | -3.5429 | -3.1753 | -4.2100 |
| BANK | -1.0713 | -3.1753 | -4.2205 |
| DBANK | -3.8371 | -3.3210 | -4.5826 |
| SECG | -2.1314 | -3.8753 | -4.9922 |
| DSECG | -3.5791 | -3.2598 | -4.4205 |

All the variables are I(1) process, so we can test them through cointegration test. Here LGDP、LFIR、BANK、SECG are tested through Johansen cointegration test (Trace test) method.

The result of Johansen test is listed in table 2. It shows that LGDP、LFIR、BANK、SECG variables fit 1 cointegration test relation in 5% level.

Table 2　Johansen（Trace test）

| LGDP、LFIR、BANK、SECG | | | |
| --- | --- | --- | --- |
| hypothesis | Eigen value | P-value | 5% level |
| None＊ | 0.910940 | 50.33608 | 47.85613 |
| At most 1 | 0.693976 | 21.31470 | 29.79707 |
| At most 2 | 0.387731 | 7.105581 | 15.49471 |
| At most 3 | 0.096563 | 1.218582 | 3.841466 |

Note：＊=significant at 5%

Cointegration test shows that the causality is existed between time series, but it can't indicate which the reason is. Grange Causality test is used to solve this problem.

The result of Grange test is listed in table 3. LFIR is the Grange cause of LGDP, and LGDP is also the Grange cause of LFIR in China. LGDP is the Grange cause of BANK, but BANK is not the Grange cause of LGDP. LGDP is the Grange cause of SECG, but SECG is not the Grange cause of LGDP.

**Table 3　The result of LGDP and LFIR, BANK, SECG Granger test**

| Null Hypothesis | Obs | F-Statistic | Probability |
| --- | --- | --- | --- |
| LFIR does not Granger Cause LGDP | 11 | 5.22529 | 0.04852 |
| LGDP does not Granger Cause LFIR | | 3.49339 | 0.03862 |
| BANK does not Granger Cause | 11 | 0.06917 | 0.097118 |
| LGDP | | 4.95276 | 0.17257 |
| LGDP does not Granger Cause | 11 | 0.03607 | 0.96478 |
| BANK | | 7.38670 | 0.02410 |
| SECG does not LGDP Granger Cause | | | |
| LGDP does not SECG Granger Cause | | | |

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## 4 Conclusion

From above results, LFIR is a general important index which can explain the financial deepen and financial development. So the financial deepen and the economic growth interacted in China. Suitable

financial deepen will improve the efficiency of financial asset, and put investment into industry in order to increase economic growth. On the contrary, economic growth will also push the financial industry development.

Economic growth is the cause of capital market development. But capital market is not the cause of economic growth or capital market doesn't influence economic growth significantly. The result is the same with Harris' (1997). Harris discussed that stock market has played a little role to economic growth in undeveloped countries. But in developed countries, stock market has really played an important role in economic growth.

BANK which represents financial intermediates is not Grange cause of economic growth. And it is pushed by economic growth. The result shows that the BANK function in China is limited in economic growth. In some degree, it is passively pushed by economic development. So deepen banking system reform is needed. Only the financial intermediate developed quickly, can improve economic growth in China.

From above analyses, the level of financial deepen is not suitable for economic growth in China, and the reformation of financial system is not enough. Economic growth needs an adaptable financial environment, and a better financial environment will improve economic growth. So, lots of work will be done in financial intermediate and market in China.

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