

# An Empirical Study about the Impact of China's Financial Industry Development on Economic Growth

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## Abstract

Since the reform and opening up, China's economic level has witnessed rapid growth, while the financial industry is gradually growing. This paper mainly explore the relationship between the development of China's financial industry and the economic situation. To measure the economic growth by GDP; to measure the development of domestic financial industry by financial development indicators such as currency and quasi-currency, gold reserve, foreign exchange reserve, the number of domestic listed companies (A, B shares), total stock issuance capital, total stock market value, stock turnover, etc. Using the relevant data from 1992 to 2017, this paper explores the relationship between the two by means of multiple regression model and principal component analysis. The research shows that with the increase of money supply and the number of listed companies, as well as the expansion of the total size of the stock market, China's economic development has improved significantly and accordingly put forward relevant suggestions.

## Keywords

GDP, Money Supply, Gold Reserve, Foreign Exchange Reserve, Total Issuance of Stocks

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## 1. Introduction

Over the past 40 years of reform and opening up, China's economy has undergone tremendous changes and made tremendous achievements. At the same time, the financial industry has undergone tremendous changes, especially China's economy has shown miraculous double-digit growth and finance has also

made breakthrough development after China's accession to the World Trade Organization (WTO). The development of financial industry has also made China's economy develop rapidly, but, it has brought a variety of drawbacks. After the international financial crisis in particular, the world's major economies have realized that the real economy is the important basis for the survival of human society and began to pay attention to strengthening support for the development of the real economy. Simultaneously, as China's current financial system is becoming larger and larger, the financial industry is dominated by traditional indirect financing, the proportion of direct financing is low and the financial efficiency still needs to be improved.

At present, China is in the period of economic restructuring under the new normal. It is very important to deepen the reform of financial system and enhance the function of financial industry serving the real economy. As a newly industrialized country, they should pay more attention to the development of real economy. The development of real economy plays a key role in China's economic stability, social stability and the realization of the goal of building a well-off society in an all-round way. Therefore, the development of real economy is the primary goal of economic development in the world, especially in China and also the necessary condition for healthy economic development. Through the analysis of domestic economic development, this paper will further introduce financial industry development indicators and explore the relationship between financial industry development and economic progress, with a view to promoting the further development of China's economy.

## 2. Literature Review

From the beginning to today, financial industry has formed a mature financial environment and market, producing complete financial products. Financial industry or financial products play an increasingly important role in China's economic development and their impact is also growing. At the same time, with the development of society and the enrichment of economic growth theory, scholars have explored the role of financial development in economic growth.

Since Levine (1993) [1] initiated the upsurge of studying the linear correlation between financial development and economic growth, Valickova, Havranek and Horvath *et al.* have used transnational panel data to study the classical research on the linear correlation between financial development and economic growth [2] [3] [4]. The research shows that financial development has a significant role in promoting economic growth. Studying the financial development process of western developed countries shows that one of the main contents of financial industry is capital, which is the main factor affecting the economic development of these countries. Compared with developed countries, China's market economy started relatively late. Many researchers have done a lot of theoretical and empirical research work for the relationship between financial development and economic growth and have made some important conclusions. Domestic scholar Liu Xingrong (2002) [5] Chooses data from 1998 to 2000 from various regions of

China and makes an empirical analysis on the relationship between the average growth rate of per capita GDP and the average growth rate of financial assets in stock market and banks. Han Yanchun (2003) [6] explores the internal mechanism of financial development and economic growth. Tan Ruyong (2004) [7] studies the linear relationship between financial development and economic growth in China and draws a conclusion that the development of financial intermediaries in China has a very significant role in promoting economic growth by the least square model. Cheng Changlin *et al.* (2013) [8] analyzes the coordination level between financial development and economic development of the Corps by the data of 2002-2011. Jin Chunyu *et al.* (2013) [9] studies the relationship between financial industry development and economic growth by Panel-VAR model and GDP, INV, LAB and FIR are introduced at the index level. Niu Na (2017) [10] divides financial industry into banking-centered financial industry, securities financial industry and inclusive financial system and studies it from three aspects: credit support of real economy, financing environment of real economy and development of small real economy. Zhang Tonggong, Sun Yijun and Zhou Jinglin (2017) [11] also studied under the background of supply-side reform and introduces relevant indicators such as deposit balances of domestic and foreign currencies of financial institutions, loan balances of domestic and foreign currencies of financial institutions and added value of financial industry.

The above studies have adopted many indicators related to the development of the financial industry, from a more detailed and reasonable point of view to define the development of the financial industry. These literature can be roughly summarized as follows: First, economic growth cannot be separated from the support of funds; Second, the sound development of financial industry can provide financial support for economic growth and improve utilization efficiency; Third, the relationship between financial development and economic growth is a two-way constraint and complementary.

### 3. Multivariate Linear Regression Analysis

In the past ten years, the proportion of financial industry in China has continuously exceeded that of most developed economies. Compared with the developed and developing countries which are in the same stage of economic development in history, China's financial industry accounts for a relatively high proportion at this stage. Therefore, when studying the impact of the development of China's financial industry on economic growth, we should take full account of China's national conditions and select more appropriate indicators in the model.

### 4. Index Selection and Model Establishment

This paper will measure economic growth by gross domestic product  $y$ . The development of domestic financial industry will be measured by monetary and quasi-currency  $x_1$ , gold reserve  $x_2$ , foreign exchange reserve  $x_3$ , the number of domestic listed companies (A, B shares)  $x_4$ , total stock issuance capital  $x_5$ , to-

tal stock market value  $x_6$ , stock turnover  $x_7$ .

Establish the following models:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + u. \quad (1)$$

We use the annual data of the relevant indicators from 1992 to 2017 to analyze the contribution rate of the above seven financial development indicators to China's economic growth and the significant degree of their impact.

## 5. Empirical Process

### 5.1. Stability Test of Time Series

This paper studies the problems in the field of economy and finance. At this time, most of the time series observations are not generated by stationary processes. Therefore, first of all, we need to test the stationarity. Using ADF unit root test, we can see that all variables are second-order monolithic and there will be no pseudo-regression.

### 5.2. Granger Causality Test

The stationarity test shows that all variables are second-order monolithic, which satisfies the precondition of Granger causality test. After Granger causality test, we know that there is Granger causality between dependent GDP and independent currency and quasi-currency, gold reserve, the number of Listed Companies in China, foreign exchange reserve, total issuance capital, total stock market value and stock turnover. Among them, except the one-way causal relationship between the total issuance of shares and GDP, the other variables and GDP are causal each other.

### 5.3. Multiple Linear Regression

After multiple linear regression of the above data, the following results are obtained:

$$y = 36072.76 + 0.354x_1 - 10.671x_2 + 1.242x_3 + 25.342x_4 + 2.369x_5 - 0.0005x_6 - 0.013x_7.$$

$$t = (19.279) \quad (-2.757) \quad (2.404) \quad (3.669) \quad (2.744) \quad (-0.016) \quad (0.012)$$

$$R^2 = 0.999, \bar{R}^2 = 0.999, F = 5511.686, DW = 1.89.$$

From the above multiple regression models, it can be seen that the goodness of fit  $R^2$  is very close to 1, the fitting degree of the model is good, and the explanatory ability of the explanatory variables is strong; Then,  $F = 5511.686$ , the integrity of the regression model is significant and the model construction is reasonable  $x_6$  and  $x_7$  failed to pass the t test and the variables  $x_2$  and  $x_6$  were negatively correlated with GDP, so the economic significance expression was unreasonable, so they failed to pass the test in the economic sense. The above problems show that there are serious multi-collinearity in the multivariate linear regression model, which needs to be revised. Therefore, the principal component analysis method is used to further modify the regression model and get the principal component regression model.

## 5.4. Principal Component Analysis

The KMO test value of the samples processed by SPSS is 0.788, more than 0.5. The significant P value (Sig) of Bartlett spherical test results in each year is 0.0050 and the chi-square distribution value is large, which is suitable for principal component analysis.

According to the results of **Table 1**, the cumulative contribution rate was 95.514% > 85%, so the first two main components were extracted. **Table 2** gives the values of the first two principal components [12].

According to the results of **Table 2**, the principal component expressions are as follows:

$$F_1 = 0.41Zx_1 + 0.396Zx_2 + 0.395Zx_3 + 0.398Zx_4 \\ + 0.412Zx_5 + 0.397Zx_6 - 0.179Zx_7.$$

$$F_2 = 0.091Zx_1 + 0.153Zx_2 - 0.096Zx_3 + 0.207Zx_4 \\ - 0.014Zx_5 + 0.086Zx_6 + 0.953Zx_7.$$

According to the principal component expression, the standardized explanatory variables of each year are brought in and the principal component scores of each year are calculated. According to the annual score of principal component and the standardized  $y$ , the principal component regression model is obtained:

$$Y = 0.413F_1 + 0.059F_2.$$

$$t = (51.299) \quad (2.884)$$

$$R^2 = 0.99, DW = 1.55.$$

**Table 1.** The results of Eigenvalues and cumulative contribution rate.

	Initial eigenvalue			Extract Square Sum Loading		
	Sum	Variance %	Cumulative%	Sum	Variance %	Cumulative%
1	5.797	82.808	82.808	5.797	82.808	82.808
2	0.889	12.706	95.514	0.889	12.706	95.514
3	0.191	2.726	98.240			
4	0.060	0.860	99.100			

**Table 2.** The first two principal component values of indicators.

Index	First principal component	Second principal component
$x_1$	0.410	0.091
$x_2$	0.396	0.153
$x_3$	0.395	-0.096
$x_4$	0.398	0.207
$x_5$	0.412	-0.014
$x_6$	0.397	0.086
$x_7$	-0.179	0.953

Note:  $x_1 - x_7$  is a standardized value, expressed by  $Zx_1 - Zx_7$ .

From the results, the goodness-of-fit of regression model is 0.99 and the t-test values of  $F_1$  and  $F_2$  are significant. Moreover, using  $DW = 1.55$  to test the autocorrelation of the model, we can conclude that the model does not have autocorrelation. Using White test to test the heteroscedasticity of the model, the results show that the model does not have heteroscedasticity, which also shows that the selection of principal components is reasonable.

Two principal component expressions are substituted into the principal component regression model, and the normalized regression model is obtained:

$$Y = 0.175Zx_1 + 0.173Zx_2 + 0.158Zx_3 + 0.177Zx_4 + 0.17Zx_5 + 0.169Zx_6 + 0.018Zx_7.$$

The final regression model has reasonable economic significance, Variable t-test is passed, multiple collinearity between variables is basically eliminated and the regression model established by principal component method is reasonable.

According to the above regression model, when other factors remain unchanged, the gross domestic product will increase by 0.175, 0.173, 0.158, 0.177, 0.17, 0.169 and 0.018 units for each unit increase in currency and quasi-currency, gold reserve, foreign exchange reserve, the number of domestic listed companies (A and B shares), total issuance of shares, total market value of stocks and volume of stock transactions. The coefficient value of domestic listed companies (A, B shares) has the greatest impact on GDP. With the increase of the number of domestic listed companies, the company's earnings also increase and its contribution to GDP is also growing. In addition, money, quasi-currency and gold reserve contribute a lot to GDP. As a circulation tool, money is an indispensable element of national economic growth. The increase of money, quasi-money supply and gold reserve plays an important role in stimulating the increase of GDP. The total stock price is also an important factor affecting GDP. With the increase of the total stock price, the gross domestic product also increases. Of course, with the increase of the total stock price, the stock derivative securities and option prices in the financial market also contribute to the increase of the gross domestic product.

## 6. Conclusions and Suggestions

### 6.1. Conclusions

Based on the above results, the conclusions are as follows:

- 1) Economic growth is inseparable from the growth of money supply.
- 2) The number of listed companies has a significant impact on improving a country's economic level.
- 3) Stock and its derivatives markets have a great impact on the economic environment.

### 6.2. Policy Recommendations

- 1) Encouraging Financial Institutions to Participate in Economic Construc-

tion.

The government should encourage financial institutions to take an active part in economic construction by evaluating or establishing a sound regulatory mechanism; make use of financial institutions to collect idle funds; give full play to the advantages of financial institutions in collecting funds; concentrate funds on the market; solve the demand for funds for market development and promote economic development [13]. In addition, in terms of economic construction, the market plays a leading role, and the government plays a leading role. It should take charge of the overall situation and control the direction.

2) Promoting Domestic Economic Development with the Development of Financial Industry.

The development of financial industry can improve the scale and technology level of material capital accumulation, thereby improving the level of material capital accumulation [14]. Secondly, through the development of financial industry, we can inject funds into talent education, vocational skills and health; improve people's knowledge, skills, experience and physique, that is, the comprehensive quality of human resources, as a result, improving the human capital of society. Thirdly, the development of financial industry can inject capital and vitality into the development of other sectors of society.

3) Strengthen the Supervision and Restriction of Finance.

In recent years, China's financial industry has developed rapidly and a large number of funds have poured into the financial market. The government must strengthen the control of fictitious economy to ensure the healthy and stable development of economy [15]. At the same time, it should deepen the construction of market economic system and promote the co-development of fictitious economy and real economy represented by financial industry.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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