Summer 5-27-2016

# The Measurement of the Level of Financial Development in Hubei Province: Based on the Comparison with the Six Central Provinces in China

Huadong Xiao
*Manufacturing Industry Development Research Center on Wuhan City Circle, Wuhan,430056,China;Business school, Jianghan University, Wuhan, 430056, China*, hd_xiao@163.com

# The Measurement of the Level of Financial Development in Hubei Province: Based on the Comparison with the Six Central Provinces in China

*Huadong Xiao*[1,2,*]
[1] Manufacturing Industry Development Research Center on Wuhan City Circle, Wuhan,430056,China
[2] Business school, Jianghan University, Wuhan, 430056, China

**Abstract:** Financial development is the important driving force of economic and social development. Based on the overall situation of the financial development of the six provinces in central China, we measured the level of financial development in Hubei province, through choosing two financial efficiency indicators – loan-to-deposit ratio and the banking concentration, and three financial scale indicators – the average annual growth rate of the loan of financial organizations, financial interrelation ratio, and the scale of securities financing, using the relevant data during the 2011-2014. We find the financial development in Hubei province is in the middle level, even in the central region.

Keywords: financial development, financial efficiency, financial scale, the six provinces in central China

## 1. INTRODUCTION

Hubei Province is one of the six provinces in central China. The central region, including Henan, Shanxi, Hubei, Anhui, Hunan and Jiangxi, is an important grain production base, energy and raw material base, equipment manufacturing base and an integrated transport hub in China. In March 2004, Premier Wen Jiabao clearly stated program to promote the rise of the central region in his government work report for the first time. In December 2004, the Central Economic Work Conference established the national strategy of "Central China Rising". In March 2006, the strategy of" Central China Rising" was included in “the 11th Five-Year Plan for National Economic and Social Development of People's Republic of China”. Since the implementation of the strategy of “Central China Rising”, the level of financial development of the six central provinces has been greatly improved, although being uneven. Meanwhile, the economy in the six provinces also gained rapid development.

Most researchers agree that finance plays a key role in economic growth (e.g. Goldsmith, 1969; McKinnon, 1973; Shaw, 1969; Stiglitz, 1985; Mayer, 1990; Levine and King, 1993a, 1993b; Levin, 1997). But in China, the research on region's financial development is not enough. Measuring the level of financial development in Hubei province is in favor of local governments making targeted economic and financial policies from the actual situation to promote financial development and economic growth.

The paper is proceeding as follows. Section 2 describes the status of economic development in six central provinces. Section 3 is indicators selection. Section 4 is empirical research. Some concluding remarks are contained in Section 5.

## 2. OVERVIEW OF ECONIMIC DEVELOPMENT IN THE CENTRAL REGION

As the strategy point of "Central China Rising", Hubei Province achieved remarkable economic development in recent years. At the same time, Economic growth rate of the central region is higher than that of the eastern region for many years, narrowing the regional gap between China's economic developments, and alleviating the regional imbalance of economic development in China.

[*] Email: hd_xiao@163.com

### 2.1 The gap of economic development is narrowing.

In recent years, the difference of economic development between the central region and other regions is narrowing, and economic strength the central region has markedly increased. Table 1 shows the growth rate of the central region is higher than the national average and that of the eastern region for 9 years.

**Table 1. The GDP of the central region during the 2006-2014**

| Year | GDP (100 million yuan) | | | GDP growth （%） | | |
|---|---|---|---|---|---|---|
| | The central region | The eastern region[1] | The whole nation | The central region | The eastern region | The whole nation |
| 2006 | 43480.57 | 138522.9 | 217656.6 | - | - | - |
| 2007 | 52971.08 | 165194 | 268019.4 | 21.83 | 19.25 | 14.2 |
| 2008 | 64040.56 | 194085.2 | 316751.7 | 20.90 | 17.49 | 9.6 |
| 2009 | 70577.56 | 211886.9 | 345629.2 | 10.21 | 9.17 | 9.2 |
| 2010 | 86109.38 | 250487.9 | 408903 | 22.01 | 18.22 | 10.6 |
| 2011 | 104473.9 | 293581.5 | 484123.5 | 21.33 | 17.20 | 9.5 |
| 2012 | 116277.8 | 320738.5 | 534123 | 11.30 | 9.25 | 7.7 |
| 2013 | 127909.6 | 351978.3 | 588018.8 | 10.00 | 9.74 | 7.7 |
| 2014 | 138671.7 | 378679.1 | 636138.7 | 8.41 | 7.59 | 7.3 |

Note: Data in this table are calculated according to the data from the website of National Bureau of Statistics of the People’s Republic of China (http://www.stats.gov.cn/).

### 2.2 Industry structure is optimizing.

Industry structure of the central region is optimizing, which provides an endless supply of power for economic development. Table 2 shows the proportion of primary industry is higher than the national average, which is due to the central region being China's important grain base. Although the proportion of tertiary industry is lower than the national average, the proportion of primary industry is declining from 2006 to 2014, and the proportion of secondary industry is far above the national average.

**Table 2. The composition of gross product of the central region during the 2006-2014**

| Year | Composition of gross product of the central region (%) | | | Composition of the national GDP (%) | | |
|---|---|---|---|---|---|---|
| | Primary industry | Secondary industry | Tertiary industry | Primary industry | Secondary industry | Tertiary industry |
| 2006 | 14.7 | 48.7 | 36.6 | 10.7 | 47.4 | 41.9 |
| 2007 | 14.4 | 49.5 | 36.1 | 10.4 | 46.7 | 42.9 |
| 2008 | 14.2 | 50.5 | 35.2 | 10.3 | 46.8 | 42.9 |
| 2009 | 13.6 | 50.4 | 36.0 | 9.9 | 45.7 | 44.4 |
| 2010 | 13.0 | 52.4 | 34.6 | 9.6 | 46.2 | 44.2 |
| 2011 | 12.3 | 53.5 | 34.1 | 9.5 | 46.1 | 44.3 |
| 2012 | 12.1 | 52.8 | 35.1 | 9.5 | 45 | 45.5 |
| 2013 | 11.4 | 50.7 | 37.9 | 9.4 | 43.7 | 46.9 |
| 2014 | 11.1 | 49.9 | 39.1 | 9.2 | 42.7 | 48.1 |

[1] The eastern region in China includes 11 provinces and municipalities, Beijing, Tianjin, Shanghai, Liaoning, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, and Hainan.

Note: Data in this table are calculated according to the data from the website of National Bureau of Statistics of the People’s Republic of China (http://www.stats.gov.cn/).

### 2.3 Residents’ living standard is improving.

Since the implementation of the strategy of “Central China Rising”, the living standards of local residents are constantly improving. Table 3 shows, although per capita disposable income and per capita consumption expenditure in central provinces below the national level, but in addition to Hunan province and Shanxi province, the growth rates of per capita disposable income in other central provinces are higher than the national average, and but in addition to Shanxi province, the growth rates of per capita consumption expenditure in other central provinces are higher than the national average.

**Table 3. Per capita disposable income and consumption expenditure**

| | Per capita disposable income (Yuan) | | | Per capita expenditure (Yuan) | | |
|---|---|---|---|---|---|---|
| | 2013 | 2014 | Growth rate (%) | 2013 | 2014 | Growth rate (%) |
| Hubei | 16472.46 | 18283.23 | 11 | 11760.77 | 12928.31 | 9.9 |
| Anhui | 15154.31 | 16795.52 | 10.8 | 10544.09 | 11726.99 | 11.2 |
| Jiangxi | 16734.17 | 15099.68 | 10.8 | 10052.77 | 11088.89 | 10.3 |
| Henan | 15695.18 | 14203.71 | 10.5 | 10002.47 | 11000.44 | 10 |
| Hunan | 17621.74 | 16004.9 | 10.1 | 11945.85 | 13288.73 | 11.2 |
| Shanxi | 16538.32 | 15119.72 | 9.4 | 10118.33 | 10863.83 | 7.4 |
| Nationwide | 18310.76 | 20167.12 | 10.1 | 13220.42 | 14491.4 | 9.6 |

Note: The NBS started an integrated household income and expenditure survey in 2013, including both urban households and rural households. The data shown in Tables 3 are compiled on the basis of the survey. The coverage, methodology and definitions used in the survey are different from those used for the separate urban and rural household surveys prior to 2013.

## 3. FINANCIAL DEVELOPMENT LEVEL INDICATORS

About the measurement of the level of financial development, Goldsmith (1969) creatively put forward stock indicators and flow indicators to measure a country's financial development level, of which the most important is the financial interrelation ratio (FIR), which was defined as the ratio of the value of entire financial assets to the value of all physical assets. However, the original formula is too complicated, in practice, so FIR was simplified as the ratio of gross financial assets to GDP [1].

When researching financial repression and financial deepening in developing countries, McKinnon (1973) thought financial development should be deepening monetization firstly, and monetization of the economy is the prerequisite and basis for financial deepening. So he used the economic monetization indicator, equaling money stock $M_2$ divided by GDP, to measure the level of a country’s financial development, which reflects the payment intermediation function and mobilizing savings function of the financial systems [2] [3].

King and Levine (1993a, 1993b, 1993c) created a basis for the modern financial development theory, in order to construct an indicators system applicable to developed countries and developing countries. They use four measures of "the level of financial development" to more precisely measure the functioning of the financial system than Goldsmith's size measure. The first measure, DEPTH, measures the size of financial intermediaries and equals liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries) divided by GDP. The second measure of financial development, BANK, measures the degree to which the central bank versus commercial banks is allocating credit. BANK equals the ratio of bank credit divided by bank credit plus central bank domestic assets. The third and fourth measures partially address concerns about the allocation of credit. The third measures, PRIVATE, equals the ratio of credit allocated to private enterprises to total domestic credit (excluding credit to banks). The fourth measure, PRIVY, equals credit to private enterprises divided by GDP [4] [5] [6].

In addition to them, many other scholars have constructed their different indicators to measure the level of financial development. However, these indicators are mainly used to measure a country's level of financial development, being not entirely suitable for measuring the level of financial development of the regions within a country. In recent years, in order to measure the level of financial development of China provinces, some Chinese scholars have constructed some indicators, even indicators systems. These indicators or indicator system comprises, state-owned financial interrelation ratio (SOFIR), total financial interrelation ratio (TFIR), and financial marketization ratio (FMR) [7]; per capita loans [8]; 21 indicators covering three aspects of financial scale， financial structures and financial efficiency [9]; the total amount and structure of bank credit [10]; 15 indicators covering three aspects of financial development scale， financial development structures and financial development efficiency [11]; 11 indicators covering four aspects of securities, insurance, banking, and financial efficiency [12].

In this paper, we choose two aspects indicators of financial efficiency and financial scale to measure the level of financial development in Hubei province. Financial efficiency indicators include loan-to-deposit ratio (LDR) and commercial banks importance indicators (BANK). Financial scale indicators include the growth rate of loans from financial institutions, financial interrelation ratio, and the securities financing volume.

### 3.1 Financial efficiency indicators.

#### 3.1.1 Loan-to-deposit ratio (LDR)

Loan-to-deposit ratio (LDR), also known as the saving-loan ratio, measures the use efficiency of commercial bank assets. LDR equals the ratio of the bank loans divided by deposits. Although in June 2015, the provision that the loan to deposit ratio should not exceed 75% was canceled in China, and LDR became the statutory regulatory indicator from the liquidity monitoring indicator, this indicator is significant.

Firstly, it reflects the bank profitability. Suppose a commercial bank has a large amount of deposit, but its release loan amount is very low, namely low LDR, which indicates a high operating costs, but the income is very low indeed created, this bank profitability on worrying. In contrast, if suppose that the bank’s deposit amount is small, but it can emit a considerable loan amount namely high LDR, which means that it creates significant revenue costing less consuming, so this is a bank with strong profitability. Due to profit-driven capital, commercial banks have an inherent incentive to improve LDR. But from another perspective, in order to avoid risks, the banks should not have an excessive loan-deposit ratio. This is because so banks must have a certain amount of cash stock (reserve) to pay the customer's daily cash withdrawal and daily settlement.

Secondly, LDR can reflect the status of the market operation. LDR is too high, often reflects market operation in a superheated state, and LDR is too low, often reflects market operation in the doldrums.

#### 3.1.2 Banking concentration

SCP (structure-conduct-performance) Model, proposed by Bain and other researchers, assumes that the market structure determines market conduct, and market conduct determines market performance [13]. Market concentration is a major determinant of market structure. They thought that the banking concentration has a negative impact on the banking market competition, because the higher the degree of banking concentration, the easier collusion with banks, and the higher output prices banks can set, which will result in higher bank market power and also lower banking market competition.

Market concentration refers to the size of the market share of a few larger enterprises or organizations in a particular industry or market. In general, the higher the market concentration, the degree of monopoly in the market is higher. Indicators commonly used measure the market concentration include Lerner index, the market concentration index ($CR_n$), the Gini coefficient and Herfindahl-Hirschman Index (also known as the HHI index).In this paper, $CR_n$ index represents the market share of the largest n enterprises in the industry.

### 3.2 Financial scale indicators.

#### 3.2.1 The growth rate of loans from financial institutions

The loan balance of financial institutions is a loan that has not been repaid until the end of the accounting period. The loan balance can explain the size of the business assets to a large extent, because the loan is a major part of bank assets business. In this paper, with the balance of loans from financial institutions as one of scale indicators, not only reflect the financial scale of the provinces, better compare the development of the financial scale in the provinces, but also to analyze the dynamic trend of financial scale in the provinces.

#### 3.2.2 Financial interrelation ratio

Goldsmith (1969) used the value of financial intermediary assets divided by GNP to gauge financial development under the assumption that the size of the financial system is positively correlated with the provision and quality of financial services. In later study, the financial interrelation ratio (FIR) was regularly defined as the ratio of money stock $M_2$ to GDP. However, due to $M_2$ data of the provinces being not available, we define FIR as the total balance of deposits by the end divided by GDP in the provinces.

#### 3.2.3 Securities financing scale

With the rapid development of China’s economy, the securities markets are more and more important in financial system. Securities financing include offering stock and issuing bond in China. Equity financing includes the issuance of A shares and H shares, and bond financing includes the issuance of corporate bonds, short-term financing bonds and medium-term notes. The securities financing scale can better reflect the provinces’ status of securities market development.

## 4. MEASURING OF THE LEVEL OF FINANCIAL DEVELOPMENT IN HUBEI PROVINCE

### 4.1 Financial efficiency in Hubei province.

#### 4.1.1 Loan-to-deposit ratio (LDR)

We use the balance of loans of financial organization by the end and the balance of deposits of financial organization by the end, from China regional financial performance reports published by the People's Bank of China, calculated the LDR of the six central provinces during the 2011-2014. The results are shown in Table 4. We find the LDR of Hubei keeping at the level close to 0.7, that is higher than Henan and Shanxi, although being lower than Anhui and Jiangxi and nearly tied with Hunan. From October 1, 2015, LDR is no longer used as indicators of financial supervision in China, which may lead to a rapid increase LDR in the provinces in the coming years.

**Table 4. LDR of the six central provinces during the 2011-2014**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 0.679 | 0.659 | 0.536 | 0.724 | 0.692 | 0.649 |
| 2012 | 0.674 | 0.635 | 0.547 | 0.724 | 0.676 | 0.658 |
| 2013 | 0.666 | 0.625 | 0.572 | 0.731 | 0.675 | 0.670 |
| 2014 | 0.693 | 0.658 | 0.615 | 0.756 | 0.687 | 0.718 |

#### 4.1.2 Banking concentration

Using the data from China Regional Financial Performance Report 2011-2014, with total assets of the five large commercial banks divided by that of banking institutions, we calculated the banking concentration $CR_5$

index of the respective provinces in central China, shown in Table 5. In China's financial system, banking financial institutions include five large commercial banks, China Development Bank and the policy banks, the joint-stock commercial banks, the city commercial banks, the urban credit cooperatives, the small rural financial institutions (including the rural commercial banks, the rural credit cooperatives, and the cooperative banks), the finance companies, the trusts, the postal savings, the foreign banks, the new rural financial institutions (including the rural banks, the loan companies, and the rural fund cooperatives), and other financial institutions (including the financial leasing companies, the auto finance companies, the money brokerage firms, the consumer finance companies, etc.).

**Table 5. $CR_5$ index of the six central provinces during the 2011-2014 (%)**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 44.54 | 41.48 | 42.95 | 43.58 | 43.35 | 43.84 |
| 2012 | 42.27 | 40.53 | 41.67 | 41.87 | 41.03 | 40.85 |
| 2013 | 42.11 | 39.64 | 39.85 | 39.45 | 39.75 | 38.96 |
| 2014 | 41.03 | 37.31 | 39.09 | 36.74 | 38.97 | 37.21 |

Overall, in recent years, the central provinces banking concentration showing a declining trend, indicating that the competition in the banking markets gradually strengthened. In the central provinces, Hubei’s banking concentration was at the highest level from 2011 to 2014, and it declined more slowly. This shows that the competition in the banking markets in Hubei province is inadequate compared to other central provinces.

By calculating two indicators – LDR and banking concentration, reflected the financial efficiency, we find the financial efficiency in Hubei Province is in the lower middle level in the six central provinces.

### 4.2 Financial scale in Hubei province.

#### 4.2.1 The growth rate of loans from financial institutions

Since 2011, deposits and loans in the six central provinces continued to grow rapidly, shown in Table 6 and Table 7. We calculated the growth rate of loans in the provinces from 2011 to 2014, shown in Table 8.

**Table 6. The deposits in financial organizations in the six central provinces (100 million yuan )**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 24148.3 | 26774.8 | 21003.2 | 19547.3 | 19444.1 | 14322.1 |
| 2012 | 28257.9 | 31970.4 | 24157.0 | 23211.5 | 23147.2 | 16839.0 |
| 2013 | 32902.8 | 37591.7 | 26269.0 | 26938.2 | 26876.0 | 19582.7 |
| 2014 | 36494.8 | 41931.1 | 26942.9 | 30088.8 | 30255.6 | 21537.7 |

**Table 7. The loans of financial organizations in the six central provinces (100 million yuan)**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 16395.4 | 17648.9 | 11265.6 | 14146.4 | 13462.5 | 9301.9 |
| 2012 | 19032.2 | 20301.7 | 13211.3 | 16795.2 | 15648.6 | 11080.1 |
| 2013 | 21902.6 | 23511.4 | 15025.5 | 19688.2 | 18141.1 | 13111.7 |
| 2014 | 25289.8 | 27583.4 | 16559.4 | 22754.7 | 20783.1 | 15466.1 |

**Table 8. The growth rate of loans from financial organizations in the six central provinces (%)**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 18.2 | 11.4 | 16.5 | 20.9 | 18.1 | 18.6 |
| 2012 | 17.2 | 15.0 | 17.3 | 18.7 | 16.2 | 19.1 |
| 2013 | 15.8 | 15.8 | 13.7 | 17.2 | 15.9 | 15.5 |
| 2014 | 15.6 | 17.3 | 10.2 | 15.6 | 13.9 | 18.0 |

The balance of loans of financial organization was 2528.98 billion Yuan by the end of 2014 in Hubei, which is second only to the level of Henan in the central provinces. We find that the annual growth rate of loans in Hubei Province presents two characteristics: (1) it is declining year by year; (2) the growth rate of loans in Hubei is lower than that in Henan and that in Jiangxi, but with the same growth rate in Anhui in 2104.

### 4.2.2 Financial interrelation ratio

In this paper, we define FIR as the total balance of deposits by the end divided by GDP in the provinces. The data of GDP come from the provincial Statistical Yearbook 2015.

**Table 9. The FIR in the six central provinces during the 2011-2014**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 1.23 | 0.99 | 1.89 | 1.28 | 0.99 | 1.22 |
| 2012 | 1.27 | 1.08 | 1.99 | 1.35 | 1.04 | 1.30 |
| 2013 | 1.33 | 1.17 | 2.08 | 1.41 | 1.10 | 1.37 |
| 2014 | 1.33 | 1.20 | 2.11 | 1.44 | 1.12 | 1.37 |

In recent years, FIR of central provinces, including Hubei, are increasing, which indicates the importance of financial activities in the economic development being deepening. The FIR in Hubei is 1.33, just higher than Henan and Hunan, under middle level in the six provinces.

### 4.2.3 Securities financing scale

The levels of development of securities market are uneven in central China, as shown in Table 10. In most central provinces, the total securities financing was increasing year by year. But in Hubei province, the total securities financing was not stable. In 2011, the total securities financing was the largest in the six provinces, being 89.6 billion yuan. But in 2014, the total securities financing in Hubei was 85.12 billion yuan, just higher than that in Jiangxi.

**Table 10. The scale of securities financing in the six central provinces during the 2011-2014 (100 million yuan )**

| Year | Hubei | Henan | Shanxi | Anhui | Hunan | Jiangxi |
|---|---|---|---|---|---|---|
| 2011 | 896.0 | 572.8 | 709.6 | 713.5 | 503.8 | 222.5 |
| 2012 | 821.4 | 874.0 | 870.6 | 913.8 | 678.7 | 335.8 |
| 2013 | 973.1 | 1352.5 | 1252.0 | 900.6 | 801.0 | 473.6 |
| 2014 | 851.2 | 1322.8 | 1443.9 | 1736 | 1034.6 | 580.4 |

By calculating three indicators - the growth rate of loans, FIR and securities financing scale, all reflected the financial scale, we find the financial scale in Hubei Province is in the middle level in the six central provinces.

## 5. CONCLUSIONS

In this paper, we measure the level of financial development in Hubei province, based on the comparison with the six central provinces in China. By calculating five indicators reflected the level of financial development, We find the financial efficiency in Hubei province is in the lower middle level (the LDR of Hubei is just higher than Henan and Shanxi, and CR5 index of Hubei is the biggest in the six central province), and the financial scale is in the middle level in the six central provinces.

In order to improve the level of financial development in Hubei province, we recommend.

Firstly, the development of local small and medium financial institutions, in particular the development of private financial institutions, should be promoted, which will reduce the banking concentration, and strengthen reasonable competition of the credit market. Therefore, the financial efficiency and the financial scale are improved.

Secondly, accelerating the reform of the banking institutions operating mechanism and the development of the multi-level capital markets, this will effectively promote the expansion of financial scale.

## REFERENCES

[1] Goldsmith R W. (1969). Financial Structure and Development. Zhou Shuo et al. translated. Shanghai: Shanghai Joint Publishing Company LTD, Shanghai People's Publishing House, 1994, 156-205(in Chinese)

[2] Levine R. (1997). Financial Development and Economic Growth: Views and Agenda. Journal of Economic Literature, 35 (2): 688-726

[3] Gao Wandong, and Lv Yingfei. (2013). The Measurement of the Development Level and Regional Comparison of the Financial Industry in China. Journal of Northeast Normal University (Philosophy and Social Sciences), (2): 22-28(in Chinese)

[4] King R G., and Levine R. (1993a). Financial Intermediation and Economic Development. in Financial intermediation in the construction of Europe. Eds.: Colin Mayer and Xavier Vives. London: Centre for Economic Policy Research, 156-189.

[5] King R G., and Levine R. (1993b). Finance and Growth: Schumpeter Might Be Right. Quart. J. Econ., 108(3)：717-37

[6] King R G., and Levine R. (1993c). Finance, Entrepreneurship, and Growth: Theory and Evidence. J. Monet. Econ., 32(3)：513-42

[7] Zhou Li, and Wang Ziming. (2002). The Empirical Research of Finance and Growth in China: 1978-2000. Journal of Financial Research， (10）: 1-13(in Chinese)

[8] Yin Zongcheng, and Ding Rijia. (2008). Cointegration Test on the Relationship Between Level of Development of the Finance System in Different Regions of China and Gap in Economic Development. The Journal of Guangdong University of Finance, 23(3):92-99(in Chinese)

[9] Xia Xiangqian. (2014). Compare Research on the Level of Financial Development of Each Province in China. Financial Theory and Practice, (1)：63-68(in Chinese)

[10] Wang Chunqiao, and Xia Xiangqian. (2015). Financial Development and TFP: Technical Progress or Efficiency Improvement-- An Empirical Study Based on Stochastic Frontier Model. Shanghai Finance, (4): 35-39(in Chinese)

[11] Lin Yong, and Chen Mingyin. (2014). Indicator System and Level Measurement of Financial Development in China. Commercial Times, (18): 64-66(in Chinese)

[12] Ding Zhujun, and Guo Qing. (2014). Spatial Distribution of Regional Differences in the Level of Financial Development: Based on the Data of 11 Province in Western China. Commercial Times, (9): 140-142(in Chinese)

[13] Bain, Joe S. Relation of profit rate to industry concentration: American manufacturing, 1936-1940. Quarterly Journal of Economics. 1951, 65(3): 293-324