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Research on the Relationship between Financial Development, Capital Stock and Economic Development

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ABSTRACT

In the process of economic development, influenced by many factors, this paper establishes a regression model between capital stock and financial development under the influence of endogenous growth theory to analyze the change of capital stock in the process of economic growth. It is found that financial development plays a greater role in the capital stock, and the role played by financial markets is weaker than that of financial intermediaries.

***Keywords*:** Financial Development; Capital Stock; Economic Development; Relationship Research

Economic development has a fixed pattern of development. Inevitably, there is a close relationship between finance and capital in the process of economic development. It has become an important research topic in the theoretical circle. Economic development includes the improvement of per capita output and sustainable national GDP. The improvement of the level, along with the constant changes in the economic structure, has led to the formation of the theory of internal growth and other research theories. The establishment of the theoretical model of endogenous economic growth fully reflects the endogenous characteristics of technological progress factors in the process of China's economic development, and fully describes the relationship between technological progress and economic growth from the perspective of theoretical construction. There is a certain developmental link between financial development, capital stock and economic growth. In this paper, a regression model is established and analyzed.

1. Background analysis of the relationship between financial development, capital stock and economic development

The internal growth theory is an important supplement and adjustment to the traditional economic growth theory under the new economic development situation, and establishes an effective link between financial development and economic growth. From the perspective of finance and capital, it explores the influencing factors of economic growth and finds that in the development of the financial system, the adjustment of capital stock and technological progress can promote the effective growth of the economy[1].

In the process of modern economic development, it is increasingly dependent on the support of financial power. The development of China's financial structure has gradually shifted toward a more elaborate financial structure, and its support for the national economy has become more apparent. Economic growth is manifested at the level of the real economy, including the increase in per capita real GDP, the continuous increase in gross national product, the continuous improvement of economic systems, and the sound development of production technologies. The realization of economic growth factors has its inherent growth mechanism. Capital stocks and financial development have an important influence on them, which has already formed an important part in the current theoretical research process. There is a close developmental link between technological progress, labor growth, capital accumulation and economic development. The theoretical academic community has paid sufficient attention to this and has drawn a number of theoretical research results.

Financial intermediaries are indispensable to financial influencing factors. With the rapid development and improvement of financial markets, they have exerted an important influence on the financial market mechanism.

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Financial intermediaries play an important role in the process of economic growth. Financial intermediaries can increase the efficiency of economic development and achieve economic growth through the increase of capital accumulation.

In recent years, China's financial market has developed rapidly, and has played a rapid role in promoting and driving economic growth. Realizing economic growth through financial development has become a new development perspective. Increasing capital stock can effectively promote the development of China's economy. Finance can increase savings and transform savings into investment, thereby achieving output accumulation and capital growth, and reacting upon savings, and promoting the growth of savings, thus providing a variety of assistance for economic development. Financial intermediaries can promote the growth of savings and increase the rate of positive growth [2].

2. Financial development has improved the efficiency of capital allocation

The important role that financial development plays in the economy is achieved through the improvement of capital allocation efficiency. The specific performance in the growth of the financial system has improved the efficiency of capital production and operation and promoted the realization of economic growth. At the same time, it can effectively collect information, strengthen effective investment between different projects. Meanwhile, the risk can be dispersed during the use process, the best combination of investment can be achieved under effective funds, the investment ratio can be optimized, the investment in risky projects can be controlled, and finally the innovation support for economic discovery projects. Financial intermediaries can effectively improve capital productivity in the process of economic development. In the investment process of funds, you can choose projects with higher risks but higher returns, or projects with higher security but lower returns. Risk technical reward includes both the impact of a specific project and the overall impact. The use of financial intermediaries in the financial market enables in-depth analysis of various investment projects in the current financial market to assist investors in making the best investment decisions, ultimately improving the efficiency of capital allocation, effectively improving economic growth efficiency, and achieving a sound economy development purpose.

The role of financial intermediation is also reflected in the dispersion of investment risks, which plays an important role in investment decision-making behavior and savings behavior. In the financial development market, the insurance market can play a good role in decentralizing risks, avoiding or reducing the risk of dispersibility caused by the volatility of asset returns. In the prevention of risks, individuals can choose some productive assets that can be realized at any time, but they have certain limitations. Through the role of banking institutions, they can combine personal liquid assets and reduce the ineffectiveness of individual investment status. It invests in some of the more productive projects by effectively integrating most of the assets. However, there is a production cycle in the bank operation process, which is less convenient for individual operators. Through the role of financial intermediaries in it can provide individuals with a variety of investment programs to meet the needs of individual liquidity, and achieve full liquidity insurance for depositors.

3. The impact of economic development on financial development and capital stock

Good financial development and capital growth can effectively promote economic development, and in turn, economic growth plays an important role in financial development and capital growth. Under the effect of fixed transaction costs and fixed costs, financial intermediaries and financial markets will show growth with the growth of per capita wealth and per capita income. In the context of rapid economic development, competition among different financial intermediaries has gradually increased, and the scale of investment in funds has gradually increased. Under this role, the individual economy has been effectively encouraged to participate in financial activities. Under the continuous development of the economy, the financial market has gradually improved, and the role of financial intermediaries has gradually emerged. It can provide good financial services for individuals, reduce the cost of individuals in financial transactions, and promoted and encouraged more individuals and enterprises in the society to participate in the financial service process, and provided good individual support and financial support for the rapid development of the financial system. Individuals have generated greater development needs for resource flow, project evaluation and investment and wealth management, providing a diversified development space for the development of financial service projects, thereby optimizing and integrating multiple investment development projects to provide individuals with more diversification and good financial services ultimately create a higher level of financial services for people. However, at the same time, the fixed transaction costs and fixed costs in the development of financial services will also increase, which is determined by the complexity and perfection of financial services. To this end, per capita income can reach a relatively ideal level of development, and the actual benefits that can be obtained through financial institutions and financial intermediaries are greater than the marginal cost. As a result, individuals will have a greater interest in more complex financial services, which will lead to greater demand for complex funds in the financial market, which is one of the important conditions for market development.

With the development of China's human resources and the increase of capital investment, China's economy has developed rapidly and has created more power support for the development of financial markets.

4. Theoretical model for the study of the relationship between financial development, capital stock and economic development

In the process of this paper, the relationship model of financial development, capital stock and economic development was established, and the core characteristics of various economic growth theories were fully combined. The economic development data of China from 1952 to 1998 were analyzed. The data of China's economic growth does not conform to the neoclassical growth theory and the R&D type growth theory. The AK type growth model can effectively analyze the current situation of China's economic growth [3].

The representative theory in the research process of China's economic development theory is the economic growth model, which has important theoretical data support for many theories in the process of China's economic research. Among them, the most widely used in the research process is the AK model, the main research method is as follows.

The internal growth growth model, the AK model, is constructed. The total linear functional relationship between total output and total capital stock is as follows:

$$y=Ak$$

Where y is the total output, k is the total capital stock, and A is a constant. The total output and the total capital stock are in a linearly varying relationship under the multiplicative relationship of the constant A. Under more complex conditions, economic growth is also affected by factors such as labor average material capital and labor average human capital.

In the process of financial development, there are two forms of development of financial intermediaries and stock market development. In the specific research process, this paper focuses on the analysis of the influence of capital stock factors on the main body of financial development. Due to the national nature of China's socialism, it has significant development advantages in the process of data collection and analysis. It can make scientific and comprehensive analysis and judgment based on the specific actual situation of financial data, and provide scientific guidance for China's economic development. The financial subject plays an important role in the capital stock. Therefore, the role of financial intermediation is fully considered in the theoretical research model, and the following model is constructed:

$$LnKt=a0+a1Ln(FBt)+a2Ln(FMt)+\varepsilon t$$

In the above formula, FB refers to financial intermediation indicators, FM refers to financial market indicators, a0, a1 and a2 are coefficients, and a1 and a2 are positive numbers, meaning that financial development has a positive correlation with financial stocks, εt is a random error, which indicates that in addition to the influence of financial intermediaries and stock market factors, it is also affected by other random factors in the process of economic development[4].

5. Empirical analysis

In the course of the research, this paper selects the data of China's economic growth between 2002 and 2017. The data is selected from the China Economic Yearbook and the China Statistical Yearbook. It is the development of economic and social development since China's reform and opening up. The capital composition includes two forms of total fixed capital formation and inventory increase, and the depreciation rate sets 5%. The financial intermediation index refers to the ratio between the broad money, ie, M2, and the current gross national product, showing the scale effect of the development of financial intermediaries on China's national economy. Financial market indicators refer to the proportion of stocks and bonds in the narrow sense of financial assets, showing the position of financial markets in the various resource allocations of economic development[5].

5.1 Unit root test

In the analysis process of the regression model, the unit root test needs to be established for various reasons. This is recognized by Philip, Newbold and Granger. The regression model is obtained through the establishment of non-stationary sequences, however, in the specific application process, there is a phenomenon of pseudo-regression. Watson learned through a large number of calculations that using a non-stationary sequence to establish a regression model in the presence of a unit root of the variable. Due to the existence of the unit root of the variable, the traditional regression statistic will have a certain deviation in the regression analysis. Therefore, regression analysis of variables is needed to ensure the optimality, stability and effectiveness of the regression results obtained. The ADF test can obtain the best test results. There are three different model types, including three models with trend and intercept terms, models with no trend and intercept terms, and models with intercept terms [6]. To this end, an ADF test is established for the model. The specific test results are shown below.

variable	**ADF test value**	**Inspection type (t,c,n）**	**Mackinnon Threshold**
LnK	-2.964	(t,c,1）	-3.268
ΔLnK	-2.661	(0,c,1）	-2.655
LnFB	-1.085	(0,c,1）	-2.642
ΔLnFB	-1.690	(0,0,1）	-1.624
LnFM	-0.955	(0,c,1）	-2.642
ΔLnFM	-3.043	(0,0,1）	-1.624

Table 1. Time series

It can be seen from the above table that LnK, LnFB and LnFM are both non-stationary sequences, and the first-order difference sequence represents a stationary time series. In the research process of this paper, the first-order single-sequence is studied.

5.2 Cointegration test

In the regression model, each variable is in an unstable state. When the linear combination between different variables is in a stationary state, a co-integration test relationship is generated between these variables in the regression model. It can be seen that, from a single different variable, it is a gradual separation state within itself. When multiple variables are combined for analysis, it can be seen that a long-term and stable equilibrium relationship is generated between multiple variables, that is, the trace statistic test is also called Johansen cointegration test. In the Johansen cointegration test, it is necessary to fully consider whether there is a long-term stability relationship between each group of variables[7]. The specific analysis results are shown in Table 2 below.

variable	**H0:rank=r**	**Eigenvalues**	**Likelihood ratio statistic (LR)**	**5% level threshold**
Lnk 与 LnFB、LnFM	Rk（II）=0	0.7183	46.143	42.44
	Rk（II）≤0	0.5121	20.811	25.31

Table 2. Johansen cointegration test

As can be seen from the above table, under the 5% significance level, Lnk has a long-term and stability linear relationship with LnFB and LnFM, and there is only one cointegration vector between the three. It can be expressed by the long-term normality equation after autocorrelation correction.

From the comparative analysis of the long-term regularity equation and the statistical test results, it can be seen that both financial market indicators and financial intermediaries play an important role in economic growth. Through the analysis of the sample interval of this paper, we can see that economic growth plays an important role in the capital stock in the process of financial development. It also proves in the long-term formality equation between financial intermediation, financial market and the stock of labor capital funds in a positive correlation, the rationality of this conclusion is demonstrated from a theoretical level. Its main development mechanism is that the rapid rise and development of financial intermediation has increased the amount of savings, and the growth of savings has led to the growth of investment, which has increased the total investment in the process of economic development, thus driving economic development and economic growth. The effective operation and development capability of the financial market has enabled the use of funds to have good mobilization and use efficiency, and promoted the increase of capital stock, which has a positive effect on economic growth. Among them, the role of financial intermediaries in the factors affecting the stock of labor capital is much greater than the role of financial markets. This phenomenon occurs because China's financial system is generally dominated by banks in the process of occurrence, especially in the source of corporate capital, which is one of its important fund suppliers. Under the continuous development of the stock market situation, the capital also plays an increasingly important role, but the operation of the Chinese stock market is also gradually perfect, the enterprise will gradually enter money has some restrictive conditions, to avoid the risk of the stock market run at the same time also restricts the full play in the role of the stock market in the capital formation, didn't make its role into full play. In terms of economic statistics, there is a clear difference between capital stock and financial development. The role of financial development in China's economic development is mainly reflected in the form of increased capital stock [8].

5.3 Error correction model

The above regression model mainly analyzes the long-term relationship between financial development, capital stock, financial market and economic development. However, in a specific period of time, financial development is a dynamic process of the development of capital stocks. To do this, it is necessary to establish a corresponding error correction model, namely the ECM model. Among them, the error correction term is the residual value calculated in the long-term equation. Through the use of the error correction model, the data in this experiment is subjected to regression analysis, and the short-term insignificant items are eliminated, and finally the error correction model is obtained.

$$\Delta LnKt=0.274-1.431\Delta LnFB_{t-1}-0.663\Delta LnFMt-1-0.136Ect_{t-1}$$

The above error correction model effectively reflects the influence of short-term fluctuations in variables, and the positive error correction term can fully reflect the influence of variables on long-term equilibrium. Under this calculation, the fluctuation of the variable includes two components: short-term fluctuation and long-term fluctuation. Combined with the calculation results and calculation methods of the model estimation, the capital stock is affected by factors such as long-term equilibrium, financial development index variables and self-lags in the calculation process. Among them, the error correction term, Ect, is a negative value, which is consistent with the concept of error correction mechanism. It can be judged from the coefficient value that financial development plays an important role in the adjustment of the long-term equilibrium of capital stock. Through this analysis, we can see that from the perspective of short-term development and long-term development, the stock of funds is affected by financial markets and financial intermediaries. Among them, the impact effect in the short-term is more obvious than the long-term effect, and the role played by the intermediary in it is greater than that of the financial market[9].

6. Research conclusions

In this paper, the regression model is constructed in the research process, and the assisted analysis method is used to analyze the relationship between financial development, capital stock and economic growth. The internal growth theory is analyzed and obtained the following analysis conclusions.

6.1 Through the analysis of the relationship between capital stock and financial development, it can be seen that in the short-term and long-term, financial markets and financial intermediaries play an important role in economic growth and economic development, which is in line with Levine's research conclusions. The impact of financial development on China's economy is mainly achieved through the accumulation of funds. This is an important performance characteristic in the early stage of financial development and a traditional financial transmission mechanism. The generation of long-term equilibrium relationship can have a relatively obvious reverse revision relationship to capital stock. It has different influences on financial development in short-term development and long-term development. The impact of capital stocks in the short-term has a greater impact than the long-term equilibrium.

6.2 Financial intermediaries play an important role in the capital stock, and play a greater role in the capital stock than the financial market itself. China's financial system structure is dominated by banks. Financial intermediaries can play a relatively large role in it, increasing capital stock and playing an important role in promoting China's economic development. In China's current economic structure, financial markets are gradually improving, and the role played by China's economy is gradually increasing. At the same time, a series of problems and deficiencies have emerged in the development process, which should be fully improved. This is consistent with Harris's research conclusions. The main expression is that in developing countries, the role of the stock market in the various factors of economic growth is relatively limited [10].

In the analysis of many influencing factors of economic development, capital stock and economic growth, this paper can provide reference for China's economic development and economic reform under the current new economic development, mainly as follows. First, under the current economic and financial development situation in China, we should uphold and stabilize the banking-led financial structure system, increase the business improvement of banking work, promote the full development of banking work, and actively play the role of banks in China's economic development, promote the role, effectively increase the capital stock, and achieve economic growth and economic development. Second, actively strengthen the standardized development of the financial market, especially in the development of capital stock to give full play to the role of the financial market. Third, the role of financial markets in promoting economic growth is mainly achieved through the increase in capital stocks. Therefore, the relevant government departments have been requested to formulate relevant economic and legal policies, industrial development policies and science and technology policies to guide the economic development, promote the efficiency of economic growth, and make full use of the relationship between financial development, capital stock and economic development to adjust economic development policies.

References

1. Guo Fanyong. An Empirical Study on the Relationship between Financial Development and Economic Growth in Chongqing [J]. Contemporary Economy, 2016(1): 126-128.
2. Zhou Wei, Qin Yu. Research on the relationship between infrastructure capital stock and economic growth [J]. Journal of Harbin University of Commerce(Social Science Edition), 2017(2): 45-55.
3. Wang Tao, Shi Dan. Financial development level, industrial structure imbalance and regional economic growth [J]. Journal of Hainan University (Humanities and Social Sciences), 2016, 34(3): 48-58.
4. Cai Junjie. Empirical Study on the Relationship between Financial Development and Economic Growth in the Yangtze River Delta Region [D]. Zhejiang University of Finance and Economics, 2017.
5. Han Yue. Research on the evaluation of capital stock effect of rural financial policy in China based on Hsiao method [D]. Harbin University of Commerce, 2016.
6. Li Biao, Song Changxu, Wu Jia. Financial Agglomeration Driven by Innovation and Regional Economic Growth [J]. Journal of Finance and Economics, 2016(1): 88-99.
7. Wang Jinyi. Rural Financial Development, Capital Stock Increase and Rural Economic Growth [J]. Quantitative Economics and Technology Economics Research, 2018(2): 64-81.
8. Ai Ping. Technological innovation and regional economic growth under financial agglomeration [D]. Taiyuan University of Technology, 2017.
9. Zhang Liyi, Tu Ben. Empirical Study on the Impact of Internet Finance Development on China's Economic Growth [J]. Statistics and Decision, 2017(11): 143-147.
10. Huang Zhixiong. Empirical study on the relationship between economic hinterland and central city financial

agglomeration [D]. Guangdong University of Foreign Studies, 2016.