

An Empirical Study of the Relationship between Financial Business Change and Economic Growth

Zhou Wei

Zaozhuang University, Zaozhuang, Shandong, 277160, China

Keywords: Financial format; Economic growth; Financial deepening; Economic efficiency

Abstract: The global financial crisis has led to a recession in the real economy, which has once again led to research on the financial system and the relationship between structure and economy. In recent years, with the continuous advancement of financial reforms, China's financial market has gradually improved, financial institutions have become increasingly diverse, and innovative financial products and tools have emerged. In this context, China's financial aggregates continue to expand, and the financial structure has undergone profound changes, especially the rapid growth of direct financing, which has made the regional financing structure more diversified, and the three financing methods of bank credit, stocks and bonds have gradually become "three pillars". Based on the theoretical and empirical research results of economic growth, this paper explores the mechanism of interaction between financial development and economic growth. Using annual time series data, it constructs a suitable measure of financial development and economic growth, and uses measurement. The economic method explores the causal relationship between financial development and economic growth. The empirical analysis of the impact of financial development on economic growth and economic efficiency is proposed to promote financial marketization reform, improve capital market construction, improve the financing environment of non-state-owned economy, and encourage financial innovation.

1. Introduction

Over the past 30 years, China's economy has achieved remarkable achievements. Finance plays an increasingly important role in China's economy. Financial reform has gradually become the central issue of China's economic reform. Since the beginning of the 21st century, with the continuous growth of China's economy and the transformation of industrial structure, the pace of reform of China's financial industry has accelerated markedly, and the relationship between financial development and economic growth has received more and more attention [1]. In fact, the study of the relationship between financial development and economic growth is one of the key research objects of modern Western economists. From the development experience of various countries in the world, finance plays an important role in the process of economic growth. In the modern market economy, financial development has a very close relationship with economic growth. Taking the development history of western developed countries as an example, in the period of industrialization, the rapid growth of the economies of the United States and Europe is often accompanied by the rapid development of finance. The relationship between financial development and economic growth has gradually become a hotspot for economists. Scholars have carried out a lot of theoretical and empirical research, trying to figure out two problems: First, what is the relationship between financial development and economic growth? The relationship is whether economic growth drives financial development, or financial development promotes economic growth, and second, what kind of financial structure is most suitable for economic growth.

2. An Overview of the Theory of Financial Format and Economic Growth

2.1 The concept and connotation of financial business

The concept of financial deepening was first proposed by American economists Mckinnon and Shaw. It refers to the government's abandonment of excessive intervention in financial markets and financial systems, relaxation of strict control over interest rates and exchange rates, so that interest rates and exchange rates fully reflect the supply and demand of funds and foreign exchange. In the situation, financial markets can effectively mobilize and allocate social funds, thus effectively promoting rapid economic growth [2]. To put it simply, the essence of financial deepening is the process by which the government relaxes strict financial regulation to promote the development of financial marketization. This paper defines the deepening of the financial industry as: the state and process of the development of the financial industry and the enhancement of financial capital strength in the process of financial marketization. From the definition, the deepening of the financial industry includes two meanings. One refers to the development and evolution of financial institutions such as various financial industries or financial markets, and the other is the process of financial capital accumulation and financial strength enhancement. More directly, the deepening of the financial industry is the state and process of financial scale expansion, financial structure optimization, and financial efficiency improvement. It is a comprehensive manifestation of financial development in a country or region.

2.2 Economic growth concept

The famous American economist Samuelson elaborated on the core meaning of economic growth in his classic textbook *Economics*: economic growth refers to the expansion of a country's potential national output or potential actual GNP. We can regard economic growth as It is the transition of the production possibility boundary outwards with time. Nobel Prize-winning economist Kuznets clearly stated in his speech at the 1971 Nobel Prize ceremony that "a country's economic growth can be defined as the long-term ability to provide its people with an ever-increasing variety of economic goods [3]. Rise, the ability to grow, based on technological improvements, and the adjustments it requires and ideology." He also pointed out, "We see economic growth in countries as usually caused by population growth and extensive structural changes. The accompanying per capita output value continues to increase." The most obvious feature of economic growth is the continuous increase in gross national product or per capita gross national product. Capital accumulation, technological progress, accumulation of human resources, institutional innovation, and adjustment of economic structure are the foundation and driving force for economic growth.

2.3 Economic theory

The Harold-Dorma model opens the shoulder to the theoretical study of modern economic growth. For the first time, it uses a mathematical model to illustrate the qualitative and quantitative analysis between economic growth and its economic variables. It emphasizes the role of capital formation and believes that only the actual growth rate is equal to the natural growth rate, in order to achieve balanced employment growth. However, its hypothetical conditions, the constant return to scale and the absence of technological progress, neglect the role of labor input and technological progress in promoting the economy [4]. The neoclassical economic growth theory suggests that economic growth is not caused by a single factor. It includes labor, capital, technological progress, and social economic systems. Romer pioneered the theory of endogenous growth research on the assumption that knowledge is a factor of production [5]. The endogenous theory of the endogenous theory attributes the internal causes of technological progress to the input of knowledge or human capital. Therefore, the income of capital investment can be realized, and the income of the total output scale increases, and the economy continues to grow. Domestic scholars' research on economic theory is mainly focused on the dynamics of economic growth, focusing on capital accumulation, labor input, human capital, FDI and foreign trade, consumption, technological progress, and property rights institutional factors. According to the economic situation at that time, the economists in China proposed that the

consumption rate declined, but the contribution rate to the economy rose in the opposite direction. It was proposed that the income gap between urban and rural areas, industry and gender should be narrowed to stimulate consumption growth, thus stimulating economic order. According to economic data, the model of effective economic growth is proposed, and compared with Japan and Taiwan, the excess per capita investment, per capita consumption and per capita net exports have a direct impact on China's economic growth. □□□

3. The mechanism of action between financial format changes and economic growth

3.1 Financial industry deepening and economic growth measurement indicators

(1) Measurement index system for deepening financial business

The financial industry includes both the evolution of the financial industry and the process of strengthening financial capital [6]. The direct result is the strengthening of financial strength. Specifically, the deepening of the financial industry is mainly reflected in several aspects such as financial scale expansion, financial structure optimization, and financial service efficiency improvement. Therefore, at the national level, indicators reflecting a country's financial strength should include: the number of financial institutions, the number of financial instruments, the size and efficiency of financial markets, the stability and safety of the financial market environment, the quality of financial institutions, and the financial industry. The proportion of GDP, the proportion of employees in the financial industry to the proportion of employed people in the whole society. However, due to the limitations of China's statistical data, many of the above indicators cannot be used when studying the deepening of financial institutions in various provinces, municipalities and autonomous regions (hereinafter referred to as “provinces”). In view of the availability and comparability of the data, the financial industry deepening measurement index system shown in Table 1 below is constructed.

Table 1 Measurement index system for deepening financial industry

Deepening financial industry(FS)	Measure indicator	Code	Indicator description
	Financial scale	F ₁	The output value of the financial industry as a share of GDP
		F ₂	The proportion of employment in the financial industry to the total employed population
	Financial structure	F ₃	The ratio of stock market value to premium income as a percentage of total financial assets
		F ₄	The ratio of total deposits and loans of banks to financial institutions in GDP
	Financial efficiency	F ₅	Bank-to-financial institution deposit-loan ratio

(2) Measurement index system for economic growth

In empirical research on the real economy, whether using GDP, industrial added value, or CPI or PPI to measure the growth of the real economy has certain defects or one-sidedness. Therefore, based on the comprehensive consideration of the definition of the real economy, this paper uses all the industries after the financial industry and the real estate industry to exclude the real economy, and the financial industry and the real estate industry as virtual economy. Correspondingly, the total output value of the virtual economy is measured by the sum of the GDP of the provinces and municipalities, the financial industry and the real estate industry. The gross output value of the real economy is measured by the difference between the GDP of each province and the city minus the virtual economy. According to China's national economic industry classification standards, the primary industry includes agriculture, forestry, animal husbandry, and fisheries; the secondary industry includes industry (mining, manufacturing, electricity, heat, gas and water production and supply) and construction; third Industries include transportation, warehousing and postal services,

accommodation and catering, finance, real estate, information transmission, software and information technology services, scientific and technical services, leasing and business services, water, environmental and public facilities Management, education, health and social work, culture, sports and entertainment, public administration, social security and social organizations, and international organizations [7]. Therefore, the primary industry of the real economy is general agriculture, the secondary industry is industry and construction, and the tertiary industry is all industries except finance and real estate.

3.2 Analysis of the Status Quo of Financial Business and Economic Growth

3.2.1 The status of financial business support for real economic growth

Since the new century, especially after China's accession to the WTO, with the continuous acceleration of China's financial system reform and the continuous improvement of the financial industry, finance has played a huge role in supporting the growth of the real economy. The financing scale of the real economy is increasing year by year. With the expansion, its financing structure has gradually improved and is becoming more reasonable.

(1) The scale of the real economy financing

The total amount of financing for the real economy can be measured by the “social financing scale” indicator. The Central Economic Work Conference at the end of 2010 first proposed the concept of “scale of social financing”. The scale of social financing is a total indicator that comprehensively reflects the relationship between finance and economy and financial support for the real economy. It refers to the total amount of funds that the real economy obtains from the financial system in a certain period of time. It is an incremental concept. This paper will use the social financing scale data to analyze the financing scale characteristics of the real economy. Table 2 shows the scale and structure data of the social financing in 2002-2014. Overall, the financing scale of China's real economy has shown a rapid growth trend after the new century. As can be seen from the data in Table 2, the scale of social financing has increased from 211 billion yuan in 2002 to 164.33 billion yuan in 2014, with an average annual growth rate of 19.12%; compared with the previous period, except 2004 and 2011. In addition to the small decline in the scale of social financing in 2014 and 2011, the other countries showed an upward trend, especially in 2009, with a particularly large increase of 99.28%, which may be related to the Chinese government's 400 billion investment plan after the financial crisis. The re-emphasis of the real economy has a certain relationship. From the perspective of the composition of social financing scale, the total amount of funds obtained from the financial system by the real economy through financial institutions, on-balance-sheet business of financial institutions, and direct financing, has shown varying degrees of growth.

(2) Structural characteristics of real economic financing

The proportion of direct financing based on corporate bonds in the total financing of the real economy is on the rise. From the proportion of social financing scale structure shown in Table 2, it can be seen that the proportion of corporate bond financing in social financing scale increased from 1.82% in 2002 to 14.51% in 2014, an increase of 12.69 percentage points. Although the total amount of direct financing and indirect financing has shown a trend of increasing year by year, the growth rate of direct financing of the real economy is obviously faster than the growth rate of indirect financing, and the proportion of direct financing to the scale of social financing is also gradually increasing. . From 2002 to 2014, the average annual growth rate of direct financing was 32.14%, the average annual growth rate of indirect financing was 17.73%, and the proportion of direct financing in social financing increased from 4.94% in 2002 to 17.16% in 2014.

In indirect financing, the proportion of financial institutions' off-balance-sheet business financing (trusted loans, trust loans and undiscounted bank acceptance bills) is on the rise, while the financial institutions in the form of RMB loans mainly account for business financing. The proportion shows a downward trend. Before 2006, the business volume of trust loans was very small, and there was no corresponding conditional data. Since 2006, the total amount of trust loans has gradually increased (a sharp drop in 2014), especially in 2012 and 2013. . In 2003, the total amount of financing obtained by the real economy in three ways: entrusted loans, trust loans and undiscounted bank acceptance bills

was 7.66%. In 2013, the proportion rose to 29.88%, although in 2014 the ratio fell to 17.64%. But still a lot higher than in 2003. In 2002-2014, the proportion of RMB loans in social financing scale fell from 90.36% in 2002 to 51.43% in 2013, and in 2014 it rose to 59.59%.

3.2.2 Interaction between financial format and economic growth

The development of financial industry plays a very important role in capital accumulation, efficient conversion of investment to investment, and improvement of production efficiency [8]. These are the factors that play an important role in economic growth. In recent years, the relationship between financial development and economic growth has received more and more attention. Although the different factions have different ideas, the essence of the concerns is common. They are all seeking the link between the financial sector and economic growth. The basic idea is that the main channel for financial variables to contribute to economic growth is investment resources. Effective use and increased productivity are achieved through higher levels of financial development and financial liberalization that facilitates the supervision of investment projects and the transfer of funds to effective investors. Even for developing countries with insufficient financial market functions, financial liberalization still plays an important role in increasing savings and improving investment capacity [9]. A good financial system can reduce information and transaction costs, which in turn affects savings rates, capital allocation efficiency, technological innovation and corporate governance, and ultimately achieves long-term economic growth. The quality of the various functions of the financial system is closely linked to economic growth. The financial system has six basic functions: one is to reduce the risk of the market; the other is to allocate resources; the third is to supervise managers and improve corporate governance; the fourth is to mobilize savings; the fifth is to facilitate the transaction of goods and services; the sixth is to create credit. In fact, every function can affect economic growth by promoting capital accumulation and technological innovation [10]. The financial development process is a process of deepening financial functions. From a functional perspective rather than a traditional institutional or structural perspective to measure financial development, we can more clearly recognize the position of finance in economic development and reveal the meaning and nature of financial development.

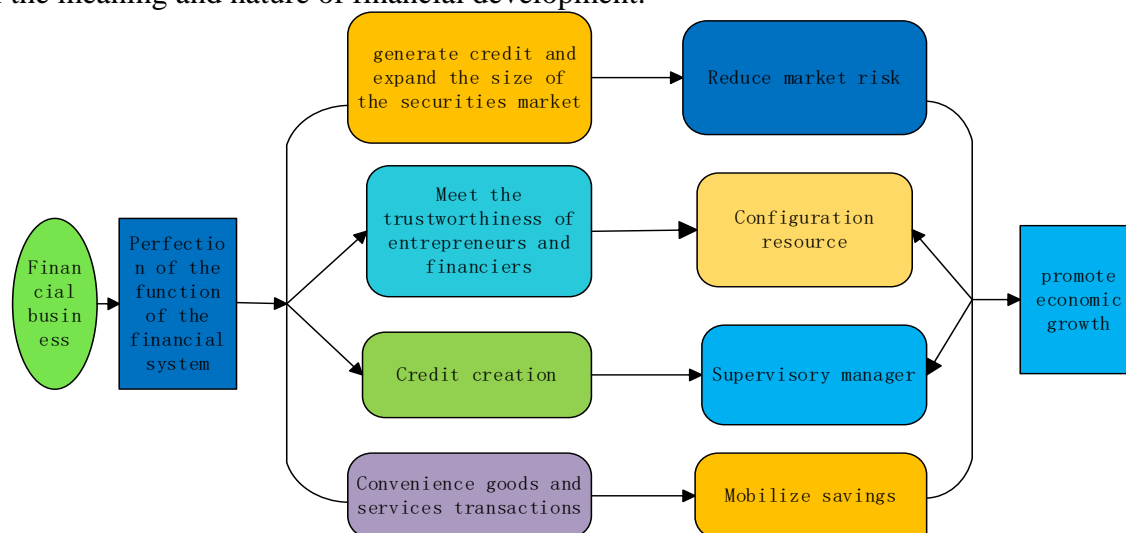


Figure 1 Financial format promotes economic growth

4. An Empirical Study on the Relationship between Financial Business and Economic Growth

There is a certain correlation between financial development and economic growth. However, under different circumstances, the extent and role of financial development in economic growth is different. At present, China's economy is in a period of transition. It is difficult to directly conduct qualitative analysis on the correlation and causal direction of financial development and economic growth. Only by using actual data can we analyze the degree of correlation and trends of the two, and propose the financial system. The direction of reform, which undoubtedly has important practical

significance for promoting China's faster economic growth. In the specific operation of the relationship between the variables, the parameter-set autoregressive model is generally used for the measurement analysis and testing, which is the most common and most used method.

$$(Y_{t+1}, \dots, Y_{t+k}) | (f_{xt}, \dots, f_{yt}) \notin (Y_{t+1}, \dots, Y_{t+k}) | f_{Y_t} \quad (1)$$

Based on the basic definition in equation (1), we look at the basic case of $k=1$. As can be seen, Under the premise of given Y_t, Y_{t-1}, \dots , there is conditional independence between Y_{t+1} and $X_t, X_{t-1} \dots$. Therefore, it can be tested with the finite lag periods X_t and Y_t . Then equation (2) can be written as:

$$Y_{t+1} | (x_t^{lk}, y_t^{lk}) \rightarrow Y_{t+1} | Y_t^{lk} \quad (2)$$

In equation (2), $X_t^k = (X_{t-lk+1}, \dots, X_t), Y_t^k = (Y_{t-lk+1}, \dots, Y_t)$. And assuming that they are all stationary time series, then $\{(X_t, Y_t)\}$ is the dimensional vector about $(l_x + l_y + 1)$. To this end, we use the joint distribution to re-describe the null hypothesis. In general, the distribution of Z is the same given $(X, Y) = (x, y)$ and $Y = y$. Therefore, the joint distribution pattern can be rewritten as:

$$\frac{f_{x-y-z}(x, y, z)}{f_{x,y}(y)} = \frac{f_{x,z}(y, z)}{f_Y(y)} \quad (3)$$

For a multivariate random vector, if the associated integral is recorded as $CV(\varepsilon)$, it should be that the independent realization probability of finding two vectors is less than or equal to ε , which can be expressed as:

$$C_v(\varepsilon) = P[\|v_1 - v_2\| \leq \varepsilon] = \iint I(\|s_1 - s_2\| \leq \varepsilon) f_v(s_2) f_v(s_1) ds_1 ds_2 \quad (4)$$

If the probability density estimation function of the random vector W in W_i is expressed as:

$\hat{f}_w(w_i) = \frac{(2\varepsilon)^{-lk}}{n-1} \sum_{i,j=1}^n I_{ij}^{\phi}$, then in the specific calculation, the form adopted is as follows:

$$T_n(\varepsilon) = \frac{(n-1)}{n-2} \sum [\hat{f}_{x,y,z}(X_i, Y_i, Z_i) - \hat{f}_{x,y}(X_i, Y_i) \hat{f}_{y,z}(Y_i, Z_i)] \quad (5)$$

The empirical results show that the financial industry deepening, the contribution rate of the total factor productivity of the real economy and the contribution rate of technological progress have a significant positive effect. The uncoordinated cooperation has a significant negative impact on the total factor productivity of the real economy and the contribution rate of technological progress. The relationship between financial development and economic growth is more in line with "supply-driven" rather than "demand-driven" advocated by Patrick, because China's financial reforms lag behind economic reforms in the early days, and then the country accelerates with the adjustment of economic structure. Reforms in the financial sector have made financial development gradually ahead of economic growth and have become an important cause of economic growth.

5. Conclusion

In theory, it expounds the related concepts of financial industry deepening and economic growth, constructs a theoretical analysis framework for financial industry deepening and real economic growth, and comprehensively analyzes the problems exposed in the process of financial industry deepening support for real economic growth, such as: virtual economy, The growth rate of virtual capital is obviously higher than that of the real economy and physical capital, and the phenomenon of inconsistency between the real economy and the virtual economy is becoming more and more serious. To accelerate the rationalization and advanced development of the industrial structure of the real

economy, it is necessary to continuously improve the degree of financial industry. From the perspectives of scale, power and structure, this paper empirically studies the impact of financial industry deepening on economic growth, and based on this, designs a long-term mechanism for deepening financial institutions to promote real economic growth. The paper examines the impact of deepening financial institutions on real economic growth by establishing a spatial econometric model. The regression results of the econometric model show that the coefficient of the deepening variable of the financial industry is significantly positive, indicating that it has a significant role in promoting the growth of the real economy. The higher the degree of financial industry and the incentives for fiscal policy, the faster the real economy grows.

References

- [1] Gök O, Peker S. Understanding the links among innovation performance, market performance and financial performance[J]. *Review of Managerial Science*, 2017, 11(3):605-631.
- [2] Zhang S. Empirical Study on the Relationship Between Financial Structure and Economic Growth: An Example of Zhejiang Province[J]. *Journal of Chemical & Pharmaceutical Research*, 2013,269:2103-2107.
- [3] Awojobi O. Does trade openness and financial liberalization foster growth: An empirical study of Greek economy[J]. *International Journal of Social Economics*, 2013, 40:537-555.
- [4] Shu T, Liu C X, Chen S, et al. An empirical study of the effects of foreign direct investment on China's economic growth in supply chain system[J]. *Systems Engineering-Theory & Practice*, 2014,34:282-290.
- [5] Yu H, Zhao S, Xu X, et al. An Empirical Study on the Dynamic Relationship between Higher Educational Investment and Economic Growth using VAR Model[J]. *Systems Research & Behavioral Science*, 2014,31:461-470.
- [6] Tan Y, Ochoa J J, Langston C, et al. An empirical study on the relationship between sustainability performance and business competitiveness of international construction contractors[J]. *Journal of Cleaner Production*, 2015,93:273-278.
- [7] Amidu A R, Agboola A O, Musa M. Causal relationship between private housing investment and economic growth: An empirical study[J]. *International Journal of Housing Markets & Analysis*, 2016,9:272-286.
- [8] Shahbaz M, Loganathan N, Tiwari A K, et al. Financial Development and Income Inequality: Is There Any Financial Kuznets Curve in Iran?[J]. *Social Indicators Research*, 2015,124:1-26.
- [9] Shi B, Wang L, Yang J, et al. Relationship between Divergent Thinking and Intelligence: An Empirical Study of the Threshold Hypothesis with Chinese Children:[J]. *Frontiers in Psychology*,2017,8:254.
- [10] Sehwat M, Giri A K. An empirical relationship between financial development indicators and human capital in some selected Asian countries[J]. *International Journal of Social Economics*, 2017,44:337-349.