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Research on the Relationship between Financial Development and Economic Growth: Based on an Empirical Analysis of Shenzhen

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Abstract

In this paper, panel data of Shenzhen from 2000 to 2012 was analyzed and capital, labor, the policy of opening up and other factors were controlled, to make an empirical study of the relationship between financial development and economic growth and draw main conclusions as follows. Financial development can promote economic development. However, financial development and real economic development show heterogeneity. That is to say, financial development hinders the development of real economy.

JEL classification numbers: F43
Keywords: Financial development, Economic growth, Heterogeneity

1 Introduction

In recent years, the frequent outbreak and rapid spread of financial crises have caused serious damage to the global economy. Some research suggested that the inconsistency between the financial development and the development of the real economy is the root cause of financial crises. Since the outbreak of financial crises, governments of various countries around the world have taken appropriate measures to deal with these different financial crises. In this environment, China, without any exception, has been subject to damage caused by the financial crisis spreading all over the world. On a global scale, it has become a major choice for various countries around the world to shift their focus back on the development of the real economy and accelerate the development of the real economy, in order to resolve the financial crisis and speed up the pace of economic rebound. Meanwhile, the relationship between financial development and economic growth has become a concern of the public. Therefore, it has gradually become a key for China to

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coordinate the financial development and the development of the real economy and accelerate the economic growth, while maintaining rapid financial development, so as to achieve stable development of the Chinese economy in the future. At the 2011 Central Economic Work Conference, the state leaders gave priority to the development of the real economy for the first time, and stressed that China should "invest great efforts to the development of the real economy to lay a solid economic foundation and strive to create an social environment which encourages people to work steadfastly, do pioneering work and acquire wealth through the real economy". In addition, in the 2012 National Finance Working Conference, the former Premier Wen Jiabao once again stressed the importance of developing the real economy and put forward that China should follow the essential principle that finance serves the real economy, and various financial institutions must firmly establish the guiding ideology of serving the real economy, comprehensively improve the quality and level of the real economy, and achieve co-existence and joint development of finance and the real economy. China is not unique in this aspect, because many developed economies including the US and some European countries have also attached great importance to the development of the real economy. It is worth mentioning that since the outbreak of the US financial crisis in 2008, the US has gradually adjusted and modified its economic development pattern from the original debt-driven one into the current export-driven one, and shifted its focus back to developing the real economy and speed up the development of the manufacturing sector in the post-crisis era. Moreover, many European countries have also put forward economic strategies to speed up the development of high-end manufacturing sectors and accelerate the development of the real economy through "re-industrialization".

Judging from the overall development course of the world economy, countries with better performance in real economy tend to be more stable in economic development and more powerful in economic sustainability and competitiveness. Germany, as the fourth largest economy in the world, can be taken as the most typical representative. The stable development of the manufacturing sector in Germany as Europe's number one economy can be said to be the backbone of the German economy. Thus it can be seen that highly valuing the development of the real economy (especially the manufacturing sector) is the main reason why Germany can successfully resist the financial crisis and debt crisis. In comparison, a large amount of funds have flowed in to the financial market, real estate market and some virtual economic sectors in China, so it has been quite difficult for small and medium-sized enterprises to finance. Worse still, precisely because of the inconsistent development of the real economy and virtual economy, the Chinese economy has developed many serious problems, such as asset bubble and industrial hollowing-out and so on. According to in-depth discussions of these problems, the real economy is the foundation for national economy of a state, while the virtual economy should serve and support the development of the real economy. Therefore, the virtual economy itself does not create value, but its profits are all from the real economy. So, the development and progress of the real economy not only provides the basis for China to achieve rapid and stable economic development, but also helps to promote the sustainable development of the Chinese economy.

This paper falls into the following 5 parts. The first part is the introduction. In the second part, a review of existing literature at home and abroad in related fields was undertaken. In the third part, theoretical analyses and data specification were made. In the fourth part, the econometric model was set and tested. In the fifth part, research conclusions were drawn, and research implications were given.

2 Literature Review

A lot of domestic and foreign scholars have investigated the relationship between financial development and economic growth. In this part, a review of relevant literature was undertaken.

In general, some foreign scholars have gained rich research results of the relationship between financial development and economic growth. Overall, since Schumpeter put forward that financial development can promote economic growth in 1911, foreign scholars have formed 3 ideas on the relationship between financial development and economic growth. The first idea was initiated by Goldsmith (1969), Fry (1978) and other scholars. According to their research results, financial development, to some extent, can promote the economic growth. Scholars represented by Patrick (1996) put forward the second idea that financial development can restrict the economic growth. The third idea suggested that the financial development and economic development have interaction effects on each other. Representative scholars of this idea include Demetriades and Hussein (1996). After research achievements of foreign scholars were summarized, a review will be undertaken to figure out how domestic scholars see the relationship between the financial development and economic growth. Chinese scholars have conducted a large number of experimental research to investigate the relationship between financial development and economic growth from different perspectives.

Chinese scholars have put forward following ideas. Wang Zhiqiang and Sun Gang (2003), Fan Xuejun (2006), Wang Yongqi(2006), Lu Jing (2012) and other scholars have made a large number of empirical research to prove that financial development can promote the economic growth. Research findings of Li Yong and Gao Yu (2010), Yang Long and Hu Xiaozhen (2011) and other scholars suggested that promoting effects of financial development on the economic growth vary by region. Moreover, Li Yankai and Han Yanchun (2011) believed that the effectiveness of the promoting effect of financial development on the economic growth is subject to the influence of the external financial eco-environment (such as government intervention in the economy, legal environment and credit culture and environment and so on). Research of Wu Zhi (2010) indicated that although financial development can promote the economic growth, financial development is essentially triggered by the economic growth. That is to say, financial development and the economic growth can promote each other. A lot of studies have proved that financial development can promote the economic growth, but some studies have come to totally opposite conclusions. Li Guangzhong and Chen Ping (2002), Zhang Chaobing (2010) and other scholars found that financial development does not have obvious impacts on the economic growth.

Based on a review of existing literature in related fields, most of existing studies suggested that financial development can promote the economic growth.

3 Data Specification, Definitions to Real Economy and Theoretical Analysis

3.1 Data Specification

In the following table, the overall development condition (reflected by changes in the total output value and its growth) and the development condition of the financial sector (reflected by changes in the output value of the financial sector and its growth) in Shenzhen during the 13 years from 2000 to 2012 are shown. Changes in the ratio of the output value of the financial sector to the total output value can be seen from the table. Data of Shenzhen in 2013, 2014 or even 2015 was not included, because 2012 data of Shenzhen is the latest data released in the "Shenzhen Statistical Yearbook". In terms of changes in the total output value of Shenzhen in the 13 years, its total output value had increased from 218,745,150,000 yuan in 2000 to 1, 295, 006, 010, 000 yuan in 2012, experiencing a 6-fold increase in just over ten years, which indicated the rapid economic development of Shenzhen. In terms of the growth rate of the total output value in Shenzhen, its growth rate showed an upward trend from 2000 to 2003, but a downward trend from 2003 to 2005, perhaps because of the Asian financial crisis. However, the growth rate of its total output value fluctuated from 2005 to 2008. In the year of 2009, its total output had increased, but the growth rate had decreased from 0.1449 to 0.0532, suffering a nearly 50% decline. This indicated that the 2008 financial crisis which spread from the US to the world constituted some damage and shock on the Chinese economic development (Shenzhen is one of rapidly-developed cities in China, so it is representative). China did not get stuck in the financial crisis, but quickly walks out of the shadow of the financial crisis. Therefore, from 2009 and 2012, the growth rate of Shenzhen's total output value had rebounded quickly and stayed at a high level. Moreover, data was also collected to investigate the development condition of the financial sector in Shenzhen. The output value of its financial sector had increased from 22,153,910,000 yuan in 2000 to 172,111,520,000 yuan in 2012, with a nearly 9-fold increase in 13 years. Thus it can be seen that the financial sector of China had developed rapidly in the last over 10 years. As seen from data about the growth rate of its financial sector output, the growth rate of its financial sector output had decreased from 0.0803 in 2000 to 0.0420 in 2003, facing a nearly 50% decline, perhaps because the financial sector just started to develop at that time. However, the growth rate of its financial sector output experienced a sharp increase from 0.0429 in 2004 to 0.6550 in 2007. The growth rate of the financial sector output showed an increase of over 10 times within 3 years, which indicated that the financial sector developed fast. From 2007 to 2012, the growth rate of its financial sector output first declined rapidly (mainly because of the financial crisis), then risen slowly (because of economic rebound) and eventually begun to fall again (mainly because the Chinese government began to focus on developing the real economy and restrict the financial sector development in 2011 and 2012). Overall, the ratio of the financial sector output to the total output value of Shenzhen had gone through 3 stages of changes from 2000 to 2012. At the first stage (2000-2005), this figure had been declining from 0.1013 in 2000 to 0.0617 in 2015, with a nearly 10% decrease, perhaps because the real economy had better development than the financial sector. At the second stage (2005 to 2011), this figure had constantly risen from 0.0617 in 2005 to 0.1359 in 2011, probably because the financial sector rose and develop fast and squeezed the development space of the real economy. At the third stage (2011 to 2012), this figure had fallen from 0.1359 in 2011 to 0.1329 in 2012, mainly because the Chinese central government began to pay attention to and promote the development of the real economy, and deliberately restrict the development of the financial sector.

Unit：10,000 yuan

Output value / Year	Total output value	Output value of financial sector	Growth rate of the total output value	Growth rate of the financial sector output	The ratio of the financial sector output to the total output value
2000	21874515	2215391	-----	-----	0.1013
2001	24824874	2393224	0.1349	0.0803	0.0964
2002	29695184	2487213	0.1962	0.0393	0.0838
2003	35857235	2620765	0.2075	0.0537	0.0731
2004	42821428	2730843	0.1942	0.0420	0.0638
2005	49509078	3056820	0.1562	0.1194	0.0617
2006	58135624	4626637	0.1742	0.5135	0.0796
2007	68015706	7657042	0.1699	0.6550	0.1126
2008	77867920	9693615	0.1449	0.2589	0.1245
2009	82013176	11106230	0.0532	0.1457	0.1354
2010	95815101	13005762	0.1683	0.1710	0.1357
2011	115055298	15636334	0.2008	0.2023	0.1359
2012	129500601	17211152	0.1256	0.1007	0.1329

Data source: “Shenzhen Statistical Yearbook”

2.2 Definition to Real Economy

In the above data specification, the real economy was repeatedly mentioned. According to a comparison of the total output value of Shenzhen and the output value of its financial sector, it can be seen that the development pace of the financial sector, to some extent, was higher than the overall economic development pace. Moreover, the ratio of the financial sector output to the total output value has become higher and higher, indicating that the real economy is shrinking. It is quite helpful to clearly define the concept “real economy”. First of all, it should be noted that “real economy” is not a technical term, because it is not included as an entry in “Ci Hai (Comprehensive Encyclopedic Lexicon of Chinese Language)”. It is not a term in economics, because it is not included in “New Palgrave: A Dictionary of Economics”. However, “real economy” is usually mentioned in daily life. Therefore, some domestic scholars have given their definitions to “real economy”. In fact, from the industrial perspective, scholars can easily define that both the primary industry and secondary industry belong to the real economy. However, some sectors in the tertiary industry are the real economy, while some other sectors of the tertiary industry do not belong to the real economy, so it is difficult to define the tertiary industry. Therefore, definitions given by Chinese scholars to “real economy” from the industrial perspective are not clear. Ever since the outbreak of the US subprime mortgage crisis, the Federal Reserve has begun to frequent use the words “real economy” and defined “real economy” as “the remaining part with the removal of the property market and the financial market”. To be specific, manufacturing, import and export, retail sales and other parts are classified by the US Federal Reserve into “real economy”. According to the latest-released industry classification by the Chinese government, the financial sector and real estate in the tertiary industry are obviously excluded from the category of the real economy, and other sectors in the tertiary industry are generally classified into the category of the real economy. Therefore, based on existing definitions given to “real economy”, this research defines “real economy” from the industrial perspective and classifies “all sectors in the primary, secondary and tertiary industries other than the financial sector and real estate sector” into the category of the real economy.

2.3 Theoretical Analysis

Chinese and foreign scholars have conducted a large amount of research to analyze the relationship between financial development and economic growth, and developed the following 2 theories. One is the capital accumulation of foreign scholars Gurley and Shaw (1955), and the other one is the technological change put forward by foreign scholars Greenwood and Jovanovic (1990) and Chinese scholars Zhao Yong and Lei Da (2010). Capital accumulation and technological change are two main mechanisms for financial development to influence economic growth. According to preliminary descriptions and analyses of Shenzhen data, it can be seen that financial development can help to promote the economic growth. On this basis, Proposition 1 can be presented.

Proposition 1: Financial development can help to promote the economic growth.

In this section, the influence of financial development on the development of the real economy is illustrated. The financial sector can be compared to a reservoir. Its main business is to take deposits and issue loans. Rapid financial development can help to change a higher proportion of savings into investment, thereby promoting the development of the real economy. However, at the same time, to minimize potential risks, the financial sector must evaluate lending units or projects, to ensure that capitals can flow to higher-yielding units of projects, which can indirectly improve the efficiency of resource allocation, thus achieving the purpose of prompting economic development. From another perspective, besides the interest on loans, lending units or projects have had to pay more and more intermediate business expenses, such as the guarantee fee, assessment fees, counsel fees, insurance, financial advisory fees, financing advisory fee and some other intermediate costs, which will greatly increase financing costs of enterprises, thereby squeezing corporate profit margins and restricting the development of the real economy. According to above analyses from two perspectives, financial development has an uncertain impact on the development of the real economy. However, based on a preliminary analysis of data in the above table, the following proposition can be developed.

Proposition 2: Financial development restricts the development of the real economy in China.

4 Econometric Model Setting and Testing

Where lnfinance is the logarithm of the financial sector output; Intotal is the logarithm of the total output value of Shenzhen; Inreal is the logarithm of the output value of real economy; δ is other controllable factors. The least squares regression is made to get the relationship of financial development with economic growth and the development of real economy. According to predictions, the θ coefficient will be positive, while γ will be negative. Regression results of the econometric model are shown in the following table.

Model	1
Dependent variables	lnfinance
lntotal	12.73 （7.11）
lnreal	-11.89 (-6.38)
_cons	-1.97 （-1.44）
F	298.32

Note: figures in brackets are estimated t values of explanatory variable coefficients.

According to regression results shown in the above table, the lntotal coefficient is 10.86, indicating that financial development promotes the development of the real economy.

However, the Inreal coefficient is -9.92, indicating that financial development and the real economic development are negatively correlated. Moreover, t values are respectively 35.82 and -31.52, which can reveal the reliability and robustness of regression results. And such results are consistent with expected ones.

5 Research Conclusions and Implications

This research took panel data of Shenzhen 2000 to 2012 was taken as samples, controlled capital, labor, the policy of opening up and other factors and established static and dynamic panel models. On this basis, an empirical study was made of the relationship between financial development and economic growth. Meanwhile, it was also found that financial development has influence on the development of real economy. Empirical research results in this paper show that financial development can promote economic growth. This finding is consistent with most of the existing research results. According to further data analytical results, it can be seen that financial development, to some extent, would restrict the development of real economy, indicating that financial development does not become a favorable factor which can promote the rapid development of real economy, but develops into an unfavorable factor restraining the development of real economy. Therefore, this research supports the idea "financial development restricts the development of real economy" from an empirical perspective. Over 30 years since the reform and opening up, the Chinese economy has developed rapidly. Moreover, along with the financial globalization, China has made great achievements in its financial institutional reforms. Empirical research results of this paper show that financial development can promote economic growth. However, it should be noted that although financial development can promote the overall economic growth, but it does not drive or promote the development of real economy, but restricts the development of real economy. This indicates that the current financial development in China can no longer meet requirements for the development of real economy, and financial development does not well fulfill its function to promote the development of real economy. Therefore, in order to strengthen economic stability and rapid economic development in China, deepening the financial system reform becomes an indispensable link to promote the economic system reform. At the 2011 Central Economic Work Conference, the 2012 4th National Financial Work Conference and also the 2012 National People's Congress and the Chinese Political Consultative Conference (NPC & CPPCC), Chinese national leaders have emphasized the importance of speeding up the development of real economy for the stable and healthy economic development in China. Based on empirical research results of this paper, it is recommended that the Chinese government should accelerate the pace of the financial system reform and properly guide funds to flow to the real economy, in order to effectively solve the financing difficulty in the development of real economy, thereby achieving the goal of lowering financing costs in the real economy. In addition, it should be noted that highlighting the development of real economy does not mean limiting financial development, but to coordinate the relationship between the real economic development and financial development, to achieve coordinated development of the whole economy, so that China can take a firm stand in the world economy arena and truly achieve its goal of stable and sustainable development.

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