The Impact of Financial Development and Financial OFDI on Economic Growth

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Abstract. Based on endogenous growth theory, this paper first discusses the impact mechanism of the development and outward foreign direct investment (OFDI) in the financial sector on economic growth. Then, using provincial panel data spanning the period 2006-2016, we test the impact of financial development, with respect to financial correlation, stock and bond market size, and financial added value, on China’s economic growth. We also employ the ratio of each province’s bank credit, stock market size, bond issuance and financial innovation as the weight to examine whether financial OFDI is through different financial models' moderating effects to booster the domestic economy. The results show that the development of the credit system not only promotes the economic growth, but also serves as a channel with financial OFDI to produce positive moderating effects. In contrast, the development of the stock and bond markets and their moderating effect on foreign investment in the financial sector can promote China's economic growth, but it is not significant. Financial innovation is found to be positively correlated with economic growth.

Introduction

It is well known that financial development can promote economic growth by providing funds, reducing financing costs, risk management and others. Financial OFDI can accelerate financial development through increasing financing channels for domestic financial institutions, integrating global resources and improving the efficiency of fund regulation. That is, through the moderating effect of financial development, financial OFDI can promote economic growth. However, the current literature is mainly to analyze the impact of financial development and non-financial investment on China's economy, and there are few literature especially empirical research to explore the issue from the perspective of financial investment. This stimulates our paper. We try to break through the traditional research and discuss the impacting mechanism of financial OFDI on economic growth from the perspective of the moderating effect of financial development. Next, China is a country in transition, and its financial development is extremely unbalanced. So, it is necessary to distinguish the impact of different aspects of financial development on China's economy. This paper subdivides the impact of financial development in four different aspects, credit system, bond and stock market, and financial innovation, and uses these four aspects as weights to test whether financial OFDI can promote domestic economic growth. The empirical results confirm the necessity of this distinction.

Theoretical Framework

Endogenous growth theory is one of the theories widely used to empirically study the impact of financial development and foreign investment on economic growth. According to this theory, economic growth is the result of public and private investment in human capital and knowledge-
intensive industries in the production process [1]. Based on this concept, the impact of foreign investment and financial development on economic growth is considered to be achieved through technology transfer and spillover effects [2]. Namely, financial media and foreign investment may function as a channel of circulation to promote the flow of knowledge between regions and countries.

Traditionally, financial development can promote economic growth through providing funds to and reducing financing costs. Modern financial development is more through risk management and financial innovation to support technological innovation and economic growth. That is, before financing an enterprise, financial institutions will evaluate its technological innovation capability and pay attention to its technological development process. The more developed a country's financial system is, the lower the cost of evaluation and supervision, which in turn provides better financing conditions for enterprises to support higher levels of technological innovation [3]. At the same time, through risk sharing, the developed financial system can help enterprises disperse the cross-period risks in the process of technological innovation, promote more reasonable R&D investment, and then improve the success rate of innovation [4]. In addition, the financial sector itself can also improve financial efficiency through innovative activities. In a word, the behavior of financial development supporting innovation activities of enterprises is conducive to strengthening market competition, promoting the emergence of emerging industries, breaking the pattern of wealth acquisition by capital or relationship, and finally enhancing innovation and economic growth [5].

Specifically, the bank's credit system, bond and stock markets are the three most common channels through which financial development affects a country's economic growth. With the advantages of information collection and professional knowledge, banks can screen loan application projects, provide financial support for promising technical projects, and improve the output efficiency of social resources. The more developed the banking system, the stronger the ability to identify credit projects, and the more efficient the use of funds. After issuing loans, banks can urge and encourage enterprises to improve corporate governance to reduce operational risks and increase returns. A country's financial development can also use the bond market to promote economic growth. In the bond market, enterprises with different scales and profit prospects are given different financing costs. Enterprises with advanced technology are screened out to obtain financing and development, thus forming the survival of the fittest and replacement development. The development of the stock market is also a common way to promote economic growth in various countries, using its price mechanism to guide resources to invest in high-tech, high-return industries. Through stock listing, enterprises raise funds for innovative projects and production improvement, but if the investment does not reach the expected profits, their stock price will fall to make them difficult to refinance, thus prompting their continuous development. The development of stock market is also an effective means to solve the financing difficulties of small and medium-sized technological enterprises [6].

In view of the positive role of financial development in economic growth, many countries have vigorously promoted the "going out" of the financial industry. Theoretically, foreign investment in financial industry can accelerate the domestic financial development of finance, and ultimately accelerate economic growth by promoting the development of domestic credit, bond and stock markets. Firstly, through foreign investment, financial institutions can increase the sources of financing channels, achieve economies of scale in transnational business activities, and obtain overseas technology spillovers to improve the efficiency of capital regulation, thereby optimizing the allocation of credit resources and providing better financial services for domestic enterprises. Secondly, financial institutions' "going out" can help domestic enterprises to issue stocks or bonds abroad, thus using overseas capital markets to provide strong financial support for the domestic economic growth. Moreover, this can also provide more convenient financial services for the foreign trade of domestic enterprises, such as short-term lending and bond financing [7]. Finally, due to the stricter laws and regulations in the international financial market, financial OFDI can promote the standardization and perfection of the financial market in the home country. It can also
help domestic enterprises improve their corporate governance structure and promote economic growth by means of the requirements of information disclosure, management system and business performance with stricter standards in the foreign capital market.

Model, Variables and Data

Based on the theoretical discussion, we use the following equations for the empirical analysis.

\[
G_{it} = \beta_0 + \beta_1 K_{it} + \beta_2 L_{it} + \beta_3 S_{it} + \beta_4 X_{it} + e_{it} \\
G_{it} = \gamma_0 + \gamma_1 K_{it} + \gamma_2 L_{it} + \gamma_3 F_{it} + \gamma_4 X_{it} + \theta_{it}
\] (1)

Where \( i \) and \( t \) refer to cross-section and time; \( e \) and \( \theta \) are error terms; \( G \) is economic growth, while \( K \) and \( L \) refer to capital and labor. \( S \) is financial development whose different aspects are measured by four variables. To overcome the problem of multiple collinearity, we adopted the suggestion of Salike [8] to put those variables into four models named model (1)-(4) and other variables remain unchanged. \( F \) refers to financial OFDI whose impacts on economic growth are weighted by different financial channels, since the theoretical analysis indicates that financial OFDI is capable of promoting the home country's financial development and using financial channels to stimulate domestic economic growth. This illustrates a progressive chain from financial OFDI to moderating effects of financial channels on economic growth. Similarly, we put those financial OFDI variables into four models, namely model (5)-(8). \( X \) is a vector of controlling variables including non-financial OFDI, inward FDI, openness and urbanization. Panel data covering the period of 2006-2016 and 29 provinces in China are employed. We use each-year's average exchange rate and GDP deflators to adjust the value of all the data. We also test the unit roots and co-integration characteristics of the employed data to secure avoiding the falsehood problem in the estimation.

| Variables | Measurement | Data sources |
|-----------|-------------|--------------|
| Economic growth | \((GDP_t - GDP_{t-1})/GDP_{t-1}\) | CSY, SY |
| Financial Development | Loan | Loan / GDP | CSY, CFSY, |
| | Stock | Stock value / GDP | CSFSY, SY |
| | Bond | Bond value / GDP | |
| Financial OFDI | Loan system | Financial OFDI weighted by each province's loan ratio to the national total | CSY, CFSY, |
| | Stock market | Financial OFDI weighted by each province's stock value ratio to the national total | SBCOFDI, |
| | Bond market | Financial OFDI weighted by each province's bond value ratio to the national total | CSF, SY |
| Financial innovation | Financial OFDI weighted by each province's financial value-added ratio to the national total | |
| Capital | Log of fixed asset investment | CSY |
| Labor | Log of employment | CSY, SY |
| non-financial OFDI | Log of stock of non-financial OFDI | CSY, SBCOFDI |
| inward FDI | Log of registered foreign capital | CSY |
| urbanization | Urban population /the total | CSY, SY |
| openness | International trade/GDP | CSY, SY |
Empirical Results

In the empirical analysis, we employ Generalized Method of Moments due to its power to control for potential endogeneity problem [9,10], and utilize the one-year lag of all explanatory variables as the instruments [11]. The White Diagonal Method is used to account for potential heteroscedasticity. Likelihood and Hausman tests are employed for model selection and finally the time fixed-effect model is selected. Table 3 shows that Loan's coefficient is positive and significant at 1%, showing that financial development plays a positive role in promoting economic growth through bank loans, the main source of financing for Chinese enterprises. According to the People's Bank of China, 73.15% of enterprises in 2016 mainly rely on credit financing to obtain development funds. It shows that financial development can use bank credit as a channel to promote the investment of non-financial sectors and help them carry out innovative R&D activities, thus promoting the technological progress and ultimately economic growth. Table 4 shows the impact of financial OFDI weighted by the credit ratio on economic growth is positive, implying that the "going out" of banks and financial institutions can promote domestic economic growth through the moderating effect of the credit system. By 2015, the number of overseas banking institutions in China has reached 1036, covering Hong Kong, Macao, Taiwan and 30 countries and regions. The "going out" of these financial institutions not only meets the requirements of the customers' globalization activities, but also improves their own service capabilities. This promotes the development of domestic banking industry and consequently domestic economic growth.

Table 2. The impact of financial development and financial OFDI on economic growth.

| Model          | Financial development | Financial OFDI |
|----------------|-----------------------|----------------|
| Loan system    | 0.03***               | 0.02**         |
| Stock market   | 0.001                 | 0.01           |
| Bond market    | 0.05                  | 0.002          |
| Financial innovation | 0.32**          |                |
| Capital        | 0.01                  | 0.0001         |
| Labor          | -0.02**               | -0.01          |
| non-financial OFDI | -0.01*             | -0.01          |
| inward FDI     | 0.01***               | 0.01**         |
| urbanization   | -0.08**               | -0.07**        |
| openness       | -0.02**               | -0.02          |
| constant       | 0.19***               | 0.20***        |
| R²-adjusted    | 0.41                  | 0.39           |
| J-statistics   | 6.4E-21 3.4E-19 9.5E-21 3.6E-20 5.1E-17 2.3E-19 3.5E-20 6.5E-19 |

Note: ***, ** and * refer to statistical significance of 1%, 5% and 10%, respectively.

Table 3 shows that the coefficient of the stock market variable is insignificant after the endogenous problem is controlled, implying that after eliminating the two-way causal relationship between economic and financial development, it is difficult for China to promote economic growth by enlarging stock market size. In China, the imperfection of stock market mechanism makes investors unwilling to make long-term investment, but mainly for short-term speculation, which restricts the development of the stock market and the promotion of economic growth. The evidence in this paper shows that this ultimately leads to the failure to produce unidirectional promoting effects of financial development on economic growth. Table 4 shows that the effect of financial...
OFDI on economic growth through the moderating effect of stock market is not significant, which further illustrates another side effect of the lack of development mechanism in stock market.

Neither the corporate bond financing itself nor financial OFDI weighted by the bond issuance ratio can play a significant role in economic growth. This implies that China has not made good use of bond market to promote economic growth, let alone use it to moderate the spillover effect of financial OFDI. Issuing corporate bonds to the public is a direct and effective mode of social financing, but in China, the main holder of corporate bonds which function as a supplement to loans is commercial banks. In 2015, for example, financial institutions held 95.04% of corporate bonds in China. Therefore, corporate bond fails to provide additional social financing to enterprises, and its effect on economic growth can only be expressed through the impact of loans. In contrast, financial innovation has a positive effect on economic growth with a significance of 5%. But, we find that the coefficient is not significant for the variable of financial OFDI weighted by financial innovation, which indicates that the degree of financial innovation in China is not enough as a channel to moderate the spillover effect of financial OFDI on domestic economic growth. Financial innovation needs to be further developed to play a more indirect role in promoting economic growth.

The results indicate that after controlling the endogenous problem, fixed asset investment has no significant impact on economic growth. This implies that the marginal output of capital input will be lower and lower at the current stage of economic development in China. Labor, measured by quantitative growth, has a negative impact on economic growth. During the decade 2006-2015, although China's employment population increased from 174.596 to 280.775 million, the quality of labor force is not improved to keep pace with the current needs of economic transformation and development, with a serious problem of the shortage of R&D personnel and technicians. This study shows that only by paying more attention to the development of labor quality can economic growth be accelerated.

Non-financial OFDI is found to have a negative impact on economic growth. Theoretically, foreign investment can improve the operation level of enterprises and obtain more overseas resources to promote domestic economic growth, but it can also transfer capital and production needed by the home country and this will affect domestic industrial structures. The results of this paper implies that the negative impact of China's OFDI on domestic economic growth is greater than the positive effect. In contrast, inward FDI has a significant positive effect on economic growth. This confirms that inward FDI can bring capital as well as advanced production technology to the host country, and then promote its technological progress and economic growth. Urbanization has a negative effect on economic growth, showing that the development of urbanization has brought about "non-agglomeration effect". A few big cities are becoming larger, while the attraction of small cities is insufficient and the countryside is depressed, which makes the marginal production cost of the former rise sharply, and also makes the vast land and other resources of the latter idle and wasted. Openness has a negative correlation with economic growth. Since the global financial crisis, developed countries have intensified trade protectionism, seriously affecting China's exports and technology imports. The results of this paper suggest that an increase in openness has transmitted the impact of international economic fluctuations on China's economy, which ultimately has a negative effect on economic growth.

**Conclusion**

Using the provincial panel data from 2006 to 2015, this paper examined the impact of financial development and its OFDI on China's economic growth. The development of the banking system is found to have a great role in promoting economic growth, and its moderating effect on financial OFDI has also had a positive impact. In contrast, the development of the stock and bond markets is found to have little or no significant impact, and it also is not possible to promote domestic economic growth through the moderating effect of these two markets on financial sector's outward investment. Moreover, financial innovation is found to have a positive impact. These findings suggest that, to stimulate economic growth, an urgent task is to accelerate the healthy development of stock and bond markets, especially to develop their "going out" and strengthen the innovation
ability of the finance system while steadily promoting the development of the banking system and its foreign investment.

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