The Relationship Between Financial Development and Economic Growth In Western China

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Keywords: western region, financial development; Economic growth; Panel data

Abstract: this article analysis western region 10 provinces from 2010-2015 panel data analysis and found that financial development and economic growth: the provinces on the overall financial development and economic growth of high positive correlation, financial development has strong role to economic growth, especially in Guizhou, Shanxi, Yunnan. In addition, the contribution of financial capital to economic growth is greater in cities where financial development is driving economic growth. Therefore, the government provide money and other things region, it should considered the financial contribution of capital growth, differentiated to funding for western provinces.

1. Introduction

In the overall environment of China's overall economic transformation from rapid growth in high growth, finance plays a crucial role in China's economic development has to do with these, mainly in two aspects: one is to provide payment and settlement system, facilitating trade and economic operation, the blood and the pipeline; storage is two and the investment effect, through the mobilization of savings to investment, promote the transformation and improve the efficiency of saving and investment, promote economic growth, plays a role of engine and reservoir. In the 10 provinces of Western China, the total amount of GDP in 2010 was 6 trillion and 16 billion 664 million yuan, and the total amount of savings and loans was 5 trillion and 513 billion 990 million yuan. By 2015, GDP reached 11 trillion and 38 billion 429 million yuan, and the total balance of savings and loans was 9 trillion and 840 billion 282 million yuan. The total amount of GDP in 10 provinces in Western China increased by 83% in 2010-2015, and the total amount of deposit and loan increased by 78.46%. In some 10 provinces, some provinces may have low degree of financial development and relatively little effect on economic growth, but with the progress of economic reform and the guidance of national policies, the role of financial development in economic growth is more and more obvious. What is the relationship between financial development and economic growth in the new economic normal era? Does this relationship affect the government's guidance to different provinces in the west? Therefore, it is of great practical significance to study the relationship between China's financial development and economic growth.

With regard to the relationship between financial development and economic growth, economists have always had their own unique views. The first economist to discuss the theory of financial development and economic growth is Inpet. Inpet (Schumpeter, 1912) believes that a well functioning bank system should be screened and provided to those entrepreneurs who are most likely to recreate products and production processes to promote technological innovation and promote economic growth. Some classical economists tend to focus on the real economy, but they think that the money is a convenient trading tool, is "a veil over the real economy". For example, Robinson (1952) claims that "business is leading the way of finance". Lucas (1988) simply doesn't believe in the importance of the relationship between finance and economic growth. It claims that economists "overemphasize the role of financial factors in economic growth". He believes that economic development creates the demand for financial services, which leads to the development of the financial sector, which economists from theoretical and empirical research confirms the
necessary conditions of financial development and economic growth, such as lattice and Shaw (Gurley and Shaw, 1960), Goldsmith (Goldsmith, 1969) a cross-country empirical studies of use the inspection, 35 countries from 1860 to 1963 data, found that financial development and economic growth are closely related, but did not determine a causal relationship between financial development and economic growth. The results of Arestis and Demetriades (1997) research show that "financial development is not universal in promoting economic growth". Levine (2000) has carried out a wide range of transnational empirical studies to show that the more developed financial system has a positive effect on economic growth. In a word, most economists believe that financial development has a great positive effect on economic growth.

Study on the relationship between financial development and economic growth in China, most of the domestic scholars tend to study China as a whole, the East China Sea Qin (2002) in the study of financial development, financial liberalization and economic growth, the empirical analysis on the relationship between China's fixed asset investment sources and economic growth studies show that economic growth and income increase private savings through banks and capital markets, has become an important source of funds, the status of private self and foreign capital investment in total investment gradually, has played a positive role in China's economic growth. Talk about Confucianism Yong (1999), Kunrong Shen (2000), Tingchun Han (2001), Cao Xiaohong Jun Wu (2002), Guangzhong Li and Ping Chen (2002), Guangqian Wang (2004), Jianfeng Yin (2006), Weiguo Chen and Hongwei Zhang (2008), however, the economic development in different regions and China imbalance, the relationship between financial development and economic growth showed a significant region. Xiaojing Gu and Jie Liu (2011) studied the economic effect (1952-2008) of financial development in Western China, and found that the scale of financial development in the West has promoted economic growth for a long time.

2. Model selection and data sources

Based on the relationship between financial development and economic growth in the western region in the western region as the research object, adopting the panel data analysis of relationship between different provinces and regions in the time of financial development and economic growth, namely, the relationship between the two research from the two aspects of cross section and time series.

2.1 Model selection

The variable $Y_{it}$ and 1 x k dimension variable vector $X_{it}$ are set up to satisfy the linear relationship.

$$Y_{it} = \alpha_{it} + \beta_{it} X_{it} + u_{it}, \quad i = 1,2, \ldots, N \quad t = 1,2, \ldots, T \quad (1)$$

The alpha is $\alpha$ intercept term, and the $\beta$ is the correlation coefficient. (1) the relationship between the K economic indexes in the N individual and the time point of T is considered. N represents the number of members of individual panel data, T represents the total number of observation periods for each section member, and the parameter $\alpha_{it}$ indicates the constant of the model. The $\beta_{it}$ represents the k×1 dimensional coefficient vector of the explanatory variable vector $X_{it}$, and K represents the explanatory variable vector. The assumption that the random error term $u_{it}$ is independent of each other and satisfies the zero mean, and the equal variance is $\sigma_u^2$.

Because the model containing N's individual member equation and the model with T time section equation are similar in the estimation method, we estimate the model with the N individual member equation as the object of illustration. According to the different requirements of intercept vector $\alpha$ and coefficient vector $\beta$, the panel data model containing N individual member equation can be divided into 3 types: the constant coefficient model without individual influence, the variable intercept model and the variable coefficient model with individual influence. (2), (3) and (4) respectively.

$$Y_{i} = \alpha + \beta X_{i} + u_{it}, \quad i = 1,2, \ldots, N \quad (2)$$
When we estimate the panel data model, the sample data contain 3 directions, including individual, index and time. If the form of the model is not set correctly, the estimation result will be far away. Therefore, we need to test the form of the model, that is to test whether the parameter $Y_{it}$ and the $\beta_i$ of the explanatory variable are the same for all the individual sections, so as to avoid the model setting bias. The following two hypotheses are mainly tested:

$$H_1: \beta_1 = \beta_2 = \cdots = \beta_N$$

$$H_2: \alpha_1 = \alpha_2 = \cdots = \alpha_N$$

$$\beta_1 = \beta_2 = \cdots = \beta_N$$

If the $H_2$ is considered to accept the hypothesis of sample data with model (2), no influence of the individual constant coefficient model; if it refuses to assume that $H_2$ will continue to test the hypothesis, $H_1$, if $H_1$ is in accordance with the accepted model (3), as the variable intercept model, on the other hand, is in accordance with the model (4), for variable coefficients with individual influence model.

The test assumes that $H_2$ can obey the statistical $F_2$ of the F distribution:

$$F_2 = \frac{S_2 - S_1}{(N - 1)(K + 1)} \sim F[(N - 1)(K + 1), N(T - K - 1)]$$

Among them, $S_1$, $S_2$, and $S_3$ are (4), (3) and (2) residual sum of squares.

If the calculated $F_2$ value is not less than a given confidence level of the corresponding critical value, refused to assume that $H_2$, to test the hypothesis of $H_1$. On the other hand, it is considered that the sample data conforms to the model (2).

Similarly, the test assumes that $H_1$ can obey the statistic $F_1$ of the F distribution:

$$F_1 = \frac{S_2 - S_1}{(N - 1)K} \sim F[(N - 1)K, N(T - K - 1)]$$

If the calculated $F_1$ value is not less than a given confidence level of the corresponding critical value, refused to assume that $H_1$ (4), with model fitting samples, on the other hand, is that the sample data with the model (3).

The above 3 models, the model (3), the variable intercept model, are the most common form of the panel data model. According to the difference of individual influence, the variable intercept model can be divided into two kinds: fixed influence variable intercept model and random influence variable intercept model. When all the units included in the data of individual members is general, i.e. the difference between the parameters in the individual members of the unit can be regarded as the regression coefficient and fixed effect panel data model is a reasonable model, such as the comparative analysis of data, including all provinces, this time using the fixed effect model analysis when is reasonable. Of course, when the individual member units are randomly selected from a large population, the fixed impact model is only applicable to the individual units that are drawn, but not to other units outside the sample.

### 2.2 Data selection

In order to study the relationship between financial development and economic growth in Western China, we use the total growth of financial assets to describe financial development. The total amount of financial assets includes three parts: broad money M2, stock market value and bond balance. Because of the limited collection of statistical data and the vast majority of the financial assets, the sum of the deposit and loan is used instead of the total amount of financial assets.

This paper selects China’s 10 western provinces and autonomous regions in 2010-2015, the sum of deposits and loans as explanatory variables, the western provinces of 2010-2015 where GDP is interpreted as a variable, the distribution of X, Y said, because of the financial development and the
economic growth speed of the previous year is of little value. All the data are from the National Bureau of statistics of People's Republic of China. In order to eliminate the effect of heteroscedasticity on the regression effect, we take the logarithm of X and Y as Ln (X) and Ln (Y) respectively, and carry out Eviews8.0 processing to the data.

3. Empirical analysis

In this paper, N=10, T=6, K=1, the sample data according to the model (2), (3), (4) regression model (2), (3), (4) the sum of squared residuals were S1=0.0666566, S2=0.149793 and S3=0.888618 put them into equation (5), (6), get F2= 1.82269849, F1=5.1243685, F distribution table, at the 95% confidence level, F0.05 (19,27) =2.07, F2, F0.05 (18,40) = 1.61, the sample data reject the hypothesis of H2, to test the hypothesis of H1, because the F1 > F0.05 (9,40) =1.79, refused to assume the H1, so you can determine the sample with model (4), for varying coefficient models. The following is to test the fixed effect of the variable coefficient model or the random effect, which can be judged by the Eviews8.0 Hausman test. Test results are shown in Table 1.

<table>
<thead>
<tr>
<th>Region</th>
<th>Intercept item αi</th>
<th>coefficient βi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guizhou</td>
<td>-0.93770679</td>
<td>1.037682619</td>
</tr>
<tr>
<td>Shanxi</td>
<td>-1.691551947</td>
<td>1.120152394</td>
</tr>
<tr>
<td>Chongqing</td>
<td>-0.319947441</td>
<td>0.963580229</td>
</tr>
<tr>
<td>Yunnan</td>
<td>-2.733218338</td>
<td>1.230984489</td>
</tr>
<tr>
<td>Sichuan</td>
<td>0.222684512</td>
<td>0.911077029</td>
</tr>
<tr>
<td>Gansu</td>
<td>1.329223864</td>
<td>0.75588882</td>
</tr>
<tr>
<td>Ningxia</td>
<td>0.887237325</td>
<td>0.797350354</td>
</tr>
<tr>
<td>Qinghai</td>
<td>1.948099246</td>
<td>0.653621395</td>
</tr>
</tbody>
</table>

The original hypothesis of Hausman test has random effects. The alternative hypothesis is fixed effect. After running, the result from table 1 shows that P value is greater than 0.05, and the test result should be rejected. If there is a random effect, it is necessary to establish a variable coefficient model with fixed influence effect. Therefore, we use the fixed influence variable coefficient model to analyze the relationship between financial development and economic growth in 10 provinces. The concrete forms are as follows:

\[ \text{Ln}Y_i = \alpha_i + \beta_i \text{Ln}X_i + u_{it} \]

The regression results are shown in Table 2.
4. Conclusions and suggestions

Table 2 shows, in the western region of China during the last 5 years of 2010-2015, in the provinces of the total financial assets and the total economy generally showed a strong positive correlation, in all the provinces of Qinghai Province, the lowest correlation coefficient reached 0.653621395, most of the provinces close to 1, especially in Guizhou, Shaanxi, Yunnan has more than the correlation coefficient 1, in the financial development of China's western region has a strong role in promoting economic growth, financial development and the economic contribution is very significant. R2=0.998950 shows that the linear fitting of financial development and economic growth is very high, and has a high linear relationship. The intercept indicates that the economic effect of different provinces based on economic growth, as shown in Table 1, based in Guizhou, Shaanxi, Chongqing economy and Yunnan provinces this is relatively low, according to the beta coefficient of $\beta_i$, the development of several provinces financial contribution to economic growth is relatively large, the largest in Yunnan, followed by Shaanxi, Guizhou, Qinghai minimum. The greater the coefficient of beta$\beta_i$, 1 units of capital investment will produce higher economic growth, which is in line with the economic growth rate of the related provinces. The development of Finance includes not only the expansion of the financial scale, but also the improvement of the financial efficiency and the development of the capital market. From the view of capital efficiency, Guizhou, Shaanxi and Yunnan provinces, the financial investment will lead to higher GDP, therefore, the state funds to consider input and output than in the western region and increase the funds delivery and support, according to the input and output of financial support than the difference, to maximize the utilization efficiency of funds.

Reference


