An Empirical Analysis of Financial Development and Urban Rural Income Gap—Take a Sample of Hunan Province

Yilin Chen

School of Economics of Shanghai University, Shanghai, China, 200444

745902317@qq.com

Abstract. As the core of economic resource allocation, finance has important implications for economic development and the income gap between urban and rural areas. Based on the perspective of financial development, using vector auto-regressive model, Co-integration test, and impulse response function, we have made an empirical study on relationship between financial development and urban-rural income gap in human province from 1978 to 2011. The result shows that there is a long-term equilibrium relationship between financial development scale and efficiency of financial development on the income gap between urban and rural areas of Hunan province. The results of pulse showed that: the scale of the financial development has been a negative response to the income gap between urban and rural, the efficiency of financial development has been a positive response to the income gap.

Introduction

From 1970s, scholars began to study the relationship between financial development and economic growth in research, accumulated a lot of research literature (Goldsmith, Levine1996; Rajan and Zingales, 1998; Levine and Zervos, 1996) [1]-[3]. On the discussion of the relationship between finance development and income distribution, Greenwood and Jovanovic (1990) made a seminal work, They are based on a dynamic model, discussing the relationship among the economic growth, financial development and income distribution, Concluded that the financial development and income distribution gap inverted "U" relationship, financial development will not only promote economic growth but also widen the income gap in the early stages. [4].

Domestic scholars were relatively late on the relationship between financial development and income inequality. Hang (2003) was the first to explore its relationship. He used bank credit to GDP to measure the level of financial development, and provincial' panel data for empirical analysis, draw on a significant widening conclusions financial development of urban and rural income gap [5]. However, Lu, Chen (2004) [6] and Zhang (2003) did not get the same conclusion. Therefore, Yao(2005) based on VAR model and co-integration analysis, using Granger causality test. On the national level between 1978-2002 empirical analyses of panel data, the empirical results show: financial development scale and income gap has a positive correlation with both bidirectional Granger causality, also, the financial development of efficient and income gap has a positive correlation with both bidirectional Granger causality [7]. Ye (2011) studied the financial development and the income gap between urban and rural areas, the relationship between urban and rural income growth and economic growth [8].But on the micro-level perspective analysis to financial development is still lacked.

Indicators and Data Sources Selection

Zhang (2004) [5] and Lu (2004) [6] made indicators, on the scale of financial development, but neglect the efficient of financial development. In this paper, four indicators were selected to measure the relationship between financial development and urban-rural income gap.

The urban-rural income gap index (IG). In this paper, the proportion of urban residents in real disposable income and real per capita net income of rural residents were to measure the income gap

between urban and rural areas.

The size of financial development indicators (FD). M2-GDP ratio often used to measure the financial scale of the development, referred to Maxwell indicator. Considering the unbalance of financial development in developing countries, Arrests take the effect of credit into account, bank loans to GDP is designed to measure the size of the financial development indicators, we use this indicator.

The efficiency of financial development indicators (FE). The ratio of bank loans obtained by non-state-owned economy is widely used to measure the efficiency of financial development.

Urbanization index (CI). In this paper, the level of urbanization is an important variable. Lu and Chen's study showed increased level of urbanization will significantly reduce the income gap between urban and rural areas [6].

To overcome heteroscedasticity and autocorrelation phenomena, this paper were carried out to quantify the data processing, eliminating the price increases due to inflation or other factors caused by the irrationality of the data, all the data are from 《China Statistical Yearbook 》、《China Finance Yearbook》、《 Hunan statistical Yearbook》、《Sixty years of New China statistical Information》, the time span of 1978-2011 years , using Eviews6.0 measurement software.

The Empirical Analysis

The Unit Root Test. A unit root test is required before the estimation and co-integration. This paper uses ADF test proposed by Dickey and Fuller (1974) to do unit root test and the result are shown as Table 1:

Table 1   Results of unit root test

variables	Testing form（C,T,K）	ADF value	Critical value	stationary
IG	(C,T,1)	-2.5863	-3.5578	unstable
D IG	(C,T,0)	-3.6919	-2.9571	stable
FD	(C,T,0)	-1.3105	-3.5529	unstable
D FD	(C,T,1)	-4.2255	-2.9604	stable
FE	(C,T,5)	-0.3853	-1.9534	unstable
D FE	(C,T,4)	-4.6329	-2.9718	stable
CI	(C,T,0)	-1.9042	-3.5529	unstable
D CI	(C,T,1)	-3.3937	-2.9604	stable

PS. D IG refers to the first-order difference of IG. The rests are similar. (C, T, L) refers to intercept, tendency and lagged order.

As the table shows, all variables' first-order differences are significant at 1% levels, which are proved stable. So we can conclude that IG, FD, FE and CI are all variables integrated of the first-order, namely I (1) process. A preliminary deduction can be drawn that there may exist co-integration relationship among them.

The Co-itentegration Test. A Johansen co-integration test is employed in this paper. Due to the Johansen test is a test method based on VAR model, a VAR model is a must before establishment. Then we choose the best selection of lag order according to the AIC and SC criteria. According to the results of test, the optimal lag order number is 2. We can get results of Johansen test as follows:

Table 2　The results of Johansen co-integration test

Number of co-integrate vector	Eigen value	T-statistic	Critical value(at the 5% level)
none	0.686272	83.63671（73.1821）	67.8761
At most one	0.623515	47.70064（41.7380）	42.9153
At most two	0.300686	17.41743（15.2403）	25.8721
At most three	0.184699	6.330118（5.5389）	12.5180

According to the T-statistic after adjustments, we can draw a conclusion that there is only one co-integration relationship among variables at the 5% significant level, expressed as follow:

$$IG=-1.366748FD+0.403476FE +0.22070CI. \tag{1}$$

It can be seen from the equation above that in the long run, the income gap between urban and rural areas of Hunan province presents a negative correlation with financial development scale and a positive correction with the efficiency of financial development, namely the enlargement of financial development scale narrow the income gap between urban and rural areas but the efficiency of financial development contributes on the contrary, which is consistent with conclusion of Cao Guangxi (2007) [9] research. The level of urbanization characterized by significant positive correlation, namely the improvement of urbanization level increased the income gap between urban and rural areas.

The Impulse Response Function Based on the VAR Model. In this paper, the vector auto-regression impulse response analysis proposed by Slims (1980) is used to do further exploration on the relationship among the variables. The horizontal axis represents trace N per, which is 10 here; The vertical axis represents the response of dependent variable to each variable; the solid line shows the response function curves and the two imaginary line represents the two times standard deviation confidence band. Fig.1 reflects the impact of impulse response function of financial development scale on the income gap between urban and rural areas. After an impact to the income gap between urban and rural areas in the current period, there will be a negative response in the first four periods and will reach a maximum negative response in the second period; then it will become a positive response and there will be rapid convergence after the ninth period. This indicates that in the period of urban and rural income gap enlarging, there will be negative influence on the development of financial development, and then, after arriving in a certain extent, it will further promote the expansion of the financial development, presenting a gradual fluctuation. Fig.2 reflects the impact of impulse response function of financial development efficiency on the income gap between urban and rural areas. It can be seen that after an impact to the income gap between urban and rural areas in the current period there will be a sustained positive response. It will reach a maximum response in the fifth period and will present a rapid convergence in the eighth period. This indicates that with the enlargement of the income gap between urban and rural areas, the financial development efficiency will continue to improve in the first five periods and the effect will gradually tend to reduce as time goes by, leveling off in the end
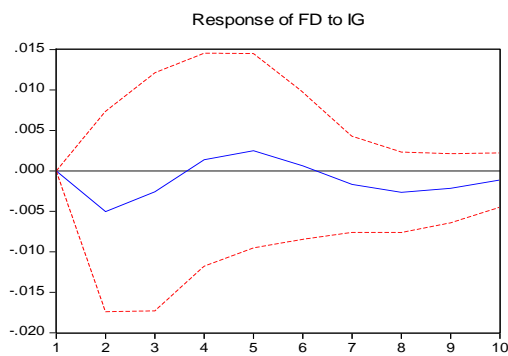
Response of FD to IG

Figure 1.   Response of FD to IG
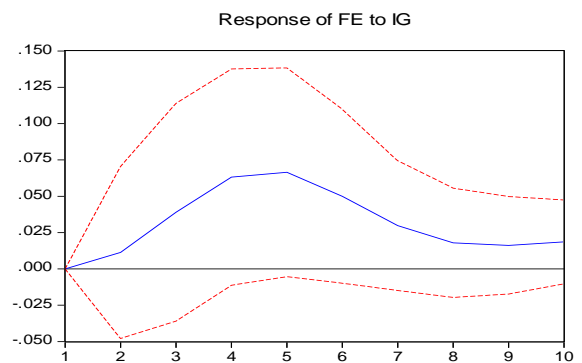
Response of FE to IG

Figure 2.   Response of FE to IG

Conclusions and Policy Recommendations

Based on the 1978-2011 time series data, we studied on the relationship between Hunan financial development scale, the efficiency of financial development and income gap between urban and rural residents in the passage. The results showed that two representative index of financial development: financial development scale and efficiency of financial development on the long-run had an equilibrium relationship in urban and rural income gap in Hunan Province. Financial scale expanded rapidly, coupled with the country to attract foreign investment, enhance the degree of openness. As a result, the bank loans and foreign investment flourished and the farmers' income sharply increased, which was helpful to narrow the income gap between urban and rural areas. The improving financial efficiency led the rural funds transfer to the city which further increased the income gap between urban and rural areas.

In view of this, Hunan province should continue to deepen the reform of the financial system, and to improve the urban and rural income gap widening situation from the view of financial development. There are some specific measures as follow: Fasten the reform of China's financial industry, especially the reform of rural financial system, and make sure the financial capital can play a significant role in the rural area.; Improve the imbalance of regional economic development and speed up the financial development in backward areas, especially in economically backward rural areas [10]; The government's macro-control policy guidance. The government should play an important role in the process of deepening the financial reform in the countryside and provide fundamental support to ensure the reform, and deepen reform of the financial system, improve imbalanced financial market development of city and rural finance.

References

[1] Rajang R, Zing ales L., 1996. Financial dependence and growth[R].University of Chicago mimeo.

[2] Levine, Ross, 1997. Financial Development and Economic Growth: Views and Agenda [J], Journal of Economic Literature.

[3] Levine, Ross, 2005. Finance and Growth: theory and Evidence [J].In handbook of Economic Growth.

[4] Greenwood J and Jovanovich B.1990. Financial development, growth, and the distribution of income [J].Journal of Political Economy.

[5] Zhang Q., Liu M. and Carefree, Vincent Chen, 2003. Chinese growth and financial intermediation income gap between urban and rural areas [R] Peking University China Center for Economic Research (CCER).

[6] Lu M. and Chen Z., 2004. Urbanization, urban economic policy and tendency income gap between urban and rural areas [J]. Economic Research.

[7] FINANCE AND, 2005. Urbanization and development experience in financial income gap analysis of the relationship. [J] Financial Research.

[8] Ye Z., Chen X. and Zhang S., 2011. Financial development can reduce the income gap between urban and rural areas do-Evidence from China [J] Financial Research.

[9] Cao G., Xia J. and Feng Y., 2007. Experience Regional Financial Development and Income Gap Analysis [J] Economic Geography.

[10] Lin Y. and Li Y., 2001. Development of small and medium financial institutions and SMEs Financing [J], Economic Research.