

Empirical Study on the Relationship Between Rural Credit and Farmers' Income in Sichuan Province

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Abstract. This paper studied the relationship between rural credit and farmers' income based on the data from 2000 to 2016 by constructing the C-D production function, comprehensively applying the ADF test, co-integration test and Granger Causality test. It indicated that there was a positive relationship between them in Sichuan Province. Therefore, this paper put forward some suggestions on how to improve the conditions of rural credit, increase the input of rural credit and promote farmers' income.

1. Introduction

Increasing farmers' income is a common topic of domestic and foreign concern. Finance is getting more and more important factor affecting farmers' income. However, Agriculture financing is difficult and expensive due to the imperfect rural financial structure, the defective operational mechanism, the long cycles of agriculture. Therefore, whether the credit funds provided by the government under the various preferential agricultural policies can be effectively used to increase farmers' income is worth studying.

2. The Status Quo Analysis of Rural Credit and Farmers' Income in Sichuan Province

2.1 The Development Status of Rural Credit

The data of Sichuan Statistical Yearbook from 2000 to 2016 showed that the rural credit balance of Sichuan Province was increasing year by year, from 57.828 billion yuan in 2000 to 25.4289 billion yuan in 2016, a total of 196.461 billion yuan was added in the past 17 years. The proportion of loans provided by financial institutions to agricultural production has decreased year by year, from 14.27% in 2000 to 5.84% in 2016. Since 2009, rural credit in Sichuan Province has decreased to less than 10% of the total loans of financial institutions. Generally speaking, rural credit in Sichuan Province accounts for a small proportion of the total loans of financial institutions, and there is still a lot of room for development.

2.2 The Current Situation of Farmers' Income

From 2000 to 2017, the average annual net income of farmers in Sichuan Province has been increasing with the growth rate ranging from 4.38% to 19.24%. In spite of the instability of growth, it remained above 10% in half. By the end of 2017, the per capita disposable income of rural residents in Sichuan Province rose to 12226.9 yuan. In addition, the composition of farmers' income has changed a lot, details are as follows: business income and transfer income continue to increase, accounting for 74% of the total, property income increased slightly (1% to 2%), while wage income decreased to 24%.

3. Empirical Research

3.1 Variable Design

With reference to relevant literature and combined with specific research contents, the following variables are intended to be set in this paper.

Table 1 variable indicators

Index	Meaning	Code	Calculation Method
Explained Variable	Farmers' per capita annual income	Y	Taken from the Statistical Yearbook of Sichuan Province from 2000 to 2016
Explanatory Variable	Farmers' per capita credit	X ₁	(agricultural loan + township enterprises)/rural population
	Per capita financial support to agriculture expenditure	X ₂	Financial support to agriculture expenditure/rural population
	Farmers' per capita cultivated lands	X ₃	The actual cultivated land area at the end of the year/ rural population

3.2 Research Hypothesis

Hypothesis H1: The rural per capita annual credit is positively correlated with the per capita net income of farmers.

Hypothesis H2: The per capita fiscal expenditure on agriculture in rural areas is positively correlated with the per capita net income of farmers.

Hypothesis H3: The per capita arable land area in rural areas is positively correlated with the per capita net income of farmers.

3.3 Model Specification

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \mu$$

3.4 Model Testing

3.4.1 Stationarity Test and Cointegration Test

Test indicates the t value is already significantly below the critical value of 5%, and the P value is less than 0.05. Therefore, we reject the original assumption that the residual sequence is stationary and monolithic, and there is a co-integration relationship between variables. ADF test results show that all variables are integrated of order one and have a long-term equilibrium relationship. According to the model, the coefficients of X₁, X₂ and X₃ are 0.11, 0.19 and 1.42 respectively.

Table 2 residual stationarity test

		T Test	P Value
ADF Test		-4.749313	0.0016
	1% level	-3.857386	
Critical Value	5% level	-3.040391	
	10% level	-2.660551	

3.4.2 Granger Causality Test

The test shows that the Granger's reason for the increase in per capita net income of farmers is the cultivated area, otherwise it's not. Financial expenditure on agriculture and per capita net income of farmers are not Granger reasons for each other, neither are rural credit and per capita net income of farmers. That is to say, the increase of rural credit can not directly promote the increase of farmers' income, indicating that the contribution of rural credit to farmers' per capita net income is not obvious in the short term. In other words, the positive role of agricultural loans has a certain lag period, that is, agricultural credit has a time-lag effect on the growth of farmers' per capita net income.

4. Conclusions

The main results are as follows:

(1) The effect of rural credit supporting agriculture in Sichuan Province is not significant. The total amount of credit increased rapidly, from 57.827 billion yuan in 2000 to 254.289 billion yuan in 2016, a total increase of 3.4 times. However, the proportion of rural credit in the total loans of the whole financial institutions has decreased year by year, from 14.27% in 2000 to 5.84% in 2016. Moreover, the financial institutions issuing rural credit were seriously unbalanced. Rural credit cooperatives have become the main force of rural loans, but the overall strength of rural credit cooperatives is not strong enough.

(2) There is a long-term equilibrium relationship between rural credit and farmers' net income in Sichuan Province. It is found that contribution of rural credit investment to the increase of farmers' income has certain effect, but there is no direct causality between rural credit and farmers' income. It is mainly due to the agricultural production lag. For example, farmers use loans in farming, but farmers or enterprises use loans which are from agricultural production cost to buy seedlings, then plant seedlings, bear fruits, finally they translate into agricultural output. It takes 3 to 5 years. So the contribution of rural credit to farmers' income is not obvious in the short term.

5. Suggestions

In order to achieve the rapid growth of rural economy and farmers' income, it is necessary to further improve a system to support agricultural development. The specific countermeasures are as follows:

5.1 Increasing Financial Support for Agriculture

Due to the weak quality of agricultural production, financial institutions with profit-oriented purposes have low willingness to lend funds to farmers. Therefore, Sichuan provincial government should take appropriate measures to improve the situation, if the government can stipulate that financial institutions should reach a certain proportion of rural credit deposit and loan ratio, the problem of farmers' loan will be reduced to a certain extent. At the same time, the government can give financial support to the rural areas. Empirical research shows that agricultural financial expenditure can promote the growth of farmers' income, so the government should continue to increase financial expenditure, to provide adequate financial support for farmers, strengthen the supervision of funds and avoid abuse of funds, all means should be taken to make the best use of financial funds.

5.2 Increasing the Number of Loans to Agriculture by Rural Formal Financial Institutions

Previous analysis shows that the proportion of credit to all loans of financial institutions in Sichuan Province is decreasing year by year, which is due to the long cycle of agricultural production and the relationship between agricultural output and weather conditions, which hinders financial institutions from loan to farmers, but to invest funds in other high-yield projects. Therefore, small and medium-sized financial institutions can be established in rural areas to integrate idle funds for farmers' loans. At the same time, financial institutions can take appropriate measures to relax the credit conditions and create convenient and efficient credit environment, so that farmers can obtain agricultural production funds in a timely and effective manner.

5.3 Perfecting the Agricultural Insurance Mechanism and Reducing the Risk of Agricultural Loan

Agricultural loans have great natural risks. once natural disasters occur, it may leads to default. Therefore, the government should provide compensation and policy support to agricultural insurance companies to improve the enthusiasm. At the same time, financial institutions and insurance companies should strengthen cooperation and adopt loan insurance cooperation mode to minimize capital losses and ensure loan security.

5.4 Perfecting the Rural Credit System

At present, there is no perfect credit mechanism in the rural areas of Sichuan Province. Therefore, under the background of E-commerce such as JD.com, Ali and other Internet giants entering the countryside, the government can establish a personal credit system with big date, which can further improve the rural credit system. At the same time, it can unify the evaluation criteria and establish the credit incentive and restraint mechanism. In addition, we should actively develop rural credit guarantee mechanism and build a bridge between bank credit and farmers' funds.

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