

The Empirical Study on the Impact of Digital Inclusive Financial Development on Rural Residents' Income

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Abstract: At present, the level of Internet technology is constantly improving, and digital inclusive finance has gradually become the mainstream model of financial development, which has an important impact on the rural economy. This paper selects the provincial panel data of China from 2011 to 2019 as the research sample, and empirically analyzes the impact of digital inclusive finance development on rural residents' income. The study finds that there is a positive correlation between digital inclusive finance and rural residents' income. At the same time, traditional financial competition plays a positive role in regulating the relationship between digital inclusive finance and rural residents' income.

Keywords: Digital Inclusive Finance; Rural Residents' Income; Traditional Financial Competition.

1. Introduction

Rural areas in China are affected by factors such as economic development and geographical location. The threshold for rural residents to enjoy financial services is high, and development funds are limited. Digital inclusive finance can make full use of Internet technology to bring more efficient and convenient financial services and enrich the availability of funds. Therefore, it is necessary to study the impact of digital inclusive financial development on rural residents' income. In addition, the development of digital inclusive finance is carried out on the basis of traditional finance. In order to gain a competitive position, traditional finance will continuously improve its comprehensive strength, and the degree of market competition will also continue to strengthen, so as to promote the development of digital inclusive finance. Therefore, whether the degree of competition in traditional finance has an impact on the relationship between the development of digital inclusive finance and the income of rural residents is another important issue studied in this paper.

2. Theoretical Analysis and Research Hypothesis

2.1. Digital Inclusive Finance and Rural Residents' Income

With the rapid development of digital inclusive finance, more and more scholars pay more attention to it. Wang Yongcang (2021)[1] proposed that the total index of digital inclusive finance and different dimension indexes can have a double threshold effect on the growth of rural residents' income, and the higher the development level of digital inclusive finance, the stronger the promotion effect on the growth of rural residents' income. Zeng et al. (2021)[2] found through research that digital inclusive finance can not only alleviate consumption poverty, but also alleviate income poverty. At the same time, the marginal utility of digital inclusive finance for poverty reduction shows a gradual increasing trend. For rural areas, the development of digital inclusive finance provides rural residents with more financial products and services. According to the actual needs of rural residents, it helps rural residents choose reasonable financial

management methods, promotes the increase of rural residents' savings, increases the personal income of rural residents, and improves the income level of rural residents.

Based on this, this paper puts forward hypothesis 1: Digital inclusive finance is positively correlated with the rural residents' income.

2.2. Digital Inclusive Finance, Traditional Financial Competition and Rural Residents' Income

The competition in the traditional financial industry is becoming more and more fierce, which has a certain impact on economic development. Zhou Shunxing (2015)[3] believed that competition among banks can have an impact on the inclusive performance of village banks, mainly through the innovation of village bank technology. On the one hand, the competition in the traditional financial industry is conducive to stimulating the financial industry to continuously innovate products and services, promoting the innovation of technical elements in the financial industry, and increasing its role in promoting industrial innovation, so as to improve the income of rural residents and promote the development of rural economy. On the other hand, Zhang Yue et al. (2021)[4] proposed that the competition in the traditional financial industry deepens the coverage and scope of inclusive finance in rural areas, promotes the development and upgrading of industrial structure in rural areas, provides financial support for the industrial development of rural residents, and promotes the development of rural economy. At the same time, it will also increase the income level of farmers. In addition, the degree of competition in traditional finance has also driven more industries to increase financial services in rural areas, and strengthened the role of digital inclusive finance in promoting the income of rural residents.

Based on this, this paper puts forward hypothesis 2: The degree of traditional financial competition plays a positive regulatory role in the process of digital inclusive financial development to improve rural residents' income.

3. Research Design

3.1. Variable definition and data sources

Based on the provincial panel data of 31 provinces,

municipalities and autonomous regions from 2011 to 2019, this paper takes stata16.0 as the data processing software. Combined with relevant references, the definition of each variable is as follows:

Explained variable: rural residents' income (Y). The measurement index is the per capita disposable income of rural residents. The data come from China Statistical Yearbook. In order to avoid the value being too large, it is treated by dividing 1000.

Explanatory variable: digital inclusive financial development level (DIF). The data come from Peking University Digital Finance Research Center.

Moderating variable: traditional financial competition (DFC). Measured by the Herfindahl index, the value is between 0 and 1. The data are derived from the number of financial institutions in China announced by the China Banking Regulatory Commission. The calculation formula is :

$$HHI_{i,t} = \sum_{j=1}^J \left(\frac{Branch_{jit}}{\sum_{j=1}^n Branch_{jit}} \right)^2$$

Control variables: industrial structure (IS); employment level (JOB); government financial support for agriculture (GE); internet penetration rate (IT). The data come from the provincial statistical yearbooks and the 'China Statistical Yearbook'.

3.2. Model setup

In order to verify the above hypothesis, this paper constructs the following two models. Model (1) is used to test Hypothesis 1, and Model (2) is used to test Hypothesis 2. The specific expressions are as follows:

$$Y_{i,t} = \alpha_0 + \alpha_1 DIF_{i,t} + \beta X_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Y_{i,t} = \alpha_0 + \alpha_1 DIF_{i,t} + \alpha_2 DFC_{i,t} + \alpha_3 DFC_{i,t} \times DIF_{i,t} + \beta X_{i,t} + \varepsilon_{i,t} \quad (2)$$

Among them, Y refers to the explained variable rural

Table 2. Correlation coefficient analysis

Y	DIF	DFC	IS	JOB	GE	IT	
Y	1						
DIF	0.789***	1					
DFC	-0.013	-0.075	1				
IS	0.449***	0.252***	0.011	1			
JOB	-0.629***	-0.932***	0.098	-0.148**	1		
GE	-0.340***	-0.013	-0.331***	-0.464***	-0.137**	1	
IT	0.797***	0.877***	-0.084	0.355***	-0.793***	-0.104	1

From the results of the correlation coefficient obtained from Table 2, it can be known that the correlation coefficient between the development level of digital inclusive finance and the income of rural residents is 0.789, which is significantly positively correlated at the level of 1%. There is a significant positive correlation between the two, which is basically consistent with the situation of Hypothesis 1.

residents ' income index, DIF refers to the explanatory variable digital inclusive financial development level, DFC refers to the adjustment variable traditional financial competition degree, X refers to each control variable.

4. Empirical Analysis

4.1. Descriptive analysis

Table 1. Descriptive Statistics

Variable	Numbers	Mean	S.D.	Min	Max
DIF	279	202.3	91.65	16.22	410.3
DFC	279	0.187	0.171	0.0979	0.698
Y	279	11,898	5,146	3,909	33,195
IS	279	0.903	0.0504	0.739	0.997
JOB	279	0.373	0.0178	0.353	0.405
GE	279	0.115	0.0326	0.0411	0.203
IT	279	0.692	0.281	0.242	2.137

According to Table 1, it can be seen that the average income of rural residents in the country is 11898 yuan, the maximum value is 33195 yuan, and the minimum value is 3909 yuan, which is at a relatively poor level; the minimum value of the inclusive development index of digital finance is 16.22, the maximum value is 410.3, the average value is 202.3, and the standard deviation is 91.65. It can be seen that there are great differences in the development level of digital inclusive finance among different provinces. The minimum value of traditional financial competition is 0.0979, and the market competition is the most intense. The average value of the proportion of the added value of the secondary and tertiary industries in the industrial structure to the GDP is 0.903; the average number of employment in the primary industry in the employment level accounts for 0.373 of the total rural population; the average proportion of government financial assistance to agriculture is 0.115; the average Internet penetration rate is 0.692.

4.2. Correlation coefficient analysis

In order to judge the impact of digital inclusive financial development on the income level of rural residents, this paper analyzes the correlation of various variables, and the results are shown in Table 2.

4.3. Basic regression results

In this paper, the basic regression model is used for regression analysis. When the regression is carried out for the first time, the control variables are not considered, and then the control variables are added for regression, so as to ensure the robustness of the regression results. The final regression results are shown in Table 3.

Table 3. Basic regression results

Variable	test1 Y	test2 Y
DIF	0.041*** (15.04)	0.049*** (9.56)
IS		13.771*** (4.26)
JOB		132.150*** (6.20)
GE		-38.485*** (-6.95)
IT		4.861*** (5.48)
Constant	3.488*** (7.03)	-58.778*** (-6.19)
Observations	279	279
R-squared	0.548	0.834
adj_R2	0.831	0.831
F	147.5	147.5

The t-value statistics are in parentheses. *, **, *** are significant at the 10%, 5% and 1% levels, respectively.

It can be seen from Table 3 that test1 is the regression result obtained without the introduction of control variables, and test2 is the regression result obtained after the introduction of control variables. It can be seen from the test1 that the coefficient of the explanatory variable digital inclusive financial development level is 0.041, which passes the T test of the 1% significance level; it can be seen from test2 that the coefficient of the explanatory variable digital inclusive financial development level is 0.049, which passes the 1% significance level T test. Whether or not the control variables are introduced, it can be found that the coefficient of the explanatory variable DIF is significantly positive at the level

of 1%. Therefore, it can be known that there is a significant positive correlation between the development level of digital inclusive finance and the income of rural residents. With the increase of control variables, the estimated parameters of DIF do not change much, and are always significantly positive. That is, the development of digital inclusive finance can positively promote the improvement of rural residents' income, and verify Hypothesis 1 proposed in this paper.

4.4. Adjustment effect test

In order to verify the moderating effect of traditional financial competition, this paper conducts regression analysis through the moderating effect model, and the results are shown in Table 4.

Table 4. Adjustment effect test

Variable	test1 Y	test2 Y
DIF	0.049*** (9.69)	0.029*** (9.29)
DFC	-1.320* (-1.83)	-1.459* (-0.77)
DFC*DIF		-0.749*** (6.07)
Controls	YES	YES
Constant	-56.472*** (-5.99)	-56.498*** (-5.96)
Observations	279	279
R-squared	0.835	0.835

It can be seen from Table 4 that test1 is the regression result obtained after the introduction of control variables and adjustment variables. Test2 is the regression result after introducing the interaction term of control variable, adjustment variable, explanatory variable and adjustment variable. It can be seen from test1 that the DIF coefficient is 0.049, through the 1% significance level T test, the DFC coefficient is -1.320, through the 10% significance level T test, where DFC is a negative indicator, the smaller the DFC value, the more intense the competition in the traditional financial market; it can be seen from test2 that the interaction term coefficient of DFC*DIF is significantly negative at the level of 1%. Because DFC is a negative indicator and DIF is

a positive indicator, it can be concluded that the stronger the traditional financial competition is, the stronger the positive promotion effect of digital inclusive financial development on rural residents' income is, which verifies Hypothesis 2 proposed in this paper.

5. Conclusion

Through empirical analysis, this paper finds that digital inclusive finance has a positive correlation with rural residents' income. At the same time, traditional financial competition plays a positive role in regulating the impact of digital inclusive finance on rural residents' income. Based on this finding, the following suggestions are put forward:

deepen the use of digital inclusive finance and give full play to its economic effects; grasp the advantages of digital economy, enhance farmers' financial ability, and promote the increase of residents' income sources.

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