Mechanism Analysis and Evaluation System of Digital Inclusive Finance to Help Rural Revitalization

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Abstract

As the level of digital inclusive financial development continues to increase, the constraints faced by the rural economy as an economic agent continue to become lower, and the threshold for accessing financial services has also become lower. As a result of financial constraints, some poor households are unable to enjoy more convenient access to credit, investment and other services, but digital technology provides a solution to the natural difficulty of overcoming the high cost of traditional financial transactions, thus helping these households to cross the threshold of financial constraints and narrow the income gap between households. In order to promote the development of digital inclusive finance, it can effectively alleviate the "three rural" problem and serve rural revitalization. Based on this, we firstly conduct a theoretical analysis of digital financial inclusion for rural revitalization, and take the panel data of 30 provinces in China from 2008 to 2020 as reference samples, establish a rural revitalization evaluation system of "six, four, three, three, three, three winds and three dimensions", and empirically study the impact of digital financial inclusion on rural revitalization by using the spatial Durbin model (SDM). rural revitalization by using the spatial Dubin model (SDM). We test whether there is a positive spatial correlation between digital financial inclusion and rural revitalization, whether the impact of digital financial inclusion on rural revitalization has a specific role in promoting rural revitalization, and whether there is a spatial spillover effect. Finally, based on the problems, countermeasures are proposed.

Keywords

Inclusive Finance; Rural Revitalization; Digital Economy.

1. Research Background

Against the background of the influential role of the new wave of information technology revolution, digital inclusive finance has gradually become a new type of kinetic energy to boost China's economic growth. "Promoting the development of inclusive finance is an inevitable requirement for China to build a moderately prosperous society in an all-round way, which helps to improve the sustainability of the development of the financial industry, and is more conducive to promoting mass entrepreneurship and innovation, helping to transform the mode of economic development, and safeguarding social fairness and harmony". On this basis, the government explicitly states that by 2020, it will build a universal financial protection system that is coordinated with the building of a moderately prosperous society in all aspects. On February 21, 2021, the Opinions of the Central Committee of the Communist Party of China and the State Council on Comprehensively Promoting Rural Revitalization and Accelerating Modernization of Agriculture and Rural Areas was released, and the Opinions highly emphasized that if the nation is to be revitalized, the countryside must need to be revitalized. In order to comprehensively build a strong socialist modernization country and realize the great rejuvenation of the Chinese nation, building the countryside has become very necessary, and the task of building the countryside has become even more arduous. With the promotion of digital inclusive finance, the supply capacity of rural finance in China has been continuously

enhanced. Based on this, this paper analyzes the impact and mechanism of digital inclusive finance on rural revitalization from the perspective of the impact and mechanism of digital inclusive finance, and studies the new issues that have emerged in the process of the development of digital inclusive finance, which is positioned as a new industry and a new model, in the service of rural revitalization. This will be of great benefit to China in deepening the promotion of digital inclusive finance and building a long-term system for rural revitalization.

Based on the incentive mechanism and impact effect of digital inclusive finance on rural revitalization, the existing research results are mainly analyzed from six perspectives: the first is to alleviate the credit constraints of rural households. Yin Zhichao (2017) and others pointed out that digital finance is conducive to easing rural household credit constraints in areas where the services of large financial institutions are not radiated. The second is to reduce the urban-rural income gap. Song (2017) uses a threshold regression model to fully prove that the inclusive features of inclusive finance can effectively reduce the urban-rural income gap. Third, alleviating rural poverty. Liu Jinyi (2020) and other studies have found that under the role of technology and network development, developing the breadth of coverage and depth of application of digital inclusive financial services to the countryside can help reduce poverty and enrichment in the countryside. Fourth, it promotes agricultural transformation and upgrading. Based on theoretical research, Tian Juanjuan (2020) and others point out that digital inclusive finance supports the transformation and upgrading of China's agricultural industry by promoting the transformation of agriculture into high value-added industries. Fifth, it provides financial support. Wang Jingxin et al. said that digital inclusive finance, which aims to alleviate the financial exclusion of the rural poor, provides all-round support for China's rural development (2018). Sixth, it promotes rural residents' consumption. Fu Qiuzi (2018) and others used the digital financial inclusion index to prove that digital financial inclusion has an enhancing effect on the consumption ability of rural villagers.

Based on the above six influencing effects of digital inclusive finance on rural revitalization, this project combines the theoretical foundation of digital inclusive finance for rural revitalization, uses the spatial Durbin model to study the influencing mechanism of digital inclusive finance on rural revitalization, and designs relevant algorithms and applications, with a view to enhancing the efficiency, effectiveness and effect of inclusive financial services for rural revitalization.

2. Objectives and Main Content of the Study

In the 1980s, under the influence of Keynes' (1983) "government interventionism theory" and Nurkse's (1986) "vicious circle of poverty theory", the theory of agricultural credit (Subsidized Credit Paradigm), which is responsible for the role of rural development and the demand for capital, became popular. The Subsidized Credit Paradigm (SCP) theory of the role of agricultural credit in rural development and the demand for capital flourished.

The theory states that the productivity of the marginalized poor is extremely low and that the general income and savings levels in rural areas are at the bottom of the social ladder. In order to promote agricultural development and alleviate the problem of poverty, it is particularly important to utilize government-subsidized rural funds and establish non-profit-oriented inclusive financial institutions to enhance the development of the "three rural areas".

Hellman et al. put forward the analytical framework of financial constraint theory (2001), which shows that efficient financial markets can promote rural development. Moreover, Sun Tongquan (2019) and others believe that financial institutions such as rural commercial banks and financial cooperatives are the dominant force in rural financial markets in the course of rural development. Therefore, government agencies need to introduce relevant policies to strictly regulate rural financial institutions, invest in inclusive subsidies for rural finance,

stimulate the potential of the rural financial market, and build an orderly, fair and equitable inclusive financial market to promote the construction of rural revitalization strategy.

According to the analysis of the endogenous relationship between financial institutions and rural development, S1 denotes the capital supply curve in rural economic development, D1 denotes the capital demand curve in rural economic development, and C1 denotes the borrowing cost. In the process of the continuous development of China's productivity, agriculture as the secondary industry also develops, and the rural demand for the economy is increasing, the demand curve changes from D1 to D2; the total demand increases from Q1 to Q2. However, the rural micro enterprises are characterized by the low aggregation of production, low output returns, low demand for capital, lack of guarantee products, and frequent single operations, which leads to the bulk-type financial institutions Tend to serve rural willingness enthusiasm is not high, financial institutions to the countryside of the total supply of services remains unchanged in the position of S1, so enhance the cost of borrowing to C2 is to meet the rural development of one of the driving forces. However, the small-scale characteristics of rural areas limit their affordability, resulting in the cost of borrowing at C1, in order to promote the rural capital supply curve from S1 to S2, reduce the cost of borrowing, and break the dilemma of the shortage of funds to inhibit rural development, the use of policy tools to help the digital inclusive finance is bound to be a fair and effective way.

According to the analysis of the role of digital inclusive finance on rural revitalization, it can be concluded that the former has a "U"-shaped effect on the latter, which is first restricted and then promoted. First of all, in the early stage of the development of digital inclusive finance, subject to the limitations of economic development, the difficulty of promoting new technologies to the countryside and the time lag, resulting in digital inclusive finance in the early stage can not significantly promote the revitalization of the countryside. At the same time, in terms of learning costs, the learning of new technologies and financial knowledge requires a certain amount of human, material and financial resources. The role of digital financial inclusion in rural revitalization will directly or indirectly promote the development of rural revitalization after bottoming out in a "U" shape.

The first is the direct effect, the in-depth development of digital financial inclusion can provide rural villagers with property management, education and security funds, and basic insurance and other services and products.

At the same time, digital inclusive finance has a sustainable and positive effect on the economic development of rural small and micro enterprises, alleviating the constraints of capital liquidity in the growth process of small and micro enterprises, and promoting the revitalization of the countryside for the rural labor force and enterprises "to help wisdom and empowerment".

Secondly, indirectly, in the process of the development of digital inclusive finance, after the economic growth in areas with a solid financial foundation, it will help poor areas through radiation and leakage, thus promoting the development of the strategy of rural revitalization.

On the one hand, digital inclusive finance has a positive role in helping rural villagers' independent entrepreneurship, increasing disposable income and improving income distribution, which is conducive to the realization of inclusive economic growth in China.

On the other hand, digital inclusive finance has a positive role in promoting the growth and extension of villagers' consumption capacity based on the integration of equity and efficiency.

3. Innovative Points and Project Features

3.1. Scientific Innovation of Variable Selection

After preliminary testing and consideration, we determine the explanatory variables, explanatory variables and control variables, among which the explanatory variables are

constructed by drawing on the indicator system constructed by other scholars to construct an innovative indicator evaluation system, and the core explanatory variables use the "Peking University Inclusive Finance Index", which involves a total of 16 second-level indicators and 58 third-level indicators, which is an accurate, innovative and abundant evaluation system. The evaluation system is accurate, innovative and rich, providing the basis of evaluation indicators for the later software development.

3.2. Comprehensive and Accurate Data Sources

The main data in the full text mainly come from many authoritative data systems such as China Statistical Yearbook, China Social Statistical Yearbook, Cathay Pacific database, etc. Moreover, through field research, it is expected that some corrective data and online missing data will be obtained.

3.3. Novel Spatial Measurement Model

The spatial measurement models of SAR, SEM and SDM are established and tested for spatial autocorrelation. In order to determine whether there is spatial autocorrelation between regions, the spatial agglomeration status of the overall spatial variables is tested by the global Moran index, and the local Moran scatter plot is used to divide the spatial variables into four quadrants: i) H-H (High-High); ii) L-H (Low-High); iii) L-L (Low-Lwo); and fourth is H-L(High-Low). Explore in the analysis of global Moran index and local Moran index, catch China's digital financial inclusion and rural revitalization reflect spatial agglomeration and a certain degree of spatial heterogeneity, to determine whether the choice of spatial measurement of the methodology of the study is scientific and reasonable.

4. Variable Selection

4.1. Explained Variables

This paper takes the rural revitalization evaluation index as an explanatory variable. Based on the national Rural Revitalization Strategic Plan.

(2018-2022), and drawing on the index system established by Jia Jin and others, and based on the principle of reasonableness and scientificity, five secondary indicators and 25 tertiary indicators are identified, and a rural revitalization evaluation system of "six, four, three, three, three winds and three dimensions" is constructed.

Prosperous industry: Prosperous rural industry is the cornerstone of rural revitalization, and the six aspects of this indicator refer to the efficiency, mechanization, technology and integration of agriculture, the quality of agricultural products, and the organization of farmers.

Ecological livability: as an important puzzle of rural revitalization, ecological livability has a prerequisite role in promoting the sustainable development of the countryside, and the "four rates" of this indicator refer to the rate of rural planning, the rate of road access, the rate of livability, and the rate of medical support.

Civilization: The construction of rural civilization is the key to promoting traditional Chinese culture, and the "three winds" of this indicator refers to the winds of the family, the winds of the neighborhood, and the winds of the society.

Effective governance: Rural governance capacity and rural governance level are the practical basis for ensuring the healthy development of rural revitalization, and the "three rules" of this indicator refer to democratic self-governance, grass-roots rule of law, and social and moral governance.

Wealthy life: the prosperity of farmers' life is the material basis for changing the poor and backward face of the countryside and enhancing the villagers' happiness, and the "three dimensions" of this indicator refer to farmers' income, income gap, and quality of life.

4.2.   Core Explanatory Variables

This paper utilizes the Peking University Digital Financial Inclusion Index (2011-2018) as the theoretical support for the core explanatory variables of the financial inclusion index. The index takes "three degrees" (breadth of coverage, depth of use and degree of digitization) as the first-level dimension, and divides into 11 second-level indicators and 33 third-level indicators, which is scientific and reasonable.

4.3.   Control Variables

Fiscal burden (BURDEN) refers to the difference between the fiscal expenditures minus the fiscal revenues of each province, and the size of the difference is directly proportional to the fiscal burden; OPENING is the value obtained by dividing the total amount of import and export trade in terms of the current year's exchange rate and RMB by the GDP; and CITY is the ratio of the population in cities and towns to the total population.

4.4.   Data Sources

The data come from China Statistical Yearbook, China Social Statistical Yearbook, China Health Statistical Yearbook, China Urban and Rural Construction Statistical Yearbook, China Rural Statistical Yearbook, China Insurance Statistical Yearbook, and statistical yearbooks of each province, etc., from 2008 to 2012, and 30 provinces and cities in China (Tibet, Hong Kong, Macao, and Taiwan were discarded because the data were missing) from 2008 to 2020 were selected as the research Object.

5.   Construction of Spatial Econometric Model and Spatial Autocorrelation Test

5.1.   Measurement Model Setting

Aware of the autocorrelation problem that can occur in the spatial location correlation of data, in order to better study the role of digital financial inclusion on rural revitalization in adjacent regions, the spatial econometric model is used to explore in depth the possible problems that may occur in the direct and indirect effects, and to fully explore the spatial dependence that occurs between regions as a result of economic interaction. On this basis, SAR, SEM and SDM spatial measurement models are established.

5.2.   Test and Selection of Spatial Measurement Model

Selecting the appropriate spatial econometric model is the focus of scientific analysis of inclusive finance for rural revitalization development, using Elhorst's test method for spatial econometric models: "specific to general" and "general to specific", the spatial econometric model is divided into three steps Test.

The first step, "specific to general" test method: the use of LM test model test to choose non-spatial econometric model or spatial econometric model (SAR or SEM), if the above two models have passed the test need to test the R-LM values. The P-value of SEM is 0, which is significant at 1% level of significance, indicating that both SEM and SAR models are suitable, so the SDM model combining SEM and SAR is selected on this basis.

Secondly, the second step, "general to specific" test method: based on the rejection of non-spatial measurement models, the LR test was chosen to screen whether SDM would degenerate into SAR and SEM, and the P-value of the LR test result was 0, which indicated that the SDM model would not degenerate into SAR and SEM.

Finally, the third step, based on the use of fixed-effects models, the LR test continues to screen the use of individual fixed effects, time fixed effects or double fixed effects. Based on the above

spatial econometric model test description results, the final decision was made to choose the SDM model with two-way fixed effects.

6. Analysis of Empirical Results

The direct effect coefficient of digital financial inclusion is 0.124 and is significant at the 1% level, indicating that for every 1% increase in the financial inclusion index, the level of rural revitalization development in the region will be increased by 0.124%, and the indirect effect coefficient is negative and is significant at the 5% level, indicating that an increase in the level of financial inclusion in the region will lead to a decrease in the level of rural revitalization development in the neighboring regions, because the competitive relationship between the various regions leads to a decline in the level of rural revitalization development in the adjacent regions. The direct and indirect effect coefficients of financial burden are 0.147 and 0.103 respectively, and are significant at 1% and 10% level, which indicates that for every 1% increase in financial burden, the level of rural revitalization development in this region will be increased by as much as 0.147%, and for every 10% increase in financial burden, the level of rural revitalization development in the neighboring regions will be increased by 0.103%; Every 1% increase in openness to the outside world raises the level of rural revitalization development in the region by 0.149%, and the level of rural revitalization development in neighboring regions by 0.152%; urbanization has a positive contribution to rural revitalization development in neighboring regions, with every 10% increase in urbanization raising the level of rural revitalization development in the local countryside by 0.128%, and with every 1% increase in urbanization, the spatial spillovers from neighboring regions are 0.500%.

7. Policy Recommendations

First, improve science and technology to raise the level and effectiveness of digital inclusive financial services for the countryside. On the basis of national support for the application of big data in the countryside, fully release the powerful advantages of big data, blockchain, AI and other technological methods in supplying scientific and technological energy for rural development, deeply explore the hotspots, highlights, focuses and difficulties in the development of rural revitalization, and promote the coordinated development of digital inclusive financial services and rural revitalization needs, and ultimately promote the "double-decrease" of manpower costs and transaction costs and the "double-up" of work capacity and regulatory capacity. Ultimately, it will promote the "double reduction" of labor costs and transaction costs, and the "double increase" of work capacity and regulatory capacity.

Second, strengthening the construction of rural informatization facilities. Utilize national financial funds to improve rural informatization construction, promote full coverage of rural network and communication facilities, and support hardware facilities for the development of digital inclusive finance. Comprehensively improve the popularization of smartphones in rural areas, and enrich villagers' use of Internet communications.

Third, improve the financial literacy of rural residents. Strengthen the popularization and publicity of digital financial knowledge and products in rural areas, utilize online trading platforms and self-media publicity platforms to cultivate the financial literacy of villagers, and overcome the problems of difficulty and time lag in the promotion of digital inclusive financial technology.

Fourth, optimizing rural industries as a focus point for rural revitalization. Strongly support the development of leading rural enterprises to promote financial inclusion to solve the plight of leading rural enterprises in the economic development of capital liquidity constraints. Promote the sustainable development of rural enterprises. Utilizing digital inclusive finance to help rural

villagers start their own businesses, increase disposable income and achieve inclusive economic growth.

Acknowledgments

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