

Mechanisms and Pathways of Financial Inclusion Affecting the Urban-Rural Income Gap in the Perspective of Rural Revitalization

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Abstract

Based on data from 31 provinces and cities in China from 2013 to 2020, this paper uses a panel data model to examine the differences between physical and non-physical branch-based financial inclusion models on the urban-rural income gap. The study finds that, overall, physical branch-based financial inclusion has an inverted U-shaped relationship with the urban-rural income gap, while non-physical branch-based financial inclusion widens the urban-rural income gap. From a regional perspective, physical branch-type inclusive finance has a significant "inverted U-shaped" relationship with the urban-rural income gap in the east; non-physical branch-type inclusive finance plays a significant negative role in narrowing the urban-rural income gap in the east and central regions. Therefore, this paper proposes to strengthen the standardization and science of inclusive finance, optimize the resource allocation model, and develop inclusive finance in accordance with local conditions.

Keywords

Physical Branch-based Financial Inclusion; Non-physical Branch-based Financial Inclusion; Urban-rural Income Gap; Impact Differences.

1. Introduction

The income gap between urban and rural residents is an important indicator of the difference between urban and rural development, and is a real problem that needs to be addressed in the process of moving towards common prosperity [1]. Finance, as an important medium for resource allocation, should play an important role in optimising the income gap [2]. However, influenced by the dualistic structure and other factors, there are currently large differences in the level of financial development between urban and rural areas and within cities, and subjects such as villagers, urban low-income groups and small and micro enterprises are subject to strong financial exclusion [3], and are thus constrained in expanding their sources of income and other aspects, one of the ultimate manifestations of which is the widening of the income gap between urban and rural residents.

To address the financial exclusion of these groups and to respond to the concept of "financial inclusion" put forward by the United Nations in 2005 [4], China has launched a series of inclusive financial practices, one of which is the policy-supported physical branch-based inclusive financial model led by new rural institutions. For example, in 2005 and 2006, the CBRC and other agencies promoted the piloting of three types of institutions, namely microfinance companies, village banks and rural capital mutual societies, which are the backbone of addressing the financial needs of long-tail groups and small and micro enterprises in rural areas of China and achieving rural revitalization [5]. The second is the non-physical branch-based financial inclusion model led by Internet enterprises such as Ali Group. This model responds to market demand, serves unrestricted groups, is initiated by Internet enterprises, is based on

mobile phones and other terminal devices, breaks through the limitations of branches, has better outreach, and is rich in products.

Most of the existing literature discusses the impact of inclusive finance promoted by traditional institutions such as banks and insurance, as well as internet companies, on the income gap between urban and rural residents. Specifically, some scholars have tested the impact of physical branch-based inclusive finance led by traditional financial institutions such as banks and insurance on the urban-rural income gap [6, 7]. Some scholars have confirmed that non-physical branch-based inclusive finance led by internet companies can affect the income gap between urban and rural residents by increasing income to reduce poverty and affecting financial accessibility [8, 9]. A small number of scholars have systematically analysed the impact of the above two types of inclusive finance models on the urban-rural income gap by combining them [10]. However, this literature merely combines the two types of models into a composite indicator and does not distinguish the differences between them. There is a richer body of scholarly research on the impact of financial inclusion on the urban-rural income gap, but this research is not yet consistently conclusive.

In view of this, this paper aims to reveal the differences in the effects of different financial inclusion models on the urban-rural income gap from the perspective of network accessibility at the inter-provincial level, with the aim of providing empirical support for the coordinated development of regional economies. The marginal contributions of this paper are: firstly, it constructs an indicator system for three types of institutions, such as microfinance companies, which are promoted under the concept of "inclusive finance", and compares and examines the differences in the impact of physical branch-based inclusive finance and non-physical branch-based inclusive finance on the income gap between urban and rural residents, enriching the empirical research on inclusive finance and urban-rural income gap. This enriches the empirical research on inclusive finance and urban-rural income disparity. Secondly, the heterogeneous impact of inclusive finance on the urban-rural income gap is analysed, and the study finds that there are different mechanisms of action in the relationship between the two in different regional samples.

2. Theoretical Analysis

This paper argues that both models of financial inclusion have their own characteristics in serving financially excluded groups and can influence the financial services environment by affecting financial accessibility, depth of financial services and quality of financial services [9], which in turn affects the income gap between urban and rural residents.

Firstly, from the perspective of financial accessibility, on the one hand, financial accessibility can be improved by increasing the possibility for financially disadvantaged groups to access financial institutions for physical branch-based financial inclusion and financial smart devices for non-physical branch-based financial inclusion, respectively; on the other hand, differences in attitudes towards financial risks and technological levels may also reinforce inter-group competition for physical branch-based and non-physical branch-based financial inclusion resources. On the other hand, differences in attitudes towards financial risks and technological levels may also reinforce unhealthy competition between groups in terms of physical and non-physical financial resources, thereby worsening the financial accessibility of the financially vulnerable.

Secondly, in terms of the depth of financial services, on the one hand, the depth of financial services can be improved by reducing information asymmetries and transaction costs by taking advantage of the "acquaintance society" of the physical branch type and the "intelligent connection" of the non-physical branch type respectively. On the other hand, the gap in the

depth of financial market participation between the strong and weak groups may be widened by factors such as market interest and limited financial literacy.

Thirdly, in terms of the quality of financial services, on the one hand, the quality of financial products can be improved through physical branch-based "personal services" and non-physical branch-based "financial innovation" respectively for the benefit of the target group of inclusive financial services; on the other hand, it may also be influenced by blind development and profit-driven factors, resulting in the development of inclusive financial services deviating from its original purpose and resources being diverted, widening the gap between the strong and weak groups in the quality of inclusive financial services, On the other hand, the development of inclusive finance may deviate from its original purpose due to blind development and profit-driven factors, resulting in resources being diverted and widening the gap in the quality of inclusive financial services between the strong and weak groups.

3. Study Design

3.1. Construction of a Physical Branch-based Financial Inclusion Measurement Indicator System

Table 1. Indicator system for measuring physical branch-based financial inclusion

Name	Dimension	Measure index	Unit	Index properties
Physical branch-based financial inclusion index	Breadth of coverage	Balance of small loan companies per ten thousand square kilometers	Ten thousand yuan/ten thousand square kilometers	Forward direction
		Number of small loan companies per ten thousand square kilometers	Pieces/ten thousand square kilometers	Forward direction
		Number of employees of small loan companies per ten thousand square kilometers	Person/ten thousand square kilometers	Forward direction
	Depth of use	Balance of small loan companies per ten thousand people	Ten thousand yuan/ten thousand people	Forward direction
		Number of small loan companies per ten thousand people	Per ten thousand people	Forward direction
		Number of employees of small loan companies per ten thousand people	Person/ten thousand people	Forward direction
	Effectiveness of use	Loan balance/GDP of small loan companies	%	Forward direction
		Loan balance of small loan companies/balance of banking and financial institutions	%	Forward direction

Currently, the measurement of physical branch-based financial inclusion indicators is mainly based on the measurement of the financial inclusion model dominated by traditional financial institutions such as banks and insurance [11, 4]. The traditional financial institution-led inclusive financial system mostly uses indicators such as the density of institutional outlets, the number of bank employees per capita, and the deposit and loan per capita to measure the development level of inclusive finance [12], which covers a large number of subjects and cannot

well reflect the original intention of developing inclusive finance in China. In addition, commercial banks and other financial institutions prefer large companies due to factors such as the lack of credit assessment data for SMEs by large financial institutions and the small amount of a single transaction; at the same time, it is difficult for these institutions to move down their service centres, which is an inherent deficiency in promoting the development of inclusive finance [13], and it is difficult to accurately obtain data on the target groups they serve for inclusive finance from the inter-provincial level. In view of this, combined with data from the World Bank and the People's Bank of China, by the end of 2016, there were 8,673 microfinance companies with a loan balance of RMB 927 billion; 1,519 village banks had been established nationwide, with a balance of RMB 653 billion in agriculture-related loans and loans to small and micro enterprises; and 48 rural capital mutual societies had been formed nationwide, with a balance of RMB 1.8 billion in loans to farmers. This shows that small loan companies are the mainstay of physical branch-based inclusive finance. Combined with data availability, this paper finally selects data related to microfinance companies and refers to Cui Yanjuan and Yang Liu's (2017) indicator evaluation system to construct a comprehensive index of physical outlet-based inclusive finance in three aspects: breadth of coverage, depth of use and effectiveness of use (Table 1).

3.2. Variable Design

Given the availability of data, the sample for this paper covers 31 provinces and cities within China (excluding Hong Kong, Macao and Taiwan). Taking into account the statistical calibre of urban and rural per capita income², the sample spans the period 2013-2020. The data were obtained from the statistical yearbooks of each province and city, the Financial Operation Report, the "Digital Inclusive Finance Index of Peking University", the CSMAR database and the statistical reports of microfinance companies published regularly on the website of the People's Bank of China. Missing values are filled in by linear interpolation.

1. Explanatory variable: urban-rural income gap (trgap) by province and city. This paper draws on the methodology of Yang, Nan and Ma, Chouxin[14] and uses the Thiel index to measure:

$$\text{trgap}_{it} = \sum_{j=1}^2 \left(\frac{I_{ijt}}{I_{it}} \right) \text{Ln} \left(\frac{I_{ijt}/P_{ijt}}{I_{it}/P_{it}} \right) \quad (1)$$

Where trgap_{it} denotes the Thiel index of area i in period t , $j=1, 2$ denotes urban and rural areas respectively I_{ijt} , P_{ijt} denotes total income, total population in urban ($j=1$) or rural ($j=2$) areas respectively, and I_{it} , P_{it} denotes total income, total population in area i in period t respectively.

Explanatory variables: physical branch-based financial inclusion index (ffp) and non-physical branch-based financial inclusion index (nffp). Among them, the physical branch-based financial inclusion index constructs a comprehensive index in terms of coverage breadth (ffpcb), usage depth (ffpud) and usage effectiveness (ffpdl). Referring to the indicator construction methods of Sarma & Pais (15) and Yanjuan Cui and Yang Liu[16], the physical branch-based financial inclusion index (ffp) constructed in this paper is specifically calculation formula is as follows:

$$w_i = V_i / \sum_{j=1}^n V_j \quad (2)$$

$$g_i = w_i [(X_i - m_i) / (M_i - m_i)] \quad (3)$$

$$\text{ffp} = 1 - \sqrt{\sum_{i=1}^n (w_i - g_i)^2} / \sqrt{\sum_{i=1}^n w_i^2} \quad (4)$$

Where w_i is determined by the coefficient of variation method, $0 \leq w_i \leq 1$, the larger the number, the more important the indicator is in physical network type inclusive finance. g_i is obtained by normalizing each indicator and then multiplying its weight, since the indicators in this paper are all positive indicators, therefore, the normalization is $(X_i - m_i)/(M_i - m_i)$, X_i denotes the actual value of the i th indicator; M_i denotes the maximum value of the i th indicator, m_i denotes the minimum value of the i th indicator. f_i denotes the actual value of the i th indicator; M_i denotes the maximum value of the i th indicator and m_i denotes the minimum value of the i th indicator. $0 \leq f_i \leq 1$, the larger the f_i , the better the development of physical branch-based inclusive finance.

The non-physical branch-based [17] financial inclusion index uses the Digital Financial Inclusion Index compiled by Peking University, which has been published since 2011 and is based on the development of hundreds of millions of microdata from a representative digital financial institution in China, and has been widely used by scholars to construct a comprehensive index mainly in terms of three dimensions: breadth of coverage, depth of use and degree of digitisation (usage validity). Meanwhile, considering the relative sizes of the two financial inclusion indices, in the empirical analysis, this paper uniformly reduces Beihang University's digital financial inclusion index and its three dimensions by a factor of 100, which are recorded as the non-physical branch-based financial inclusion index (nffp), coverage breadth (nffpcb), usage depth (nffpud) and usage validity (nffpdl).

3. Control variables. In order to control the influence of other variables on the urban-rural income gap, this paper selected six control variables (Table 2) based on the research of other scholars: industrial structure (is), level of financial development (fd), level of human capital (lnrs), degree of openness to the outside world (lnopen), dynamism of economic development (lnen), and level of investment in fixed assets (lnfa).

Table 2. Variable descriptions

Variable category	Variable name	Variable definition
Explained variable	Urban-rural income gap (trgap)	Measured by the Thiel Index, as calculated in equation (1)
Core explanatory variables	Physical branch-based financial inclusion index (ffp)	Calculated as per equation (4)
	Non-physical branch-based financial inclusion index (nffp)	Quoted from the Digital Inclusive Finance Index as measured by the Digital Research Centre of Peking University
Control variables	Industrial structure (is)	(Secondary industry value added + Tertiary industry value added)/GDP
	Level of financial development (fd)	Total banking sector deposits and loans/GDP
	Level of human capital (lnrs)	Number of university students per 100,000 enrolled, taking the natural logarithm
	Level of openness to the outside world (lnopen)	Volume of import and export trade, taking the natural logarithm
	Economic development dynamism (lnen)	Number of newly registered enterprises, taking the natural logarithm
	Level of investment in fixed assets (lnfa)	The amount of fixed asset investment excluding farmers, the Take the natural logarithm

3.3. Measurement Models

Since economic variables are intricately linked and mostly have non-linear relationships [18], this paper adopts the Utest test proposed by Lind & Mehlum [19], combined with the quantile regression model, and finds that physical branch-based inclusive finance has a non-linear relationship with the urban-rural income gap, and is tentatively judged to be an "inverted U-shaped". The relationship is initially judged to be "inverted U-shaped". Non-physical branch-type inclusive finance and urban-rural income gap did not form a non-linear relationship, and combined with Cheng Mingwang and Zhang Jiaping [20], it was tentatively judged that non-physical branch-type inclusive finance and urban-rural income gap had a linear relationship. However, these are the results without considering the control variables, which may not accurately reflect the relationship between inclusive finance and the urban-rural income gap.

Accordingly, this paper sets the model of physical branch-based financial inclusion and urban-rural income gap as a non-linear model, as in equation (5), and the model of non-physical branch-based financial inclusion index and urban-rural income gap as a linear model, as in equation (6).

$$\text{Trgap}_{it} = \alpha_0 + \alpha_1 \text{ffp}_{it} + \alpha_{12} \text{ffp}_{it_sq} + \sum_j \alpha_j \text{Control}_{jit} + v_i + w_t + \varepsilon_{it} \quad (5)$$

$$\text{Trgap}_{it} = \beta_0 + \beta_1 \text{nffp}_{it} + \sum_j \beta_j \text{Control}_{jit} + v_i + w_t + \varepsilon_{it} \quad (6)$$

Where Trgap_{it} represents the urban-rural income gap; ffp_{it} represents the primary term of the physical branch-based financial inclusion index; ffp_{it_sq} represents the secondary term of the physical branch-based financial inclusion index; nffp_{it} represents the non-physical branch-based financial inclusion index; Control_{jit} represents a series of control variables; v_i represents provincial and municipal fixed effects; w_t represents year fixed effects; ε_{it} represents random error; subscripts i and t represent province and city and year respectively, and j represents the serial number of the control variable.

4. Analysis of Results

4.1. Baseline Regression

Table 3 reports the results of the benchmark regressions between the two financial inclusion models and the rural-urban income gap. From model (1), it can be seen that the relationship between physical branch-based financial inclusion and the urban-rural income gap has a more significant "inverted U-shaped" relationship. Accordingly, the inflection point of ffp can be deduced to be 0.145;3 when $\text{ffp} < 0.145$, the development of physical branch-type inclusive finance will widen the urban-rural income gap; when $\text{ffp} > 0.145$, the development of physical branch-type inclusive finance will narrow the urban-rural income gap. This may be due to the fact that at the early stage of development, there are problems such as disorderly development and low initial acceptance, resulting in the development of physical branch-type inclusive finance widening the urban-rural income gap; when the development reaches a certain level, with certain experience summed up, the development model of physical branch-type service institutions gradually becomes scientific, and the acceptance and financial literacy of the financially excluded groups improve, the physical branch-type inclusive finance model gradually plays a role in narrowing the urban-rural income gap. The positive effect of the urban-rural income gap. As shown in model (2), the coefficients of non-physical branch-based inclusive finance and urban-rural income gap are all positive, indicating that the development of non-physical branch-based inclusive finance will widen the urban-rural income gap. This may be because the financial literacy, information channels and technology level of the urban

financially excluded group are relatively higher than those of the rural financially excluded group, therefore, the urban residents can make better use of non-physical branch-based inclusive finance, which in turn makes non-physical branch-based inclusive finance widen the income gap between urban and rural residents.

Table 3. Baseline regression results for the two financial inclusion models and the urban-rural income gap

Variables	(1)	(2)
ffp	0.022** (0.353)	
ffp-sq	-0.076*** (0.012)	
nffp		0.024*** (0.000)
Intercept distance	0.325*** (0.000)	0.296*** (0.000)
Control variables	Yes	Yes
Year/Province fixed	Yes	Yes
Hausman	FE	FE
R2	0.875	0.880
Sample size	248	248

Note: *** represents $P < 0.01$, ** represents $P < 0.05$, * represents $P < 0.1$; P values in brackets, same below.

4.2. Robustness Tests

Table 4 reports the robustness tests of the baseline regression model. The first is to overcome the endogeneity problem. Considering the possible endogeneity problem between the inclusive finance model and the urban-rural income gap, for example, the development of inclusive finance can promote the reduction of the urban-rural income gap, and in turn, the reduction of the urban-rural income gap provides supporting conditions for the development of inclusive finance. Combining the difficulty of obtaining instrumental variables, this paper adopts the first-order lagged term of the explanatory variable as the instrumental variable for physical branch-based inclusive finance; and because the regression coefficients of the core variables are small, the FDGMM model is used for testing; drawing on the method of selecting instrumental variables by Zhang Xun et al. [21], the spherical distance from Hangzhou to the capital cities of each province and city (ivnffp) is used as the non-physical branch-based inclusive instrumental variable for finance, and tested using 2SLS. The results are shown in models (1) (2) in Table 4. From model (1), it can be seen that the p-values of AR (1) and AR (2) satisfy the requirement of first-order autocorrelation and there is no autocorrelation at second order and above, and the Sargan test shows that none of the instrumental variables are over-identified, indicating that the instrumental variables are valid. From model (2), the F-value for the first stage is 2858, which is much greater than 10, and therefore, there is no weak instrumental variable problem.

Secondly, other robustness tests. We conducted robustness tests by replacing the dependent variable measure and expanding the sample size. In particular, the dependent variable is measured by referring to the study of Geffey and Die-Fei [22], which uses the Wilson coefficient to measure income disparity. The results are shown in (5)(6) in Table 4, and the results remain robust. The physical branch-based financial inclusion index is measured using (farm-related loans + agricultural premium income)/GDP for 2013-2020, and the results are shown in (7) in

Table 4, and the results remain robust. Referring to Zhao [23] et al.4, the sample time is expanded to 2011-2020 and the empirical results are shown in model (8) (9) in Table 4, and the results are still robust.

Table 4. Robustness test table

Variables	Robustness tests for endogeneity		Lagged first order		Change of measure		Replacing a measure (expansion)	Expanding the sample size	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ffp	0.072** (0.011)		0.038 (0.118)		0.041 (0.347)		0.013 (0.567)	0.019 (0.551)	
ffp-sq	-0.077*** (0.009)		- 0.089*** (0.005)		- 0.134*** (0.017)		-0.038*** (0.058)	-0.083*** (0.073)	
nffp		0.031*** (0.000)		0.023*** (0.000)		0.039*** (0.000)			0.031*** (0.000)
ivnffp		0.010*** (0.000)							
Ltragp	0.740*** (0.000)								
Intercept distance	0.036 (0.623)	0.297*** (0.001)		0.304*** (0.000)			0.708*** (0.000)	0.724*** (0.000)	0.646*** (0.000)
Control variables	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0.08	/			/	/		/	/
AR(2)	0.687	/			/	/		/	/
SARGAN	0.186	/			/	/		/	/
Year/Province fixed	/	Yes	Yes	Yes	Yes	Yes	Yes	Ye/s	Yes
Hausman	/	FE	FE	FE	FE	FE	FE	FE	FE
R2	/	/	0.870	0.875	0.881	0.883	0.840	0.835	0.853
Sample size	186	248	217	217	248	248	310	310	310

5. Heterogeneity Analysis

Considering the differences between the East, Central and Western regions in terms of economic development levels and other aspects, there may be regional heterogeneity in the impact of financial inclusion on the urban-rural income gap. Table 5 reports the results of the regression of financial inclusion and urban-rural income gap by region. From model (1)(2)(3), it can be seen that there is a significant "inverted U-shaped" relationship between physical branch-type inclusive finance and the urban-rural income gap in the east, and a non-significant "positive U-shaped" relationship with the central and western regions. This may be due to the fact that the eastern part of the country is more economically developed, has a higher demand for capital and a more financially literate population, and is able to make better use of physical branch-type inclusive financial products and services, which in turn has a significant impact on the urban-rural income gap; this also means that the effect of physical branch-type inclusive finance on the urban-rural income gap in the central and western parts of the country is not well exploited. From model (4)(5)(6), it can be seen that in the east and central regions, non-physical branch-based financial inclusion plays a significant negative role in reducing the urban-rural income gap; in the west, it plays a non-significant positive role. This may be due to the fact that the degree of development of non-physical branch-based financial inclusion requires higher financial literacy of the group; and the large gap in financial literacy between urban and rural intra-groups in the east and central regions causes non-physical branch-based financial inclusion to widen the income gap between urban and rural residents in the east and central regions.

Table 5. Regression results on financial inclusion and urban-rural income gap by region

Variables	Physical Branch Inclusive Finance			Non-physical Branch Inclusive Finance		
	(1) East	(2) Central	(3) West	(4) East	(5) Central	(6) West
ffp	0.016 (0.543)	-0.048 (0.305)	-0.007 (0.858)			
ffp-sq	-0.058** (0.034)	0.068 (0.226)	0.029 (0.636)			
nffp				0.012** (0.046)	0.023*** (0.001)	-0.007 (0.520)
Intercept distance	0.502*** (0.000)	0.167*** (0.024)	0.115 (0.126)	0.529*** (0.000)	0.268*** (0.000)	0.130* (0.069)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year/Province fixed	Yes	Yes	Yes	Yes	Yes	Yes
Hausman	FE	FE	FE	FE	FE	FE
R2	0.902	0.954	0.951	0.889	0.963	0.951
Sample size	88	64	96	88	64	96

6. Conclusion and Recommendations

Based on data from 31 provinces and municipalities within China from 2013 to 2020, this paper constructs a physical branch-based financial inclusion index using data from microfinance companies, combined with a digital financial inclusion index measured by Peking University to measure the development of non-physical branch-based financial inclusion; with the help of a panel data model, from the perspective of the overall, different dimensions, different regions and whether the provinces and municipalities include poor counties, etc. The differences in the impact of the two inclusive finance models on the urban-rural income gap are empirically tested. The main findings of this study are as follows: (1) On the whole, the relationship between physical branch-type inclusive finance and the urban-rural income gap is "inverted U-shaped", with an inflection point of 0.145; non-physical branch-type inclusive finance widens the urban-rural income gap. (2) From a regional perspective, physical branch-type inclusive finance has a significant "inverted U-shaped" relationship with the urban-rural income gap in the east, and a non-significant "U-shaped" relationship with the central and western regions; non-physical branch-type inclusive finance plays a significant negative role in narrowing the urban-rural income gap in the east and central regions. There is a significant negative effect of non-physical branch-based financial inclusion on the reduction of the urban-rural income gap in East and Central China.

Based on the above findings, the article draws the following insights: (1) When insisting on the development of inclusive finance, strengthen its normative and scientific nature. From the overall empirical evidence, it can be seen that physical branch-based inclusive finance will widen the urban-rural income gap at a lower level; the development of non-physical branch-based inclusive finance is widening the urban-rural income gap. This indicates that the positive effects of inclusive finance are not well reflected in the reduction of the urban-rural income gap. Therefore, it is necessary to regulate the development of inclusive finance, especially the scientific regulation of non-physical branch-based inclusive finance. Specifically, it can establish an effective dynamic observation mechanism and study the patterns by trying to join forces with pioneers of non-physical branch-based inclusive finance practices such as Ali; in addition, it should pay attention to the differences in financial literacy between groups in developed and less developed regions, and narrow the differences in financial literacy between groups by establishing public service forums on financial literacy and enriching financial activities on APP

platforms. It is also important to focus on the scientific development of the internal dimensions of the inclusive financial development model. Specifically, physical branch-based inclusive finance should continue to promote the development of its depth of use and pay attention to the current development of its breadth of coverage and effectiveness of use; non-physical branch-based inclusive finance should increase the development of its breadth of coverage and pay attention to the current development of its depth of use and effectiveness of use.

(2) Optimize the resource allocation model and develop inclusive finance in accordance with local conditions. In the east and west, the focus should be on the development of physical branch-based inclusive finance models and the development of non-physical branch-based inclusive finance; in the west, a balance should be struck between non-physical branch-based inclusive finance and physical branch-based inclusive finance development. In the east, the development of physical branch-based inclusive finance is conducive to narrowing the urban-rural income gap; the development of non-physical branch-based inclusive finance is not conducive to narrowing the urban-rural income gap. In the central part of the country, the positive role of physical branch-based inclusive finance in narrowing the urban-rural income gap has not yet been brought into full play; the development of non-physical branch-based inclusive finance is not conducive to narrowing the urban-rural income gap. Specifically, the scientific and coordinated layout and development of physical branch-type financial institutions in the east and central regions should be strengthened. At present, in the west, the positive role of physical branch-type inclusive finance in narrowing the urban-rural income gap has not yet been given full play, while non-physical branch-type inclusive finance is conducive to narrowing the urban-rural income gap. Therefore, the development of non-physical branch-based inclusive finance and physical branch-based inclusive finance should be increased in the west. Specifically, on the one hand, the west should strengthen exchanges and learning with the east and central regions to introduce their technical conditions for developing non-physical branch-based inclusive finance; at the same time, it should also increase its ability to innovate itself, improve its own hard power and enhance the development of non-physical branch-based inclusive finance. On the other hand, the government should increase its support for policies on the development of physical branch-based inclusive finance in the west, and focus on regulating and strengthening physical branch-based inclusive finance in the west, so that physical branch-based inclusive finance can better serve the high-quality development of the rural economy.

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References

- [1] X.H. Wang, Y.A. Zhao: Is There a Matthew Effect in Digital Financial Development? --An Empirical Comparison of Poor and Non-Poor Households. *Financial Research*, 2020(07): 114-133.
- [2] S. Jauch, S. Watzka: Financial Development and Income Inequality: A Panel Data Approach. *Empirical Economics*, 2016, 51(1): 291—314.
- [3] X.Y. Zeng, H. Jiang: Research on Financial Service Strategies of Small and Micro Enterprises of Large Commercial Banks Based on the Perspective of Financial Exclusion. *Rural Finance Research*, 2017 (02): 39-43.
- [4] J.J. Li, Y.C. Peng, S.C. Ma: Financial Inclusion and China's Economic Development: A Multidimensional Connotation and Empirical Analysis. *Economic Research*, 2020, 55(04): 37-52.
- [5] H.X. Cheng, L. Yang: Spatial Distribution and Diffusion Characteristics of New Rural Financial Institutions in China. *Economic Geography*, 2020, 40(02): 163-170.

- [6] J. Salazar-Cantú, J. Jaramillo-Garza, B. Álvarez-De la Rosa: Financial Inclusion and Income Inequality in Mexican Municipalities. *Open Journal of Social Sciences*, 2015, 3(12): 29-43.
- [7] J.W. Li: Financial Inclusion Development and Adjustment of Urban-rural Income Distribution Imbalance: an Empirical Study Based on a Spatial Econometric Model. *International Financial Studies*, 2017(10): 14-23.
- [8] X. Zhang, G.H. Wan, J.J. Zhang, et al. Digital Economy, Inclusive Finance and Inclusive Growth. *Economic Research*, 2019, 54(08): 71-86.
- [9] L. Zhou, D.W. Feng, X.J. Yi: Digital Inclusive Finance and the Urban-rural Income Gap: "Digital Dividend" or "Digital Divide". *The Economist*, 2020(05): 99-108.
- [10] S.T. Qian, S.J. Mao: Research on the Impact of Comprehensive Inclusive Finance on Urban-rural Income Gap-an Empirical Analysis Based on Inter-provincial Panel Data in China. *Finance and Economics*, 2019(04): 37-42.
- [11] F. Allen, A. Demirguc-Kunt, L. Klapper: The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts. *Journal of Financial Intermediation*, 2016(27): 1-30.
- [12] J.J. Li, X. Han: Inclusive Finance, Income Distribution and Poverty Alleviation - Policy Framework Options to Promote Efficiency and Equity. *Financial Studies*, 2019 (03): 129-148.
- [13] J. Ding: Theoretical and Practical Paradoxes of Internet Finance and Financial Inclusion. *Finance and Economics Science*, 2015(06):1-10.
- [14] N. Yang, C.X. Ma: Dynamic Inverted U Evolution and Falling Point Prediction of the Impact of Financial Development on Urban-Rural Income Gap in China. *Financial Research*, 2014, 413(11): 175-190.
- [15] M. Sarma, J. Pais: Financial Inclusion and Development. *Journal of International Development*, 2011, 23(5): 613-628.
- [16] Y.J. Cui, L. Yang: Research on the Evaluation of the Level of Inclusive Financial Development in China - an Analysis Based on Inter-provincial Data in China. *Journal of Dalian University of Technology (Social Science Edition)*, 2017, 38(02): 66-70.
- [17] F. Guo, J.Y. Wang, F. Wang, et al. Measuring the Development of Digital Inclusive Finance in China: Indexing and Spatial Characteristics. *Journal of Economics (Quarterly)*, 2020, 78 (04): 1401-1418.
- [18] B. Xu, Y.F. Chen, S. Shen: Clean Energy Development, Carbon Dioxide Emission Reduction and Regional Economic Growth. *Economic Research*, 2019, 54(07): 188-202.
- [19] J.T. Lind, H. Mehlum: With or without U? The Appropriate Test for a U-shaped Relationship. *Oxford Bulletin of Economics and Statistics*, 2010, 72(1): 109-118.
- [20] M.W. Cheng, J.P. Zhang: Internet Penetration and Urban-rural Income Gap: Theory and Empirical Evidence. *China Rural Economy*, 2019(02): 19-41.
- [21] X. Zhang, Y. Tong, W. Chen, et al. Digital Financial Development and Population Consumption Growth: Theory and Practice in China. *Management World*, 2020, 36(11): 48-63.
- [22] F. Ge, F. Dai: Exploring the Relationship between China's Manufacturing Income Gap and FDI Based on Wilson Coefficient. *World Trade Organization Dynamics and Research*, 2013, 20(02): 78-89.
- [23] B.Q. Zhao: Digital Inclusive Finance and Urban-rural Income Gap in China: An Empirical Study Based on a Panel Threshold Model. *Journal of Social Sciences*, 2020(01): 196-205.