

Does Digital Inclusive Finance Expand or Narrow the Urban-rural Income Gap from the Perspective of Common Prosperity?

Yina Zhu¹, Jinshi Qiu², Huangcheng Gui³

¹School of Finance, Anhui University of Finance and Economics, Bengbu 233000, China

²School of Statistics and applied mathematics, Anhui University of Finance and Economics, Bengbu 233000, China

³School of Management Science and engineering, Anhui University of Finance and Economics, Bengbu 233000, China

Abstract

At present, China has completely eliminated rural absolute poverty and put the realization of common prosperity on the agenda. If we want to achieve common prosperity, we must solve the problem of unbalanced and inadequate development. Narrowing the income gap between urban and rural areas is an important task at present. Digital inclusive finance has become an important concept in the development of the global financial industry and plays an important role in increasing the income of the poor. Therefore, in the context of vigorously promoting common prosperity, it is of great practical significance to strengthen the attention to the impact of the development of digital inclusive finance on the urban-rural income gap and promote the solution of major social contradictions. Based on the data of the Digital Inclusive Finance Index from 2011 to 2020 released by the Digital Finance Center of Peking University, this paper calculates the income gap between urban and rural residents in various provinces of China by using the Taier Index, and empirically analyzes whether the development of digital inclusive finance reduces, expands or presents an "inverted U" relationship with the urban-rural income gap by using the spatial econometric model. On this basis, this paper further uses the indirect effect of the spatial econometric model to measure the positive effect of the development of digital inclusive finance on reducing the urban-rural income gap in neighboring provinces through the spatial spillover effect, so as to provide reference for relevant policy recommendations.

Keywords

Digital Inclusive Finance; Urban-rural Income Gap; Spatial Metrological Model; "Inverted U" Type.

1. Introduction

2020 is a special year for China with challenges and harvest. As of November 23, 2020, 832 poverty-stricken counties in China have been lifted out of poverty, and absolute poverty in rural areas has been completely eliminated. China has entered the post-poverty era from the era of poverty alleviation. At this stage, the main contradiction in our society is the contradiction between the people's growing need for a better life and the unbalanced and inadequate development. Promoting common prosperity has become an important task in the next stage of our country. Common prosperity is not only a concept of social development, but also a social change marked by narrowing the regional gap, urban-rural gap and income gap. In recent years, digital inclusive finance has developed rapidly, which can be simply understood as a new trend after integrating Internet factors into traditional finance. Because of its role in reducing "elite capture", expanding the audience of financial services, and reducing the threshold of financial

services, it is regarded as an important way to solve the income problem of vulnerable groups. The income gap between urban and rural residents is an important factor affecting China's economic development. Especially after 1984, the focus of reform has shifted from rural areas to cities. The reform of the system and the adjustment of the enterprise system have played a great role in promoting the development of cities and towns. In recent years, rural industry has developed rapidly, expanding the employment channels of rural labor, and the income ratio of rural residents has dropped from 2.77 in 2017 to 2.5 times in 2021. However, we should also see that China's economy is still facing huge downward pressure, the employment environment is very severe, the growth of residents' disposable income is limited, and the overall income gap between urban and rural areas is still large, which has caused certain obstacles to social equity and economic development [1].

Therefore, in the context of vigorously promoting common prosperity, it is of great practical significance to strengthen the attention to the impact of the development of digital inclusive finance on the urban-rural income gap and promote the solution of major social contradictions.

2. Literature Review

With regard to the research on the current situation of the urban-rural income gap in China, Zhang Fangfang et al. (2017), based on the comparison of the data differences between urban and rural areas in terms of per capita disposable income, per capita net income, household consumption, employment and other indicators, concluded that although China's economy is growing steadily and the lives of urban and rural residents have been greatly developed, this development is uneven, and the urban-rural income gap still exists significantly, and even holds the trend of increasing year by year [2]. Zhang Jinsong (2022), based on the study of Gini coefficient and common prosperity, pointed out that the Gini coefficient in the range of 0.4~0.5 is regarded as a large income gap internationally. China's Gini coefficient has reached more than 0.4 all the year round, and has reached more than 0.45 for many consecutive years. If China wants to steadily promote the process of common prosperity, it must pay attention to solving the urban-rural income gap [3].

The "inverted U curve" first appeared in the article "Economic development and income inequality" published by the famous American economist Kuznets in 1955. Its empirical support is only based on the limited statistical data of the United States, Britain, Germany and other countries, and its scope of application is also small. On the basis of Kuznets inverted U curve hypothesis, Professor Chen Zongsheng (2002) put forward the theory of "Chen's inverted U curve", taking into account the special national conditions of China's public ownership economic reform, to explain the development rules of China's income distribution reform and opening up since 1980 and in the future [4]. Wang Xiaolu et al. (2005) used the Gini coefficient panel data of the urban-rural separation of provinces and regions in China from 1996 to 2002 to empirically show that the change trend of the urban-rural income gap has the characteristics of Kuznets curve in the mathematical sense [5]. On the study of whether digital inclusive finance can narrow the urban-rural income gap, Haber et al. (2003) believed that the improvement of financial development level will cause the urban-rural income gap to expand further. Wang Junping et al. (2021) using the panel data of 30 provinces and cities in China from 2011 to 2018, it is pointed out that digital inclusive finance can reduce the urban-rural income gap, and has a spatial spillover effect, which also has a positive role in reducing the urban-rural income gap in neighboring provinces [6]. Zhang Tongjin (2021) and others also believe that digital inclusive finance can narrow the urban-rural income gap, and has a better effect in the central and western regions [7]. Zhou Qiqing et al. (2019), based on the national level, regional level and time period level, concluded that there is an inverted U-shaped relationship between financial development and urban-rural income gap [8]. Qian Shuitu et al. (2021) based on the research of

China's provincial panel data from 2011 to 2018, it is found that digital inclusive finance has a threshold effect on reducing the urban-rural income gap. While digital inclusive finance will promote economic development while reducing the urban-rural income gap, the improvement of economic development level will cause the side effect of slightly expanding the urban-rural income gap, but the convergence of the urban-rural income gap is dominant [9]. Li Cuimei et al.(2021) based on the spatial econometric model and the data of digital inclusive finance development index from 2011 to 2018, it is concluded that digital inclusive finance has an inverted U-shaped relationship with urban-rural income gap, and has a spatial spillover effect [10].

To sum up, China's current Gini coefficient is not optimistic, and the problem of narrowing the urban-rural income gap needs to be solved urgently. However, scholars dispute whether digital inclusive finance has narrowed the urban-rural income gap. The above documents provide a good idea and basis for this study. Although some scholars have introduced the "inverted U hypothesis" for analysis, and also considered the spatial spillover effect, most of the selected research samples are slightly older and cannot be well applied to the context of common prosperity. In view of this, this study selects a relatively recent period, uses the latest published Peking University Digital Inclusive Finance Index (2011-2020), and considers the spatial spillover effect, and comprehensively analyzes the impact of digital inclusive finance on the urban-rural income gap.

This paper proposes the following two assumptions:

H1: In a certain period of time, the impact of inclusive financial development in China's provinces on the urban-rural income gap is not a simple linear relationship. Under certain conditions, the relationship between them is "inverted U".

H2: Digital inclusive finance has a spatial spillover effect when it affects the urban-rural income gap. The development of digital inclusive finance can not only narrow the urban-rural income gap in the province, but also have a positive effect on reducing the urban-rural income gap in neighboring provinces.

3. Empirical Analysis

3.1. Model Setting

Based on the above two assumptions and the practices of other papers, this study uses SDM model for research. SDM model can not only judge the spatial correlation of urban-rural income gap, but also estimate its direct effect, indirect effect and total effect respectively. Among them, the indirect effect represents the impact of the change of the digital inclusive financial development index in neighboring provinces on the urban-rural income gap in that province, and is used to measure the positive effect of the digital inclusive financial development on the narrowing of the urban-rural income gap in neighboring provinces through the spatial spillover effect. The SDM model set in this study is:

$$GAP_{it} = \beta_0 + \gamma WGAP_{it} + \beta_1 Finc_{it} + \beta_2 F^2 inc_{it} + \theta WFinc_{it} + \beta_3 X_{it} + \mu_i + \rho_t + \varepsilon_{it}$$

In the above equation, GAP represents the urban-rural income gap. γ is the spatial correlation coefficient. W represents the spatial weight matrix of each province. $\gamma WGAP_{it}$ indicates the impact of the urban-rural income gap of neighboring provinces on the urban-rural income gap of the province, $WFinc$ indicates the impact of digital inclusive financial development in neighboring provinces on the urban-rural income gap in the province. $Finc$ represents the digital inclusive financial development index, $F^2 inc_{it}$ is used to examine the non-linear impact of digital inclusive financial development on urban-rural income gap. $\beta_1 \beta_2$ represent their

coefficients respectively. X is a matrix composed of a series of control variables. θ is the corresponding regression coefficient. $\mu_i\rho_t$ they represent the fixed effect in space and the fixed effect in time. ε_{it} is an error item. i represents different provinces, t represents the year.

3.2. Variable Selection

3.2.1. Explained Variable: Urban-Rural Income Gap

The indicators to measure the urban-rural income gap are divided into absolute income indicators and relative income indicators. The absolute income indicator only reflects the range of change, ignoring many other influencing factors. The Gini coefficient, the income ratio of urban and rural residents, and the Thiel index are widely used in the relative income indicators. Gini coefficient is an overall indicator, which is slightly weak when discussing the urban-rural income gap; Although the income ratio of urban and rural residents is easy to obtain, it does not reflect the change of the proportion of urban and rural residents; The Thiel index makes up for the defects of the previous two indicators, so this study uses the Thiel index to measure the urban-rural income gap.

3.2.2. Explanatory Variable: Digital Inclusive Financial Development

This study uses the Peking University Digital Inclusive Finance Index (2011-2020) to reflect the development of digital inclusive finance in various provinces and cities.

3.2.3. Selection and Measurement of Control Variables

In order to exclude other indicators that affect the urban-rural income gap, this study selects the following control variables to strengthen the explanation of the model:

- ① Education development level: measure the education level in different regions, the higher the value is, the higher the education level is.
- ② Extent of opening-up: measure the level of economic development in different regions. The higher the value, the higher the degree of openness of the region.
- ③ Government social assistance: measure the level of social security in different regions. The higher the value, the higher the level of social employment security in the region.
- ④ Urbanization level: according to previous literature references, the proportion of urban population in each province in the total population of the region is used to measure.

3.3. Empirical Test and Result Analysis

3.3.1. Empirical Test

① Spatial correlation test

Moran index I can effectively test the correlation between neighboring regions in the whole spatial region. The value range of Moran index is generally $-1 \leq I \leq 1$. When the index is greater than 0, it means that the provinces are positively correlated in space; When the index is less than 0, it means that the provinces are negatively correlated in space; When the index is equal to 0, there is no spatial correlation among provinces.

This paper uses Stata15 software to calculate the spatial correlation of urban-rural income gap and digital inclusive finance under the spatial adjacency matrix. The spatial correlation test results are shown in Table 1. The index value calculated by the spatial matrix has passed the significance test, and the corresponding Z value of all years is greater than 1.96, indicating that there is a very significant spatial autocorrelation between the urban-rural income gap in all regions of China, that is, provinces with similar urban-rural income gap have geographical proximity.

② Endogenous test

The static spatial panel model often ignores the influence of time factors other than the explanatory variables and spatial factors on the urban-rural income gap.

Table 1. Spatial correlation test

particular year	gap	
	Moran's I	Z value
2011	0.454***	4.005
2012	0.462***	4.076
2013	0.460***	4.062
2014	0.384***	3.476
2015	0.359***	3.258
2016	0.340***	3.108
2017	0.375***	3.381
2018	0.281***	2.630
2019	0.369***	3.267
2020	0.403***	3.989

Therefore, the above static spatial panel model may have endogenous problems. To solve this problem, this paper adds the first-order lag term of the explained variable, establishes a dynamic spatial panel model on the urban-rural income gap, and analyzes the estimated results of the model in depth. From the analysis of the results of the dynamic spatial autoregressive model, we can see that gap (- 1) is significantly positive at the 1% significance level, which indicates that the past urban-rural income gap in a region will have a positive impact on the urban-rural income gap in the future, The core explanatory variable of digital inclusive finance (index) coefficient is significantly negative at the level of 1%, which indicates that the development of digital inclusive finance has a positive effect on reducing the urban-rural income gap. All control variables have passed the significance test at the level of 1%, which indicates that the dynamic spatial panel model has well solved the endogenous problems existing in the static model.

3.3.2. Result Analysis

Table 2. Result analysis

Gap				0.905*** -20.28
Finc _{it}	-0.001*** (-4.40)	-0.001*** (-3.82)	-0.001*** (-3.70)	-0.001*** (-4.09)
F ² inc _{it}	-0.171 (-1.19)	-0.069 (-0.51)	0.179 (-1.38)	-0.205** (-2.03)
X _{it}	-0.478 (-0.41)	-0.714 (-0.71)	-0.849 (-0.8)	3.331*** 3.92
γ		0.218*** -2.64	0.232*** -2.79	0.589*** -8.77
R2	0.794	0.798	0.889	0.836
Loglikelihood	-13	76.117	157.865	153.605
sample size	310	310	310	310

The regression results are shown in Table 2. The first column in Table 2 is the regression result of the ordinary least squares regression (OLS), the second column is the regression result of the static spatial autoregressive model (SAR) based on the spatial adjacency matrix, the third column is the estimation result of the fixed effect static spatial autoregressive model considering the robustness of heteroscedasticity, and the fourth column is the estimation result of the fixed effect dynamic spatial autoregressive model. Compared with the above models, it is found that the core coefficient size is basically consistent with the significance, indicating that the results have good robustness.

4. Conclusion and Suggestions

4.1. Conclusion

First, the role of digital inclusive finance in the income gap between urban and rural residents. According to the data of China's digital inclusive financial index from 2011 to 2020, the impact of inclusive financial development in China's provinces on the urban-rural income gap is not a simple linear relationship within a certain period of time. Under certain conditions, the relationship between them is "inverted U".

Second, digital inclusive finance has a spatial spillover effect when it affects the urban-rural income gap. The development of digital inclusive finance can not only narrow the urban-rural income gap in the province, but also have a positive effect on reducing the urban-rural income gap in neighboring provinces.

4.2. Suggestions

First, we should take inclusive finance as the top priority of development, expand the inclusive financial ecosystem based on digital technology, accelerate the construction of network, information, communication and other infrastructure in the central and western regions and remote areas, and promote the development of inclusive finance. Second, we should strengthen the coordinated development and cooperation of inclusive finance between neighboring provinces and cities, so as to maximize the spatial spillover effect of inclusive finance, and effectively reduce the income gap between urban and rural residents. Third, we should strengthen the supervision of the inclusive digital financial service system and protect the rights and interests of financial customers. Digital inclusive finance is a new thing. It should not only promote its development, but also effectively supervise it, so that inclusive digital finance can better serve the vast number of financial consumers.

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