

Empirical Research on the Impact of Digital Inclusive Finance on Urban-rural Income Gap

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Abstract. Based on the provincial panel data from 2011 to 2019, this paper uses the panel fixed effect model and the System GMM model to study the impact of digital Inclusive Finance on the urban-rural income gap. The empirical results show that the development of digital inclusive finance can effectively converge the income gap between urban and rural areas, and it is found that this convergence effect has the threshold of economic development. The research conclusion of this paper not only enriches the literature on digital Inclusive Finance and urban-rural income gap, but also has important reference significance for relevant departments in China to formulate digital inclusive financial policies and achieve the long-term goal of common prosperity.

Keywords: Digital Inclusive Finance; The income gap between urban and rural areas; Panel fixed effect mode; System GMM model; panel threshold model

1. Introduction

The Fifth Plenary Session of the 19th CPC Central Committee made major arrangements for China's new journey towards the second centenary goal by scientifically studying and judging the international and domestic situation and the development conditions of China, and clearly put forward the goal of "achieving more significant substantive progress for the common prosperity of all people" by 2035. [i]However, China's current development is unbalanced and inadequate, and the problem of urban-rural income gap is particularly prominent. Except for 2017, the ratio of per capita disposable income of urban and rural residents in China has always remained above 2.4. In addition, when we observe the Gini coefficient of China in the past 20 years, we find that the Gini coefficient of China in the past 20 years is above the warning line when measured by the international standard of "warning line" of 0.4, which indicates that the problem of unbalanced income gap between urban and rural areas in China has not been well solved for a long time. The long-term trend of urban-rural income inequality will affect the efficiency of economic operation and the level of social welfare, and ultimately affect the realization of the goal of common prosperity. Therefore, the income gap between urban and rural areas, which is one of the obstacles to achieving the goal of common prosperity, is a difficult problem that China needs to overcome at this stage.

With the rapid development of economy and society, a new financial service model, digital Inclusive Finance, emerged. Its emergence has brought good solutions for improving farmers' income and narrowing the income gap between urban and rural areas. The concept of digital Inclusive Finance was put forward at the G20 summit in Hangzhou in 2016. Compared with traditional financial institutions, the concept of digital Inclusive Finance is "benefiting the whole people", which can meet the needs of low-income and vulnerable groups, and reflects the due meaning of Inclusive Finance [ii] (Guo Feng et al, 2016). We speculate that the development of digital Inclusive Finance will narrow the income gap between urban and rural areas. Is this conjecture correct? Can the development of digital inclusive finance really narrow the income gap between urban and rural areas? Will the impact of the development of digital Inclusive Finance on the income gap between urban and rural areas be significantly different with different regions?

In view of this, it is of great significance for the state to formulate policies to narrow the urban-rural income gap and realize the long-term goal of common prosperity for all people to analyze the impact and mechanism of digital Inclusive Finance on the urban-rural income gap.

2. Literature review

Many scholars have conducted a lot of empirical research on the digital Inclusive Finance and the urban-rural income gap. For example, song Xiaoling and Liang Shuanglu (2017, 2019) confirmed that the development of digital inclusive finance can significantly reduce the income gap between urban and rural areas by means of panel data regression [iii][iv]. Xia Shilong, Liu Jinyi and others (2020) also confirmed that digital Inclusive Finance will alleviate rural poverty [v][vi]. Zhao Bingqi (2020) concluded based on the threshold model that the impact of digital Inclusive Finance on the urban-rural income gap is significantly different with different economic levels [vii].

In terms of impact mechanism, song Xiaoling and fosu (2017, 2017) first proposed that digital inclusive finance affects the urban-rural income gap through threshold effect, poverty reduction effect and exclusion effect [viii][ix]. Zhang he (2018) and others conducted empirical tests using lag terms and instrumental variables, and found that digital Inclusive Finance has three effects of narrowing the urban-rural income gap: inclusion effect, poverty reduction effect and growth effect [x]. Liang Shuanglu (2018) questioned the three traditional effects, proposed that they did not reflect the connotation of digital, and then confirmed the existence of educational constraints between the two through the threshold effect [xi]. Other scholars, such as Zhang Biqiong et al. (2021), confirmed that Digital Inclusive Finance → Equal opportunities for entrepreneurship in urban and rural areas → Fair income distribution this mechanism [xii].

To sum up, the research conclusions of scholars show that the development of digital inclusive finance can significantly reduce the urban-rural income gap, but most of the models used are ordinary linear regression, and it is difficult to comprehensively and accurately measure the convergence effect of digital Inclusive Finance on the urban-rural income gap. Therefore, compared with the existing literature, the innovation of this paper is mainly reflected in the following aspects: first, the digital Inclusive Finance and the urban-rural income gap are connected by comprehensively referring to the previous research results, and the non-linear impact of the development of digital Inclusive Finance on the urban-rural income gap is explored from the static and dynamic perspectives. Second, considering that the urban-rural income gap may have dynamic changes, this paper comprehensively uses a variety of methods to verify the impact of digital Inclusive Finance on the urban-rural income gap, which fully ensures the robustness of the research conclusion.

3. Data and empirical model

3.1 Sample data

This paper uses the panel data of 31 provincial administrative regions from 2011 to 2019. Among them, the digital inclusive finance index comes from the third phase of the digital inclusive finance index of Peking University (2011-2020) released by the Internet Finance Center of Peking University. The disposable income of urban and rural residents, per capita GDP, urbanization rate, financial development level and other data are from China Statistical Yearbook and guotai'an database.

3.2 Variable definition

3.2.1. Explained variable

The explanatory variable used in this empirical study is the urban-rural income gap index (Urb), measured by the Thiel index. Its advantage is that it is sensitive to changes at both ends of the value, and can better describe the gap between high-income groups and low-income groups. At the same time, it also takes into account the urban and rural population structure, reflecting the characteristics of China's unique urban-rural dual structure. The specific formula is as follows:

$$Theil_{it} = \sum_1^2 \left(\frac{P_{ij,t}}{P_{i,t}} \right) \ln \left[\left(\frac{P_{ij,t}}{P_{i,t}} \right) / \left(\frac{Z_{ij,t}}{Z_{i,t}} \right) \right] \quad (1)$$

3.2.2. Core explanatory variable

Digital inclusive financial index Dfi . In order to eliminate the dimensional impact, this paper divides the digital inclusive financial index of each province in China by 100 as the proxy variable of the digital inclusive financial development index.

3.2.3. Control variable

On the basis of comprehensive reference to previous studies, this paper also selects the following indicators as control variables to be included in the model to reduce possible endogenous problems in the model: ①Economic development level (Eco) ;②industrial structure (Is) ;③Urbanization rate(Urb);④Education level(Edu);⑤Financial development level(Fin);⑥Degree of government intervention (Gov) ;⑦Openness ($Open$) .

3.3 Descriptive statistics

This study selects the panel data of 31 provinces in China from 2011 to 2019. The descriptive statistics of the main variables are obtained by using stata14.0, as shown in Table 1:

Table 1 Descriptive statistics of variables

variable	sample size	mean value	standard deviation	minimum value	Maximum value
<i>Theil</i>	279	0.098057	0.443525	0.0195286	0.2273838
<i>Dfi</i>	279	2.02355	0.9165163	0.1622	4.1
<i>Cov</i>	279	1.822217	0.9043649	0.0196	3.85
<i>Dep</i>	279	1.970247	0.9146554	0.0676	4.4
<i>Dig</i>	279	2.783935	1.176675	0.0758	4.62
<i>Eco</i>	279	5.368624	2.624006	0.90306	16.4
<i>Is</i>	279	0.9012942	0.0523622	0.7416186	0.9971806
<i>Urb</i>	279	0.5664936	0.1313983	0.2271	0.896
<i>Edu</i>	279	9.666573	0.7914617	7.456506	12.93773
<i>Fin</i>	279	3.160896	1.126698	1.517521	7.574625
<i>Gov</i>	279	0.2813691	0.2074665	0.1102704	1.379153
<i>Open</i>	279	0.2723027	0.3033171	0.168079	1.548163

3.4 Construction of measurement model

In order to empirically test the impact of digital Inclusive Finance on the urban-rural income gap, this paper first sets a static panel regression model and obtains equation (1):

$$Theil_{i,t} = \beta_0 + \beta_1 Dfi_{i,t} + \varphi x_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

In order to investigate the impact of digital Inclusive Finance and education level on the urban-rural income gap, the interaction term of digital Inclusive Finance and education level is further added to obtain equation (2):

$$Theil_{i,t} = \beta_0 + \beta_1 Dfi_{i,t} + \beta_2 Dfi_{i,t} \times Edu_{i,t} + \varphi x_{i,t} + \mu_i + \varepsilon_{i,t} \quad (2)$$

Considering that there may be inertia in the urban-rural income gap, this paper introduces its lag value as a new explanatory variable to build a dynamic panel model, which to some extent alleviates the endogenous problem and residual difference variance problem of the model. The constructed model is as follows:

$$Theil_{i,t} = \beta_0 + \theta_i Theil_{i,t-1} + \beta_1 Dfi_{i,t} + \varphi x_{i,t} + \mu_i + \varepsilon_{i,t} \quad (3)$$

In order to explore the heterogeneity effect of digital inclusive financial development on the urban-rural income gap in different economic development levels, this paper refers to the research

results of Hansen(1999) and Wang (2015) [xiii][xiv],and verifies it with the panel threshold model, and constructs equation (4):

$$Theil_{i,t} = \beta_0 + \beta_1 Dfi_{i,t} \times I(Eco_{i,t} \leq \gamma) + \beta_2 Dfi_{i,t} \times I(Eco_{i,t} > \gamma) + \varphi x_{i,t} + \mu_i + \varepsilon_{i,t} \quad (4)$$

4. Empirical results and analysis

4.1 Linear panel regression

From the static and dynamic perspectives, this paper builds a variety of models to explore the impact of digital Inclusive Finance and the integration of digital Inclusive Finance and education on the urban-rural income gap. According to the above analysis, firstly, the equations (1) and (2) are estimated at the national level from the static perspective. The regression results are shown in Table 2.

Table 2 Full sample estimation results (static)

variable	Static FE			
	(1)	(2)	(3)	(4)
<i>Dfi</i>	-0.0143*** (0.0010)	-0.0046* (0.0025)	-0.0132** (0.0054)	0.0170 (0.0119)
<i>Dfi × Edu</i>			-0.0001 (0.0005)	-0.0023* (0.0012)
<i>Eco</i>		-0.0003 (0.0049)		0.0009 (0.0049)
<i>Edu</i>		0.0006 (0.0010)		0.0051* (0.0026)
<i>Urb</i>		-0.4471*** (0.0655)		-0.4527*** (0.0652)
<i>Open</i>		-0.0234** (0.0117)		-0.0240** (0.0116)
<i>Gov</i>		0.0091 (0.0303)		0.0056 (0.0302)
<i>Is</i>		0.2114** (0.0918)		0.1927** (0.0919)
<i>Fin</i>		0.0049* (0.0028)		0.0057** (0.0029)
<i>Cons</i>	0.1269*** (0.0021)	-4.2316*** (0.7551)	0.1269*** (0.0021)	0.1266 (0.0805)
<i>Hausman</i>	31.06 (P=0.0000)	14.00 (P=0.0818)	31.72 (P=0.0000)	15.32 (P=0.0532)
<i>R²</i>	0.4764	0.6222	0.4764	0.6276

Note: FE represents the fixed effect model, RE represents the random effect model, and the number in the brackets represents the robust standard error. The number in the brackets of Hausman test results represents the p value, *, **, *** test results represents the p value.

The coefficient of digital Inclusive Finance is significantly negative. Therefore, it is preliminarily judged that digital inclusive finance can reduce the income gap between urban and rural areas to a certain extent. It is found that the coefficient of the interaction term is significantly negative after the introduction of the control variable, indicating that there is a synergistic effect between digital Inclusive Finance and education level. The improvement of residents' education level can strengthen the inhibitory effect of digital Inclusive Finance on the urban-rural income gap. It is true that digital Inclusive Finance is developing rapidly at this stage, but we should also take

into account the matching degree between the development of digital Inclusive Finance and the level of education. We should pay attention to the benign interaction between the development of digital Inclusive Finance and the level of education, so as to play a stronger role in suppressing the income gap between urban and rural areas.

Based on the previous analysis, this paper further studies the impact of digital Inclusive Finance on the urban-rural income gap from a dynamic perspective. Considering that the accuracy of the GMM results of the system is higher, and compared with the one-step GMM model, the two-step GMM can obtain consistent and effective estimators. Therefore, in the dynamic panel estimation, this paper selects the two-step System GMM estimation method. The regression results are shown in Table 3.

Table 3 Full sample estimation results (dynamic)

Valuable	System – GMM			
	(5)	(6)	(7)	(8)
<i>L.Theil</i>	0.4612*** (0.0013)	0.0136*** (0.0039)	0.3563*** (0.0038)	0.0201*** (0.0058)
<i>Dfi</i>	-0.0097*** (0.0000)	-0.0051*** (0.0003)	0.0338*** (0.0009)	-0.0029*** (0.0009)
<i>Dfi × Edu</i>			-0.0048*** (0.0001)	-0.0003*** (0.0001)
<i>Eco</i>		-0.0029** (0.0006)		-0.0009** (0.0004)
<i>Edu</i>		0.0002 (0.0001)		0.0006 (0.0008)
<i>Urb</i>		-0.2706*** (0.0080)		-0.2867*** (0.0082)
<i>Open</i>		-0.0088*** (0.0031)		-0.0060 (0.0039)
<i>Gov</i>		-0.0226*** (0.0036)		-0.0221*** (0.0045)
<i>Is</i>		0.6292*** (0.0363)		0.6262*** (0.0008)
<i>Fin</i>		-0.0028*** (0.0080)		-0.0025*** (0.0006)
<i>Cons</i>	0.0706*** (0.0001)	0.2684*** (0.0054)	0.0833*** (0.0010)	0.2705*** (0.0058)
AR(1)检验	0.2749	0.3292	0.2905	0.3253
AR(2)检验	0.2844	0.3520	0.2194	0.3856
Hansen	0.1567	0.1708	0.1688	0.2177

Note: System GMM represents the regression of GMM. The standard error in parentheses is robust. AR and Hansen tests show p value.

The models (5) - (8) all passed the autocorrelation test, and the P values of Hansen test were all greater than 0.1, indicating that the instrumental variables were effective, which further indicates that the dynamic panel estimation results of the overall sample are reliable. According to the regression results, the coefficients of the urban-rural income gap lagging behind the first period are all significantly positive, indicating that the urban-rural income gap has inertia. At the same time, we can find that the results of dynamic regression are almost consistent with static regression,

which indicates that digital inclusive finance can narrow the income gap between urban and rural areas. In addition, the improvement of economic development level, urbanization rate and financial development level will play a certain role in suppressing the urban-rural income gap. By comparing the absolute value of the action coefficient of each variable, it can be seen that the improvement of urbanization rate has the greatest effect on narrowing the urban-rural income gap. Therefore, the government should strengthen the construction of urbanization rate, increase the income of rural residents by transferring rural surplus labor and increasing the income of rural surplus labor, reduce the income gap between urban and rural areas as much as possible, and promote the common prosperity of all people.

4.2 Threshold regression analysis

4.2.1. Threshold effect test

Unlike the previous literature, which mostly used urbanization rate and education level as threshold regression variables, this paper tries to find a new entry point - taking economic development level as threshold regression variable to further explain the impact law and threshold characteristics of digital Inclusive Finance on urban-rural income gap.

Table 4 Threshold effect Self sampling test

Model	<i>F</i> value	<i>P</i> value	Number of <i>BS</i>	critical value		
				10%	5%	1%
Single threshold	18.42*	0.0967	300	18.0851	21.1214	27.7340
Double threshold	297.14***	0.0000	300	22.7966	26.6238	34.1473
Triple threshold	37.85	0.6467	300	119.7917	382.1518	522.4415

The results of Self sampling test show that when the economic development level is taken as the threshold variable, the single threshold effect and the double threshold effect both pass the 10% significance level test, while the triple threshold effect does not pass the significance test. This indicates that there is a double threshold effect in the impact of digital Inclusive Finance on the urban-rural income gap in China, so a double threshold panel model is constructed to estimate.

4.2.2. Estimation of threshold value

Confidence interval estimation is used to confirm whether the model has double threshold effect. See Table 5 for the estimated value and confidence interval of threshold. The threshold results in Table 5 show that the previous analysis is correct and there is a double threshold effect. The estimated value of the first threshold is 1.6548, and the estimated value of the second threshold is 1.7018. Thus, the economic development level is divided into three sections, i.e. $Eco \leq 1.6548$, $1.6548 < Eco \leq 1.7018$ and $Eco > 1.7018$.

Table 5 Threshold estimates and confidence intervals

Model	Threshold estimate	95% confidence interval
Single threshold	1.6548	[1.6301-1.6632]
Double threshold	1.6916	[1.6904-1.7018]
	1.7018	[1.5608-1.7158]
Triple threshold	1.4578	[1.4529-1.4601]

4.2.3 Parameter estimation and result analysis.

With the help of Stata14.0 a full sample threshold regression was conducted with the urban-rural income gap as the explained variable, digital Inclusive Finance as the core explanatory variable, and economic development level as the threshold variable.

Table 6 Full sample threshold regression results

variable	(9)	(10)
<i>Dfi</i>		-0.0046* (0.0025)
<i>Dfi</i> ($Eco \leq 1.6548$)	-0.0084*** (0.0018)	
<i>Dfi</i> ($1.6548 < Eco \leq 1.7018$)	0.0504*** (0.0037)	
<i>Dfi</i> ($Eco > 1.7018$)	-0.0057*** (0.0017)	
<i>Is</i>	0.0408 (0.0626)	0.2114** (0.0918)
<i>Eco</i>	-0.0036 (0.0033)	-0.0003 (0.0049)
<i>Urb</i>	-0.3530*** (0.0448)	-0.4471*** (0.0655)
<i>Edu</i>	0.0011 (0.0007)	0.0006 (0.0010)
<i>Gov</i>	0.0056 (0.0203)	0.0091 (0.0303)
<i>Fin</i>	0.0066*** (0.0020)	0.0049* (0.0028)
<i>Open</i>	-0.0263*** (0.0079)	-0.0235** (0.0117)
<i>Constant</i>	0.2553*** (0.0537)	0.1528* (0.0796)
<i>Observations</i>	279	279
R^2	0.8316	0.6222
<i>F</i> value	117.57***	49.41***

Table 6 shows the threshold regression results of the whole sample. From the analysis of Table 9, it can be seen that the coefficient of digital Inclusive Finance in the control group is -0.0046 and significant, indicating that digital Inclusive Finance has a certain convergence effect on the income gap between urban and rural areas. The results of threshold regression show that digital Inclusive Finance has a convergence effect on the urban-rural income gap only in a specific economic development interval, and the scope of this convergence effect is greater than the overall regression. The results of threshold regression show that digital Inclusive Finance has a convergence effect on the urban-rural income gap only in a specific economic development interval, and the scope of this convergence effect is greater than the overall regression. Specifically, when $Eco \leq 1.6548$, the effect coefficient of the development level of digital Inclusive Finance on the urban-rural income gap is -0.0084, which passes the significance test of 1%. In this range, the development of digital inclusive finance can narrow the income gap between urban and rural areas; When $1.6548 < Eco \leq 1.7018$, the effect coefficient of digital inclusive financial development on urban-rural income gap is 0.0504, which passes the significance test of 1%. In this range, the development of digital Inclusive Finance will expand the income gap between urban and rural areas; When $Eco > 1.7018$, the effect coefficient of the development level of digital Inclusive Finance on the urban-rural income gap is -0.0057, which passes the significance test of 1%. In this range, the development of digital Inclusive Finance will have a restraining effect on the income gap between urban and rural areas.

4.3 Heterogeneity analysis

Considering that there are great differences in resource endowment and economic development level in different regions of China, it is speculated that the impact of digital Inclusive Finance on the urban-rural income gap is different in different regions. In order to verify the correctness of this conjecture, this paper divides the whole sample regression into eastern, central and western regions for heterogeneity regression. Because the dynamic panel model is suitable for large sample data, the static panel model is selected for estimation in the consistency analysis.

Table 7 Heterogeneity analysis

variable	(11)	(12)	(13)	(14)
	National Region	Eastern Region	Central region	Western Region
<i>Dfi</i>	-0.0046* (0.0025)	-0.0037** (0.0016)	-0.0041 (0.0150)	-0.0115*** (0.0035)
<i>Eco</i>	-0.0003 (0.0049)	0.0038 (0.0031)	0.0612 (0.0652)	-0.0276** (0.0131)
<i>Edu</i>	0.0006 (0.0010)	0.0074 (0.0039)	-0.0018 (0.0030)	0.0011 (0.0016)
<i>Urb</i>	-0.4471*** (0.0655)	-0.2613*** (0.0498)	0.3889* (0.2116)	-0.2045*** (0.0735)
<i>Open</i>	-0.0234** (0.0117)	0.0026 (0.0068)	-0.0072 (0.0511)	-0.0816*** (0.0226)
<i>Gov</i>	0.0091 (0.0303)	-0.0689 (0.0500)	0.3889* (0.2116)	-0.0421** (0.0198)
<i>Is</i>	0.2114** (0.0918)	-0.3079*** (0.1472)	0.4074* (0.2464)	0.1753* (0.1060)
<i>Fin</i>	0.0049* (0.0028)	0.0064** (0.0029)	0.0068 (0.0210)	0.0064** (0.0029)
<i>Cons</i>	-4.2316*** (0.7551)	0.4442*** (0.1128)	0.0502 (0.2079)	0.1328 (0.0940)
<i>Hausman</i>	0.0818	0.0443	0.0344	0.1813
<i>R²</i>	0.6222	0.8101	0.4077	0.8394

According to the heterogeneity regression results in Table 7, the absolute value of the digital Inclusive Finance coefficient of the regression results of the whole country and the eastern, central and western regions can be compared and analyzed, which can intuitively show that the development of digital Inclusive Finance in the western region is more effective than that in the Eastern, central and western regions in narrowing the urban-rural income gap. This is consistent with the previous threshold effect regression results, which confirms that vigorously developing digital Inclusive Finance in the western region is the most effective way to narrow the urban-rural income gap. This conclusion will be conducive to the implementation of the national strategy to narrow the income gap between urban and rural areas, and improve the income level of the western region by promoting the development of digital Inclusive Finance in the western region, so as to achieve the goal of common prosperity.

4.4 Robustness test

In this paper, we first consider the endogenous problem of the model. For the measurement error and missing variables, this paper tries to use the authoritative data of the National Bureau of statistics and adds a series of control variables in the estimation process; For the causality problem, this paper takes the lag term of the development of digital Inclusive Finance as a new core explanatory variable for regression analysis. At the same time, in order to ensure the robustness of the estimation results, this paper mainly tests from the following two aspects: first, eliminate the

data of the municipalities directly under the central government and conduct the regression again. Second, the Internet broadband penetration rate of each province is used as the instrumental variable of digital Inclusive Finance for regression. See table 8 for the above three robust regression results.

Table 8 Robustness test results

variable	Explained variable (urban-rural income gap)					
	<i>L.dfi</i> is the core explanatory variable		Exclude municipalities directly under the central government		Instrumental variable method	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Dfi</i>			-0.0042 (0.0038)	0.0218 (0.0135)	-0.0122*** (0.0029)	-0.0330** (0.0163)
<i>L.Dfi</i>	-0.0087*** (0.0026)	0.0231* (0.0124)				
<i>Dfi</i> × <i>Edu</i>		-0.0033*** (0.0013)		-0.0028** (0.0014)		0.0025 (0.0017)
<i>Eco</i>	0.0020 (0.0052)	0.0027 (0.0051)	-0.0053 (0.0157)	-0.0014 (0.0157)	-0.0047 (0.0071)	-0.0053 (0.0070)
<i>Edu</i>	0.0009 (0.0011)	0.0069*** (0.0025)	0.0006 (0.0012)	0.0062** (0.0031)	0.0023 (0.0017)	0.0025 (0.0017)
<i>Urb</i>	-0.3646*** (0.0739)	-0.3574*** (0.0729)	-0.4491*** (0.1015)	-0.4527*** (0.1008)	-0.2809*** (0.0280)	-0.3192*** (0.0384)
<i>Open</i>	-0.0283** (0.0136)	-0.0303** (0.0134)	-0.0389** (0.0181)	-0.0377** (0.0180)	-0.0263*** (0.0091)	-0.0207** (0.0084)
<i>Gov</i>	0.0085 (0.0317)	0.0035 (0.0314)	0.0051 (0.0361)	0.0041 (0.0359)	-0.0455*** (0.1219)	-0.0330** (0.0137)
<i>Is</i>	0.3478*** (0.1163)	0.3463*** (0.1147)	0.2178** (0.0981)	0.1981** (0.0979)	0.0824** (0.0355)	0.0932*** (0.0359)
<i>Fin</i>	0.0064* (0.0033)	0.0064* (0.0033)	0.0057* (0.0033)	0.0073** (0.0034)	0.0128*** (0.0025)	0.0102*** (0.0025)
<i>Cons</i>	-0.0211 (0.1009)	-0.0802 (0.1020)	0.1519* (0.0883)	0.1087 (0.0903)	0.1721*** (0.0344)	0.1814*** (0.0351)
<i>R</i> ²	0.5477	0.5622	0.6148	0.6221	0.7532	0.7434

So far, the above three robustness tests show that the estimation results of this paper are very robust.

5. Conclusions and policy recommendations

5.1 Research conclusion

Based on the basic fact that digital Inclusive Finance has greatly affected the income of urban and rural residents, this paper empirically tested the impact of digital Inclusive Finance on the urban-rural income gap and its internal mechanism by using provincial panel data from 2011 to 2019. The main research conclusions are as follows:

First, digital inclusive finance can effectively narrow the urban-rural income gap and the main way for digital Inclusive Finance to narrow the urban-rural income gap is still to improve the urbanization rate.

Second, digital Inclusive Finance is education driven. The integrated development of digital Inclusive Finance and education level will help to narrow the income gap between urban and rural areas. Specifically, the improvement of residents' education level has enhanced the effect of digital Inclusive Finance on narrowing the urban-rural income gap.

Third, digital Inclusive Finance has an economic development level threshold in narrowing the urban-rural income gap. Only in two specific areas, with the improvement of economic development level, can digital inclusive finance promote the narrowing of the urban-rural income gap.

5.2 Policy recommendations

As a product of the combination of the emerging Internet and traditional Inclusive Finance, digital Inclusive Finance has unlimited potential. Based on the research conclusion of this paper, the following suggestions are put forward:

First, improve the level of digital inclusive financial services and build a diversified service system. On the one hand, we should improve the construction of China's digital inclusive financial infrastructure, reduce the cost of financial services, establish a comprehensive financial system that provides services for all social strata and then narrow the income gap between urban and rural areas; On the other hand, it is necessary to fully integrate the advantages of traditional Inclusive Finance and emerging Internet technologies to make them perfectly meet the needs of the development of digital Inclusive Finance. At the same time, introduce talents and advanced technology, build a diversified service system, and help the development of digital Inclusive Finance.

Second, we will accelerate the process of urbanization and help rural residents increase their income. As a symbol of regional economic development, the increase of urbanization is conducive to improving the income of rural residents' surplus labor force and driving the economic growth of rural areas. On the one hand, we should pay attention to improving the wage level of migrant farmers in the process, and the government can issue relevant policies or give bonus subsidies; On the other hand, we should pay attention to the fairness of factor distribution. Excessive growth of urban residents' income will not be conducive to accelerating the urbanization process. Therefore, this phenomenon of excessive growth of urban residents' income can be suppressed on the basis of giving consideration to efficiency and fairness.

Third, pay attention to the economic development of all provinces and cities, and popularize digital inclusive financial education. On the one hand, we should pay attention to supporting economically backward areas, because developing digital Inclusive Finance in these areas is the most effective way to narrow the income gap between urban and rural areas; On the other hand, we should steadily promote the economic growth of economically developed areas, and we should not ignore this thin ratio, but comprehensively improve China's economic development. In addition, we should also pay attention to popularizing digital inclusive financial education. The lack of understanding of digital Inclusive Finance makes it difficult to keep up with the trend of social development and improve their income level with the help of new technologies. Therefore, the publicity and education of digital inclusive finance can be strengthened to improve the awareness of residents to improve their income through digital Inclusive Finance.

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