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Study of the Impact of Digital Financial Inclusion on the Consumption of Rural Residents: Taking Guangdong Province as an Example

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Abstract

The emergence of digital inclusive finance can enable rural residents to enjoy more diversified products and services, which is conducive to promoting the implementation of the rural revitalization strategy from various aspects and helping the all-round development of rural areas. This paper selects the panel data of Guangdong Province from 2013 to 2022, and empirically analyzes it by constructing a fixed effects model. The empirical results show that the continuous development of digital inclusive finance in Guangdong Province has a facilitating effect on the consumption of rural residents. Second, from the perspective of regional division, the promotion effect is more obvious in the Pearl River Delta (PRD) and the northern part of Guangdong, effectively promoting the growth of rural residents' consumption in these two regions, while the positive effect on the western and eastern parts of Guangdong is not significant. Next, from the perspective of pathways, digital payment and digital credit have a positive impact on rural residents' consumption, while digital insurance has a smaller degree of positive impact.

Keywords

Digital Inclusive Finance; Rural Residents' Consumption; Guangdong Province.

1. Background of the Study

In recent years, China's economic development has achieved great results, and consumption, as an important driving force, has a crucial role to play in realizing the transformation and upgrading of the economy through its steady growth. However, the consumption level of China's residents has yet to be improved, especially in rural areas. In Guangdong Province, as a key province in China's economic development, the per capita consumption expenditure of urban residents was 21,621.5 yuan in 2013, rising to 36,936.2 yuan in 2022, an increase of 70.8%, while the per capita consumption expenditure of rural residents rose from 8,937.76 yuan in 2013 to 20,800 yuan in 2022, an increase of 132%. Overall, rural residents' consumption shows a trend of rapid growth, but the difference between urban and rural areas is as high as 16,136.2 yuan in terms of the absolute value of consumption in the year 2022 for the two comparisons, and the gap between urban and rural areas is particularly obvious, with rural areas realizing sustained development, but there is still a long way to go in comparison with towns and cities. Therefore, promoting the consumption of rural residents in Guangdong Province is an important tool for effectively expanding domestic demand and promoting rural revitalization.

With the development of digital technology, digital inclusive finance has become an emerging financial business model, the advantages of which overcome the limitations of traditional finance and will not be affected by geographic factors, and the digital payments brought about have changed the traditional payment methods, providing diversified financial products and

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services for remote rural areas, so that people who are hindered by financial services can benefit from them, and increasing the diversification of rural residents' income channels for rural residents. Guangdong Province is in the second echelon of the development of digital financial inclusion in China, and in the past decade, the digital financial inclusion index is realizing continuous growth from 127.06 in 2012 to 416.36 in 2022, with a growth rate of 227.7%, which is a relatively fast rate of growth, based on which, the effective combination of digital technology and financial inclusion compensates for the shortcomings of traditional finance, and allows more beneficial The effective combination of digital technology and financial inclusion makes up for the shortcomings of traditional finance, brings more beneficial development results into rural areas, realizes the transformation and upgrading of consumption, and promotes the rapid development of the economy, which is of great practical significance for the solution of the "three rural" problems and the implementation of rural revitalization in Guangdong Province.

2. Literature Review

Regarding the study of digital financial inclusion and its impact on consumption, Wibella N, Fahmi I and Saptono I T (2018)[1] argued that digital financial inclusion is a way to meet the needs of the underprivileged groups of financial need by transforming the traditional financial services with the help of digital technology, and that the success of the digital inclusive financial services depends not only on the institutions that provide the digital financial services, but also on the use of the service The acceptance of the customers who use the service and can unfold the new type of financial services within the acceptance. Hossain (2010)[2] argues that digital financial inclusion has different impacts on the rural areas, the most important is the positive impact in rural poverty eradication, which enables the poor to enjoy financial services at a lower cost, and in the process of economic and social development, rural consumption patterns are changing over time. Li J, Wu Y and Xiao J (2020)[3-4] believe that residents' household consumption will change because of the development of digital inclusive finance, the changes caused by the positive, people's consumption behavior and habits, etc. will change to the good side, but also bring people a lot of convenient experience, not only change the way of consumer payment, but also reduce the problem of credit constraints of the population, do not have to be Traditional financial services, which is conducive to the promotion of household consumption. Wang J (2023)[5] believes that the implementation of the rural revitalization strategy can not be separated from the promotion of digital financial inclusion, in the implementation of the policy, the state, the government, including every citizen is paying for it, effectively promoting the development of consumption in the direction of the good, the enhancement of consumption to the rural revitalization strategy to help the way of digital payment can be effectively promote the process of rural revitalization, but there is no significant impact. It can also be seen that digital inclusive finance can make up for the deficiencies and shortcomings of traditional finance in the development process, and play a positive and positive impact on the development of rural revitalization. Liu Dan, Fang Rui and Tang Yingmei (2019)[6] believe that the development of digital inclusive finance can help to improve the non-farm income of farmers, and it also has a certain role in promoting other provinces. Yan Yuhao, Li Wei and Hu Xiqin (2023)[7] concluded that the development of digital inclusive finance has a driving effect on the level of rural revitalization, and the construction of digital infrastructure reduces the cost of rural residents' access, provides support in technology, and forms a virtuous cycle of development, all of which play a positive regulatory role in digital inclusive finance for rural revitalization development. Li Junhui (2020)[8] believes that the consumption structure of residents will be affected by many aspects, the highest degree of influence is the income level of residents, which will change the consumption structure because of personal habits, living expenses and other factors, and the secondary way of influence is the level of urbanization, and

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in the process of increasing the level of urbanization, people will be more inclined to enjoyment-type consumption expenditures to improve their quality of life. Lan Leqin and Yang Zhuoran (2021)[9] believe that digital inclusive finance can significantly improve the consumption level of China's residents, and the degree of influence varies by region, with the western region having the greatest influence and the eastern region having the least influence. Wang Gangzhen and Liu Tingting (2020)[10] By categorizing the consumption structure, they believe that digital inclusive finance will alleviate people's income constraints, and the level of income determines the level of economic development of their regions, and most people in rural areas will reduce their consumption expenditures because of the restrictions imposed by various local policies, at this time, digital inclusive finance plays a great role in it and brings great changes to rural areas.

3. Theoretical Foundations

3.1. Theory of Liquidity Constraints

Liquidity constraint refers to the fact that when residents are faced with the difficulty of shortage of funds, due to the strict restrictions imposed by the consumer credit policy, it is very difficult for these residents to easily obtain the credit funds they need, which not only affects their consumption ability, but also hinders the realization of their basic consumption needs. The theory suggests that for individual consumers, consumers will appropriately maintain their consumption levels within a reasonable range when they face liquidity constraints in the present period, and when anticipating concerns about the lack of liquidity that they may face in the future, consumers react in a more pronounced manner by beginning to reduce their consumption of non-essential goods and instead increasing their savings accounts to cope with the impending uncertainty of the situation and to ensure their future consumption. Digital financial inclusion has changed the way rural residents are constrained in their spending. Rural residents can access the appropriate amount of spending online, thereby driving economic growth.

3.2. Theories of Financial Exclusion

The theory of financial exclusion, which emerged in the 1990s, mainly refers to the phenomenon of some groups not being able to enjoy financial services for certain reasons. According to this theory, financial institutions in developed countries choose to close financial service outlets in remote rural areas in order to reduce their own service costs and service risks, resulting in financial services being more complete in developed areas such as cities, while remote rural areas are more backward, making it difficult for residents of remote rural areas to obtain the financial services they need. In an environment of financial exclusion, low-income groups will not be able to meet their own financial needs due to the phenomenon of financial exclusion, which is not conducive to the development of finance in the region. The emergence of digital inclusive finance has substantially reduced the occurrence of financial exclusion, and rural residents will no longer be subject to restrictions; financial institutions can provide rural residents with convenient financial services through online means, and the costs that financial institutions need to pay for this have also been reduced, which provides a more convenient way for both financial institutions and rural residents.

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4. Digital Inclusive Finance and the Current Situation of Rural Residents' Consumption in Guangdong Province

4.1. The Current Situation of Digital Inclusive Finance in Guangdong Province

The development of digital inclusive finance in China has achieved remarkable results, and Guangdong Province is in the leading position in the development of digital inclusive finance in China. From the perspective of the total digital financial inclusion index of Guangdong Province, Figure 3-1 shows a line graph of the development trend of the digital financial inclusion index of Guangdong Province during the period from 2013 to 2022, and it can be seen that the digital financial inclusion index rises from 184.78 in 2013 to 416.36 in 2022, which is a relatively fast growth rate. From the overall rising trend line, Guangdong Province Digital Inclusive Finance Index has a faster growth rate in the early stage of development and tends to stabilize in the later stage, indicating that digital inclusive finance in Guangdong Province is developing from the stage of high-speed growth towards the stage of stabilization and normalization, and the development trend of digital inclusive finance is more mature.

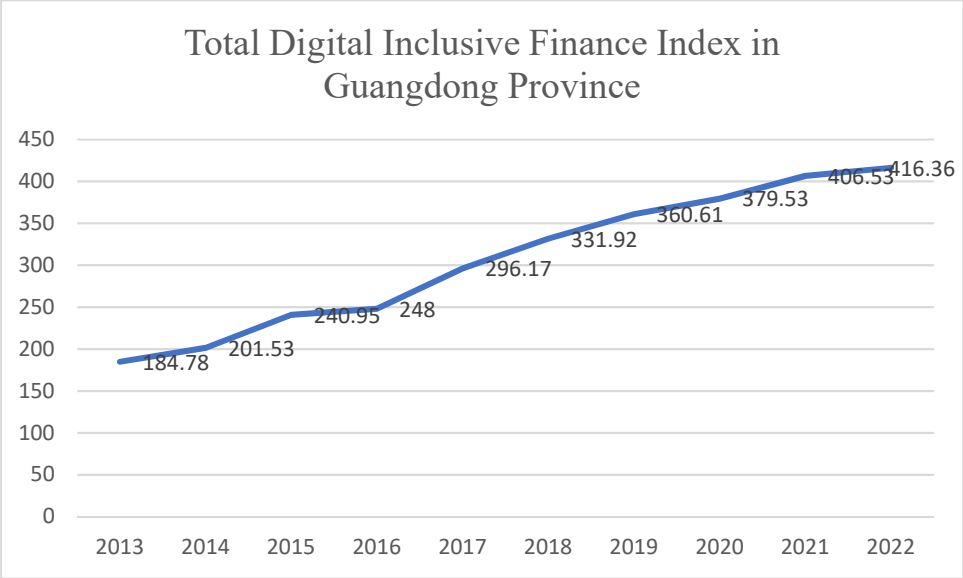

Figure 1. Total Digital Inclusive Finance Index in Guangdong Province, 2013-2022
Data source: BYU Digital Financial Inclusion Index

Guangdong Province is mainly divided into four regions, namely the Pearl River Delta, Guangdong East, Guangdong West and Guangdong North. Table 3-3 presents the average values of the digital financial inclusion index for the four regions in Guangdong Province from 2013 to 2022. From the overall direction, the values of each prefecture-level city show a rising trend year by year, with the value rising in 2013 to about 200 in 2022, which is a relatively fast growth rate. From a regional perspective, the Pearl River Delta (PRD) region has the highest value of the Digital Inclusive Finance Index, which also indicates that the degree of development of digital inclusive finance will also be faster in more economically developed regions. From a regional growth rate perspective, the PRD region grew from 158.30 to 323.34, an increase of 165.04, a growth rate of 104.26%, the eastern part of Guangdong grew from 135.45 to 296.88, an increase of 161.43, a growth rate of 119.18%, the western part of Guangdong grew from 124.02 to 287.63, an increase of 163.61, a growth rate of 131.92%, and Northern Guangdong grew from 125.49 to 288.65, an increase of 163.16, a growth rate of 130.02%. In terms of the amount of growth, the difference between the four regions is relatively small, with all of them growing by about 160. In terms of growth rate, the western part of Guangdong has the highest

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growth rate, followed by the northern part of Guangdong, and the PRD region has the lowest growth rate instead, which indicates that the western and northern parts of Guangdong, which are less economically developed regions, have a greater potential for the development of digital inclusive finance, whereas the PRD region has been in a high stage of development, and has been relatively less affected by digital inclusive finance.

Table 1. Comparison of the average value of digital financial inclusion index in four regions of Guangdong Province in 2013 and 2022

shore	2013	2022
Pearl River Delta	158.30	323.34
Eastern Guangdong	135.45	296.88
western Guangdong	124.02	287.63
northern Guangdong	125.49	288.65

Data source: BYU Digital Financial Inclusion Index

4.2. Current Consumption Situation of Rural Residents in Guangdong Province

4.2.1. Consumption Level of Rural Residents

By comparing the per capita consumption expenditure in rural and urban areas, the trend of growth rate is used to analyze the consumption level of rural residents. The per capita consumption expenditure of rural residents in Guangdong Province is RMB 8937.8 in 2013 and RMB 20800 in 2022, with a growth rate of 132.7%, which is an overall upward trend, revealing a significant increase in the consumption ability of rural residents in the process of urbanization. In 2022, the per capita consumption expenditure of urban residents reaches RMB 36,936.2, compared to which the per capita consumption expenditure of rural residents is relatively low. consumption expenditure is relatively low, and there is a gap of 16,136.2 yuan between the two, and this gap will make people pay more attention to the lack of rural consumption. However, in terms of growth rates, urban and rural growth rates fall sharply in 2020 by -1.9% and -5.1% respectively due to the new crown epidemic, with towns falling faster. The real rural growth rate is lower than the real urban growth rate only in 2019, and higher than the real urban growth rate in the rest of the years. The per capita consumption expenditure of rural residents in 2022 is still higher than the per capita consumption expenditure of urban residents in 2013, which indicates that the current consumption potential of rural residents in Guangdong Province is increasing.

4.2.2. Consumption Structure of Rural Residents

As can be seen from Figures 2 and 3, the consumption structure of rural residents in Guangdong Province has not changed much from 2013 to 2022, and the proportion is relatively stable. It mainly focuses on three categories: food, tobacco and alcohol, education, culture and entertainment, and housing, with the proportion of expenditure on food, tobacco and alcohol decreasing from 42.1% in 2013 to 40.3% in 2022, reflecting rural residents' increasing awareness of food quality and health. This shift is not only a quantitative decrease, but also a pursuit of quality and a change in lifestyle. Expenditure on education, culture and recreation grows from 8.9% in 2013 to 9.0% in 2022. As people's income level rises and their demand for spiritual and cultural activities increases, cultural and recreational activities gradually become an important part of their daily lives. Expenditure on housing grows from 21.2% in 2013 to 23.0% in 2022, indicating that the consumption structure in rural areas is constantly being improved and upgraded, and that consumption concepts and behavioral patterns are changing, as people begin to pursue the enhancement of quality of life and the satisfaction of personalized needs, and consumption becomes more diversified, a trend that signals that the rural

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consumption market will continue to expand in the future, and that the consumption structure will continue to move in a high-quality direction.

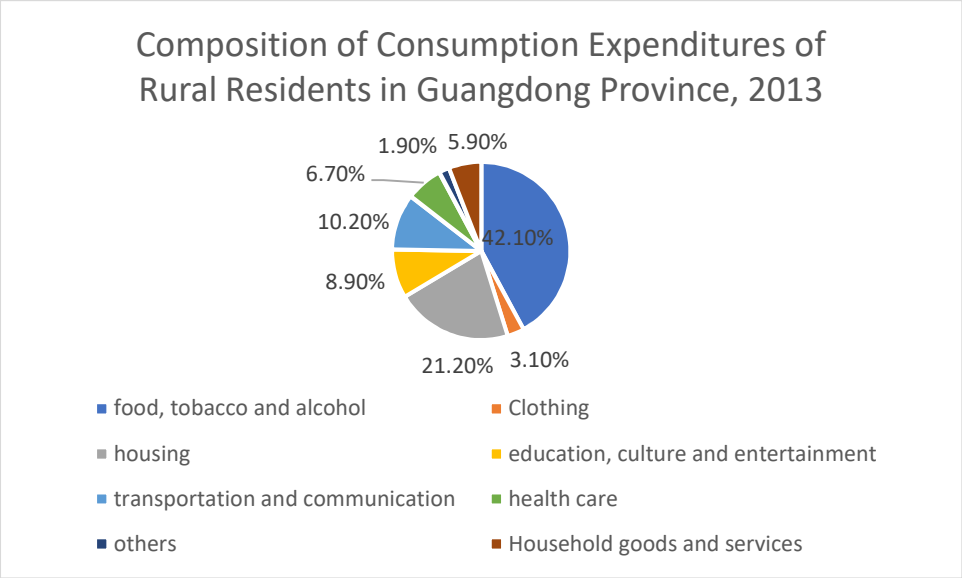

Figure 2. Composition of Consumption Expenditures of Rural Residents in Guangdong Province, 2013
Source: Guangdong Statistical Yearbook

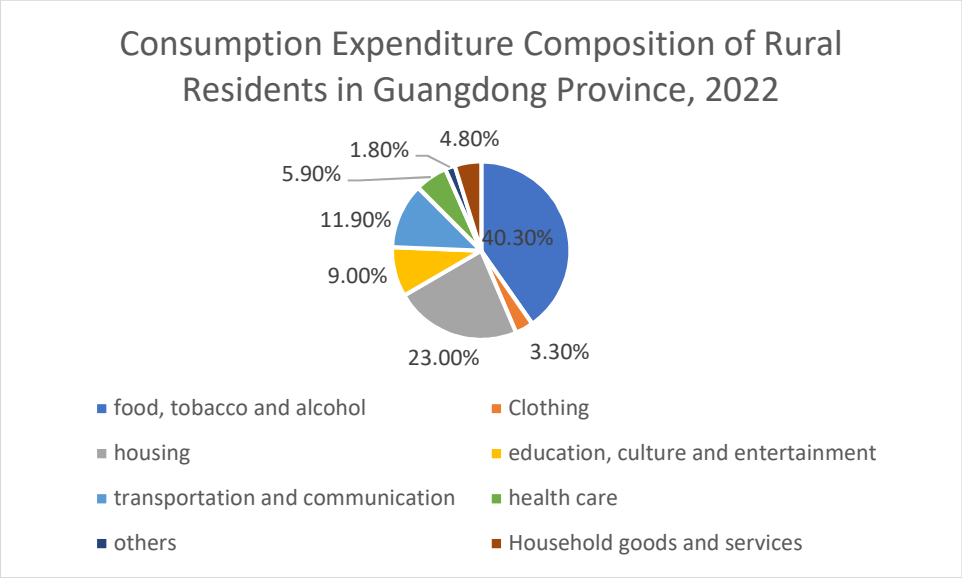

Figure 3. Consumption Expenditure Composition of Rural Residents in Guangdong Province, 2022
Source: Guangdong Statistical Yearbook

5. Empirical Analysis of the Impact of Digital Financial Inclusion on Rural Residents' Consumption in Guangdong Province

5.1. Research Hypothesis

Through reading, analyzing and summarizing the content of the article in many aspects, including the understanding of the theoretical level and the development status of Guangdong

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Province, understanding the relevant theories, and synthesizing the above analysis, the following research hypotheses are proposed:

Hypothesis 1: The impact of digital financial inclusion in Guangdong Province on rural residents' consumption is positive and significant.

Hypothesis 2: There are differences in the impact of digital financial inclusion on different regions in Guangdong Province. Guangdong Province is mainly divided into four regions: the Pearl River Delta (PRD), eastern Guangdong, western Guangdong, and northern Guangdong, and there are differences in the impacts arising from different regional development conditions.

Hypothesis 3: Digital financial inclusion in Guangdong Province can have an impact on rural residents' consumption through multiple pathways, and the impacts of these pathways are different. The impact on rural residents' consumption is different in different ways.

5.2. Data Sources and Modeling

5.2.1. Data Sources

The empirical software used in this paper is stata15. panel data of 20 prefecture-level cities (except Shenzhen) in Guangdong Province from 2013 to 2022 are selected as the study object, with a total sample size of 200. All variables selected are from the relevant data of the Peking University Digital Inclusive Finance Index 2011-2022 and the Guangdong Statistical Yearbook.

5.2.2. Model Setup

This paper takes Guangdong Province as an example, the main research object is rural residents' consumption, will analyze the impact that the development of digital inclusive finance will have on the research object, in order to further explore the relationship between the two, use the panel data of Guangdong Province's various prefectural-level cities to carry out an empirical analysis, and construct the model as follows:

$$lnc_{it} = \beta_0 + \beta_1 lndifi_{it} + \beta_2 lnincome_{it} + \beta_3 lngdp_{it} + \beta_4 urb_{it} + \beta_5 gov_{it} + \mu_{it} \quad (1)$$

where i denotes the 20 prefecture-level cities in Guangdong Province, t denotes one of the years 2013-2022, and logarithmic treatment is done for c, difi, income, gdp.lnc_{it} ,$lndifi_{it}$,$lnincome_{it}$, and$lngdp_{it}$ denote the natural logarithm of the four variables: rural per capita consumption expenditure, digital financial inclusion index, rural per capita disposable income and per capita GDP in city i in year t, respectively, and usingurb_{it} to denote the urbanization level of city i in year t, and gov_{it} to denote the government financial expenditure in city i in year t, andμ is the random disturbance term.

5.3. Variable Selection and Descriptive Statistics

5.3.1. Selection of Variables

(i) Explained variables

In this paper, the per capita consumption expenditure of rural residents in Guangdong Province from 2013 to 2022 is selected as an explanatory variable to better assess the consumption of rural residents in the prefecture-level cities of Guangdong Province, and the logarithm of it is taken and denoted as lnc.

(ii) Explanatory variables

In this paper, the digital financial inclusion index of Guangdong Province from 2013 to 2022 is selected as an explanatory variable to analyze the overall values of 20 prefectural-level cities as well as the numerical situation of different regions by taking the logarithm of it, which is denoted as lndifi.

(iii) Control variables

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(1) Disposable income per rural resident (lnincome)

Residents' income level largely determines their consumption expenditures, which can reflect the living standards of rural residents, and according to the principle of maximizing benefits, rural residents will choose the best way to consume when their incomes are determined. Therefore, this paper adopts the per capita disposable income of rural residents to measure their income level, taking its logarithm for measurement.

(2) GDP per capita (lngdp)

GDP per capita serves as a measure of the level of economic development of a region and the standard of living of its inhabitants, and as the level of economic development increases, the environment faced by rural inhabitants also changes. The higher the index, the better the quality of life of the residents. Therefore, the logarithm of GDP per capita is chosen as a proxy in this paper.

(3) Level of urbanization (urb)

The level of urbanization is an indicator of the degree of regional economic development. The higher the level of urbanization, the faster the process of urbanization, and the concentration of the rural population in the urban areas brings about an increase in the income of the rural residents and enhances the consumption capacity of the rural residents. Therefore, this paper chooses the proportion of the resident population in urban areas to the total resident population in Guangdong Province to indicate the urbanization level.

(4) Government financial expenditure (gov)

Government fiscal expenditure largely represents the economic level of the region, and when the government spends more, the more capital is invested, thus promoting its economic development. Therefore, this paper chooses the ratio of government general public budget expenditure to GDP to represent government fiscal expenditure.

5.3.2. Descriptive Statistics

This paper descriptively analyzes the data related to the regression model by Table 2, which shows that the total sample size is 200.

First, from the explanatory variables, after taking the natural logarithm of the per capita consumption expenditure of rural residents, the average value is 9.525, showing the overall trend of improving the consumption level of residents in rural areas, but at the same time, its value is the largest of 10.35, with a difference of 1.556 from the smaller value, which is still a big difference between the two.

Next, in terms of explanatory variables, the logarithm of the digital financial inclusion index is taken for analysis, and its largest value is 5.819, while the smallest value is 4.750, with a difference of nearly 1.1, showing the unevenness in the development of digital financial inclusion in various prefectures and cities in Guangdong Province. Some regions have achieved rapid development, while some appear to be lagging behind. This status quo of uneven development is not beneficial and may have far-reaching effects on the long-term development of the economy and the quality of life of residents.

Finally, from the four control variables, the average value of lngdp is 10.85, and the maximum and minimum values are 12.01 and 9.852, indicating that there is still a difference in the level of per capita GDP in different areas of prefectural cities, and that the areas with a lower level of per capita GDP still need to be improved, and are still facing a great challenge in promoting the growth of the local economy and upgrading the living standards of the people. The maximum value of income is 10.72, and the minimum value is 9.079, without taking logarithm, the values are 45,135.8 and 8,772.6 respectively, a difference of five times, indicating that there is still a large gap, and when the income is more, it also represents a better economy in the region. urb's mean value is 62.21, and the minimum and maximum values are respectively 37.51, 95.22,

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indicating that there are obvious differences between urban and rural areas in the prefectures and cities of Guangdong Province, which are not only manifested in the aspects of life, but also at the social level, and that there is an imbalance between urban and rural development, and the current trend of urbanization will continue to increase, and the state has been promoting the development of the countryside through the implementation of favorable measures to achieve the effective integration of urban and rural areas, and to promote urban-rural regional coordination. The maximum value of gov is 0.399, while the minimum value is only 0.069, which indicates that the governments of the prefectural-level cities in Guangdong Province make financial expenditures according to the level of economic development, with the purpose of promoting the overall improvement of the economy through reasonable financial inputs.

Table 2. Descriptive statistics

Variable type	Variable Definition	variable symbol	sample size	average value	(statistics) standard deviation	minimum value	maximum values
explanatory variable	Consumption expenditure per rural inhabitant	lnc	200	9.525	0.341	8.794	10.35
explanatory variable	Digital Inclusive Finance Index	lndifi	200	5.390	0.275	4.750	5.819
control variable	Per capita disposable income of rural residents	lnincome	200	9.784	0.370	9.079	10.72
	GDP per capita	lngdp	200	10.85	0.487	9.852	12.01
	urbanization level (of a city or town)	urb	200	62.21	17.95	37.51	95.22
	Government expenditure	gov	200	0.173	0.073	0.069	0.399

Data source: Peking University Digital Inclusive Finance Index, Guangdong Statistical Yearbook.

5.4. Empirical Evidence Process

5.4.1. Model Testing

This paper uses panel data for model construction, in order to select the analytical model suitable for empirical research, after passing the test of three models, the most suitable model is selected for the research and analysis of this paper. As can be seen from Table 3, the use of F test and LM test to verify the method, the results yielded two methods of P value of 0.0000, the value of the 1% level of significance, so the original hypothesis should be rejected, choose one of the fixed and stochastic models. The Hausman test shows that P=0.0008, at which point the original hypothesis is rejected and the fixed effects model is finally chosen as the best model.

Table 3. Test results

original hypothesis	Test Methods	P-value	reach a verdict
Mixed OLS effects outperform fixed effects models	F-test	0.0000	rejection
Mixed OLS effects outperform random effects models	LM test	0.0000	rejection
Random effects models are superior to fixed effects models	Hausman test	0.0008	rejection

Standard errors in parentheses* $p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

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5.4.2. Correlation Analysis

The relationship between the variables is clarified through correlation analysis, according to the data in Table 4, the p-value of the explanatory variables lndifi and lnc is less than 1% and the statistical value is greater than zero, which indicates that the two sides have a promotional relationship with each other. The significance level of the control variables lnincome, lngdp, urb and lnc are all 1%, which indicates that the choice of control variables is effective and the model has the significance of conducting the research, in which the control variables gov and lnc are significant at the 1% level but negatively correlated, so it can be seen that the government's financial investment in the rural areas does not promote the economic development of the rural areas, and to a some extent constitutes an important factor that hinders its healthy development.

Table 4. Correlation analysis

	lnc	lndifi	lnincome	lngdp	urb	gov
lnc	1.000					
lndifi	0.854***	1.000				
lnincome	0.971***	0.807***	1.000			
lngdp	0.799***	0.582***	0.843***	1.000		
urb	0.688***	0.355***	0.712***	0.814***	1.000	
gov	-0.267***	-0.0100	-0.357***	-0.545***	-0.539***	1.000

Standard errors in parentheses* p < 0.1,** p < 0.05,*** p < 0.01.

5.4.3. Regression Analysis

(1) Baseline regression analysis

After going through the correlation analysis in the previous section, the model that conforms to the research of this paper is used to conduct a benchmark regression analysis of digital financial inclusion and rural residents' consumption, taking the variables to be added to the regression one by one for analysis.

Column (1) considers the effect of the explanatory variables on the explanatory variables alone, the regression coefficient of the variable lndifi is 1.062, and R^2 is 0.729, p less than 0.01, which is statistically significant at the 1% level of significance, i.e., when the index of digital financial inclusion increases or decreases, the per capita consumption expenditure of rural residents will follow the same direction of change by 1.062%, which proves that digital financial inclusion has a promotional effect on rural residents' consumption, and hypothesis 1 is valid. residents' consumption, hypothesis 1 is valid.

Columns (2) to (5) show the results of adding the control variables, and it can be seen that the regression coefficients for digital financial inclusion are all positive and significant. Column (2) is the regression result of adding the first control variable lnincome, it can be seen that the regression coefficient is 0.747, with 1% significant level, and the regression coefficient is reduced compared with the case of no control variable, and from column (5), it can be known that, when lndifi increases by every percentage point, lnc will increase by 0.300%, which shows that there is a promoting relationship between the two. Column (3) is the regression result of adding the second control variable lngdp, the result of this column changes a lot, after adding the control variable, the regression coefficient changes from positive to negative, and there is no obvious significance, it can be shown that the addition of this control variable does not play a certain role in promoting rural consumption in general. The (4) column is the regression result of adding the third control variable urb, the regression coefficient is 0.003, p-value is less than 0.01, which shows that the overall regression has a more significant trend after the addition of urbanization, lngdp still presents a negative state, the (5) column is the regression

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result of the fourth control variable gov, the regression coefficient of gov is 0.228, p-value is still less than 0.01, is significant. 0.01, which is significant and reveals that the various government expenditures will effectively increase the consumption capacity of villagers. From the last column, we can see that only the regression coefficient of lngdp shows a negative trend, indicating that with the increase of GDP per capita, the expenditures at the social level, such as infrastructure, public services, etc., will increase accordingly, which may ultimately reduce the consumption level of rural residents.

Table 5. Benchmark regression analysis

	(1)	(2)	(3)	(4)	(5)
VARIABLES	lnc	lnc	lnc	lnc	lnc
lndifi	1.062***	0.248***	0.248***	0.336***	0.300***
	(0.046)	(0.031)	(0.033)	(0.034)	(0.036)
lnincome		0.747***	0.749***	0.664***	0.677***
		(0.023)	(0.037)	(0.037)	(0.037)
lngdp			-0.001	-0.063***	-0.043*
			(0.020)	(0.022)	(0.023)
urb				0.003***	0.003***
				(0.001)	(0.000)
gov					0.228***
					(0.086)
Constant	3.803***	0.877***	0.877***	1.717***	1.518***
	(0.248)	(0.134)	(0.135)	(0.192)	(0.204)
N	200	200	200	200	200
R^2	0.729	0.957	0.957	0.963	0.964

Standard errors in parentheses* p < 0.1,** p < 0.05,*** p < 0.01.

(2) Regression analysis in different regions

After analyzing the regression results of the impact of digital inclusive finance on the consumption of rural residents in each prefecture-level city in Guangdong Province, the regression analysis of the impact on different regions is carried out, the development of each region is different, and in general, the development of the better economic regions will be better, and regional differences will also make the degree of development of digital inclusive finance show an imbalance, as can be seen in the previous text, the PRD region's digital inclusive finance development is faster, the while non-Pearl River Delta regions are lagging behind.

The impact of digital financial inclusion on the consumption of different regions is not the same, from the first line of regression coefficients can be seen that the development of digital financial inclusion will have a positive effect, to a large extent, also has regional differences, for each region to promote the effect is not the same, the assumption that 2 holds. From the regression results in Tables 6, it can be seen that the regression coefficient of digital financial inclusion in the Pearl River Delta region is 0.629, p less than 0.01, and the regression coefficient of digital financial inclusion in the northern part of Guangdong Province is 0.398, which is significant at the level of 1%, and the effect produced by these two regions is positive and significant, and as the core of the economy in the Pearl River Delta region, the contradiction between the traditional concepts of life of the rural residents has been gradually dissolved. dissolved, and digital inclusive finance, with its unique advantages, has quickly gained wide recognition and acceptance among rural residents. The northern part of Guangdong has long faced the problem of incomplete coverage of financial services, but the development of digital inclusive finance

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not only breaks down the old barriers to financial services, but also effectively fills the gaps in the rural financial market, so the northern part of Guangdong shows a strong and significant positive impact on digital inclusive finance, and the consumption behavior of the rural residents has changed positively as a result. While the regression coefficients for the eastern and western regions of Guangdong are 0.138 and 0.100 respectively, the p-value is not significant, and these two regions have a positive effect, but there is no significant effect. The conditions of these two regions are relatively backward compared to the Pearl River Delta region, especially in terms of infrastructure construction and Internet penetration, so digital financial inclusion can bring positive effects for them, and the significance of this effect is much weaker than that of the other two regions, and although the significance is not very strong, it is also effective in promoting the economic development of these two regions in many aspects.

Table 6. Regression analysis for different regions

	(1)	(2)	(3)	(4)
	Pearl River Delta	Eastern Guangdong	western Guangdong	northern Guangdong
VARIABLES	lnc	lnc	lnc	lnc
lndifi	0.629***	0.138	0.100	0.398***
	(0.090)	(0.182)	(0.210)	(0.118)
lnincome	0.536***	0.798***	0.726***	0.598***
	(0.077)	(0.218)	(0.190)	(0.171)
lngdp	-0.226*	0.072	0.238	-0.004
	(0.119)	(0.185)	(0.250)	(0.162)
urb	-0.006	-0.005	-0.007	-0.003
	(0.004)	(0.011)	(0.007)	(0.005)
gov	-0.013	0.289	-0.083	0.160
	(0.479)	(0.401)	(0.720)	(0.182)
Constant	3.930***	0.503	-0.365	1.691*
	(0.835)	(0.983)	(2.233)	(0.992)
N	80	40	30	50
R^2	0.975	0.980	0.985	0.988

Standard errors in parentheses* p < 0.1,** p < 0.05,*** p < 0.01.

(3) Regression analysis of different impact pathways

As can be seen from the content of in the previous text, digital financial inclusion has an impact mainly through four impact pathways, Table 7 shows the impact pathway regression results, due to the missing data of digital finance 2013, the three aspects of digital payment, digital insurance and digital credit are chosen to analyze the impact pathways. Table 7 shows that the coefficient of digital payment is 0.156, with a p-value of less than 0.01, which indicates that the emergence of digital payment will bring more convenience to people, and they don't need to go through the cash payment method to make consumer payments, and the cash payment has certain risks, such as it will be stolen by unscrupulous people, and the use of counterfeit banknotes. The coefficient of digital credit is 0.123, which is statistically significant at the 1% significance level. Consumer credit computerizes the process of applying for a loan, combines new technology with innovation, and satisfies a wider and broader range of consumers, and people will be more willing to choose a convenient and efficient way of carrying out the loan operation, which will greatly contribute to the development of this way. The coefficient of the digital insurance index is 0.038, which is significant at the 10% level, and it can be seen that the significance of digital insurance is not as significant as the significance effect of the other two

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pathways, insurance after the addition of digitalization, the purchase of insurance will become very convenient, do not have to go through the process of purchasing insurance with the insurance seller offline, and only need to buy the appropriate insurance according to the current consumption of their own, however, in rural areas However, people in rural areas do not buy insurance because they are less aware of risks or think that insurance is not beneficial. The above analysis of the three pathways shows that hypothesis 3 is valid. This shows that digital payment and digital credit have a significant driving effect on rural residents' consumption expenditure, while the positive effect of digital insurance route is not obvious enough.

Table 7. Regression analysis of different impact pathways

	(1)	(2)	(3)
	digital payment	digital insurance	digital credit
VARIABLES	lnc	lnc	lnc
lnpayment	0.156***		
	(0.021)		
lninsurance		0.038*	
		(0.022)	
lncredit			0.123***
			(0.028)
lnincome	0.797***	0.864***	0.842***
	(0.043)	(0.049)	(0.046)
lngdp	0.050	0.167**	0.110*
	(0.059)	(0.065)	(0.064)
urb	-0.004*	-0.009***	-0.008***
	(0.002)	(0.003)	(0.002)
gov	-0.191	0.506***	0.171
	(0.170)	(0.160)	(0.172)
Constant	0.633**	-0.509*	-0.052
	(0.309)	(0.304)	(0.310)
N	200	200	200
R^2	0.978	0.971	0.974

Standard errors in parentheses* p < 0.1,** p < 0.05,*** p < 0.0.

6. Conclusion

This paper centers on the impact of digital inclusive finance on rural residents' consumption to carry out an in-depth study, including the theory, the current situation and empirical analysis of three aspects, synthesize the summary of each chapter, and draw the following research conclusions:

(1) The digital financial inclusion index curve for Guangdong Province shows a steady upward trend from an overall perspective, with the highest degree of digitization level, and relatively low breadth of coverage and depth of use from different dimensional indicators. From a regional perspective, the Pearl River Delta (PRD) region is the most developed, followed by western and eastern Guangdong, and finally northern Guangdong.

(2) The growth rate of consumption expenditures of rural residents in Guangdong Province is rising rapidly, and the level of consumption has increased, but it is still slower than that of urban consumption expenditures, indicating that there is still a lot of room for progress in the consumption of rural residents.

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(3) The baseline regression analysis shows that when the gradual addition of control variables is carried out, digital inclusive finance in Guangdong Province has a positive effect on the consumption of rural residents, indicating that the consumption in rural areas has improved, which in turn promotes the upgrading of consumption demand.

(4) By analyzing different regions in Guangdong Province, it can be seen that the Pearl River Delta region and the northern part of Guangdong Province are positively affected by the development of digital inclusive finance, while the positive impact on the eastern and western parts of Guangdong Province is not significant. The analysis of different impact pathways shows that both digital payment and digital credit produce positive and significant effects, while digital insurance produces a weaker significant impact.

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