

# Analysis of the Impact of Digital Finance Development on Household Consumption of Urban and Rural Residents in China

## -- Microscopic Evidence from Chinese Families

Yanjiao Huang<sup>1</sup>, Tao Xu<sup>1</sup>, Yan Yin<sup>1</sup>, Zejiong Zhou<sup>2,\*</sup>

<sup>1</sup>School of Finance, Anhui University of Finance and Economics, Bengbu, Anhui, China

<sup>2</sup>School of Economics, Anhui University of Finance and Economics, Bengbu, Anhui, China

\*aczzj123456@163.com

### Abstract

In recent years, China's digital finance has developed rapidly, profoundly changing the way residents live and consume. Especially in the context of China's Urban-rural dual economic structure, the impact of digital finance development on urban and rural household consumption is significantly different. The dual structure of urban and rural areas and the development model of financial efficiency and fairness have led to the imbalance between urban and rural development in China's financial system. Many economically backward rural areas have lagged behind in financial development. Digital finance has expanded the coverage and service scope of Inclusive Finance, and changed people's lifestyle and consumption habits. Realize the docking of consumption willingness and consumption capacity. Narrow the gap between urban and rural consumption. The study shows that the development of digital finance has significantly increased the consumption level of urban and rural households, but overall the impact on the consumption of urban households has been greater. Specifically, the depth of use of digital finance has a greater impact on the household consumption of urban residents, and the breadth and degree of digital financial coverage have a greater impact on the consumption of rural households. Further research found that there are differences in the impact mechanism of digital financial development on household consumption of urban residents and rural residents: The development of digital finance mainly promotes the consumption of urban households by increasing residents' incomes and reducing the uncertain risks faced by households, and increases the consumption of rural households by facilitating payment and alleviating liquidity constraints.

### Keywords

Digital Finance; Household Consumption; Urban-rural Disparities; Influence Mechanism; Urban-rural Development Gap.

### 1. Introduction

Digital finance is the biggest innovation in the financial field in the Internet era. With the help of Internet channels to communicate information, it has a wide coverage and real financial institutions. By collecting a large amount of user information, financial institutions can more accurately analyze user information and determine credit limit. Digital Finance Development helps to improve the market environment, optimize industrial development, and increase residents' income. Obviously, there will be a potential impact on the consumption of urban and rural residents, but in the current study, there are relatively few analyses on the development of digital finance and the consumption structure of urban and rural residents. Similarly, there are few studies analyzing the relationship between digital finance and the structure of urban

and rural consumption. The data shows that the consumption rate of Chinese residents is from 53.1% in 1981 fell to a historical low of 35.4% (1) in 2010, and then began to slowly increase, in the same period, China's digital finance developed rapidly, this related development has aroused widespread concern among domestic scholars, further research found that there are significant urban and rural differences between the two. Benefiting from technological progress, digital finance is strengthening the role of finance in promoting residents' consumption by reducing costs, improving the quality and scope of financial services, and expanding access to financial services.

The development of digital finance in China mainly depends on the rapid development of e-commerce industry. Since 2007, China's e-commerce has been gradually recognized by consumers. However, it can become an important supplement to daily consumption. E-commerce also needs to be new Xing's settlement method, from which a digital currency was born, in order to better solve the number. The settlement problem of word currency supervision, digital finance came into being. A variety of functions such as wealth management, loans, leasing, insurance and credit have gradually become an important complement to the traditional financial sector. Combined with the conclusions of existing studies, it is not difficult to find that in the context of the new normal of the economy. Next, it is imperative to improve the urban and rural consumption structure of our country, for the development of digital finance. An in-depth analysis of the role may be able to solve the problem of alienation of urban and rural consumption structure questions to help. At present, the differences in the impact of digital finance on urban and rural residents' household consumption are limited to a simple heterogeneity analysis, and there are few research results that combine the differences in income, uncertainty, credit constraints, and consumption environment faced by urban and rural residents to specifically analyze them. Therefore, it still needs further verification whether the impact of digital finance on household consumption is stable, whether the impact on the consumption of urban and rural households, and whether there are differences in the impact mechanism.

## 2. Literature Review

Nowadays, digital finance has penetrated into all aspects of people's lives. Research on the development of digital finance and its impact has gradually become a hot topic among scholars at home and abroad. All along, scholars at home and abroad have fully studied the factors affecting the consumption of Chinese residents. Consumption, simply put, is the process by which consumers use social products to meet a range of needs. As one of the three carriages to promote China's economic development, it is not only the last step of the continuous renewal of the production process, but also the key link of the production process, which can be divided into production consumption and personal consumption. Since the gap between income and consumption has always attracted the attention of scholars from all over the world, the research on the two is of vital significance for China to narrow the gap between urban and rural areas, achieve common prosperity, and build a moderately prosperous society.

Judging from the existing literature, there are relatively few studies on the impact of digital finance on the gap between urban and rural consumption, and most articles still analyze its impact on the gap between urban and rural consumption on the basis of traditional finance. Or the relationship between digital finance and urban and rural income gap as a research object to be demonstrated. However, starting from China's basic national conditions, under the background of the long-term existence of the dual economic structure of urban and rural areas, there is a significant gap between the consumption level of rural residents and urban residents in China. This gap has hindered the process of Urban-rural integration, which not only has a very adverse impact on the coordinated development of urban and rural areas, but also is not

conducive to the smooth operation of the economy. However, with the rapid development of digital finance, the consumption gap between urban and rural residents in China has also changed greatly.

Furthermore, digital finance benefits from technological advances and can It is enough to make up for the shortcomings of traditional finance to a certain extent, and the impact on residents' consumption also shows some different characteristics. Jiang Hongli believes that digital finance increases the consumption rate of residents and promotes the upgrading of consumption structure by narrowing the income gap between urban and rural areas and optimizing the industrial structure [1]. Zou Xinyue et al found that the development of digital inclusive finance can promote the improvement of per capita residents' consumption level by raising the income level of residents, and the impact of digital inclusive finance on the western region is greater than that in the eastern region [2]. Chen Xiaoxia found that the development of digital inclusive finance can act on consumption upgrading through the income mechanism, and has a greater impact on low-income areas and areas with high levels of digital inclusive financial development [3]. Through the analysis of CFPS data, Yi Xingjian et al found that digital inclusive finance can promote the improvement of residents' consumption level by alleviating liquidity constraints and facilitating residents' payment, and the development of digital inclusive finance has a more significant role in promoting consumption expenditure in rural areas and low- and middle-income consumer groups [4]. Based on CHFS data in 2013, Xie Jiazhi et al found that digital finance eased household credit constraints, thereby promoting household consumption expenditure, and digital finance was for low-income families and rural households [5]. The incentive effect of court consumption is more obvious. Based on CFPS data, Zhang Xun et al found that the development of digital finance promotes consumption growth by facilitating payment and reducing uncertainty [6], and the promotion effect of digital inclusive finance development on the consumption expenditure of urban residents is more significant, and only the mechanism of promoting urban residents' consumption is analyzed in the mechanism analysis [7].

Based on the above literature review, it is not difficult to find that the research on the relationship between digital finance and the impact of resident consumption is limited and there is still room for further exploration. Without in-depth research on the underlying mechanism of differences, it is interpreted only at the income level: Digital finance can narrow the income gap between urban and rural areas, and the promotion effect on the income of rural residents is more significant, but some people believe that digital finance has a greater effect on the income of urban residents. Therefore, this paper selects appropriate research variables to analyze the impact of digital finance on the consumption gap between urban and rural residents, and makes suggestions on the basis of theoretical and empirical analysis to study the impact of digital finance on the consumption of urban and rural residents.

### **3. Mechanism of Digital Finance Affecting Household Consumption**

Digital finance is a financial development model applied to traditional financial services by the Internet and information technology. Financial institutions and Internet enterprises combine information technology with financial services such as payment and settlement, credit, savings, investment and insurance, which have an impact on traditional financial models. Many innovative financial products are conducive to providing financial services. Differentiated products can meet the different needs of customers under fierce market competition, use big data to improve the risk control system, alleviate information asymmetry and risk ethics, and comprehensively improve the risk control ability of finance. Digital finance is inclusive and is a supplement and important development direction of inclusive finance. Financial inclusion is committed to addressing and providing solutions to constraints that prevent people from

participating in the financial sector. In particular, financial services are provided to groups that have long been financially excluded. Make financial services work for all and promote balanced development of the financial system.

Digital finance relies on information technology, breaking the constraints of time and space, and financial services can realize resource allocation functions in new models, organizational forms and business processes. Reduce the operating costs of the branches of physical financial institutions and reach rural areas with the advantages of low cost, wide coverage and high efficiency; Digital finance improves the preservation and appreciation of rural residents' assets through financial innovation products, optimizes the allocation of market resources, allows rural areas that have long been excluded by financial development to enjoy diversified financial services, and improves the objectivity and rationality of financial services. The development of digital finance has lowered the threshold of various transactions, improved the personal credit reporting system and credit risk management mechanism, increased the participation of the digital inclusive financial market, improved the humanization and initiative of finance, and many ordinary people can also participate in it.

The development of digital finance has further improved the inclusive financial system, and it has an impact on the traditional financial development pattern. This in turn affects the way people live. Thanks to the development of information technology, people can complete financial business on mobile phones. Internet financial business breaks the constraints of time and space, Simple operation, timely completion, low handling fee, open and transparent information, the above advantages have led people to increase the use of Internet financial services. Lifestyles and consumption habits have also changed. The specific mechanism of the development of digital finance affecting residents' consumption can be divided into the following aspects.

First, the development of digital finance has improved the convenience of payment. Through mobile payment, consumption has realized a leap in time and space, reducing the cost of consumption; the quota limit has been lifted, and consumers do not have to be suppressed by insufficient cash consumption impulse, which can increase the randomness and surprise of consumption; enriches the application scenarios of life, brings consumers different consumer psychological experiences, and also makes consumers' decision-making more rapid and can promote more active consumption behavior. Mobile payment organically combines financial institutions, mobile terminals and the Internet, residents can use mobile phones to make monetary payments, and can also pay various living expenses online, realizing real-time transfer and cross-local settlement, which greatly facilitates the lives of residents. The shopping platform provided by e-commerce breaks the offline mode of shopping, mobile payment shortens the shopping time, reduces the cost of shopping on the margin, improves the marginal utility of consumption, and the products of the e-commerce platform are invested in genuine insurance, order insurance, freight insurance and other insurance types, protecting the legitimate rights and interests of consumers, improving residents' consumption confidence, and stimulating residents to increase consumption. With the in-depth promotion of inclusive finance and the gradual improvement of rural infrastructure, digital finance has benefited rural areas, and the frequency of mobile payment methods in rural areas has been increasing, and the use groups have been expanding, so as to realize the docking of consumption willingness and consumption channels, thereby releasing the vitality of rural consumption.

Second, the development of digital finance eases liquidity constraints. When there are liquidity constraints, residents increase their savings to prevent uncertain spending, and consumption decreases, while the development of digital finance expands financing channels and reduces many restrictions when applying for loans. China's credit card penetration rate is low, most residents, especially in rural areas, lack credit records and no materials to prove their credit qualifications, while the development of digital finance uses information technology to collect

data such as online shopping, payment, and social networking that people use every day to provide personal information for credit records. Internet financial products use Huabei, borrowing and other services, equivalent to opening an additional credit card for residents, according to the consumer's online shopping records and credit rating to grant users different levels of consumption quota, "first consume, then pay" consumption model to achieve the docking of consumer demand and purchasing power, can reduce liquidity constraints, promote consumption.

Wu Yu and other studies have found that the development of digital finance can make people square the quick access to credit funds has had a certain substitution effect on traditional private lending, thus significantly reducing the traditional private borrowing needs of households. For a long time, it has been difficult for rural residents to obtain formal credit services, and the main source of funds is the mutual borrowing of families, relatives and friends, etc. This kind of liquidity constraint has seriously inhibited the consumption growth of rural residents. The substitution effect of digital finance on private lending channels can help alleviate the liquidity constraints of rural residents, thereby promoting rural residents' consumption. For urban residents, although there is a certain coverage of formal credit services, the existence of a large number of informal loans also shows that there is insufficient supply of formal credit or the phenomenon of financial repression. Whether digital finance has a difference in alleviating the liquidity constraints of urban and rural residents needs further testing.

Third, digital finance can reduce uncertainty and thus enhance consumer willingness. According to the random wandering hypothesis and the precautionary savings hypothesis, households face large uncertainties that have a great impact on consumption, and families save preventively to prevent future uncertainties from reducing consumption. He Zongyu and other research found that digital finance can promote the consumption of urban residents by reducing the uncertainty of urban residents' expenditure.

On the one hand, digital finance enriches the way of household wealth management, and reasonable asset investment by households can better diversify risks, reduce the risks caused by income uncertainty, and then stabilize households' expectations for future consumption and enhance their current willingness to consume. On the other hand, digital insurance has enriched the sales channels of insurance and improved the insurance product and service system. The inclusive nature of digital insurance can stimulate the purchase demand of potential insurance consumers and promote the increase of insurance consumption, and empirical research has found that digital insurance can promote the increase in the density of property insurance and accident insurance. Insurance can alleviate the uncertain risks caused by emergencies in the family, improve the ability to resist risks, enhance the stability of income, and thus enhance the willingness to consume. The effectiveness of the household portfolio was significantly positively correlated with family financial literacy, and the demand for family insurance was significantly positively correlated with family financial literacy. Studies show that the financial literacy of Chinese residents is generally low, but the higher the level of education, the higher the level of wealth and the higher the degree of risk appetite, the higher the level of financial literacy of residents, so urban households may have a higher level of financial literacy. That said, the impact of digital finance on the effectiveness of household portfolios and the impact of insurance consumption may have Urban-rural differences.

## **4. Research Design**

### **4.1. Data Sources and Variable Selection**

Digital financial data from Peking University Digital Inclusive Finance Index, the effectiveness of the index has been fully tested, in recent years, more and more digital finance research

literature using the index in China's digital finance development and its impact to study, data value has been effectively verified. Household consumption and control variable data are from the China Household Finance Survey (CHFS) of Southwestern University of Finance and Economics. The object contains all members of the sample family. The explanatory variables in this paper are the total household consumption, rural household consumption and urban household consumption; the core explanatory variables use the provincial-level digital inclusive finance index to measure the degree of digital financial development in various provinces in China. The controlling variables are: First, total household income and total assets. The controlling variables are: First, total household income and total assets. Second, the head of household characteristic variable and the family characteristic variable. Third, economic development variables. This paper uses GDP per capita in household locations as a substitute variable for regional economic development variables. According to the price index and the total price index corresponding to the various consumption expenditures in the province where the household is located, the value variables involved in the article include consumption, income, assets and per capita GDP, which are based on the 2011 base period. The price is deflated and logarithmic. Other variables include whether the household uses a credit card, the method of payment the household, and whether the family is in the city or the countryside.

#### 4.2. Empirical Model

We use a short-panel fixed-effect model to analyze the impact of digital financial development on household consumption, and the regression model is as follows:

$$\ln C_{ijt} = \beta_0 + \beta_1 \ln DF_{jt} + \beta_2 X_{ijt} + \varphi_i + \varepsilon_{ijt} \quad (1)$$

Where, subscripts  $i$ ,  $j$  and  $t$  indicate the family individual, the province portions and time,  $C_{ijt}$  is the interpreted variable the consumption level of residents;  $DF_{jt}$  is the core explanatory variable digital financial development;  $X_{ijt}$  represents the household characteristic variables, head of household characteristic variables, and economic development variables that may affect household consumption;  $\varphi_i$  represents the household fixed effect; and  $\varepsilon_{ijt}$  is a random perturbation term. In the analysis of the mechanism test, the mediation effect model is used to verify the impact mechanism of digital finance on the total household consumption.

### 5. Empirical Research Results and Analysis

We estimate the model (1) based on the total household consumption as the dependent variable, and obtain the impact of digital financial development on the total household consumption of residents, and the regression results are as shown in Table 1.

After gradually adding regional characteristic control variables, household characteristic control variables and household head characteristic control variables, it can be seen that the digital finance development system is significantly positive in the total sample, rural sample and urban sample, that is, the development of digital finance can significantly promote the improvement of the total household consumption of residents, but the promotion effect of digital finance on the total household consumption of urban residents is higher than that of rural households. This is mainly due to the impact of digital finance development on the consumption of urban and rural residents, which will be affected by the "digital divide" between urban and rural areas. Obviously, the internet coverage is not. It has expanded, but there are still obvious Urban-rural differences. Due to the uneven development of infrastructure construction and the obstacles to the popularization of digital technology, some rural residents

lack digital financial tools, knowledge related to digital technology, and financial literacy, and cannot benefit from the development of digital finance.

**Table 1.** Digital finance development and household consumption: Benchmark regression

Index	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)
	Total sample		Rural families		Town family	
Digital financial development	0.392*** (0.011)	0.383*** (0.018)	0.302*** (0.019)	0.333*** (0.033)	0.460*** (0.014)	0.419*** (0.021)
Household income		0.032*** (0.003)		0.027*** (0.005)		0.036*** (0.004)
Control regional characteristics	no	yes	no	yes	no	yes
Control family characteristics	no	yes	no	yes	no	yes
Control the characteristics of the head of the household	no	yes	no	yes	no	yes
The household fixation effect	yes	yes	yes	yes	yes	yes
Number of samples	26649	26649	10788	10788	15861	15861
R <sup>2</sup>	0.069	0.103	0.035	0.069	0.106	0.142

The development of digital finance is a comprehensive indicator, which takes into account the breadth of coverage, depth of use and degree of digitization of digital finance, and mainly integrates the role of digital finance in payment, insurance, credit, monetary funds and investment. Given that the development of digital finance is multi-dimensional, it is necessary to examine the impact of each sub-index on the household consumption of urban and rural residents.

According to Table 2, the secondary indicators of digital financial development have significantly promoted the total household consumption of urban and rural residents. It can be seen that the breadth of coverage on the promotion of rural residents' household consumption is greater than that of cities and towns, and the coverage breadth mainly measures the extent to which digital finance can ensure that users receive corresponding services, that is to say, with digital finance being able to benefit more people, the promotion effect on rural residents' household consumption is greater. Similarly, the degree of digitalization on the rural residents' household consumption to promote the role is greater than that of cities and towns, the degree of digitalization mainly reflects the convenience of digital finance, low cost and low threshold advantages, when digital finance can benefit people who originally did not have formal financial services in a convenient way and at a lower cost, it will have a greater role in promoting the consumption of rural residents' families. The use of depth of use of rural residents to promote the consumption of rural households is less than that of cities and towns, the depth of use is mainly measured from the perspective of covering the types of financial services, the depth of use will be subject to the residents' own education level, risk attitude and financial literacy, etc., therefore, urban residents' household consumption may be more able to benefit from the in-depth development of digital finance.

**Table 2.** The development of digital finance and household consumption of urban and rural residents: Secondary indicator regression

Index	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)
	Rural families			Town family		
Breadth of coverage	0.369***			0.348***		
	(0.034)			(0.024)		
Use depth		0.145***			0.183***	
		(0.053)			(0.036)	
Degree of digitization			0.461***			0.431***
			(0.045)			(0.031)
Control regional characteristics	yes	yes	yes	yes	yes	yes
Control family characteristics	yes	yes	yes	yes	yes	yes
Control the characteristics of the head of the household	yes	yes	yes	yes	yes	yes
The household fixation effect	yes	yes	yes	yes	yes	yes
Number of samples	10788	10788	10788	15861	15861	15861
R <sup>2</sup>	0.074	0.059	0.071	0.144	0.129	0.144

## 6. Conclusions and Suggestions

With the development of China's digital financial system, digital finance provides an effective path for improving the urban and rural economy, serving small and micro enterprises, and achieving financial inclusion. In the same period, the consumption rate and final consumption rate of residents also began to slowly increase, in this context, we studied the impact of digital finance development on the consumption level of urban and rural households in China from a micro perspective. The empirical results show that digital finance can significantly increase household consumption expenditure and have a greater impact on the household consumption of urban residents, while the coverage breadth and degree of digitalization of the secondary indicators of digital finance development have a greater impact on the household consumption of rural residents, and the depth of use has a greater impact on the household consumption of urban residents.

The paper further analyzes the reasons for the above differences, and the study finds that there are differences in the impact mechanism of digital finance development on the household consumption of urban residents and rural residents: first, in urban and rural households, digital finance can promote household consumption by reducing the uncertainty faced by households, which has a greater impact on urban residents; second, digital finance can promote the consumption of urban households and rural households through convenient payment, and has a greater impact on rural residents; third, Digital finance can promote household consumption in rural areas by alleviating liquidity constraints, and the impact on urban households is not significant. In summary, in urban households, digital finance mainly improves household consumption capacity and enhances household willingness to consume by increasing household income and reducing uncertainty, thereby promoting household consumption; in rural households, digital finance mainly affects consumption habits and improves consumption habits by promoting convenient payments and alleviating liquidity constraints period of consumption capacity, and then promote household consumption.

We must strengthen the construction of urban and rural infrastructure and strengthen the effectiveness of digital finance development. The core reason why the development of digital finance can improve the urban and rural consumption structure lies in the inclusive value of the "long-tail" population, the financial support of this group, and the effective improvement of the disposable income of urban and rural residents. To improve the consumption level of residents and enhance the consumption rate of residents, we should give full play to the role of digital finance in an all-round way, not only focusing on its convenience in consumption and low-threshold consumer credit, but more importantly, we must fully tap the advantages of digital finance in increasing residents' income and improving residents' security, fundamentally seek welfare for the people, narrow the income gap between urban and rural areas, promote the integration of urban and rural development, improve the overall consumption level of residents, and achieve high-quality development of China's economy. At the same time, we will improve the digital construction infrastructure in rural areas and optimize the allocation of financial resources. Focus on strengthening the popularization of financial knowledge in rural areas and improving the financial literacy of the public. Improve the living stability of rural residents, promote the fair allocation of social security resources, and promote the common development of urban and rural areas.

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## References

- [1] Jiang H L, Jiang P C. Research on Residents' Consumption Level Improvement and Structural Optimization of Digital Inclusive Finance [J]. Modern Finance and Economics (Journal of Tianjin University of Finance and Economics), 2020(10):18-32.
- [2] Zou X Y, Wang W. Research on the Impact of Digital Inclusive Finance on Residents' Consumption: An Empirical Analysis Based on Spatial Econometric Model [J]. Financial Economics Research, 2020(4):133-145.
- [3] Chen X X. The Effect of Digital Inclusive Finance on Supporting Residents' Consumption Upgrading: An Empirical Test Based on the Perspective of Income Channel [J]. Business Economic Research, 2020(18):45-48.
- [4] Yi X J, Yang B Y. Empirical test of the determinants of resident consumption rate in various countries and regions of the world [J]. World Economy, 2015(1):22.
- [5] Xie J Z, Wu J R. Digital Finance, Credit Constraints and Household Consumption[J].Journal of Central South University (Social Science Edition), 2020(2):9-20.
- [6] Zhang X, Wan G H, et al. Digital Economy, Inclusive Finance and Inclusive Growth[J].Economic Research, 2019(8):71-86.
- [7] Jiang H, Li C. Research on Financial Development and Consumer Demand under Dual Economic Conditions [J]. Research on Financial and Economic Issues, 2018(9):7.