

The Impact of Digital Finance on the Income Growth of Urban and Rural Residents—Taking Anhui Province as an Example

Hongyu Yan^{1,a}, Xuefang Ma^{2,b}, Aiwen Zhang^{2,c}, Yulai Wang^{2,d}, Zejiang Zhou^{2,e,*}

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

²School of Economics, Anhui University of Finance and Economics, Bengbu, China

^a1605948620@qq.com, ^b1980454213@qq.com, ^c1557644209@qq.com, ^d994734624@qq.com,

^eaczzj123456@163.com

*Corresponding author

Abstract: The development of digital finance has improved the level of innovation and entrepreneurship in Anhui Province, and has also had an impact on the growth of income for urban and rural residents. This article focuses on the issue of income growth for urban and rural residents in Anhui Province from the perspective of digital finance. Firstly, the current situation of digital finance development in Anhui Province was analyzed. Secondly, the mechanism by which digital finance affects the income growth of urban and rural residents was elaborated. Finally, propose an optimization path for digital finance to promote residents' income growth, in order to provide reference for the development of digital finance and the improvement of income levels in other regions.

Keywords: Digital finance; Income growth; Regional finance; Innovation and entrepreneurship

1. Introduction

The development and progress of "Internet plus" technology has brought digital finance into a stage of rapid development. At this stage, digital finance has greatly improved the financial accessibility of urban and rural residents and affected their innovation and entrepreneurship activities. At the same time, in the context of common prosperity, the income level of urban and rural residents is growing well. Although affected by the epidemic in early 2020, it has now entered the stage of gradual recovery. In recent years, Anhui Province has vigorously supported the development of digital finance, but it still faces problems such as backward digital infrastructure construction and insufficient financial literacy of residents. Therefore, it is necessary to test the impact of Anhui digital finance on the income of urban and rural residents.

Scholars at home and abroad have conducted extensive theoretical and practical research on the relationship between digital finance and income. The research on the impact of digital finance on income can be roughly divided into two aspects: firstly, the differences in the impact of digital finance on the income gap between urban and rural residents. Zhao et al. (2022) analyzed the inclusive characteristics of digital finance and its promoting role in narrowing income inequality [1]. Peng et al. (2022) found that the opportunities for digital finance to affect income growth are uneven, and it can better drive the growth of urban areas under the heterogeneity of human capital [2]. Lu et al. (2021) found that the widening income gap has affected the economic effects of digital finance in rural areas, and is more significant in the central region. The second is the difference in the impact of digital finance on residents' income growth [3]. Chen et al. (2022) used the mesomeric effect model to empirically study the effect of digital finance on residents' income growth [4]. Zhang et al. (2021) found that the degree of digitization has a negative impact on income growth [5]. Si et al. (2022) found through heterogeneity research that digital financial capabilities have a more significant impact on the consumption upgrading of rural areas and low-income households [6].

With the acceleration of the situation of common prosperity in China, the mechanism of digital finance to enhance residents' income has also become the focus of research. Zhang et al. (2019) argue that digital finance differs from traditional financial models, as it can drive an increase in residents' income through its innovative role in entrepreneurship [7]. Bianchi (2010) believes that digital finance can leverage entrepreneurship to drive innovation and economic growth, thereby solving employment

problems and further promoting income growth for residents [8]. Allen et al. (2021) believe that the development of traditional finance can affect employment and increase income levels, while the development of digital finance amplifies this impact and better promotes income growth [9]. Song et al. (2022) used the Heckman two-stage method and the quantile regression method to study and found that the development of digital finance significantly increased the entrepreneurial income of rural migrants, and compared with the entrepreneurs of the high-income class, digital finance had a more significant effect on the income of developing middle-income entrepreneurs [10].

In summary, although the impact of digital finance on income growth has attracted the attention of most scholars, existing research has two shortcomings: firstly, the transmission path of the intermediary utility mechanism of innovation and entrepreneurship is unclear, making it difficult to describe changes in residents' income structure. Secondly, ignoring the heterogeneity of various income groups and internal regions can lead to biased results.

The marginal contributions of this article include: firstly, clarifying the intermediary transmission mechanism of "digital finance capability → innovation and entrepreneurship level → resident income growth", and conducting empirical testing on the path of digital finance capability promoting income growth of urban and rural residents from the perspective of innovation and entrepreneurship development. Secondly, by distinguishing between urban and rural areas and the southern, central, and northern regions of residents, the heterogeneity of the impact of digital finance development on income growth was explored, revealing the relationship between the two.

2. Development Level of Digital Finance and Current Income Status of Residents

2.1 Current Status of Digital Finance Development

According to the Anhui Province Urban Index, a digital inclusive finance index released by the Digital Finance Center of Peking University, the digital finance index consists of three sub dimensions of coverage breadth, depth of use, and degree of digitization. In order to gain a more comprehensive understanding of the development of digital finance in Anhui Province, we will first compare the development of digital finance in the Yangtze River Delta region of Anhui Province. For a more objective comparison, we chose the three provinces with larger population and land coverage, excluding Shanghai. From 2015 to 2020, the digital finance exponential growth of Anhui Province increased significantly, from 211.28 in 2015 to 350.16 in 2020. The cross range is also very obvious, although not as strong as Zhejiang and Jiangsu, the development momentum is very strong.

Comparing the digital inclusive finance indices of various cities in Anhui Province in 2015 and 2020, it was found that the total index and three sub dimensions of digital finance in Anhui Province showed a growth trend, but there were significant differences in the growth rate among different regions. From the perspective of the development level of digital finance in various cities within the province, the overall development level of central Anhui is the best, ranking first in the overall index of digital finance among the three regions, followed by southern Anhui and northern Anhui. The capital city of Anhui, Hefei, has the best development in digital finance, consistently ranking first, and reached 299.16 in 2020. Lu'an has also directly advanced from ranking 13 in 2015 to ranking fifth in the province in 2020, with the fastest pace of progress in Anhui Province; Wuhu City in southern Anhui has also made great progress, ranking second in 2020 and narrowing the gap with Hefei; The ranking of urban digital finance indices in the northern Anhui region is relatively low, while the rankings of Fuyang and Bozhou have also lagged behind for a long time, resulting in poor progress effects. Overall, the data shows that the gap between cities is narrowing.

2.2 Current Situation of Resident Income

2.2.1 Disposable Income of Residents

From 2015 to 2020, the disposable income of all residents in Anhui Province showed an upward trend, indicating that the living standard of residents continued to improve, reflecting China's common prosperity policy. From 2015 to 2020, the disposable income of residents in Anhui Province was 18363 yuan, 19998 yuan, 21863 yuan, 23984 yuan, 26415 yuan, and 28103 yuan, respectively, an increase of 53.04% in six years.

2.2.2 Differences in Income between Urban and Rural Residents

There are differences in the growth rate of disposable income between urban and rural residents in Anhui Province, but due to differences in regional advantages and policy support, the growth rate of disposable income of urban residents is slightly weaker than that of rural residents. Due to the impact of the epidemic and economic depression in 2020, the indicators have anomalies, so we mainly refer to data before 2019. In 2019, the growth rate of disposable income of rural residents in Anhui was 10.15%, which was higher than the growth rate of 9.15% in urban areas. This also indirectly indicates that in recent years, Anhui Province has achieved comprehensive victory in the poverty alleviation campaign in 2020 and maintained the fruits of victory.

2.2.3 Differences in Income among Residents in the Three Major Regions

The regional economic development of Anhui Province is mainly divided into three major economic regions, namely the southern, central, and northern regions of Anhui. Due to the influence of economy, politics, geographical location and culture, the income growth of residents in the three regions is also different. The residents in central Anhui have a high income level and fast growth rate, with a significant increase in the income of the middle class and a high happiness index for their lives; Due to its proximity to the middle and lower reaches of the Yangtze River Basin and the radiation and driving effect of the Yangtze River Delta Economic Belt, southern Anhui has a high level of economic activity. The development of the tertiary and high-tech industries is very vigorous, and the growth of residents' income is good, with a large potential for growth. The industries in northern Anhui are not concentrated, there are relatively few science and innovation industries, and labor output is relatively high. However, transportation is relatively developed, and the situation of characteristic industries driving residents' income growth is poor. Among the three regions, the growth rate of residents' income is the slowest. Of course, the proportions of high-income, middle-income, and low-income groups in the three regions are also different, and overall, they are mainly composed of middle and low-income groups.

3. Theoretical Mechanism of Digital Finance Promoting Residents' Income Growth

3.1 Digital Finance Promotes Innovation and Entrepreneurship, Thereby Affecting Residents' Income

Innovation refers to the introduction of a new combination of production factors and conditions into the production system, which is an important driving force for economic development; Entrepreneurship refers to the process or activity of discovering, creating, and utilizing opportunities to combine production factors with effective business models to achieve commercial success. In recent years, Anhui Province has ranked among the top in innovation capacity in the country, and its regional innovation capacity has remained the first in the country for 13 consecutive years. Innovation and entrepreneurship have made significant progress, especially in terms of increasing innovation and entrepreneurship entities, enhancing capabilities, gradually improving the innovation and entrepreneurship environment, and flourishing high-tech industries.

From the perspective of entrepreneurship, the financial market, as an industry market where risks and benefits coexist, has derived a digital finance digital ecosystem that is vastly different from traditional financial service models, optimizing the rational allocation of resources in the financial market, and influencing people's ideological concepts. Bank institutions in Anhui Province actively promote enterprise assistance and relief, increase support for small and micro enterprises and individual businesses, provide more loanable funds and financing channels, and provide financial support for innovation and entrepreneurship activities. The relevant P2P platforms and financial loans provide information transparency and reduce information asymmetry, reducing the financing costs of residents, making the majority of people without background and resources in the labor market choose to start their own businesses or participate in financial market employment, thereby changing the pattern of income distribution and increasing the income of middle and low income groups. Thus, the logical mainline of "financial market development - increase in innovation and entrepreneurship activities - income growth" has been formed.

3.2 Digital Finance is Conducive to Promoting Economic Development and Narrowing the Income Gap among Residents

3.2.1 Deepening the Development of Digital Finance in Combination with the Real Economy

Digital finance should return to the real economy in its development, providing support for the growth of the real economy. The Anhui Provincial Government has issued documents such as the "Anhui Provincial Informatization Promotion Regulations" and the "Guiding Opinions on Accelerating the Construction of the " Digital Jianghuai ", providing a high-quality policy environment for the development of the digital economy.

The promotion of digital finance for the real economy can be seen from alleviating credit constraints and strengthening scientific supervision. Firstly, in terms of credit, with the continuous development of internet companies such as Alibaba, Tencent, and JD.com in Anhui Province, the big data portraits of various types of enterprises in the province are basically clear. These platforms can provide financial support for their sustainable development by extending industry digital banking and lending companies to some small and micro enterprises. As the company's profits increase, the income level of residents will also increase. Secondly, in terms of regulation, the Anhui Provincial Government utilizes digital technologies such as the Internet of Things, artificial intelligence, and cloud computing to achieve scientific and effective regulation. It also checks the relevant transactions or economic transactions in the digital financial market from time to time to better understand the funding and data situation of the financial market operation, thus formulating more precise policy measures to make the operation of the real economy more scientific and effective. Allowing different income groups to choose appropriate economic and financial resources based on their own economic situation to achieve income growth.

3.2.2 Digital Finance to Alleviate the Income Gap between High and Low Income Groups

The development of digital finance is conducive to alleviating the income gap between high-income and low-income groups in Anhui Province. Digital finance itself has the characteristic of inclusiveness. By utilizing digital technology, digital finance has lowered the threshold for financial services, enabling financial institutions to no longer exclude traditional vulnerable groups. Low income and middle to low income groups can receive sufficient financing amounts and enjoy equal financial services, better promoting the equality of entrepreneurial opportunities for multiple groups, truly balancing fairness and efficiency, Injecting vitality into the production and operation of mainstream entrepreneurial markets. In terms of insurance, digital finance has also led to the transformation and upgrading of insurance service models, establishing "digital insurance" services and reaching low-income groups, changing their attitude towards risk, encouraging them to invest in the financial market, and enriching the channels for asset use, such as stocks, funds, bonds, and other growth channels.

The relevant infrastructure construction has also been fully improved, and the broadband development support system has been basically fully established, achieving "broadband Anhui". 4G network technology has achieved provincial coverage, and 5G network technology is being orderly promoted. Various financial institutions also promote the use of online financial platforms and the interpretation of offline promotional manuals, aiming to promote financial knowledge, promote financial products, and efficiently absorb deposits. This also makes it more convenient for many residents to browse information related to financial entrepreneurship, financial management, policies and regulations, and skill training through both online and offline methods, improving the financial knowledge and information level of the labor force, This enables middle and low-income groups to allocate their assets in a reasonable financial manner, obtain more individual financial resources, and promote the growth of their own income.

4. Suggestions for Promoting Residents' Income Growth through the Development of Digital Finance

4.1 Strengthen the Construction of Digital Infrastructure in Various Regions of the Province and Enhance the Coverage of Digital Finance

On the one hand, attention should be paid to the combination of "market plays a decisive role+government macroeconomic regulation guidance". The government actively guides various resources to flow to underdeveloped and remote areas, promotes resource balance, further optimizes entrepreneurial resources, industrial resources, and financial resources in the market, improves the

digital and financial service capabilities of the market, better realizes the rational allocation of resources in southern, central, northern, and urban-rural regions, and enhances the level of regional economic growth.

On the other hand, emphasis should be placed on strengthening the infrastructure construction in northern Anhui. The first is the construction of network facilities in the "Internet plus Finance" model, to ensure the use of residents' financial terminals, to build a wide coverage of the whole region network use system, to better popularize financial knowledge, expand the depth and breadth of digital financial services, so that finance can be more intelligently integrated into urban and rural households. Secondly, it is the construction of financial infrastructure, increasing the scale and quantity of financial sites, and combining local characteristics to develop various types of financial products (property rights mortgage, use rights mortgage, live property mortgage), to enhance the accessibility of funds for residents and meet their needs for characteristic financial products; Finally, the construction of a digital financial system involves constructing a regional financial database divided by the north and south regions, fully understanding the supply and demand of residents for entrepreneurial funds and financial products, predicting their financial needs, intelligently mining and providing digital finance products in investment, payment, and credit, better promoting financial products, and meeting the entrepreneurial needs of residents in different scenarios.

4.2 Strengthen Training on Residents' Financial Knowledge and Professional Skills

Firstly, in enhancing residents' financial knowledge, the government should cooperate with financial institutions. The government should actively establish financial branches in various regions of the province and regularly hold relevant financial knowledge lectures and activity Q&A to improve the financial literacy level of urban and rural residents, forming a current situation of government guidance, financial institution participation, and people's willingness to learn; Financial institutions should also take the initiative to eliminate credit risks, assume more social responsibility, and strive to popularize financial knowledge in rural and remote areas, narrow the gap in relevant financial resources in the region, provide financing support and financial support for farmers' entrepreneurship, and contribute to income growth in rural areas; Residents in the province should also active learning financial knowledge, attach importance to the role of education and training, improve their enthusiasm for participation, and finally achieve good results in mastering financial knowledge.

Secondly, in terms of strengthening residents' professional skills training, the government should hire professional talents from relevant universities and training institutions to form an excellent training team, and irregularly and circularly go to the northern and southern regions of Anhui to provide skills training for residents. Financial classrooms should be established to strengthen the effective integration of financial services and internet technology, so as to benefit more families without special skills. Talent lectures and exchange activities should be appropriately conducted one-on-one. One to many assistance is provided to identify the entrepreneurial aspects and skills that residents are interested in and excel in, while retaining young talents in various regions and adopting flexible teaching methods to impart knowledge. In terms of teaching methods, a combination of online and offline methods is adopted to make the training easy to understand, vivid and interesting, and to stimulate residents' interest in learning again.

Acknowledgment

This research is supported by Anhui University of Finance and Economics Undergraduate Research Innovation Fund Project (Grant No.: XSKY23099).

References

- [1] Zhao Y.X, Wang X.H. (2022) *Digital Finance, Relative Household Income, and Vulnerability - Also on the Impact of Multidimensional "Divides"* [J]. *Financial Research*, 1:77-97.
- [2] Peng P., Zhou L. (2022) *Research on the Impact of Rural Digital Finance Development on the Income Liquidity of Farmers in China* [J]. *Quantitative Economic and Technological Economic Research*, 39 (06): 23-41.
- [3] Lu C.M., Wang H.Y. (2021) *Digital Finance, Income Gap, and Resident Consumption: An Empirical Study Based on 280 Prefectural Cities in China* [J]. *Finance and Economy*, 7:22-30.
- [4] Chen X., Xu L.(2022) *Digital Finance, Innovation and Entrepreneurship and Income Growth of*

Urban and Rural Residents [J]. Journal of Agriculture and Forestry Economic Management, 21(05): 537-546.

[5] Zhang S.W., Lin S.Q., Guo F.M. (2023) *Research on the Impact of Digital Finance Development on Household Income [J]. Quantitative Economy Research, 14(01): 35-51.*

[6] Si C.N., Li Y.H., Sun L. (2022) *Digital Finance Capability, Income Diversification, and Household Consumption Upgrade [J]. Consumer Economy, 38(06): 70-80.*

[7] Zhang X., Wan G.H., Zhang J.J., He Z.Y. (2019) *Digital Economy, Inclusive Finance, and Inclusive Growth [J]. Economic Research, 54(08): 71-86.*

[8] Bianchi M. (2010) *Credit constraints, Entrepreneurial Talent, and Economic Development[J]. Small Business Economics, 34(01):93-104.*

[9] Allen F. Demirguc-Kunt A. Klapper L. Peria M. (2016) *The foundations of financial inclusion: Understanding ownership and use of formal accounts [J]. Journal of Financial Intermediation, 27:1-30.*

[10] Song L., He Y. (2022) *The Impact of Digital Finance on the Entrepreneurship Income of Rural Floating Population [J]. Contemporary Economic Science, 44(03): 83-96.*