

Research on the impact of digital finance on labor productivity in China

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Abstract. Based on the panel data of 30 provinces in China from 2011 to 2020, this paper empirically studies the impact and mechanism of digital finance on labor productivity in China by using two-way fixed effect model and mediation effect model. Research shows that digital finance can promote labor productivity. However, there are differences in the driving effects of coverage breadth, depth and digitization level of digital finance on labor productivity. In terms of the direction of its impact on labor productivity, coverage breadth and depth have a positive effect, while the digitization level has a negative effect. Moreover, there are differences in the promotion effect of digital finance on labor productivity in different regions of China. The positive effect is significant in the eastern region, the positive effect is insignificant in the central region, and the reverse effect is significant in the western region. Further research shows that innovation plays a mediating role in the improvement of labor productivity driven by digital finance. The conclusions of this paper will provide reliable empirical evidence and policy implications for improving labor productivity and promoting high-quality economic development under the background of digital economy.

Keywords: Digital finance; Labor productivity; Innovation.

1. Introduction

With the development of Internet and information technology, the combination of digital technology and traditional financial model gives rise to a new financial model -- digital finance. The Fintech Development Plan (2022-2025) issued by the People's Bank of China clearly emphasizes that "digital elements, such as the whole process of financial services, will be integrated into the whole chain of business operations, and the pace of financial digital transformation will be accelerated." Digital finance uses big technology platforms, big data, cloud computing and other technological means to innovate financial products, business models, technology applications and business processes, which has profoundly changed people's lives and economic development models. In terms of people's livelihood, traditional financial institutions improve the convenience of users' access to financial products and services by establishing online business handling channels. In terms of corporate financing support, financial institutions launch new financial products through the integration of digital technologies to connect the supply and demand of financing. At the same time, relying on the application of new technologies such as big data, 5G and blockchain, real-time data acquisition and storage can be realized, and precise risk control positioning and credit rating can be carried out for enterprises. In terms of innovation, digital finance promotes the deep integration of Internet enterprises in the financial industry, which not only finds a way for Internet platform enterprises to realize traffic, but also enables financial institutions to obtain traffic entry.

In recent years, with the spread of digitization and the implementation of various supporting policies, digital finance in China has greatly expanded, which could lead to changes in productivity. Through the related literature can be found, the existing research on the impact of digital finance mainly focuses on the macro level impact such as economic growth and rural revitalization, and the micro level impact such as enterprise financial risk and government regulation mode. There are few empirical studies on productivity, or they mainly focus on total factor productivity, without researching the mechanism path of labor productivity. Based on this, this paper combines digital finance and labor productivity to deeply segment and discuss how digital finance affects labor productivity in China, which broadens the relevant research on digital finance and high-quality economic development, and has important theoretical and practical significance.

At present, the research content closely related to this paper is mainly divided into two parts.

First, the relationship between finance and total factor productivity is studied from multiple analysis dimensions. From the micro perspective, the financing mode of financial leasing can promote the improvement of the total factor productivity of listed companies. Financial leasing effectively improves the total factor productivity of enterprises by increasing tax incentives, reducing financing costs and alleviating financing constraints (Sheng Mingquan and Long Huihui, 2022)[1]. Some other scholars have found that fintech (Han Fengze and Dai Jinping, 2022)[2], financial agglomeration (Li Ruixue et al., 2022)[3] and Inclusive Finance (Yu Desheng and Yang Lihua, 2022)[4] are significantly and positively related to the total factor productivity of enterprises. On the contrary, financial mismatch will inhibit the improvement of enterprises' total factor productivity (Cheng Qiongwen et al., 2022)[5]. From a macro perspective, on the one hand, finance can provide support for the government's intervention in the market and give full play to the guiding role of policies. Policies adopted by the government to support the development of fintech can promote the innovation of business forms, accelerate the accumulation of data factors and thus improve the total factor productivity (Wu Xinhong and Pei Ping, 2022)[6]. On the other hand, as the booster of the market mechanism, finance should give full play to the regulating role of the market to the social economy. Under the principle of meeting sustainable development, the development of digital inclusive finance can provide appropriate, responsible and cost controllable financial services for the capital demander, and promote the improvement of total factor productivity and economic growth through the intermediary effect mechanism of technological innovation and industrial structure upgrading (Zheng Yueming and Mei Aoyu, 2022)[7].

The second is to study the impact of digital finance on all aspects of social economy, mainly in three aspects. First, promoting high-quality agricultural development and rural revitalization. Wang Sen and Chen Yubin (2022)[8] used the panel data of 31 provinces in China from 2011 to 2019 and used the entropy method to conduct research. The results showed that digital finance had a significant positive effect on the high-quality development of agriculture, which was more obvious in the central and western regions with relatively backward agricultural development. The second is the coupling linkage between digital finance, green development and double carbon goals. Liu Minlou (2022)[9], such as using provincial panel data from 2011 to 2019, using interactive fixed effects model, the intermediary effect model and measurement methods, such as dynamic panel threshold model, found that the principal part of the digital financial innovation that by reducing the transaction costs and stimulate innovative financing efficiency, drive the improvement of the regional innovation ability, realize green development, It is empirically tested that the improvement of the development level of digital finance has a significant promoting effect on green development. In terms of the impact dimension, the promoting effect is mainly achieved by improving the coverage breadth and the degree of digitization, while the impact of the depth of use is not significant. Third, digital finance improves the quality and efficiency of capital market. Liu Wei et al. (2022)[10] analyzed the impact of digital finance on the loan structure and risk of commercial banks by using the financial data of 181 Chinese commercial banks from 2011 to 2020, and found that digital finance promoted both personal loans and credit loans of state-owned large commercial banks, but only increased the proportion of personal loans of shareholding commercial banks. For city commercial banks, it promotes personal loans and short-term loans. Digital finance has the power to amplify banks' risk-taking.

Previous literature has deeply studied the impact of digital finance on social economy, which is conducive to our scientific understanding of digital finance. Compared with the existing literature, the research contribution of this paper is mainly reflected in the following aspects: First, the existing literature does not pay attention to the relationship between digital finance and labor productivity, this paper discusses the impact of digital finance on labor productivity in China, which is conducive to supplement the relevant research. In the critical stage of China's economic transformation from high growth to high quality, a large number of Chinese labor force flows from the secondary industry with high productivity to the tertiary industry with low productivity. How to guide the improvement of the overall social labor productivity is an unavoidable and important task for China's economic

development in the new era. Second, the past literature lacks not only a systematic explanation of the relationship between digital finance and Labour productivity, but also a more microscopic perspective. This paper empirically tests the impact of digital finance on labor productivity from the aspects of impact mechanism and regional heterogeneity, and provides a more detailed perspective for related research. Thirdly, this paper provides some targeted enlightenment. It is found that digital finance is conducive to improving labor productivity. Therefore, promoting the development of digital finance is conducive to boosting the overall development of social economy in China at present and in the future.

2. Data & Model

2.1 Measurement model setting

In order to verify the relationship between digital finance and labor productivity, this paper constructs the following two-way fixed effect model:

$$Labor_{it} = \alpha_0 + \alpha_1 Aggregate_{it} + \alpha_3 \cdot Z + \varepsilon_{it} \quad (1)$$

In the equation of the econometric model(1), the dependent variable *Labor* is labor productivity, the independent variable *Aggregate* is the total index of digital financial inclusion, *Z* is the control variable, ε is the random error term, α_0 is the constant term, α_1 is the regression coefficient of digital financial inclusion, α_3 is the regression coefficient of control variable, *i* and *t* respectively represent region and time.

2.2 Variable declaration

Explained variable: labor productivity. Based on the practice of Li Qiang et al. (2021)[11], this paper selects the proportion of real GDP and employed population to measure.

Core explanatory variable: digital finance. Referring to the method of Jiang Changliu et al. (2020)[12], this paper uses the total digital financial index of Peking University Digital Financial Inclusion Index compiled by the joint research group composed of the Digital Financial Research Center of Peking University and Ant Technology Group for measurement. Meanwhile, in order to improve the reliability and universality, the coverage breadth, depth and digitization level of digital finance are also selected to measure the development level of digital finance.

3、Control variables. In order to improve the estimation accuracy, the following control variables are included in the model. Property is expressed as fixed asset investment/gross regional product. Environmental regulation is expressed as industrial Pollution control investment/industrial added value. Government intervention (Finance) is measured by fiscal expenditure/gross regional product; Trade is measured by the total volume of imports and exports/gross regional product. Population is measured by Population density; The industrial structure (Industry) is measured by the proportion of the secondary Industry.

2.3 Data declaration

Considering the uniformity of data, this paper uses panel data of 30 provinces in China from 2011 to 2020 as the research sample. Due to the lack of data, Hong Kong, Macao, Taiwan and Tibet are not included. The data of data finance in the empirical study comes from the "Digital Financial Inclusion Index of Peking University" published by the Digital Finance Research Center of Peking University. Other data were obtained from China Statistical Yearbook, China Environmental Statistical Yearbook, and statistical yearbooks of each province. In order to obtain stationary data and avoid spurious regression, this paper takes logarithms of all variables in the process of empirical analysis. Descriptive statistics of each variable are shown in Table 1.

Table 1. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max	Obs
Labor	10.119	4.555	3.077	24.306	300
Aggregate	217.246	96.968	18.33	431.93	300
Breadth	198.01	96.334	1.96	397	300
Depth	212.036	98.106	6.76	488.68	300
Digital	290.238	117.644	7.58	462.23	300
Property	0.776	0.253	0.21	1.455	300
Pollution	0.003	0.003	0.001	0.028	300
Finance	0.25	0.103	0.11	0.643	300
Trade	0.253	0.267	0.007	1.457	300
Population	469.325	703.705	7.864	3924.29	300
Industry	43.126	8.766	15.8	59	300
GDP	56080.05	26279.99	16152.52	154760.8	300
Patent	101506	143628.5	732	967204	300

3. Empirical results and analysis

3.1 Full sample analysis

This paper uses the Digital Financial Inclusion Index of Peking University and China's provincial panel data to study the impact of digital finance on China's labor productivity by using the two-way fixed effects model. The regression results of the benchmark model are shown in Table 2. Through the stepwise regression method, it is found that the regression coefficient of digital finance on labor productivity is always significantly positive below the level of 1%, indicating that digital finance significantly promotes labor productivity, so the development of digital finance is conducive to improving labor productivity. The above empirical results can be interpreted as follows: First, digital finance, as a typical representative of technological innovation, significantly expands the frontier of production possibilities, thereby promoting the improvement of single labor productivity; Second, the development of digital finance has further opened up financing channels for all kinds of enterprises, especially small and micro enterprises. The gradual solution of capital demand has increased the investment of fixed capital, thus promoting the development of labor productivity.

Table 2. Main regression results

Explained variable	Labor(1)	Labor(2)	Labor(3)	Labor(4)
Aggregate	0.2181*** (8.32)	0.1880*** (7.33)	0.1874*** (7.50)	0.1347*** (5.45)
Property		0.0852*** (5.47)	0.0842*** (5.59)	0.0957*** (6.71)
Pollution		-0.0007 (-0.12)	-0.0014 (-0.26)	-0.0038 (-0.76)
Finance			-0.769** (-2.46)	-0.1103*** (-3.43)
Trade			0.0606*** (3.97)	0.0384*** (2.64)
Population				-0.7960*** (-6.39)
Industry				0.1967*** (3.80)
Province region fixed effect	Control	Control	Control	Control
Year fixed effect	Control	Control	Control	Control
Adjusted-R ²	0.9597	0.9639	0.9665	0.9713
Observations	300	300	300	300

****, *** and ** are 1%, 5% and 10% confidence levels, numbers in parentheses are standard errors. The same below

In addition, from the point of control variables, environmental regulation has always can't through the test of significance, but environmental regulation coefficient is negative, indicates that the present environmental protection policies and measures have a negative impact to the labor productivity, its deep-seated reason is that China's current economic development model in general is still relatively extensive, contradiction between the level of economic development and environmental protection. The coefficient of investment is always significantly positive at 1% level, which proves that investment in fixed assets can significantly promote the improvement of labor productivity. The coefficient of government intervention is significantly negative at the level of 5%, indicating that the current government intervention in the market inhibits the progress of labor growth rate, indicating that there is still room for improvement in the formulation and implementation of government policies. The coefficient of trade factor is significantly negative at the level of 1%, indicating that the increase of import and export trade can drive the improvement of labor productivity, and the government should continue to adhere to the economic policy of opening to the outside world. Population factor coefficient is negative in the 1% significance level, that of the excessive growth of population will obviously drag on the improvement of labor productivity, from large Numbers of possible reason is the population large working-age population, the government to control the unemployment rate to retain a large number of labor-intensive industries, lead to the overall low level of labor productivity. The industrial structure is positive at the significance level of 1%, indicating that the proportion of secondary industry is positively related to labor productivity.

At the same time, table 3 provides the impact of three sub dimensional indicators of digital Finance (breadth, depth and digitization level) on labor productivity. The results show that the coefficients of coverage and depth of digital finance are positive at the significance level of 1%, indicating that these two sub dimensional indicators have a significant boosting effect on labor productivity, but the digitization level of digital finance has a significant negative impact on labor productivity, the possible reason is that the current degree of digitization of digital finance in China is not high enough to produce a significant promotion effect on labor productivity.

Table 3. Multidimensional regression results

Explained variable	Breadth	Depth	Digitization level
	Labor	Labor	Labor
Core explanatory variable	0.0471*** (4.76)	0.0323*** (1.74)	-0.0598*** (-3.92)
Property	0.0989*** (6.87)	0.1124*** (7.70)	0.1111*** (7.82)
Pollution	-0.0041 (-0.81)	-0.0064 (-1.23)	-0.0041 (-0.80)
Finance	0.1213*** (-3.75)	-0.1349*** (-4.03)	-0.1496** (-4.60)
Trade	0.0393*** (2.65)	0.0343** (2.21)	0.0255* (1.72)
Population	-0.8731*** (-7.10)	-0.9812*** (-7.79)	-1.0080*** (-8.38)
Industry	0.2016*** (3.84)	0.2324*** (4.29)	0.2365*** 4.47
Province region fixed effect	Control	Control	Control
Year fixed effect	Control	Control	Control
Adjusted-R ²	0.9706	0.9684	0.9698
Observations	300	300	300

3.2 Regional heterogeneity analysis

In order to explore the impact of digital finance on labor productivity in different regions of China, this paper divides 30 provinces into three regions: eastern, central and western regions and conducted two-way fixed-effect regression respectively. Regression results as shown in table 4: the east, the

central region digital financial regression coefficients of labor productivity is positive, the eastern region of which can be through the test of significance of 1%, significantly stronger than the central region, it shows that digital financial to the eastern and central regions labor productivity has the positive influence, but the central region is not significant. The regression coefficient of digital finance on labor productivity in western China is significantly negative at the significance level of 10%, which indicates that there are regional differences in the promotion of labor productivity by digital finance. Possible reasons are as follows: First, the lack of talent, information, infrastructure and other elements in the central and western regions leads to a low level of digital finance development. The impact on the social economy is mainly quantitative growth rather than the improvement of economic efficiency, and it may even have an inhibitory effect on the growth of economic efficiency to some extent. The second is the eastern region of high level of economic development in the Midwest "siphon effect", attracted excessive resources, especially financial, large data such talent intensive, capital intensive industry, squeezed the Midwest economic development space, digital financial form of promotion is more than content, also causes to the eastern region of vicious competition in the industry.

Table 4. regional regression results

Explained variable	Eastern region	Central region	Western region
	Labor	Labor	Labor
Aggregate	0.2034*** (3.59)	0.0441 (0.32)	-0.0624* (-1.68)
Property	0.0665*** (3.13)	0.1299*** (3.99)	0.0437** (2.00)
Pollution	-0.0074 (-1.11)	0.0059 (0.39)	-0.0213*** (-3.33)
Finance	-0.0249 (-0.41)	-0.3393*** (-3.27)	-0.0502 (-1.20)
Trade	0.0800* (1.73)	-0.0020 (-0.04)	-0.0146 (-0.96)
Population	-0.5776** (-2.25)	-1.0285** (-2.48)	-0.5924*** (-3.49)
Industry	0.5635*** (5.80)	0.0964 (0.96)	0.1545** 2.45
Province region fixed effect	Control	Control	Control
Year fixed effect	Control	Control	Control
Adjusted-R ²	0.9733	0.9782	0.9907
Observations	110	80	110

3.3 Mediation effect

In order to investigate the mechanism of digital finance affecting labor productivity in China, this paper further constructs regression models as shown in Equations (2) and (3). Among them, M is the intermediary variable, namely the innovation factor, which is measured by the number of patent acceptance and is in logarithmic form. The data are from China Statistical Yearbook. Equation (2) investigates the influence of the total index of digital finance on innovation factors; Equation (3) examines the impact of total index of digital finance and innovation factors on labor productivity.

$$M_{it} = \beta_0 + \beta_1 \text{Aggregate}_{it} + \beta_3 \cdot Z + \varepsilon_{it} \quad (2)$$

$$\text{Labor}_{it} = \gamma_0 + \gamma_1 \text{Aggregate}_{it} + \gamma_3 M_{it} + \gamma_4 \cdot Z + \varepsilon_{it} \quad (3)$$

Equations (1) to (3) together constitute the mediating effect model, and the regression results are shown in Table 4. Regressions (1) to (3) examine whether digital finance can affect labor productivity by influencing innovation factors. Regression (1) examines the impact of digital finance on labor productivity, and the results show that digital finance significantly promotes the improvement of labor productivity, which is consistent with the above conclusion. Further investigation of the impact of digital finance on innovation factors shows that the estimated coefficient of digital finance in

regression (2) is significantly positive at the 1% level, indicating that digital finance significantly promotes the improvement of scientific and technological innovation level. Regression (3) further shows the impact of digital Finance on labor productivity. It is found that the estimated coefficient of innovation factors is significantly positive at the level of 5%, which indicates that innovation factors have a promoting effect and significantly improve labor productivity. The possible reason is that scientific and technological innovation and technological iteration have improved output or efficiency, and also created a foundation for the renewal of fixed capital. Compared with regression (1), the coefficient of digital finance has decreased, which indicates that innovation factors play a part of the intermediary role in the process of digital finance affecting labor productivity. It can be seen that innovation factors have an intermediary effect in digital finance and labor productivity. Scientific and technological innovation is an important channel for digital finance to affect labor productivity.

Table 5. Mediation mechanism test

Explained variable	Labor	Patent	Labor
Aggregate	0.1347*** (5.45)	0.6780*** (5.71)	0.1159*** (4.45)
Property	0.0957*** (6.71)	0.1113 (1.62)	0.0926*** (6.50)
Pollution	-0.0038 (-0.76)	-0.0472* (-1.96)	-0.0025 (-0.50)
Finance	-0.1103*** (-3.43)	0.5941*** (3.85)	-0.1267*** (-3.85)
Trade	0.0384*** (2.64)	-0.0964 (-1.38)	0.0411*** (2.83)
Population	-0.7960*** (-6.39)	1.5565*** (2.60)	-0.8390*** (-6.69)
Industry	0.1967*** (3.80)	0.9380*** (3.77)	-0.1708*** (3.23)
Patent			0.0276** (2.13)
Province region fixed effect	Control	Control	Control
Year fixed effect	Control	Control	Control
Adjusted-R ²	0.9713	0.8746	0.9718
Observations	300	300	300

3.4 Robustness Tests

In order to verify the reliability of the above empirical results, this paper conducts the following robustness tests.

Replace the explained variable. In order to test whether the conclusion that digital finance promotes labor productivity improvement is robust, this paper first uses the method of replacing the explained variable to estimate, that is, per capita real GDP of each province in China is used as the explained variable to estimate Equation (1), and the results are shown in Table 5. It can be found that the regression coefficient of digital finance is still significantly positive at the 1% level, indicating that digital finance effectively promotes the improvement of per capita real GDP, which is consistent with the previous conclusion.

Alternative measures of core explanatory variables. In this paper, the total index of digital finance lags behind phase I and phase II as the core explanatory variables are re incorporated into the model. According to the results in the second and third columns of table 5, the coefficient of digital finance is still significantly positive no matter whether it lags behind phase I or phase II, indicating that digital finance has a sustained and significant role in promoting labor productivity.

Instrumental variable method. In order to alleviate the possible endogenous problem, this paper uses the instrumental variable method for stability test, and adopts the lag phase of the core explanatory variable as the instrumental variable. In this paper, on the one hand, digital finance has

continuity, the layout of the early digital finance will lay the foundation for the improvement of current labor productivity; On the other hand, the development of digital finance in advance will affect labor productivity by affecting the level of digital finance in the current period. Therefore, this article uses the previous phase of the total number of financial index as a instrumental variables, using two-stage least squares method to estimate, the results such as shown in the fourth column of table 6, which shows that the impact of digital]finance on labor productivity is still significantly positive, indicating that after considering the endogenous problem, digital finance can still significantly improve labor productivity.

The above three stability tests fully demonstrate the robustness of the core conclusions of this paper.

Table 6. Robustness tests

Explained variable	Change variable	Lag phase I	Lag phase II	Instrumental variable method
	Per capita real GDP	Labor	Labor	Labor
Aggregate	0.0503*** (4.35)	0.1199*** (5.22)	0.0931*** (4.23)	0.3644*** (4.23)
Property	0.0960*** (14.37)	0.0811*** (5.76)	0.0657*** (4.43)	0.0687*** (4.76)
Pollution	-0.0022 (-0.94)	-0.0030 (-0.61)	-0.0023 (-0.45)	-0.0018 (-0.33)
Finance	-0.1815*** (-12.05)	-0.1019*** (-3.08)	-0.0989** (-2.85)	-0.0018* (-0.33)
Trade	0.0028 (0.42)	0.0262 (1.63)	0.0162 (0.90)	0.0269 (1.39)
Population	-0.6872*** (-11.78)	-0.7437*** (-5.39)	-0.7000*** (-4.58)	-0.7326*** (-6.18)
Industry	0.1120*** (4.62)	0.1651*** (2.95)	0.1273** 2.15	0.1642** 2.70
Cragg-Donald Wald F statistics				648.462
Province region fixed effect	Control	Control	Control	Control
Year fixed effect	Control	Control	Control	Control
Adjusted-R ²	0.9924	0.9661	0.9593	0.9929
Observations	300	300	300	270

4. Conclusion and Enlightenment

4.1 Conclusion

With the development of information technology, the world has entered the era of digital economy. The modern financial industry is one of the industries most closely related to the digital economy and with the highest degree of digitalization. It is also an important driving force for the high-quality development of the digital economy. Combined with previous research results, we speculate that digital finance may have an important impact on labor productivity, but the relationship between the two has not been systematically analyzed. This paper uses panel data of 30 provincial-level regions from 2011 to 2020, except Hong Kong, Macao, Taiwan and Tibet, combined with the Digital Financial Inclusion Index of Peking University, and uses the two-way fixed effects model to empirically test the impact and heterogeneity of digital finance on labor productivity in China. Further from the perspective of innovation factors, the mediation effect model is used to analyze the internal mechanism and transmission path of digital finance on labor productivity. The main conclusions of this paper are as follows:

1). Digital finance is conducive to improving labor productivity, but digital finance has different impacts on labor productivity in different dimensions, namely coverage breadth, depth and digitization level. According to the empirical test results, the coverage breadth and depth of digital finance can significantly promote the improvement of labor productivity, but the degree of digitization significantly inhibits labor productivity.

2). The impact of digital finance on labor productivity has regional heterogeneity. Digital finance has significantly promoted the progress of labor productivity in the eastern region, but it has not yet played a significant role in promoting the central region, and even has a significant inhibitory effect in the western region.

3). From the perspective of transmission channels, innovation factors play a partial intermediary role in the transmission mechanism of digital finance to promote labor productivity, and digital finance will promote the improvement of labor productivity through innovation factors.

4.2 Enlightenment

Based on the above conclusions, this paper puts forward the following policy suggestions:

First, accelerate the layout of digital finance, strengthen the construction of digital infrastructure, promote the digitalization of traditional financial institutions and the deep integration of digital finance and industry, so as to lay the foundation for the improvement of labor productivity and high-quality economic development.

Second, promote the digitalization of digital finance, accelerate the construction and layout of new financial data centers and supercomputing centers, and encourage the application and promotion of big data and artificial intelligence in the financial sector. The government should guide the financial industry to integrate with the big data strategy, jointly create a three-dimensional financial service matrix in line with the requirements of the new era, further promote the digital transformation of finance, and release the boosting role of digital finance in the labor growth rate.

Third, Balance the regional differences in the development of digital finance. Government needs to encourage the flow of human resources to the central and western regions, increase investment in digital infrastructure in the western region, and improve the supply capacity of digital financial products and services in the western region. Give full play to the guiding and driving role of the eastern region and strengthen exchanges and interactions between the eastern, central and western regions. At the same time, with the help of the Internet and new information transmission channels, the spatial and regional limitations of digital financial services will be broken through.

Fourth, attach importance to the innovation incentive of digital finance. Government needs to improve the regulatory system of digital finance, strengthen copyright protection, optimize patent approval, give full play to the role of digital finance in promoting scientific and technological innovation, and improve the efficiency and quality of social innovation. To promote the coordinated development of the quantity and quality of digital finance, we should not only improve the coverage and popularity of digital finance, but also promote the iteration and progress of financial digitization itself, so as to promote the development of labor productivity and further improve the quality of economic development.

References

- [1] Sheng Mingquan, long Huihui. Will financial leasing improve the total factor productivity of Listed Companies [J]. Friends of accounting, 2022 (14): 76-83.
- [2] Han Fengze, Dai Jinping. Financial technology and foreign direct investment: a study based on the perspective of enterprise financialization and productivity [J]. International economic and trade exploration, 2022,38 (04): 68-86.
- [3] Li Ruixue, Si Menghui, Zhang Hanfei. Research on the impact of financial agglomeration on industrial green Total Factor Productivity -- An Empirical Study Based on the Yangtze River Delta [J]. East China economic management, 2022,36 (05): 34-47.

- [4] Yu Desheng, Yang Lihua. Digital Inclusive Finance, supply chain finance and total factor productivity of Enterprises -- taking manufacturing industry as an example [J]. Wuhan finance, 2022 (04): 21-28.
- [5] Cheng qiongwen, Li Zhaoyan, Zhang Jing. Research on the bilateral effects of financial mismatch and government subsidies on total factor productivity of enterprises [J]. Industrial technology and economics, 2022,41 (06): 94-102.
- [6] Wu Xinhong, Pei Ping. Financial technology, total factor productivity and digital economic growth [J]. Economic and management research, 2022,43 (07): 16-36.
- [7] Zheng Yueming, Mei Aoyu. Analysis of the impact of digital Inclusive Finance on total factor productivity based on Provincial Panel Data [J / OL]. Operation and management: 1-14 [2022-08-15].
- [8] Wang Sen, Chen Yubin. How does digital inclusive finance promote the high-quality development of agriculture-- On the mechanism of intermediary and threshold [J]. Journal of management, 2022,35 (03): 72-87.
- [9] Liu minlou, Huang Xu, sun Jun. the impact mechanism of digital Finance on green development [J]. China population, resources and environment, 2022,32 (06): 113-122.
- [10] Liu Wei, Liu Weizhen, Dai Bingqing, LV ting Digital finance, loan structure and risk bearing of commercial banks -- Analysis Based on financial data of 181 commercial banks from 2011 to 2020 [J]. Wuhan finance, 2022 (07): 29-40.
- [11] Li Qiang, Ding Chunlin, song Guohao. Urban sprawl and productivity: promotion or inhibition-- Analysis based on night light data [J]. Journal of management science, 2021,24 (03): 45-62.
- [12] Jiang Changliu, Jiang Chengtao Can digital inclusive finance promote the high-quality development of regional economy-- Based on the empirical evidence of 258 cities [J]. Journal of Hunan University of science and Technology (SOCIAL SCIENCE EDITION), 2020,23 (03): 75-84.