



Research on the Influence of Digital Inclusive Finance on the Profits of Commercial Circulation Industry Empirical Analysis Based on China's Provincial Panel Data

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Abstract. In recent years, the wave of digitalization has swept the world and gradually penetrated into the commercial and trade circulation industry. With the development of financial technology, such as big data and blockchain are favored by financial institutions with the advantages of lower acquisition costs and review costs. In order to discuss the impact of digital inclusive finance on the profits of the commercial and trade circulation industry, this paper uses the digital inclusive finance index published by Peking University to start from six dimensions of digital inclusive finance coverage, depth of use, payment, insurance, credit and digitalization. The results show that digital financial inclusion has significantly promoted the improvement of the profits of the commercial and trade circulation industry; secondly, the regression of sub-sectors finds that the promotion of digital financial inclusion on the profits of the retail industry is greater than that of the wholesale industry; in addition, the return to reality by region, digital inclusive finance has a significant impact on the improvement of the profits of the commerce and trade circulation industry in the eastern and western regions, but it has a greater role in promoting the eastern region.

Keywords: Digital financial inclusion · wholesale and retail industry · panel data model

1 Introduction

Digital financial inclusion are a new financial service mode driven by digital technology, which can reduce the marginal cost of financial institutions through digital technology and provide financial support for small and medium-sized enterprises, farmers, the elderly and other special groups. At present, my country's commercial and trade circulation industry is dominated by small and medium-sized enterprises. These enterprises link upstream manufacturers and downstream consumers, forming a complex and huge commercial circulation network in my country, and they are the "capillaries" of the social and economic system. With the increase of domestic consumer demand, my country's commercial and trade circulation industry has continuously optimized the service model,

and has initially formed a relatively perfect commercial and trade circulation system, further moving towards high-quality economic development. However, the entire industry is still faced with the problems of low circulation efficiency, long capital turnover period, and high intermediate costs. Among them, the difficulty of capital financing is more serious. The reason is that my country's long-term financial "dual-track system" has caused small and medium-sized commercial and trade circulation enterprises to face financing discrimination for a long time. These small and medium-sized enterprises are precisely the "pillars" that supports my country's commercial and trade circulation system. The emergence of digital inclusive finance has lowered the threshold for financial services, enabling small and medium-sized commercial and trade circulation industries to obtain sufficient sources of funds. In addition, relying on technologies such as big data and the Internet, digital inclusive finance has enriched transaction methods, and changed from traditional offline payment to online payment, which greatly reduces transaction costs and is conducive to improving the profit level of the commercial and trade circulation industry.

Many domestic scholars have found that digital inclusive finance can promote the development of the commerce and trade circulation industry. Wang Xinqing [1] measured the development level of inclusive finance and the commercial and trade circulation industry, and used the grey relational analysis model to study the impact mechanism of the development of inclusive finance on the commercial and trade circulation industry business field [1]. Bai Chunmei [2] studied the path optimization effect of inclusive finance on the rural commerce and trade circulation system, and believed that inclusive finance could promote the modernization of the rural commerce and trade circulation market system and improve its operational efficiency [2].

Based on this, some scholars have deeply studied the impact mechanism of digital inclusive finance on the commerce and trade circulation industry. Zhao Yubing [3] calculated the high-quality development index of China's commercial and trade circulation industry based on the coefficient of variation method, and empirically analyzed the impact of digital inclusive finance on the high-quality development of the commercial and trade circulation industry. The study found that digital inclusive finance relies on technologies such as big data and cloud computing. With the guidance of government policies, it can significantly promote the rapid development of the commercial and trade circulation industry [3]. Liu Yiyuan [4] found that at present, most banks have completed digital transformation, and financial institutions take digitalization as an opportunity to accurately match financial resources to help small and medium-sized commercial and trade circulation enterprises grow [4].

The current academic research focuses on the impact of digital inclusive finance on the efficiency of the commercial and trade circulation industry, but to measure the development level of the commercial and trade circulation industry, its profitability should be used as an important measure. Therefore, this paper conducts research based on the indicators that can reflect the profitability of the commerce and trade circulation industry, deeply analyzes the impact of digital inclusive finance on the profits of the commerce and trade circulation industry, and provides relevant policy recommendations.

2 Research Design

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2.1 Variable Description

Explained variable. In this paper, the main business profit (MBP) of wholesale and retail industry is used to measure the level of operating profit of commercial and trade circulation industry. Referring to the practice of Wang Jing (2021), this article selects the wholesale and retail industry as the representative industry of commercial and trade circulation, without loss of generality. The larger the profit of the main business of the wholesale and retail industry, the higher the level of operating profit of the commercial and trade circulation industry.

Core explanatory variables. This paper selects the Digital Financial Inclusion Index (DFIIC) released by the Digital Finance Research Center of Peking University to measure the development level of digital financial inclusion in each province. The digital financial inclusion index covers six dimensions, including coverage, depth of use, payment, insurance, credit, and digitalization. It is widely used in academia and can objectively and accurately reflect the development level of digital financial inclusion.

Control variables. The proportion of each province's fiscal expenditure in the national fiscal expenditure is used as a proxy variable for the degree of government intervention (GI), and the government's financial investment in the commercial and trade circulation industry is different, which will lead to a corresponding increase or decrease in the development of commercial and trade circulation enterprises' operating profits; the level of scientific and technological development (LOTD) is measured by the R&D funds of industrial enterprises above designated size. The increase or decrease of R&D funds invested by enterprises will affect the technological level of the entire commercial and trade circulation industry, thereby affecting its operational efficiency and thus its operating profits; economic openness (LOD) measured by the proportion of imports and exports to exports, with the evolution of economic globalization, the degree of economic openness has an increasingly significant impact on operating profits in the field of commercial and trade circulation, but its specific impact needs further analysis and research.

2.2 Data Sources

In view of the change of the accounting method of the profit of the main business of wholesale and retail industry in China's statistical year in 2019, in order to better reflect

Table 1. Descriptive Statistical Analysis Of Variables

| Variable Name | Descriptive Statistics | | | |
|---------------|------------------------|--------------------|---------------|---------------|
| | Average value | Standard deviation | Minimum value | Maximum value |
| lnMBP | 6.3981 | 1.1933 | 3.2771 | 8.8658 |
| lnDFFIIC | 5.2747 | 0.3779 | 4.1185 | 5.9342 |
| lnGI | 0.8790 | 0.5543 | -0.5109 | 2.0015 |
| lnLOTD | 14.1052 | 1.6865 | 7.8641 | 16.8635 |
| lnLOOD | -3.0731 | 1.3555 | -6.3876 | 0.1169 |

the impact of digital inclusive finance on the profit of wholesale and retail industry, this paper selects 31 provinces and municipalities in China from 2011 to 2018 and panel data of autonomous regions. The measurement indicators of the development level of digital financial inclusion come from the Digital Finance Research Center of Peking University, and the rest of the data are from China Statistical Yearbook, China Financial Yearbook and EPS database.

In order to eliminate heteroskedasticity and cardinality effects, the above variables are treated logarithmically. The descriptive statistical analysis of each variable is shown in Table 1.

2.3 Model Setting

This paper mainly studies the impact of digital financial inclusion on the commerce and trade circulation industry, and constructs the following models:

$$\ln MBP_{it} = \alpha + \beta_1 \ln DFIIIC_{it} + \Sigma Controls + \varepsilon_{it}$$

Among them, lnMBP represents the operating profit level of the commercial and trade circulation industry, lnDFIIC represents digital financial inclusion, and Controls represents the control variables, including government intervention status (lnGI), technology development level (lnLOTD), and economic openness (lnLOOD). The subscript i represents each province and city, and t represents the year, which is a random error term.

3 Theoretical Analysis and Research Hypotheses

Digital inclusive finance relies on the development dividends of high-tech such as big data, which greatly alleviates the problem of information asymmetry in the financing process of small and medium-sized enterprises, lowers the financing threshold, and shortens the financing process. At present, there is a general problem of insufficient input in the commercial and trade circulation industry. The main reason for this problem is that the source of funds is single and the financing threshold is high. Insufficient input will lead to a decrease in the output tax that can be deducted by commercial and

trade circulation enterprises, which in turn increases their tax burden and damages their operating profits. The digital inclusive financial platform has enriched source of funds for SMEs, has the capital to carry out various businesses, and has a source of input, which can reduce the tax burden and improve the profit level of commercial and trade circulation enterprises. On the other hand, inclusive finance has promoted the rapid growth of e-commerce, and e-commerce has provided a large number of orders for many commercial logistics enterprises. The traditional financial model seriously hinders the development of e-commerce. Inclusive digital finance is based on platform data, which facilitates online transactions and lending in major e-commerce industries, and provides financial support for their normal operations. Based on this, the online transaction volume of the commerce and trade circulation industry has grown rapidly, and relying on network technology, a lot of intermediate costs have been saved, which has a positive impact on the increase of its operating profit.

This paper believes that the promoting effect of digital inclusive finance on the development of commerce and trade is not uniform in the eastern and western regions, and the effect on the eastern region is more significant. The reason is that the eastern region of my country is more economically developed than the western region, the level of science and technology is more advanced, and the infrastructure such as transportation is more complete, which has laid a solid foundation for the development of the commerce and trade circulation industry. In addition, digital inclusive finance has different degrees of positive impact on different industries in the commercial and trade circulation system, and the impact on the profit level of the retail industry is higher than that of the wholesale industry. The reason is that inclusive finance mainly solves the problem of the source of funds for enterprises with financing difficulties, and the main service subjects are the groups who cannot carry out traditional financial lending, and these groups are mostly low-income groups. With the development of network technology, such groups are in the transaction volume reached by e-commerce platforms such as Pinduoduo and Taobao has increased significantly, and the increase in demand for retail goods has boosted the profit level of the retail industry.

So make some assumptions. H_1 : Digital financial inclusion has a positive role in promoting commercial and trade circulation enterprises. H_2 : The development of inclusive finance has a greater driving effect on commercial and trade enterprises in the eastern region. H_3 : The amount of inclusive benefits will have a heterogeneous impact on the wholesale and retail industries.

4 Empirical Analysis

4.1 Overall Regression Analysis

After the Hausman test, this paper determined to use the fixed effect model, and fixed the time effect and individual effect. The specific results are shown in Table 2. As shown in the columns (1)–(4) of Table 2, under the method of gradually adding control variables, the coefficient of digital financial inclusion (lnDFIIC) are all positive numbers and pass the test at the 1% significant level. It shows that digital inclusive finance can effectively improve the profit level of the commerce and trade circulation industry by lowering the threshold of SMEs' lending, rationally allocating financial resources, highly integrated

with the e-commerce industry, and promoting the upgrading and transformation of the industrial structure. The research hypothesis H1 is proved.

Among the control variables, government intervention (lnGI) has the greatest positive impact on the operating profit of the commercial and trade circulation industry. From the perspective of its impact, every 1% increase in government intervention in the commercial and trade circulation industry will increase the profit of the commercial and trade circulation industry by 0.7368%. The reason is that the commercial and trade circulation industry is a pillar industry that drives my country's economic development. The government has increased capital investment in the infrastructure construction of the commercial and trade circulation industry, and formulated relevant policies to encourage technological innovation in the commercial and trade circulation industry. Influence, promotes industrial upgrading and transformation, and improve its profitability.

4.2 Analysis of Regression Results by Industry

After the Hausman test, this paper determined to use the fixed effect model, and fixed the time effect and individual effect. The specific results are shown in Table 2. As shown in the columns (1)–(4) of Table 2, under the method of gradually adding control variables, the coefficient of digital financial inclusion (lnDFIIC) are all positive numbers and pass the test at the 1% significant level. It shows that digital inclusive finance can effectively improve the profit level of the commerce and trade circulation industry by lowering the threshold of SMEs' lending, rationally allocating financial resources, highly integrated with the e-commerce industry, and promoting the upgrading and transformation of the industrial structure. The research hypothesis H1 is proved.

This paper subdivides the wholesale and retail industry, and studies the impact of digital HP Finance on the operating profit of the wholesale and retail industries. As shown in columns (2) and (3) in Table 3, the impact of digital financial inclusion on

Table 2. Analysis Of The Overall Regression Results

| Variable Name | Stepwise Regression | | | |
|---------------|----------------------|----------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| lnDFIIC | 0.3495*** (11.10) | 0.3637*** (12.33) | 0.2417*** (6.02) | 0.2270*** (5.63) |
| lnGI | | 0.9185*** (5.35) | 0.6563*** (3.75) | 0.7368*** (4.16) |
| lnLOTD | | | 0.2767 (4.27) | 0.2430*** (3.68) |
| lnLOOD | | | | 0.0332** (2.18) |
| Constant | 4.5548*** (27.36) | 3.6722*** (16.22) | 0.6435 (0.87) | 1.2269 (1.57) |

Table 3. Analysis Of Regression Results By Industry

| Variable Name | Divided Industries | | |
|---------------|-------------------------------|---------------------|----------------------|
| | Wholesale and Retail Industry | Wholesale Industry | Retail Industry |
| lnDFIIC | 0.2270*** (5.63) | 0.1648*** (3.47) | 0.2889*** (6.93) |
| lnGI | 0.7368*** (4.16) | 1.0648*** (5.14) | 0.4599*** (2.51) |
| lnLOTD | 0.2430*** (3.68) | 0.2119*** (2.75) | 0.3644*** (5.34) |
| lnLOOD | 0.0332** (2.18) | 0.0595*** (3.36) | -0.0035 (-0.22) |
| Constant | 1.2269 (1.57) | 1.3300 (1.46) | -1.7152** (-2.12) |

the operating profit of the wholesale and retail industries is significant at the 1% level, and the coefficients are all positive, indicating that the impact of digital financial inclusion on the wholesale and retail industries is significant. Operating profit has a positive role in promoting. However, compared with the wholesale industry, digital financial inclusion has a greater impact on the profits of the retail industry. The reason may be that the technological development level of the retail industry companies is ahead of the wholesale industry companies. Under the wave of science and technology, relying on the advantages of the Internet, retail enterprises use online live broadcasts and other sales methods to attract consumers, which greatly increases retail sales, and reduces intermediate costs with the help of Internet dividends, which significantly increases retail operating profits. The wholesale business model still needs to be further innovated.

4.3 Analysis of Regression Results by Region

This paper divides the 31 provinces and municipalities in the country into the eastern region and the western region, and studies the impact of digital inclusive finance on the operating profits of the commercial and trade circulation industries in different regions. As shown in Table 4, at a significant level of 1%, digital inclusive finance has a significant impact on the profits of the commerce and trade circulation industry in the eastern and western regions, but has a greater impact on the eastern region. This paper believes that it may be affected by the government’s industrial policy. The governments of the eastern region, especially the developed regions such as the southeast coast, actively promote the upgrading and transformation of the commercial and trade circulation industry, and have formulated many policies to improve their industrial structure and improve the overall profitability of the industry. For example, as early as 2010, Shenzhen City, Guangdong Province issued the “Shenzhen Commercial and Trade Circulation Industry

Table 4. Analysis Of Regression Results By Region

| Variable Name | Divided Region | |
|---------------|---------------------|---------------------|
| | Eastern region | Western region |
| lnDFIIC | 0.3607*** (5.02) | 0.2508*** (4.88) |
| lnGI | 1.1216*** (5.31) | 0.5956** (2.12) |
| lnLOTD | -0.1146 (-0.81) | 0.2095*** (2.69) |
| lnLOOD | -0.0199 (-0.88) | 0.0432** (2.18) |
| Constant | 5.7887** (3.33) | 1.5104* (1.68) |

Fund Management Measures”, with a total support fund of more than 8 million yuan, providing financial support for commercial and trade circulation enterprises.

5 Conclusions and Policy Recommendations

5.1 Conclusion

The development of inclusive finance has benefited many enterprises. Unlike the monopolistic competitive market, the foundation of my country’s commercial and trade circulation system is tens of thousands of commercial and trade enterprises, and it is these enterprises that have opened up the “last mile” of commercial and trade circulation. In view of this, based on the data of 31 provinces in China from 2012 to 2018, this paper empirically analyzes the impact of inclusive finance on the commercial and trade circulation industry by constructing a panel data model. The results show that:

- 1) The development of digital inclusive finance has brought significant positive effects to commercial and trade circulation enterprises, effectively alleviated the difficulty of capital turnover of commercial and trade enterprises, and can improve corporate profits and scale.
- 2) Further explore industry heterogeneity compared with the wholesale industry, digital inclusive finance has a greater role in promoting the retail industry. The reason may be that the retail side is more widely benefited by inclusive finance.
- 3) The study found that the eastern and western trade circulation industries showed that there is a huge difference, and the depth and breadth of the impact of inclusive finance on commercial and trade circulation enterprises in the eastern region is much higher than that in the western region.

5.2 Policy Suggestions

Based on the above conclusions, the following five policy recommendations are put forward.

- 1) We should vigorously develop digital inclusive finance to drive the growth of the profits of the commerce and trade circulation industry. It is necessary to further improve the infrastructure construction, further introduce new infrastructure such as big data in the financial field [5], promote the digital development of the financial industry, and transform from traditional finance to “digital finance”. Applying more science and technology in the financial field can not only improve the efficiency of capital operation, but also improve people’s quality of life and improve their service satisfaction.
- 2) The government should further remove obstacles to the development of digital financial inclusion. To maximize the positive role of digital financial inclusion, the government should formulate tax policies with incentives to encourage the development of digital financial inclusion services. At the same time, corresponding penalties will be imposed on companies that disrupt the market economy and hinder the development of financial technology. Improve the reward and punishment mechanism to point out the direction for the reform of financial institutions.
- 3) Financial companies, governments and other entities should learn from the advanced experience of developed countries in the financial field. For example, the government subsidizes scientific and technological personnel to go abroad for exchange and study, improve their financial research capabilities, and then promotes technological innovation in the financial field. Financial companies should also carry out regular training, so that employees can master the core essence and technology of inclusive finance, and promote the technological transformation of financial companies.
- 4) It is necessary to further apply technologies such as big data to the wholesale industry. According to the results of empirical analysis, the digitalization level of the wholesale industry in the commercial and trade circulation industry is lower than that of the retail industry, therefore the infrastructure construction of the wholesale industry should be improved. Introduce big data, blockchain and other technologies into the wholesale industry to improve the efficiency of capital circulation and reduce financial risks.
- 5) The coordinated development of the eastern, central and western regions will escort the financial lending of small and medium-sized enterprises. Relying on big data, blockchain and other technologies, gradually unify the domestic commercial and trade circulation market, reduces the process of commodity circulation, improve transaction and transportation efficiency, and make the resources of the eastern region and the central and western regions relatively balanced and coordinated development. Small and medium-sized enterprises should vigorously carry out in-house technical training to improve employees’ awareness of the field of digital inclusive finance. When there is a problem with capital flow, you should actively seek services from financial institutions, and at the same time, it can also help enterprises to upgrade and transform.

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