

# The Impact of Digital Inclusive Finance on Outward Foreign Direct Investment by Small and Medium-Sized Enterprises-- Empirical Evidence from China's "Specialized, Specialized and New" SMEs

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**Abstract:** In recent years, China's digital inclusive finance has promoted high-quality economic development by lowering thresholds and other means, but its mechanism of action on OFDI has not been elucidated. This paper empirically examines the impact of digital inclusive finance on OFDI and its path based on the data of China's provincial specialized, special and new small and medium-sized listed companies from 2012 to 2022. It is found that digital inclusive finance significantly promotes firms' OFDI, and this conclusion still holds after a series of robustness tests such as substitution variables and propensity score matching. The results of the sub-sample show that digital inclusive finance has a stronger facilitating effect on the eastern region than on the central and western regions, and a stronger promoting effect on non-state-owned enterprises than on state-owned enterprises. The mechanism analysis shows that digital inclusive finance promotes OFDI through three paths: alleviating financing constraints, promoting enterprise innovation and enhancing enterprise total factor productivity. The above results reveal the mechanism by which digital inclusive finance promotes OFDI, and provide theoretical basis and practical instructions for the government to formulate relevant policies and for enterprises to seize the opportunities of digitalization to enhance their international competitiveness.

**Keywords:** digital financial inclusion; outward foreign direct investment (OFDI); financing constraints; corporate innovation; total factor productivity.

## 1. Introduction

In recent years, the scale of China's digital economy has continued to expand, becoming an important engine for the development of the global digital economy. As a product of the deep integration of the digital economy and financial inclusion, digital financial inclusion has significantly reduced the threshold and cost of financial services through mobile payment, blockchain technology and big data risk control, alleviating the financing difficulties of small and medium-sized enterprises (SMEs). The State Council's "14th Five-Year Plan for the Development of the Digital Economy" emphasizes the importance of "promoting high-quality development of the economy by taking digital inclusive finance as a hand". According to the "Statistical Bulletin of China's Outward Foreign Direct Investment in 2023", China's outward foreign direct investment (OFDI) grew by 8.7% in 2023, realizing a stable and healthy development, while global foreign direct investment (FDI) declined by 2%, and cross-border mergers and acquisitions (M&A) scale was the lowest in the past ten years. Nonetheless, companies still face challenges such as financing constraints, lack of innovation, and low productivity. Under this premise, it is important to explore the impact of digital inclusive finance on OFDI by helping SMEs alleviate financing constraints and promoting enterprise innovation and total factor production.

Digital inclusive finance is of great significance to the development of enterprises. Wan Jiayu et al. (2020) suggest that digital finance can solve the financing problems encountered by enterprises in research and development innovation projects and promote enterprise innovation. Zhang Xun et al. (2021) point out that it enhances regional innovation capacity through technological spillover effects. Gu Ning et al. (2021) suggest that long-excluded small and medium-sized enterprises (SMEs) can improve their total factor productivity through inclusive finance. Meanwhile, Ji Xiangbao (2014) also

suggests that TFP can promote the level of OFDI. However, the existing literature rarely mentions the role of digital inclusive finance on OFDI, or focuses only on the role of a single mechanism, and lacks systematic integration of the role mechanisms financing constraints, corporate innovation and corporate total factor production.

Specialized, special and new, refers to the development of enterprises with specialization, refinement, special features, novelty, the essence of focusing on niche markets with special expertise of innovative small and medium-sized enterprises, July 30, 2021, the Political Bureau of the Central Committee held a meeting to promote the development of small and medium-sized enterprises specializing in specialties to the national level. Specialized, special and new enterprises face the financing dilemma of "difficult to pledge technical value" due to their light assets and high R&D investment. Digital inclusive finance solves this problem through policy guidance. According to the policy of the Ministry of Finance, the Ministry of Finance relies on the National Financing Guarantee Fund to build a national governmental financing guarantee business management service platform to guarantee the development of small and micro enterprises. Under the support of national policies, specialized, special and new enterprises have flourished, and as of November 2024, there were 14,600 specialized, special and new "small giants" in China.

Theoretically, digital inclusive finance can promote the development of enterprise OFDI. First, the financing constraints of enterprises can be alleviated, and they can have more channels to obtain more funds, which can promote the development of enterprises as well as export trade (Wan Jiayu et al., 2020). Secondly, the innovation ability of enterprises can be improved as a result, and the products they produce can have a competitive advantage in the international market (Liang Bang, Zhang Jianhua, 2019). Third, it promotes the total factor production of enterprises, reduces the cost of production, and enhances the advantages of trade with overseas merchants (Gu Ning et al., 2021).

This paper uses a sample of Chinese provincial-level specialized small and medium-sized listed companies from 2012 to 2022 to verify the positive impact of digital financial inclusion on OFDI with a fixed-effects model, and follows up with robustness tests, heterogeneity analysis, and mechanism analysis to validate the conclusions. The subsequent structure of this paper is as follows: chapter 2, literature review; chapter 3, research hypotheses; chapter 4, empirical design; chapter 5, empirical results; chapter 6, further mechanism tests; chapter 7, conclusion.

## **2. Literature review**

### **2.1. Digital Inclusive Finance**

Digital inclusive finance realizes the universality, low cost, convenience and efficiency of financial services through technological innovation and institutional innovation. Zhang Xun and other scholars (2019) suggest that the rapid development of the Internet in recent years and the creation and sharing of information or data brought about by the Internet revolution have helped to promote the emergence of the digital financial industry and improve the accessibility and inclusion of finance. According to Guo Feng et al. (2020), inclusive finance improves the accessibility of financial services through the construction of financial infrastructure and realizes the provision of convenient financial services at a lower cost to people from all walks of life, especially those with lower incomes. Liu Xinyi and other scholars (2023) believe that digital inclusive finance breaks through the limitations of traditional financial institutions' outlets in terms of geographic distance, and can allocate financial resources more effectively.

Digital inclusive finance can also alleviate the financing constraints of enterprises and help them innovate as well as their total factor development. Liang Bang & Zhang (2019) suggest that digital finance significantly improves the financing efficiency of enterprises by alleviating the problem of information asymmetry. Wan Jiayu and other scholars (2020) analyzed that digital finance can effectively alleviate enterprise financing constraints by broadening the source of funds, increasing the scale of financing and enhancing the ability of enterprise data integration. Ren Xiaoyi (2020) pointed out that the policy-oriented nature of digital finance not only alleviates the enterprise financing

constraints, but also expands the boundary of financial services. Gu Ning and other scholars (2021) show that micro and small enterprises, which have long been excluded from traditional finance, can obtain sustainable inclusive services through digital inclusive finance, thus improving total factor productivity and realizing efficient operations. Zhang Yong and Yin Jian (2022) emphasize that digital finance can solve the structural mismatch problem of traditional finance, alleviate the "difficult" and "expensive" difficulties of enterprise financing, and thus promote total factor productivity.

## **2.2. OFDI**

Research on the macro aspects of OFDI has mostly focused on the drivers, influencing factors and economic effects of OFDI at the national, industry or regional level. Wang Sheng (2014) further analyzes that home country's direct investment in the host country affects home country's import and export trade to the host country, and at the same time, the flow of import and export trade from the home country to the host country also affects the home country's OFDI, and there is a significant endogeneity between the two. Wang Jueli and Xiang Jiaojiao (2015) analyzed that the economic and rule of law system has a significant positive effect on China's OFDI toward developing countries, but the effect on China's OFDI toward developed countries is not significant. According to the findings of Yang Jiao Hui et al. (2016), China's OFDI does not show institutional risk aversion, but at least ostensibly is more distributed to countries and regions with poorer institutional quality, which is characterized by institutional risk preference.

Research on the micro level of OFDI has mostly focused on OFDI decisions, behavior and its performance at the enterprise level. According to Ji Xiangbao's (2014) research, in the case of a perfect institutional environment, the export competitiveness of enterprises with stronger institutional dependence and a preference for building their own brands to sell in foreign markets will be higher than that of processing trade enterprises with lower institutional dependence and a preference for exporting by OEM or OEM. The research of Li Lei and other scholars (2018) shows that the horizontal spillover, forward spillover and backward spillover effects of foreign capital have a significant positive impact on the OFDI of Chinese domestic enterprises, and the backward spillover effect of foreign enterprises is higher than the forward spillover effect.

## **2.3. Literature review**

The existing literature is rich in independent studies on digital financial inclusion and OFDI, but the exploration of the intrinsic linkages between the two and the mechanisms of their impacts is still insufficient. These literatures mention the characteristics and impact aspects of digital financial inclusion or the macro and micro aspects of OFDI, but there are certain limitations. Specifically, there are few in-depth analyses of the effect of digital financial inclusion on OFDI and its specific path of influence in the existing literature, and some studies only mention that digital finance can promote the development of OFDI, but the analysis of the mechanism of its role involves only a few variables and is not yet comprehensive. Although digital inclusive finance has been proved to be able to indirectly enhance the competitiveness of enterprises by alleviating financing constraints and improving their innovation ability and resource allocation efficiency, how this process is transformed into the driving force of OFDI has not been systematically explained.

## **3. Theoretical analysis and research hypotheses**

Digital finance refers broadly to the emerging financial business model based on digital technology to realize financing, payment, investment and so on (Wan Jia Yu et al., 2020). The technology can reduce the threshold of financial services, optimize resource allocation, and help small and medium-sized enterprises (SMEs) successfully finance so as to facilitate their development of direct foreign trade. Digital inclusive finance can drive enterprise OFDI through three core paths: first, by alleviating financing constraints, digital financial tools reduce the threshold and cost of enterprise

financing, SMEs can obtain more funds, and improve enterprise cash flow to support overseas investment needs; second, by empowering enterprise innovation, digital technology platforms (e.g., blockchain, industrial internet) accelerate the efficiency of knowledge sharing and R&D, and form a Second, by empowering enterprise innovation, digital technology platforms (e.g. blockchain, industrial internet) accelerate knowledge sharing and R&D efficiency, forming a technological advantage to break through the barriers to competition in the international market; and third, by boosting enterprise total factor productivity, digital finance optimizes resource allocation and promotes technological upgrade (e.g. introduction of automated equipment) to enhance enterprise productivity and spillover capacity of economies of scale. All three mechanisms help SMEs become more competitive in the international market and promote their OFDI.

Government policy support can promote the development of digital inclusive finance. The Third Plenary Session of the 20th CPC Central Committee proposed that "we should actively develop digital finance and inclusive finance, and strengthen high-quality financial services for major strategies, key areas, and weak links", and this policy orientation has yielded great results by lowering the threshold of financial services and expanding the scope of credit coverage. According to the People's Bank of China, the balance of RMB inclusive small and micro loans at the end of the fourth quarter of 2024 amounted to RMB 32.93 trillion yuan, an increase of 14.6% year-on-year. Monetary and fiscal policy linkage is a core policy tool at the national level to promote the development of digital inclusive finance. For example, in Yunnan Province, the province's digital empowerment platform for inclusive finance, the Rongxin service platform for the pain points and difficulties in the financing process of enterprises, designed for digital credit, loan aggregation, direct policy, financing credit four major functions, to realize the effective docking of supply and demand, the platform is efficiently completed, and is well received by enterprises. Government departments provide subsidy amounts to SMEs that utilize digital inclusive finance for OFDI to help their rapid development, and also allow financial institutions to provide loan support to these enterprises.

The government develops OFDI through the means of digital inclusive finance. as a policy financial institution, China Credit Insurance Corporation (CICC) has been increasing its investment in inclusive financial resources in recent years, proposing favorable policies such as reducing costs for SMEs and innovating service methods to help SMEs trade with foreign countries smoothly. According to statistics, in 2021, China Credit Insurance Corporation (CICC) will underwrite more than US\$800 billion and serve more than 160,000 clients. CBIRC has promoted ICBC and Bank of China to set up 56 inclusive financial service centers along the Belt and Road, providing localized credit and settlement services to reduce the burden of enterprises in foreign trade settlement. In accordance with the State Council's Guiding Opinions on Promoting the High-Quality Development of Trade, the Government has provided tax incentives, including income tax exemptions and additional deductions for export tax refunds, for qualified offshore investment projects, to assist enterprises in foreign trade.

Digital finance can alleviate information asymmetry (Duan, Zhang, 2024). Compared with large enterprises, SMEs have more serious information asymmetry problems and are more prone to moral hazard and adverse selection problems. Digital inclusive finance significantly reduces information barriers in the process of enterprise internationalization by integrating cross-border market data (e.g., host country policies, consumer preferences, supply chain information, etc.). Digital financial instruments can also reduce financing costs and thresholds through tools such as supply chain finance and digital payments, helping firms improve cash flow and ease financing constraints. With more capital, enterprises have the ability to innovate to make their products more compliant with international standards and their production processes more efficient, increasing their competitiveness in the international trade market. The alleviation of enterprise financing difficulties helps technological innovation, which in turn enhances the total factor productivity of enterprises. Enterprises are able to apply new technologies to optimize the internal management process, which can also promote the rational allocation of resources, so their production efficiency is improved.

Enterprises' financing constraints are eased by digital inclusive finance, so they have access to more capital, which they can use for overseas mergers and acquisitions, factory construction and market research. Enterprises are also more resistant to international trade risks, such as host interest rate fluctuations and political risks, after their cash flows are stabilized, and are better able to conduct foreign trade. According to the risk-taking theory, the alleviation of financing constraints can increase the risk appetite of enterprises. Enterprises can also improve their innovation and industrial level after obtaining more capital. Some companies in the manufacturing industry can improve their level of smart manufacturing, which not only enhances the image of corporate social responsibility, reduces long-term operating costs and environmental risks, and provides the possibility of large-scale OFD. Digital inclusive finance also helps enterprises to develop total factor production. Enterprises with high TFP are more efficient in production, have lower unit production costs, and are able to earn more profits to support their foreign trade. In addition, these enterprises can also develop their unique competitive advantages, such as product quality is far ahead, which can attract more host enterprises to cooperate with them. Based on the above analysis, this paper establishes the following hypothesis H1:

H1: Digital financial inclusion can significantly boost OFDI.

## 4. IV. Research design

### 4.1. Data sources

This paper adopts the sample of Chinese provincial-level specialized, specialized and new small and medium-sized listed companies from 2012 to 2022, with data sources from the Cathay Pacific database (CSMAR) and the Vantage database (Wind). In addition, this paper refers to previous literature and treats the sample according to the following principles: (1) remove samples with missing values of key variables; (2) exclude financial and insurance companies; (3) exclude ST, \*ST & PT companies; and (4) shrink the tails of all the variables at the 1% and 99% quartiles. After a series of processing, this paper finally obtains 3593 firm-year observations.

### 4.2. Definition of variables

#### 4.2.1 Explained variable: Outward foreign direct investment (OFDI)

In this paper, the 0-1 variable is used to indicate whether the enterprise conducts OFDI in the current year or not. Many studies focus on the "occurrence or not" of OFDI rather than the investment scale, referring to the study of Chen Yuxuan and Cheng Nuo (2015), if an enterprise carries out OFDI, the dichotomous variable takes the value of 1; if an enterprise doesn't carry out OFDI, the dichotomous variable takes the value of 0. By using the 0-1 variable, the sample can be classified into "OFDI enterprises" and "non-OFDI enterprises", which is convenient for comparing the differences between groups, and can also reduce the complexity of data conversion.

#### 4.2.2 Explanatory variable: digital financial inclusion (*Difi*)

This paper adopts the logarithmized "Peking University Digital Inclusive Finance Index" to measure the level of digital inclusive finance development in each city based on the research of Tang Wenjin et al. (2019), which covers the dimensions of payment, credit, insurance, and investment, and is constructed through the indicators such as the coverage rate of standardized mobile payment, the availability of online credit, and the digital financial management penetration rate (Guo Feng et al., 2020), which comprehensively reflect the breadth and depth of regional digital financial services (Guo Feng et al., 2020). The index is constructed through indicators such as standardized mobile payment coverage, online credit availability, and digital financial management penetration, and comprehensively reflects the breadth and depth of regional digital financial services (Guo Feng et al., 2020).

### 4.2.3 Control variable

Referring to the practice of previous scholars, this paper carries out the following variable controls: firm size (*Size*), gearing ratio (*Lev*), net profitability of total assets (*ROA*), total asset turnover (*ATO*), cashflow ratio (*Cashflow*), shareholding ratio of top five shareholders (*Top5*), and number of years since the listing (*ListAge*), Years in business (*FirmAge*), Big 4 audit or not (*Big4*). Large firms have stronger capital reserves, management experience, and risk tolerance, and are more likely to overcome the fixed costs of investing overseas relative to SMEs. Controlling the size can exclude the interference of firm size differences in OFDI decisions. Capital structure directly affects firms' financing constraints and risk preferences and needs to control the nonlinear impact of firms' corporate debt ratios on OFDI. Specific variables are defined in Table 1 below.

**Table 1** Definition of variables

| variable name                                 | notation                      | define                                                                                                                    |
|-----------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| external direct investment (OFDI)             | <i>OFDI</i>                   | Investments made by an investor who organizes and operates a business directly in a foreign country                       |
| Digital Inclusive Finance                     | <i>Difi</i>                   | Fully empower financial inclusion through digital technologies such as big data mining, blockchain and cloud computing    |
| Company size                                  | <i>Size</i>                   | Ln (total assets)                                                                                                         |
| gearing                                       | <i>Lev</i>                    | Total liabilities/total assets                                                                                            |
| Net profit margin on total assets             | <i>ROA</i>                    | Net profit/total assets                                                                                                   |
| Total asset turnover                          | <i>ATO</i>                    | Operating income/total assets                                                                                             |
| Cash flow ratio                               | <i>Cashflow</i>               | Net cash flow from operating activities/total assets *100%                                                                |
| Shareholding ratio of top five shareholders   | <i>Top5</i>                   | Shareholding of top five shareholders/total shares of the company                                                         |
| Number of years listed                        | <i>ListAge</i>                | Ln (year of study - year of IPO + 1)                                                                                      |
| Years of Establishment<br>Whether Big 4 Audit | <i>FirmAge</i><br><i>Big4</i> | Ln (year of study - year of inception + 1)<br>The current year belongs to the Big Four audit take 1, not belong to take 0 |

### 4.3. Modeling assumptions

In this paper, we use model (1) to test the hypotheses.

$$OFDI_{it} = \alpha + \beta Difi_{it} + \lambda Controls_{it} + IndustryF.E + TimeF.E + \varepsilon_{it} \quad (1)$$

Where *OFDI* is the OFDI index, *Difi* refers to the measurement of digital financial inclusion, *Controls* is the set of control variables, *IndustryF.E* indicates that the model controls for industry effects, *TimeF.E* indicates that the model controls for time effects, and  $\varepsilon_{it}$  is the residual term. The study focuses on the coefficient of  $\beta$ . If  $\beta$  on the right side of the equation is significantly positive, it indicates that digital financial inclusion promotes OFDI and the hypothesis is valid. In addition, in order to avoid the potential problem of cross-sectional heteroskedasticity, all regressions in this paper are treated with robust standard errors of clustering to firms.

## 5. Empirical findings

### 5.1. Descriptive statistics

This paper involves the explanatory variable *Difi*, the explanatory variable *OFDI*, and nine control variables, and Table 2 below shows the statistical descriptions of the eleven variables. Among them, the mean value of the explanatory variable *OFDI* (outward foreign direct investment) is 0.245,

indicating that 24.5% of the enterprises in the sample have overseas investment behaviors; the difference of the explanatory variable *Difi* is small, indicating that the overall level of digital financial development of the enterprises is high; and the standard deviation of the enterprise's cash flow is 0.0625, indicating that the differences in the cash flow of the selected enterprises are small.

**Table 2** Results of descriptive statistics

|                 | (1)   | (2)    | (3)    | (4)    | (5)   |
|-----------------|-------|--------|--------|--------|-------|
| VARIABLES       | N     | mean   | sd     | min    | max   |
| <i>OFDI</i>     | 3,593 | 0.245  | 0.430  | 0      | 1     |
| <i>Difi</i>     | 3,593 | 5.501  | 0.327  | 4.468  | 5.862 |
| <i>Size</i>     | 3,593 | 21.54  | 0.805  | 20.05  | 23.96 |
| <i>Lev</i>      | 3,593 | 0.329  | 0.180  | 0.0541 | 0.828 |
| <i>ROA</i>      | 3,593 | 0.0417 | 0.0698 | -0.229 | 0.210 |
| <i>ATO</i>      | 3,593 | 0.551  | 0.340  | 0.0945 | 2.344 |
| <i>Cashflow</i> | 3,593 | 0.0430 | 0.0625 | -0.135 | 0.218 |
| <i>Top5</i>     | 3,593 | 0.516  | 0.140  | 0.212  | 0.836 |
| <i>ListAge</i>  | 3,593 | 1.747  | 0.656  | 0.693  | 3.219 |
| <i>FirmAge</i>  | 3,593 | 2.899  | 0.285  | 2.079  | 3.526 |
| <i>Big4</i>     | 3,593 | 0.0256 | 0.158  | 0      | 1     |

## 5.2. Return to baseline

This paper utilizes the model in the model assumptions to regress the hypotheses, and the regression results are shown in Table 3. The first column is the baseline regression model, which contains the core explanatory variables and the explanatory variables, and does not incorporate the fixed effects and control variables; the second column is the fixed effects extension model, which adds industry and year fixed effects on the basis of the baseline model; the third column is the control variables extension model, which introduces control variables such as firm size (*Size*) in the baseline model; and the fourth column incorporates both the fixed effects and the control variables in order to comprehensively control for potential omitted variables and heterogeneity effects. In columns (2) and (4) of Table 3, the coefficients on *Difi* are positive and significant at the 1% level. This result supports the core hypothesis of this paper, indicating that digital financial inclusion has a significant positive impact on firms' direct outward investment. In addition, this paper finds that firm size (*Size*), gearing ratio (*Lev*), cash flow ratio (*Cashflow*), years of listing (*ListAge*), years of company establishment (*FirmAge*), auditing for the Big 4 (*Big4*), and shareholding ratio of the top five shareholders (*Top5*) have a positive relationship with *OFDI*, while total capital turnover is negatively related to it.

**Table 3** Benchmark regression results

|                     | (1)         | (2)         | (3)         | (4)         |
|---------------------|-------------|-------------|-------------|-------------|
| <i>VARIABLES</i>    | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> |
| <i>Difi</i>         | 0.138***    | 0.610***    | 0.140***    | 0.671***    |
|                     | (4.332)     | (9.505)     | (3.789)     | (8.927)     |
| <i>Size</i>         |             |             | 0.038*      | 0.066***    |
|                     |             |             | (1.755)     | (3.151)     |
| <i>Lev</i>          |             |             | 0.041       | 0.021       |
|                     |             |             | (0.422)     | (0.233)     |
| <i>ROA</i>          |             |             | -0.126      | -0.185      |
|                     |             |             | (-0.697)    | (-1.037)    |
| <i>ATO</i>          |             |             | -0.016      | -0.019      |
|                     |             |             | (-0.391)    | (-0.404)    |
| <i>Cashflow</i>     |             |             | 0.062       | 0.121       |
|                     |             |             | (0.403)     | (0.780)     |
| <i>ListAge</i>      |             |             | -0.011      | 0.026       |
|                     |             |             | (-0.401)    | (0.932)     |
| <i>FirmAge</i>      |             |             | -0.080      | 0.030       |
|                     |             |             | (-1.396)    | (0.523)     |
| <i>Big4</i>         |             |             | 0.186**     | 0.193**     |
|                     |             |             | (2.116)     | (2.253)     |
| <i>Top5</i>         |             |             | 0.123       | 0.101       |
|                     |             |             | (0.896)     | (0.857)     |
| <i>Constant</i>     | -0.511***   | -2.464***   | -1.172**    | -4.363***   |
|                     | (-2.959)    | (-8.071)    | (-2.545)    | (-7.295)    |
| <i>Observations</i> | 3,593       | 3,593       | 3,593       | 3,593       |
| <i>R-squared</i>    | 0.011       | 0.113       | 0.026       | 0.138       |
| <i>Industry FE</i>  | NO          | YES         | NO          | YES         |
| <i>Year FE</i>      | NO          | YES         | NO          | YES         |

Note: \*\*\*, \*\*, \* represent significant at 1%, 5%, 10% level respectively, t-value in parentheses, same below

## 6. Further analysis

### 6.1. Robustness tests

#### 6.1.1 Substitution of explanatory variables

In order to verify the robustness of the impact of digital financial inclusion (*Difi*) on corporate outward foreign direct investment (*OFDI*), this paper further replaces the measure of *OFDI* from a binary dummy variable to the investment scale in billions of dollars (*OFDI\_scale*) and re-runs the regression, and the results are shown in Table 4. In the first column, the coefficient of *Difi* is positive (9.302) and significant at the 1% level; after the introduction of control variables, the coefficient of *Difi* is still positive (10.414) and larger than before, further supporting the reliability of the core findings.

**Table 4** Results of replacing the explanatory variables measure

|                     | (1)               | (2)               |
|---------------------|-------------------|-------------------|
| <i>VARIABLES</i>    | <i>OFDI_scale</i> | <i>OFDI_scale</i> |
| <i>Difi</i>         | 9.302***          | 10.414***         |
|                     | (8.682)           | (8.392)           |
| <i>Size</i>         |                   | 1.269***          |
|                     |                   | (3.500)           |
| <i>Lev</i>          |                   | -0.059            |
|                     |                   | (-0.040)          |
| <i>ROA</i>          |                   | -4.576            |
|                     |                   | (-1.557)          |
| <i>ATO</i>          |                   | -0.190            |
|                     |                   | (-0.231)          |
| <i>Cashflow</i>     |                   | 2.202             |
|                     |                   | (0.837)           |
| <i>ListAge</i>      |                   | 0.326             |
|                     |                   | (0.701)           |
| <i>FirmAge</i>      |                   | 0.526             |
|                     |                   | (0.588)           |
| <i>Big4</i>         |                   | 3.763**           |
|                     |                   | (2.397)           |
| <i>Top5</i>         |                   | 0.639             |
|                     |                   | (0.325)           |
| <i>Constant</i>     | -37.224***        | -72.233***        |
|                     | (-7.287)          | (-7.026)          |
|                     |                   |                   |
| <i>Observations</i> | 3,591             | 3,591             |
| <i>R-squared</i>    | 0.103             | 0.135             |
| <i>Industry FE</i>  | YES               | YES               |
| <i>Year FE</i>      | YES               | YES               |

### 6.1.2 Propensity score matching

There may be a risk of bias in the process of sample selection. Enterprises in developed regions may have higher levels of OFDI due to well-developed infrastructures and diversified financing channels even if they don't use *Difi*, while some enterprises in underdeveloped regions with a low rate of *Difi* use may find it difficult to carry out OFDI due to financing constraints. In order to mitigate the impact of sample selection bias on the relationship between digital financial inclusion (*Difi*) and enterprises' outward foreign direct investment (*OFDI*) relationship, this paper adopts the propensity score matching method to deal with the sample self-selection bias. The results of this paper's research are shown in Table 5. After dealing with the sample self-selection bias, the *Difi* coefficient is 0.686, which is still significantly and positively correlated with *OFDI* at the 1% level, indicating the robustness of the model.

**Table 5** Results of propensity score matching

|                     | (1)         | (2)         | (3)         | (4)         |
|---------------------|-------------|-------------|-------------|-------------|
| VARIABLES           | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> |
| <i>Difi</i>         | 0.144***    | 0.609***    | 0.150***    | 0.686***    |
|                     | (4.309)     | (9.448)     | (3.911)     | (9.138)     |
| <i>Size</i>         |             |             | 0.030       | 0.068***    |
|                     |             |             | (1.322)     | (3.176)     |
| <i>Lev</i>          |             |             | 0.052       | 0.027       |
|                     |             |             | (0.513)     | (0.278)     |
| <i>ROA</i>          |             |             | -0.151      | -0.263      |
|                     |             |             | (-0.752)    | (-1.350)    |
| <i>ATO</i>          |             |             | -0.032      | -0.021      |
|                     |             |             | (-0.755)    | (-0.408)    |
| <i>Cashflow</i>     |             |             | 0.044       | 0.181       |
|                     |             |             | (0.261)     | (1.075)     |
| <i>ListAge</i>      |             |             | -0.018      | 0.020       |
|                     |             |             | (-0.627)    | (0.681)     |
| <i>FirmAge</i>      |             |             | -0.070      | 0.066       |
|                     |             |             | (-1.129)    | (1.100)     |
| <i>Big4</i>         |             |             | 0.198*      | 0.216*      |
|                     |             |             | (1.906)     | (1.944)     |
| <i>Top5</i>         |             |             | 0.120       | 0.091       |
|                     |             |             | (0.811)     | (0.751)     |
| <i>Constant</i>     | -0.545***   | -2.567***   | -1.036**    | -4.637***   |
|                     | (-3.027)    | (-8.498)    | (-2.231)    | (-7.677)    |
| <i>Observations</i> | 2,665       | 2,665       | 2,665       | 2,665       |
| <i>R-squared</i>    | 0.013       | 0.136       | 0.024       | 0.162       |
| <i>Industry FE</i>  | NO          | YES         | NO          | YES         |
| <i>Year FE</i>      | NO          | YES         | NO          | YES         |

### 6.1.3 Instrumental variables approach

Although this paper controls the relevant variables as much as possible, it still faces a possible endogeneity problem: on the one hand, the development of digital inclusive finance may promote the concentration of capital in the local market, which is difficult to promote the OFDI of SMEs; on the other hand, there are a large number of factors affecting the OFDI, and it is difficult to prevent the generation of omitted variables with the control variables involved in the current data. In order to cope with the potential endogeneity problem in the relationship between digital inclusive finance (*Difi*) and corporate outward foreign direct investment (*OFDI*), referring to the study of Qian et al. (2020), this paper adopts the instrumental variable method to test the robustness of model (1). In this paper, the Heckman two-step method is used to deal with the sample selection bias problem and further control the endogeneity problem through the instrumental variable method (2SLS). The first step of the two-step approach is to introduce instrumental variables into the regression model to verify their correlation with endogenous variables. The results, as shown in Table 6, indicate that the instrumental variables are highly correlated and significantly positively correlated with the endogenous variables, and the coefficient of the instrumental variables is 0.856 and is significant at the 1% level, which indicates that the selected instrumental variables have high validity. In the second step, based on the regression results of the first step, the predicted fitted values of the endogenous variables are generated and replaced with the original endogenous variables in the benchmark regression. This method can effectively eliminate the endogeneity problem caused by endogenous

explanatory variables. The results show that after controlling for endogeneity, the coefficient of the core explanatory variable *Difi* is 0.658 and significant at the 5% level. This result further validates the robustness of the core conclusion of this paper, which is that digital inclusive finance has a significant role in promoting corporate OFDI.

**Table 6** Results of instrumental variables based on industry averages

|                     | (1)                   | (2)                   |
|---------------------|-----------------------|-----------------------|
| VARIABLES           | <i>Difi</i>           | <i>OFDI</i>           |
| <i>iv</i>           | 0.856***              |                       |
| <i>Difi</i>         | (6.868)               | 0.658**<br>(1.989)    |
| <i>Size</i>         | -0.012<br>(-0.992)    | 0.068***<br>(2.842)   |
| <i>Lev</i>          | -0.039<br>(-0.708)    | 0.025<br>(0.248)      |
| <i>ROA</i>          | 0.066<br>(0.694)      | -0.261<br>(-1.325)    |
| <i>ATO</i>          | 0.024<br>(1.064)      | -0.020<br>(-0.402)    |
| <i>Cashflow</i>     | 0.003<br>(0.035)      | 0.181<br>(1.076)      |
| <i>ListAge</i>      | -0.084***<br>(-4.878) | 0.018<br>(0.434)      |
| <i>FirmAge</i>      | 0.020<br>(0.558)      | 0.067<br>(1.046)      |
| <i>Big4</i>         | 0.010<br>(0.290)      | 0.217*<br>(1.826)     |
| <i>Top5</i>         | 0.089<br>(1.177)      | 0.094<br>(0.698)      |
| <i>Constant</i>     | 0.921<br>(1.319)      | -4.503***<br>(-2.646) |
| <i>Observations</i> | 2,665                 | 2,665                 |
| <i>R-squared</i>    | 0.720                 | 0.082                 |
| <i>Industry FE</i>  | YES                   | YES                   |
| <i>Year FE</i>      | YES                   | YES                   |

#### 6.1.4 Change the sample interval

In this paper, we test robustness by changing the sample interval to exclude the sample data of 2015, because from July 2015, the regulatory authorities imposed strict restrictions on short selling in securities financing, and securities financing trading almost completely stopped; one year later, although securities financing trading resumed, the scale of the business was very limited, only equivalent to one-tenth of the size of the stock market prior to the abnormal volatility of the stock market in 2015, and the high ups and downs of stock market volatility had a significant impact on listed firms has a significant impact. Retaining the 2015 data may make OFDI subject to policy interference and lead to inaccurate results, remove it to exclude the interference of special years and test whether the core findings are disturbed by short-term policy perturbations, so as to enhance the external validity of the study. The results of changing the sample interval are shown in Table 7. The paper finds that the coefficient of digital financial inclusion is still positive and significant at the 1% level, which leads to the conclusion that the impact of *Difi* on *OFDI* is not limited by year and is robust.

**Table 7** Results of changing sample intervals

|                     | (1)         | (2)         | (3)         | (4)         |
|---------------------|-------------|-------------|-------------|-------------|
| <i>VARIABLES</i>    | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> | <i>OFDI</i> |
| <i>Difi</i>         | 0.131***    | 0.606***    | 0.136***    | 0.682***    |
|                     | (3.836)     | (9.451)     | (3.502)     | (9.056)     |
| <i>Size</i>         |             |             | 0.030       | 0.068***    |
|                     |             |             | (1.322)     | (3.146)     |
| <i>Lev</i>          |             |             | 0.057       | 0.028       |
|                     |             |             | (0.552)     | (0.290)     |
| <i>ROA</i>          |             |             | -0.163      | -0.303      |
|                     |             |             | (-0.806)    | (-1.551)    |
| <i>ATO</i>          |             |             | -0.019      | -0.005      |
|                     |             |             | (-0.442)    | (-0.096)    |
| <i>Cashflow</i>     |             |             | 0.034       | 0.166       |
|                     |             |             | (0.195)     | (0.977)     |
| <i>ListAge</i>      |             |             | -0.020      | 0.020       |
|                     |             |             | (-0.691)    | (0.650)     |
| <i>FirmAge</i>      |             |             | -0.072      | 0.067       |
|                     |             |             | (-1.157)    | (1.118)     |
| <i>Big4</i>         |             |             | 0.200*      | 0.216*      |
|                     |             |             | (1.915)     | (1.958)     |
| <i>Top5</i>         |             |             | 0.146       | 0.122       |
|                     |             |             | (0.997)     | (1.003)     |
| <i>Constant</i>     | -0.477**    | -2.567***   | -0.990**    | -4.662***   |
|                     | (-2.582)    | (-8.567)    | (-2.116)    | (-7.743)    |
| <i>Observations</i> | 2,479       | 2,479       | 2,479       | 2,479       |
| <i>R-squared</i>    | 0.011       | 0.134       | 0.023       | 0.161       |
| <i>Industry FE</i>  | NO          | YES         | NO          | YES         |
| <i>Year FE</i>      | NO          | YES         | NO          | YES         |

## 6.2. Heterogeneity analysis

### 6.2.1 Regional heterogeneity

The overall level of China's digital financial development is on an upward trend, but there are large differences between regions, with the largest gap between the east and west, and there is a widening trend. The eastern coastal region has taken the lead in piloting policies such as free trade zones and cross-border financial reforms to lower the threshold for enterprises to engage in foreign direct trade, while the policies in the central and western regions are mostly focused on boosting local economic development. Eastern regions have higher GDP per capita and more digitized enterprises, which is more advantageous for OFDI development, while enterprises in less developed regions are relatively weakly driven by digital financial inclusion. This paper refers to Guo Feng et al. (2020) to test whether there are regional differences in the impact of *Difi* on *OFDI*. This paper divides the provinces where the listed companies are located into three parts of the East, Center and West for the study, and the results obtained are shown in Table 8. This paper finds that the coefficient is larger in the eastern region, indicating that *Difi* has the strongest promotion effect on *OFDI* in the east, followed by the central and western regions. This also verifies the study of Guo Feng et al. (2020) that digital financial inclusion has strong spatial heterogeneity and spatial aggregation. In the study, the coefficient of firm size is significantly positive at the 1% level in the East, while it is significant at the 5% level in the Midwest, which also suggests that firms in the East are more likely to utilize the scale effect to amplify the effect of digital financial inclusion on their OFDI.

**Table 8** Regional heterogeneity results

|                     | (1)            | (2)            | (3)            |
|---------------------|----------------|----------------|----------------|
| Variable/group      | eastern region | central region | western region |
| <i>Difi</i>         | 0.779***       | 0.370**        | 0.629**        |
|                     | (8.031)        | (2.288)        | (2.449)        |
| <i>Size</i>         | 0.065**        | 0.010          | 0.086          |
|                     | (2.438)        | (0.170)        | (1.326)        |
| <i>Lev</i>          | -0.027         | 0.031          | 0.028          |
|                     | (-0.240)       | (0.140)        | (0.107)        |
| <i>ROA</i>          | -0.403*        | 0.048          | -0.045         |
|                     | (-1.767)       | (0.094)        | (-0.087)       |
| <i>ATO</i>          | 0.052          | 0.119          | -0.253***      |
|                     | (0.815)        | (1.058)        | (-3.053)       |
| <i>Cashflow</i>     | 0.103          | 0.308          | 0.138          |
|                     | (0.522)        | (0.644)        | (0.353)        |
| <i>ListAge</i>      | 0.035          | -0.070         | 0.100**        |
|                     | (0.854)        | (-0.924)       | (2.047)        |
| <i>FirmAge</i>      | 0.086          | 0.385**        | -0.172         |
|                     | (1.204)        | (2.575)        | (-1.051)       |
| <i>Big4</i>         | 0.287**        | 0.226          | 0.027          |
|                     | (2.204)        | (1.648)        | (0.152)        |
| <i>Top5</i>         | 0.198          | -0.473         | -0.110         |
|                     | (1.261)        | (-1.526)       | (-0.376)       |
| <i>Constant</i>     | -5.361***      | -2.532         | -3.878**       |
|                     | (-7.218)       | (-1.362)       | (-2.639)       |
| <i>Observations</i> | 1,931          | 380            | 354            |
| <i>R-squared</i>    | 0.156          | 0.203          | 0.300          |
| <i>Industry FE</i>  | YES            | YES            | YES            |
| <i>Year FE</i>      | YES            | YES            | YES            |

### 6.2.2 Heterogeneity of enterprise ownership

This paper draws on the study of Lulu Cai et al. (2021), which considers the effect of enterprise ownership on *Difi*, and categorizes enterprises into state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). State-owned enterprises (SOEs) generally have "soft budget constraints" (Kornai, 1986), i.e., they rely on implicit government guarantees to obtain low-cost credit, which reduces their incentives to optimize their financing structure through *Difi*, while private enterprises face hard budget constraints and need to reduce their financing costs and improve the efficiency of cross-border capital allocation through *Difi*. Compared with SOEs, non-state enterprises have fewer constraints and more advantages in foreign trade. Non-state enterprises have long faced credit discrimination in the traditional financial system, and the degree of financing constraints is significantly higher than that of SOEs, while digital inclusive finance can effectively alleviate financing constraints. The results are shown in Table 9. This paper finds that the *Difi* coefficient of non-SOEs is larger and significant at the 1% level, indicating that *OFDI* of non-SOEs is more sensitive to *Difi*, and digital inclusive finance promotes non-SOEs more obviously. On the one hand, non-state enterprises receive less government support, and with the development of digital inclusive finance, banks and other institutions are able to use financial technology to identify enterprises with high creditworthiness and provide them with financing support; on the other hand, compared with state-owned enterprises, non-state enterprises have a great deal of flexibility, and they can make timely adjustments to the conditions that need to be met for financing, so as to better raise funds (Cai Lulu et al. 2021).

**Table 9** Business ownership results

|                     | (1)                   | (2)                  |
|---------------------|-----------------------|----------------------|
| Variable/group      | nationalized business | non-state enterprise |
| <i>Difi</i>         | 0.254**               | 0.767***             |
|                     | (2.045)               | (9.474)              |
| <i>Size</i>         | 0.016                 | 0.070***             |
|                     | (0.411)               | (2.964)              |
| <i>Lev</i>          | 0.022                 | 0.058                |
|                     | (0.152)               | (0.559)              |
| <i>ROA</i>          | -0.230                | -0.305               |
|                     | (-0.543)              | (-1.496)             |
| <i>ATO</i>          | -0.081*               | 0.019                |
|                     | (-1.858)              | (0.329)              |
| <i>Cashflow</i>     | -0.197                | 0.236                |
|                     | (-1.039)              | (1.288)              |
| <i>ListAge</i>      | 0.069                 | 0.074**              |
|                     | (1.001)               | (2.173)              |
| <i>FirmAge</i>      | 0.111                 | 0.049                |
|                     | (1.063)               | (0.759)              |
| <i>Big4</i>         | -0.061                | 0.229**              |
|                     | (-0.571)              | (1.987)              |
| <i>Top5</i>         | 0.071                 | 0.201                |
|                     | (0.309)               | (1.545)              |
| <i>Constant</i>     | -1.780**              | -5.144***            |
|                     | (-2.250)              | (-7.877)             |
| <i>Observations</i> | 356                   | 2,309                |
| <i>R-squared</i>    | 0.141                 | 0.183                |
| <i>Industry FE</i>  | YES                   | YES                  |
| <i>Year FE</i>      | YES                   | YES                  |

### 6.3. Mechanism analysis

Digital inclusive finance promotes the development of enterprise *OFDI* by broadening financing channels, reducing information asymmetry and thus enterprise financing constraints (Ren Xiaoyi, 2020), and enhancing the ability of enterprise foreign investment. At the same time, digital inclusive finance can also alleviate the problem of capital constraints of enterprises, and enterprises have sufficient funds that can be used for enterprise innovation to make their products more competitive (Tang Wenjin et al., 2019), so as to promote enterprise *OFDI*. In addition, digital inclusive finance can also help enterprises optimize resource allocation, enhance total factor production capacity, and have more advantages in international competition and develop *OFDI*. This paper utilizes the two-step method of mechanism analysis to study, and its formula is shown below:

$$\begin{aligned}
 SA_{it} &= \alpha_1 + \beta_1 Difi + \gamma Controls_{it} + \varepsilon_{it} \\
 IOE_{it} &= \alpha_2 + \beta_2 Difi + \eta Controls_{it} + \varepsilon_{it} \\
 TFP_{it} &= \alpha_3 + \beta_3 Difi + \varpi Controls_{it} + \varepsilon_{it}
 \end{aligned} \tag{2}$$

Where *Difi* stands for Digital Financial Inclusion and *Controls* stands for control variables.

Each of the above three mechanisms is measured in different ways, financing constraints are measured using the SA Index (Size-Age Index) firm innovation is measured using IOE (Innovation Output Efficiency) (Chesbrough, 2003); and firm total factor productivity was adopted as TFP (Total Factor Productivity), which was measured by the OP (Olley-Pakes) method (Olley & Pakes, 1992).

The results are shown in Table 10. For financing constraints, the coefficient of *Difi* is significantly negative at 1%, indicating that digital inclusive finance can significantly alleviate financing constraints, thus promoting enterprise OFDI; for enterprise innovation, the coefficient of *Difi* is significantly positive at 5%, indicating that digital inclusive finance promotes enterprise innovation and facilitates enterprise OFDI; for TFP, the coefficient of *Difi* is significantly positive at 5%, indicating that digital inclusive finance promotes enterprise innovation and facilitates enterprise OFDI; and for TFP, the coefficient of *Difi* is significantly For TFP, the coefficient of *Difi* is significantly positive at 5%, indicating that digital inclusive finance promotes enterprises' total factor production, enhances enterprises' competitiveness in the international arena, and favors foreign direct trade.

**Table 10** Mechanism analysis results

|                     | (1)       | (2)      | (3)      |
|---------------------|-----------|----------|----------|
| VARIABLES           | SA        | IOE      | TFP      |
| <i>Difi</i>         | -0.094*** | 0.033**  | 0.004**  |
|                     | (-3.767)  | (2.081)  | (2.331)  |
| <i>Size</i>         | -0.058*** | -0.004   | 0.001    |
|                     | (-8.161)  | (-0.912) | (1.218)  |
| <i>Lev</i>          | 0.039     | 0.003    | 0.004    |
|                     | (1.645)   | (0.139)  | (1.517)  |
| <i>ROA</i>          | 0.050     | -0.040   | 0.017**  |
|                     | (1.061)   | (-0.652) | (2.424)  |
| <i>ATO</i>          | -0.014    | -0.016   | 0.004**  |
|                     | (-0.843)  | (-1.506) | (2.283)  |
| <i>Cashflow</i>     | 0.054     | 0.065    | 0.013*   |
|                     | (0.961)   | (1.130)  | (1.698)  |
| <i>ListAge</i>      | -0.011    | -0.014** | 0.004*** |
|                     | (-1.084)  | (-2.031) | (4.199)  |
| <i>FirmAge</i>      | -0.712*** | 0.004    | -0.002   |
|                     | (-26.814) | (0.346)  | (-1.453) |
| <i>Big4</i>         | 0.073*    | 0.009    | 0.001    |
|                     | (1.826)   | (0.283)  | (0.416)  |
| <i>Top5</i>         | -0.004    | -0.048*  | -0.007** |
|                     | (-0.109)  | (-1.938) | (-2.309) |
| <i>Constant</i>     | 0.186     | 0.378*** | 0.959*** |
|                     | (0.787)   | (2.931)  | (57.107) |
| <i>Observations</i> | 2,665     | 2,665    | 2,647    |
| <i>R-squared</i>    | 0.857     | 0.383    | 0.192    |
| <i>Industry FE</i>  | YES       | YES      | YES      |
| <i>Year FE</i>      | YES       | YES      | YES      |

## 7. Conclusions

Digital inclusive finance, as a rapidly developing financial service in today's era, can ease the financial pressure for SMEs and promote their development, which in turn promotes the development of SMEs' OFDI, but the research on its role channels is still not systematic enough. Based on China A-share listed companies in the Cathay Pacific database (CSMAR) and the Vantage database (Wind), this paper adopts the data from 2012-2022 as the original sample, and conducts modeling and empirical validation on the mechanism of digital inclusive finance on OFDI. The findings show that the development of digital inclusive finance will promote the development of corporate OFDI, mainly

through alleviating financing constraints, promoting corporate innovation and enhancing corporate total factor development.

## References

- [1] Cai Lulu, Xing Jinjia, Lu You. The impact of digital inclusive finance on business performance - an empirical study based on A-share listed companies[J]. *Technology and Innovation Management*, 2021, 42(06): 674-680.
- [2] Chen Yuxuan, Cheng Nuo. Determinants of OFDI in China's listed companies: based on corporate governance perspective[J]. *Financial Development Research*, 2015, (10): 27-33.
- [3] Chesbrough H W. Open innovation: The new imperative for creating and profiting from technology[M]. Harvard Business Press, 2003.
- [4] Duan Z, Zhang Y. The impact of digital finance on resource allocation efficiency: evidence from China[J]. *Applied Economics*, 2024: 1-15.
- [5] GU Ning, WU Mao, ZHAO Xunyue. The Impact of Digital Inclusive Finance on Total Factor Productivity of Micro and Small Enterprises—"Adding Flower to the Flower" or "Delivering Charcoal in the Snow"[J]. *Nanjing Social Science*, 2021, (12): 35-47.
- [6] JI Xiangbao. Analysis of Influential Factors of China's Outward Foreign Direct Investment—Based on the Perspective of Institution[J]. *International Trade Issues*, 2014, (09): 98-108.
- [7] LI Lei, SIN Guoming, BAO Qun. Does "bringing in" promote "going out"? —The impact of foreign investment on Chinese enterprises' outward FDI[J]. *Economic Research*, 2018, 53(03): 142-156.
- [8] Li Muchen, Feng Sixian, Xie Xing. Research on the heterogeneous impact of digital inclusive finance on urban-rural income gap[J]. *Journal of Nanjing Agricultural University (Social Science Edition)*, 2020, 20(03): 132-145.
- [9] Liang Bang, Zhang Jianhua. Can digital inclusive financial development incentivize innovation? — Evidence from Chinese cities and SMEs[J]. *Contemporary Economic Science*, 2019, 41(05): 74-86.
- [10] LIU Xinyi, HUANG Ying, HUANG Sirui, et al. Digital inclusive finance and common wealth: theoretical mechanisms and empirical facts[J]. *Research in Financial Economics*, 2022, 37(01): 135-149.
- [11] Olley S, Pakes A. The dynamics of productivity in the telecommunications equipment industry[J]. 1992.
- [12] QIAN Haizhang, TAO Yunqing, CAO Songwei, et al. Theoretical and empirical evidence on digital financial development and economic growth in China[J]. *Research on Quantitative and Technical Economics*, 2020, 37(06): 26-46.
- [13] Ren Xiaoyi. Can the development of digital inclusive finance alleviate enterprise financing constraints[J]. *Modern Economic Discussion*, 2020, (10): 65-75.
- [14] Tang Wenjin, Li Shuang, Tao Yunqing. Digital inclusive financial development and industrial structure upgrading—Empirical evidence from 283 cities[J]. *Journal of Guangdong University of Finance and Economics*, 2019, 34(06): 35-49.
- [15] WAN Jiayu, ZHOU Qin, XIAO Yi. Digital finance, financing constraints and corporate innovation[J]. *Economic Review*, 2020, (01): 71-83.
- [16] WANG Sheng, TIAN Tao, XIE Runde. Research on the trade effect of China's outward foreign direct investment[J]. *World Economic Research*, 2014, (10): 80-86+89.
- [17] Wang Shuli, Xiang Jiaojiao. Institutional Quality, Investment Motivation and Location Choice of Chinese Outward FDI[J]. *Financial Research*, 2015, 41(05): 134-144.
- [18] YANG Jiaohui, WANG Wei, TAN Na. Solving the mystery of "institutional risk preference" in China's outward foreign direct investment location distribution[J]. *World Economy*, 2016, 39(11): 3-27.
- [19] ZHANG Xun, WAN Guanghua, WU Haitao. Bridging the digital divide: Digital financial development with Chinese characteristics[J]. *China Social Science*, 2021, (08): 35-51+204-205.
- [20] Zhang Y, Yin Jian. Did Digital Inclusive Finance Promote Total Factor Productivity Improvement of Enterprises? [J]. *Fiscal Science*, 2022, (11): 119-132.