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Research on the Influence of Digital Economy on the Interactive Development of Two-way FDI in China

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Abstract

As a new economic form, digital economy can not only improve economic efficiency and optimize economic structure, but also promote economic transformation and upgrading of an important driving force. Under the background of the current complex and profound changes in the international investment pattern and the global digital economy boom, China's foreign direct investment and foreign direct investment attracted have improved to varying degrees in terms of both quantity and amount of investment. Based on the interactive development of China's Two-way FDI under the background of digital economy, this paper summarizes the overall situation of China's OFDI and foreign direct investment, and finds out the factors that influence the development of China's Two-way FDI through qualitative analysis. Select the relevant indicators of China's 31 provincial 2005-2019 panel data for empirical analysis, combined with qualitative analysis and empirical analysis results, to analyze how the digital economy affects China's Two-way FDI interaction development. Finally, the impact of digital economy on China's Two-way FDI development is analyzed from the aspects of innovation, investment motivation, industrial structure and economic development level.

Keywords

Digital Economy; OFDI; Foreign Direct Investment; Affects Results.

1. Introduction

At present, the global digital economy has been set off a global boom, the digital economy has gradually evolved into an increasingly important part of the global economy. The World Investment Report 2017 makes the digital economy one of the themes of its annual report and, as a new form of economy, brings many new opportunities for inclusive and sustainable development. Therefore, countries have introduced a series of related policies to promote the development of their digital economy, in order to seize the commanding heights of a new round of global industrial competition, enhance their competitive advantage in the global market. Under the background of global economic integration, the economic ties between countries are getting closer, and international direct investment, as an important link linking the economies of all countries, is an important measure for a country to participate in global economic competition. Since China vigorously pursued the strategy of "introducing" and "going out", it has been actively integrated into international direct investment activities and is playing an increasingly important role in the world economic landscape. Data show that China actually uses $138.3 billion in foreign investment, ahead of other developing countries. At the same time, China's industry-wide outbound direct investment exceeded US$136.91 billion in 2019, up 3.2% year-on-year. It can be seen that the amount of foreign direct investment in China, whether it is foreign direct investment or the amount of foreign direct investment is very large, ranking in the forefront of the world, foreign direct investment and foreign investment between the

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positive interaction. It shows that China is actively engaged in international investment activities in its dual capacity as home and host country, and is gradually embedded in global value chains.

Digital technology is accelerating the development of Direct Foreign Investment and Foreign Investment in China by changing the mode of production, market operation and investment of enterprises. To sum up, the above fully illustrates that China's digital economy and Two-way FDI has developed rapidly in recent years. Therefore, the influence of digital economy on China's Two-way FDI interaction development has important research value, which helps to find the relationship between the two, and further promotes the development of China's Two-way FDI by speeding up the development of digital economy.

2. Overview of the Article

2.1. Research on the Digital Economy

2.1.1. Digital Economy Concept

Some scholars compare the meanings of "digital economy", "data economy" and "information economy" and point out that digital economy is an economic paradigm of economic activities using digital technology (Li Changjiang, 2017). According to the characteristics of the digital economy, it is divided into three categories, through the analysis of three types of digital economy, it is proposed that the digital economy emphasizes the general importance of information or knowledge in the economy, and e-commerce also belongs to the digital economy (Singh N, 2004).

2.1.2. Digital Economic Impact

Some scholars show that the development of digital economy, especially the development of digitalization, has fundamentally changed the nature of products, especially the change of the competitive environment of enterprises. Combined with China's socio-economic situation, the integration of the digital economy and manufacturing can accelerate the transformation and upgrading of manufacturing, while improving the quality of the manufacturing chain and the efficiency of the supply chain (Thoresten Koch, 2017). The integration of digital economy and industry will greatly reform China's industrial development model and promote China's economic development towards higher quality. The integration of digital economy with the three major industries is conducive to the sustainable growth of the national economy (Yu Jian, Zhu Xinmin, 2013; Cao Zhengyong, 2018).

2.1.3. The Digital Economic Development of Developed and Developing Countries is Uneven

There are huge differences in digital economic development in different countries, take the United States as an example, the United States in the digital economic development layout earlier, more comprehensive, and actively promote big data and cloud computing strategy, Internet applications, compared with China's digital economic development in the total amount, innovation ability, industrial development and supervision of the United States there is a large gap (Zhong Chunping, Liu Cheng, etc., 2017). In the context of the vigorous development of the global digital economy, China should firmly grasp this opportunity, take advantage of its obvious advantages and take various measures to construct effective tools to bridge the digital divide, and actively address the challenges facing the digital economy in international competition (Wang Weichen, Li Shuxuan, 2018). Perfecting the business model and market environment that match the digital economic development, speeding up the digital innovation of enterprises and markets, building a service-oriented digital government, fully mobilizing digital resources, relying on the numerous quantitative advantages of Our netizens and the institutional advantages of organizational system guarantee, the digital economy can develop

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rapidly in our country and become a new dynamic of economic development under the new normal (He Yanying, 2013; Yang Xinming, 2017).

2.2. Research on the Interactive Development of Two-way FDI

Two-way FDI refers to Outward Direct Investment (OFDI) and Foreign Direct Investment (IFDI)I. Throughout domestic and foreign studies, it can be seen that most of the current research on international investment focuses on the exploration of one-way FDI, that is, foreign direct investment IFDI and OFDI. There is less research on incorporating bidirectional FDI into an analytical framework at the same time. For most countries, the introduction of foreign direct investment (IFDI) and OFDI are objective coexisting, and it is biased to study IFDI or OFDI alone. China also has the dual status of "home country" and "host country" of international direct investment, and the coexistence of Two-way FDI has long been an indisputable objective fact. After General Secretary Xi proposed in the report of the 19th National Congress of the Communist Party of China to "promote the formation of a new pattern of comprehensive opening up", "introducing and "going out" has become a long-term policy of opening to the outside world that China needs to adhere to, so it is inevitable to attach importance to and coordinate the Two-way FDI.

2.3. Literature Review

To sum up, domestic and foreign scholars are still stuck in the OFDI and foreign direct investment as relatively independent research objects. Few scholars have studied OFDI and IFDI under the same framework. Under the background of digital economy, the research on the interactive development of Two-way FDI in China has not been paid much attention to. However, with the rapid development of the global digital economy, the economic ties between regions and countries are increasing, which will further expand the scale of international investment. Therefore, under the background of digital economy, studying the interactive development of China's Two-way FDI will attract more and more scholars at home and abroad. This paper integrates Two-way FDI into the same analysis framework to explore the impact of digital economy on the development of Two-way FDI in China. Further from the location selection, path selection, investment model, investment amount and so on, to study the digital economy in China's Two-way FDI interaction development.

3. Description of the Model and Variables

3.1. Model Build

This paper uses the following measurement models to examine the impact of digital economy on bidirectional FDI:

$$\ln OFDI_{it} = \alpha_1 \ln DIGIec_{it} + X_{it}\alpha_2 + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$\ln IFDI_{it} = \beta_1 \ln DIGIec_{it} + X_{it}\beta_2 + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Among them, $OFDI_{it}$ and $IFDI_{it}$ indicates of OFDI and foreign direct investment, $DIGIec_{it}$ represents the digital economy,X_{it} represents a matrix of control variables,α_2 and β_2 are the coefficient vector that controls the variable,μ_i represents the fixed effect of the province,λ_t represents the year-fixed effect, ε_{it} Represents a random item. α_1 and β_1 For the most important coefficients in this study, if both coefficients are greater than zero, it shows that the digital economy is conducive to Two-way FDI, and vice versa.

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3.2. Variable Description

In this paper, the fixed effect model of provincial panel data is constructed for Two-way FDI, so the core interpreted variables are divided into two parts: OFDI and FDI, the measured index is the stock of OFDI, and the latter is foreign direct investment. The core explanatory variable of this paper, digital economy, will directly select telecommunications business volume to measure the level of digital economy, and the development of information and communication technology is closely related to the digital economy, so it is very representative.

For control variables, this article selects the following metrics. (1) Industrial structure (CIS): There is a strong correlation between industrial structure and Two-way FDI, the upgrading of industrial structure will directly affect the direction of OFDI and IFDI, this paper uses the sum of the total output value of the second and third industries in each province and the proportion of the total value of the primary industry to measure the industrial structure. (2) Innovation ability (INNO): Innovation ability is related to the sustainable development of enterprises, for Two-way FDI is also essential. The innovation ability is measured by the number of patent grants granted in each province from 2005 to 2019. (3) Trade Dependency (TD): Measured in terms of the proportion of foreign trade exports to GDP in each province. The economic development of each province is highly dependent on trade and export, and it will attach importance to the development of Two-way FDI, thus establishing the competitive advantage of foreign trade. (4) Total Labour Productivity (TLP): Measured by the ratio of GDP to the total employed population in each province, total labour productivity has a greater impact on social productivity, which is directly related to the final return on profits of Two-way FDI.

4. Empirical Analysis

4.1. Statistical Description of Variables

The characteristics of each variable in the regression model are summarized below, among which the industrial structure index and trade dependence index are the ratio and the others are natural values.

Table 1. Variables statistically describe the results

Variable	Obs	Mean	Std. Dev.	Min	Max
lnofdic	465	22.89607	2.288993	15.84418	27.91403
cis2_cis1	465	8.563287	13.37155	0.7317373	99.14478
lninno	465	9.235663	1.782126	3.78419	13.1757
iept_gdp	461	7.123863	12.02589	0.0002477	60.39264
tlp	465	13.46333	3.801879	4.954564	28.70844
lnifdi	465	26.41799	1.573659	21.7803	30.23182
lndigiec	465	6.27606	1.064915	2.727853	9.396522

4.2. Basic Regression

First of all, the two models are basically regression, and the direction and size of the digital economy's effect on bidirectional FDI are analyzed by double fixed effect of whether the regression model controls the relevant variables, as shown in Tables 2 and 3. Table 1 and table 2 of the (1) Column does not add any control variables and there is no fixed year effect analysis, after the initial regression is not difficult to find that the digital economy on the Two-way FDI impact coefficient of 1.482 and 0.6535, at the 1% significance level significantly, and the effect on OFDI is greater than IFDI, the preliminary conclusion of digital economy on Two-way FDI has a greater role in promoting. Table 2 and table 3 , paragraph (2) are shown as fixed years and provincial regression results, showing that the COEFDI coefficient has decreased, the coefficient of IFDI has little impact, that is, the digital economy has a decrease in the degree of

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effect on OFDI, overall at the 1% level of significance. Table 2 and Table 3 (3) listed as the control variables after the addition of no fixed year effect, the results show that the digital economy on OFDI is not very effective and the results are not significant, but through the coefficient analysis of control variables, found that industrial structure, innovation ability, total labor productivity on OFDI has a significant impact, so it is believed that the heterogeneity of each region may have a greater impact on the results; But the level of action has decreased. Table 2 and Table 3 of the (4) column to add the control variable double fixed effect, this column is the final study of the conclusion of this paper, the digital economy to the Two-way FDI coefficient of 0.8957 and 0.6549, respectively, after the control year and provincial fixed effect, the impact of digital economy on the Two-way FDI at the significance level of 1%, consistent with the expected results.

Table 2. The impact of the digital economy on OFDI

	(1)	(2)	(3)	(4)
	lnofdic	lnofdic	lnofdic	lnofdic
lndigiec	1.4820***	0.9181***	0.0030	0.8957***
	(0.1026)	(0.1795)	(0.0505)	(0.1863)
cis2_cis1			0.0341***	0.0287***
			(0.0089)	(0.0074)
lninno			1.4120***	0.2944***
			(0.0571)	(0.0918)
iept_gdp			-0.0019	0.0008
			(0.0060)	(0.0052)
tlp			0.0699***	0.0332**
			(0.0155)	(0.0143)
R^2	0.325	0.915	0.894	0.932
time effect	no	yes	no	yes
Individual effect	yes	yes	yes	yes
F	208.6700	299.1139	715.4069	298.7977

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3. The impact of the digital economy on IFDI

	(1)	(2)	(3)	(4)
	lnifdi	lnifdi	lnifdi	lnifdi
lndigiec	0.6535***	0.6342***	0.2953***	0.6549***
	(0.0314)	(0.0873)	(0.0270)	(0.1026)
cis2_cis1			0.0173***	0.0142***
			(0.0047)	(0.0041)
lninno			0.4194***	0.0699
			(0.0305)	(0.0506)
iept_gdp			0.0065**	0.0049*
			(0.0032)	(0.0028)
tlp			-0.0053	-0.0009
			(0.0083)	(0.0079)
R^2	0.501	0.840	0.769	0.844
time effect	no	yes	no	yes
Individual effect	yes	yes	yes	yes
F	433.8929	146.7649	282.3985	116.7488

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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4.3. Heterogeneous Analysis

In the above analysis, it is suggested that the results may be biased due to regional heterogeneity, so the 31 provinces of China are divided into east, middle and west parts to analyze whether the heterogeneity of the region will affect the influence of digital economy on Two-way FDI. The results are shown in Tables 4 and 5. The results show that the influence of digital economy on OFDI has a significant role in promoting the eastern and central regions, especially in the central region is more important than the other two regions, the author thinks that it may be because the eastern region is mostly first-tier cities occupy other resource advantages, the second central region is more than second- and third-tier urban resources advantage is not obvious, the role of digital economic development on its OFDI is significantly higher than other regions, the results of the western region is not significant and the promotion effect is weak, perhaps because of Tibet, The special geographical location and the limitation of lack of resources in Xinjiang and other regions have led to the development of OFDI. On the opposite of the impact of digital economy on IFDI, the results show that the digital economy in the central and western regions is promoting ifDI development at the significant level of 1% and 5%, respectively, but the promotion of the role in the eastern region is not obvious, the reasons for this result may be the following: First, the development of digital economy in the eastern region is more mature, is not the main factor to promote foreign direct investment. Second, the development strategy of the central and western regions, especially after the development strategy report of the western region after 2011, the development of infrastructure and the tendency of policy have become one of the important factors of foreign direct investment. Therefore, the digital economy is heterogeneous to the development area of Two-way FDI.

Table 4. Analysis of the heterogeneity of OFDI in the digital economy

	Eastern Region	Central region	Western Region
	lnofdic	lnofdic	lnofdic
lndigiec	1.0429***	2.2061***	0.5098
	(0.3799)	(0.4916)	(0.3932)
R^2	0.942	0.953	0.929
time effect	yes	yes	yes
Individual effect	yes	yes	yes

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5. Heterogeneous analysis of IFDI in digital economy

	Eastern Region	Central region	Western Region
	lnifdi	lnifdi	lnifdi
lndigiec	0.2121	0.7956***	0.4255**
	(0.2146)	(0.2433)	(0.2105)
R^2	0.824	0.903	0.884
time effect	yes	yes	yes
Individual effect	yes	yes	yes

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5. Conclusion

Based on the empirical analysis of the impact of digital economy on Two-way FDI, this paper explores the relationship between the two using Chinese provincial panel data from 2005 to 2019. Finally, it is concluded that the digital economy has significantly promoted the

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development of OFDI and IFDI, but due to the difference of geographical location, the influence of digital economy on OFDI is more obvious in the eastern and central regions, while the influence on IFDI is more obvious in the central and western regions. In view of the above conclusions, some suggestions are put forward, foreign direct investment and foreign direct investment play an important role in promoting our economic development and upgrading of industrial structure to promote economic growth, and the digital economy on the one hand reflects China's modernization drive, so regional development should be coordinated, deep participation in the division of production, the use of the convenience of the digital economy to expand OFDI. Secondly, the governments of the underdeveloped regions should improve the construction of infrastructure and use the reverse effect of OFDI to enhance the industrial structure and the innovation ability of enterprises, so as to attract foreign direct investment. Finally, by optimizing the domestic innovation environment and innovation elements to enhance the development of digital economy, build their own leading Two-way FDI interactive development, enhance international competitiveness.

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References

[1] Corcoran A, Gillanders R: Foreign direct investment and the ease of doing business, Review of World Economics, vol. 151(2015) No.1, p,103-126.

[2] C.G Foster and M. Graham: Reconsidering the Role of the Digital in Global Production Networks, Global Networks, vol. 17(2016) No.1, p,68-88.

[3] World Investment Report. Investment and the Digital Economy. New York and Geneva: 2017, United Nations.

[4] Jullien. B: Oxford Handbook of the Digital Economy, Chapter Two–Sided B to B Platforms, Oxford University Press, p,161-185.

[5] Novy. D: Gravity radix: measuring international trade costs with panel data, Economic Inquiry, vol. 17(2013) No.1, p,101-121.

[6] Rangan, S and M. Sengul: Information Technology and Transnational Integration: Theory and Evidence on the Evolution of the Modern Multinational Enterprise, Journal of International Business Studies, vol. 40(2009) No.9, p,1496-1514.

[7] Chen, W and F. Kamal: The Impact of Information and Communication Technology Adoption on Multinational Firm Boundary Decisions, Journal of International Business Studies, vol. 47(2016) No.5, p,563-576.

[8] Baldwin, R and A.J. Venables: Spiders and snakes: Offshoring and agglomeration in the global economy, Journal of International Economics, vol. 90(2013) No.2, p,245-254.

[9] Dwsbordes R and Wei S. J: The Effects of Financial Development on Foreign Direct Investment, Journal of Development Economics, vol. 127(2017) No.1, p,153-168.