



Empirical Study on the Influence of RCEP Countries' Trade Facilitation Level on China's OFDI

Wanting Sun*, Lixin Ye

School of Economics and Management, Nanjing University of Science and Technology, Nanjing, 210000, China

*Corresponding author Email: 2893461932@qq.com

Abstract. The study builds a trade facilitation measurement system by selecting 4 primary indicators and 15 secondary indicators to measure RCEP countries' trade facilitation level. Then, establishing a panel fixed effect model to study the influence of RCEP countries' trade facilitation level on China's OFDI, with comprehensive indicators of trade facilitation as explanatory variables and GDP of the host country and exchange rate level between countries as control variables. It is found that the RCEP countries' trade facilitation level can promote China's OFDI significantly. Therefore, China should strengthen economic and trade cooperation with organizational members, actively promote the infrastructure construction of countries with relatively background RCEP trade facilitation level, deepen financial business cooperation, and promote the investment of Chinese enterprises in RCEP countries.

Keywords: Trade facilitation level; Outward foreign direct investment (OFDI); RCEP countries

1 Introduction

Due to the impact of COVID-19, trade protectionism has prevailed among various countries, and new trade barriers such as trade "non-efficiency" and "investment threshold" have been continuously emerged, which has seriously hindered the development of free trade among countries. The promotion of trade facilitation can effectively reduce transaction costs and reduce the obstacles to trade circulation, which has become the major topic of discussion in the field of international trade in recent years. Foreign direct investment, as the dominating form of capital flow on a global scale, can also promote economic growth and high-quality economic development. In 2020, China's outbound direct investment ranked first in the world for the first time, which reached \$153.71 billion dollars, up 12.3% over the previous year. Under the continuous instability of the global economy, China can also achieve the growth of outward direct investment, which is closely related to China's investment policy and a stable social environment. The signing of the Regional Comprehensive Economic Partnership (RCEP) in 2021 clearly stipulates measures such as investment protection and investment conditions, thus improving trade facilitation policies and providing a stable institutional

guarantee for economic cooperation in the Asia-Pacific region. Can RCEP countries' trade facilitation level promote China's outbound direct investment? Thus, it is of great importance to measure the RCEP countries' trade facilitation level, analyze its impact on Chinese OFDI and seek corresponding solutions to promote regional economic development.

2 Literature reviews

At present, the research on trade facilitation mainly focuses on measuring trade facilitation level, import and export trade and innovation effect. Qi Wei¹ (2021) calculated the "Belt and Road" countries' facilitation level, and discovered that most of them have a relatively low trade facilitation level, and there are close links between the economic development level, infrastructure construction, Regulation management and their trade facilitation level. Lu Juan⁸ (2022) used the extended gravity model to analyze the effect of trade facilitation level on high-tech manufacturing exports. As a result, the level of trade facilitation has two-sided effects on exports: positive effect on industrial export with high level of development and negative effect on industrial export with low level of development. Zhao Zhongxiu² (2022) investigated the function mechanism of trade facilitation on domestic and international patent applications of Chinese enterprises. The study found that trade facilitation can contribute to innovation overseastrade, but the innovation effect varies according to the difference of patent type and industry innovation intensity.

The influence research on OFDI is mainly focused on institutional aspects, environmental quality and financing structure, and the research subjects are also mostly focused on the "Belt and Road" countries. Yang Lu³ (2022) discussed the impact of environmental law on enterprises' OFDI, and found that the discovery of environmental law has promoted foreign direct investment of Chinese companies. He Dan⁴ (2022) empirically studied the impact of financial openness in the host country on China's OFDI from the perspective of investment motivation. The study found the financial openness of countries, along the Belt and Road, had a significant positive effect on China's OFDI. Yan Yirong⁵ (2021) selected 81 countries to analyse the influence of their trade facilitation on China's OFDI scale. It showed that the country, which have higher level, can promote our foreign direct investment. Du Qunyang⁷ (2021) empirically analyzed the influence of countries' trade facilitation level on China's OFDI, which are along the "Belt and Road". From the perspective of comprehensive effect, trade facilitation level has affected China's OFDI actively; from the perspective of sub-item effect, the three primary indicators have significant positive effects on OFDI in China, but only finance and e-commerce are not significant. Based on this, this paper takes RCEP countries as the research object, introduces the comprehensive evaluation index of trade facilitation, and more comprehensively analyzes the impact effect of trade facilitation on OFDI in China.

3 Trade facilitation level calculation and result analysis

3.1 Selecting Trade Facilitation Indicators

Referring to Wilson⁶ (2003) and other ideas to build trade facilitation indicators, the port efficiency, customs environment, government regulations and finance and e-commerce are taken as the 4 primary indicators to measure the trade facilitation level from the macro and micro perspective. Investigating the effect of trade facilitation on China's OFDI for more comprehensively, combined with the current background of economic globalization and the rapid development of the Internet, in this paper, the secondary indicators included in the 4 primary indicators are expanded to 15. The secondary index data are all from the Global Competitiveness Report (GCR), which published by the World Economic Forum over the years.

3.2 Processing Data and Determining Weights

With the exception of policy transparency and Internet usage indicators, other indicators range between 1 and 7. A higher score indicates a higher level of trade facilitation. Policy transparency index is measured by every 100 people, the higher the policy transparency, the more conducive to trade; the more Internet users, the more rapid national information technology development and perfect network infrastructure, which are beneficial to the progress of cross-border e-commerce. To make the data comparable, the secondary index was standardized by dividing the raw data of the secondary index by the maximum value of the index into values between 0 and 1. In the principal component analysis of SPSS26.0 software to determine the weight of each index, the results show that two principal components can be proposed, the cumulative contribution rate of variance is 86.963%, and there is no correlation between the components. According to the obtained two principal components, the weight of the secondary index can be obtained, and then the principal component comprehensive evaluation model can be calculated and normalized. The final expression TFI is shown as follows:

$$TFI=0.076I_1+0.071I_2+0.075I_3+0.077I_4+0.052C_1+0.068C_2+0.069G_1+0.062G_2+0.069G_3+0.066G_4+0.073G_5+0.048F_1+0.049F_2+0.070F_3+0.074F_4 \quad (1)$$

3.3 Results and Analysis of Trade Facilitation Level Measurement

The statistical data of China and 13 RCEP countries from 2010 to 2019 were selected and used to calculate the trade facilitation comprehensive index expression TFI to obtain RCEP countries' trade facilitation level in recent years. Usually, trade facilitation indicators can be divided into four grades: TFI greater than 0.8 is very convenient; between 0.7 and 0.8 is relatively convenient; between 0.6 and 0.7 is general convenience; less than 0.6 is trade inconvenient. The specific calculation results and grades are shown in Table 3.

Table 1. Trade Facilitation indicators and weights

primary indicators	secondary indicators	Score range	Secondary index weight
Infrastructure construction (I) (0.299)	Quality of road infrastructure	1-7	0.076
	Efficiency of train services	1-7	0.071
	Efficiency of seaport services	1-7	0.075
	Efficiency of air transport services	1-7	0.077
Customs environment (C) (0.12)	Prevalence of non-tariff barriers	1-7	0.052
	Border clearance efficiency	1-7	0.068
Government regulation (G) (0.339)	Government Policy Transparency	0-100	0.069
	Burden of government regulation	1-7	0.062
	Efficiency of legal framework in settling disputes	1-7	0.069
	Judicial independence	1-7	0.066
	Intellectual property protection	1-7	0.073
Finance and E-commerce (F) (0.241)	Venture capital availability	1-7	0.048
	Soundness of banks	1-7	0.049
	Internet users	0-100	0.070
	Multi-stakeholder collaboration	1-7	0.074

Source: Original

Table 2. Results of the principal component analysis of each indicator

The principal components	characteristic value	variance percentage (%)	Cumulative contribution rate (%)
Comp1	11.427	76.18	76.18
Comp2	1.617	10.783	86.963

Source: Calculated by SPSS26.0

Table 3. Level and levels of trade facilitation between China and RCEP countries

Country / year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Trade facilitation degree
China	0.653	0.661	0.658	0.676	0.690	0.681	0.696	0.709	0.696	0.701	Relatively, general
Singapore	0.948	0.943	0.950	0.947	0.943	0.947	0.954	0.953	0.942	0.956	Very
Malaysia	0.758	0.791	0.797	0.801	0.839	0.837	0.811	0.806	0.799	0.797	Relatively, very
Indonesia	0.585	0.569	0.586	0.621	0.631	0.613	0.632	0.654	0.657	0.672	General, inconvenient
Thailand	0.649	0.627	0.621	0.625	0.617	0.615	0.617	0.635	0.619	0.636	General

Laos	0.582	0.581	0.589	0.583	0.564	0.547	0.552	0.556	0.556	0.584	Inconvenient
Philippines	0.462	0.485	0.524	0.558	0.578	0.564	0.540	0.538	0.600	0.613	Inconvenient, general
Vietnam	0.534	0.505	0.509	0.531	0.543	0.564	0.566	0.561	0.552	0.594	Inconvenient
Brunei	0.690	0.656	0.678	0.716	0.673	0.667	0.619	0.637	0.670	0.680	General
Cambodia	0.498	0.528	0.557	0.526	0.479	0.475	0.501	0.492	0.515	0.551	Inconvenient
Japan	0.773	0.785	0.793	0.823	0.847	0.853	0.859	0.853	0.853	0.856	Relatively, very
Korea	0.709	0.696	0.707	0.709	0.690	0.701	0.716	0.724	0.745	0.767	General, relatively
Australia	0.809	0.799	0.802	0.778	0.773	0.790	0.791	0.791	0.802	0.807	Very, relatively
New Zealand	0.843	0.843	0.874	0.878	0.869	0.850	0.853	0.862	0.841	0.837	Very

Source: Calculated according to formula TFI

From the table, the RCEP countries' trade facilitation level is uneven, and the gap is relatively obvious. From the view of the comprehensive index level, five countries have reached the very high facilitation level, while three countries are still in a completely inconvenient state, and most of them belong to the general facilitation level. Singapore's trade facilitation level ranks first, with scores above 0.94, followed by New Zealand. The trade facilitation level is relatively stable, maintaining around 0.85, both of which are very convenience levels for a long time. Then, in Japan, Malaysia and Australia, trade facilitation has developed rapidly in recent years and has also reached a high level of convenience. China and South Korea are promoted to the higher convenience level, Thailand and Brunei are in the general convenience level, and other countries have trade facilitation scores below 0.6, which is in an inconvenient state. From the view of national analogy, the developed countries' trade facilitation level is generally high, while those in developing countries are relatively low. The level of trade facilitation is positively correlated with regional economic growth.

4 The influence of trade facilitation level on China's OFDI

4.1 Variables and Data Sources

In order to better research about the effect of trade facilitation level on China's foreign investment, this paper introduces trade facilitation comprehensive indicators as explanatory variables in the traditional gravity model, and bilateral exchange rate level, GDP of the host country, population and distance between the two countries as control variables to build the corresponding model. In order to reduce the possibility of heteroscedasticity in the results, partial data were logized, and the expression for taking the logarithm is as follows:

$$\ln OFDI_{ijt} = \alpha_0 + \alpha_1 TFI_{jt} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln EX_{jt} + \alpha_4 \ln POP_{jt} + \alpha_5 \ln DIS_j + \mu_{ij} \quad (2)$$

4.2 Empirical Analysis

The study uses the Eviews10.0 software to conduct an empirical analysis between China and 13 RCEP countries, with the short-panel data from 2010 to 2019. Firstly, the data stationarity was tested by using the LLC unit root test method, The results showed that TFI, ln GDP, ln EX, ln POP all rejected the null hypothesis, indicating that the data in this panel had good stability. Secondly, the data of this panel are judged to be mixed-effect model, fixed-effect model or random-effect model by F test and Hausman test. The f value is calculated through the F test, and then the f value is checked through the table and is greater than the critical value F. The latter is chosen between the mixed-effect model and the fixed-effect model; As seen by Hausman test, p-value is less than 0.05, The former was selected in the fixed-effect model and in the random-effect models. Since the model contains an invariant distance, the time-point fixed-effects model was selected for this analysis.

Table 4. Results of the LLC test

Variables	LLC test	significance probability	data stationarity
TFI	-10.4842	0.0000	stable
ln EX	-5.5083	0.0000	stable
ln POP	-5.7771	0.0000	stable
ln GDP	-7.7364	0.0000	stable

Table 5. Hausman Test

Test Summary	Chi-Sq Statistic	Chi-Sq. d. f	Prob.
Cross-section Random	235.53	4	0.0000

Source: Calculated by EViews10.0

Table 6. Variable meanings and data sources

Variables	Variable meanings	data sources
OFDI _{ijt}	Stock of China's OFDI in Country j	Statistical of Bulletin China's Foreign Direct Investment
TFI _{jt}	j countries trade facilitation level	be calculated according to the TFI formula
GDP _{jt}	Gross domestic product of country j	IMF
EX _{jt}	Exchange rate of country j (in USD)	UNCTAD STAT
POP _{jt}	Population in country j	World Bank
DIS _j	The distance between China and the country of j	CEPII

The sample data were regressed according to the fixed-effect model. TFI, ln EX, ln POP and ln DIS in the model passed the significance test, and only ln GDP failed the significance test. Excluding the variable ln GDP, the expression can be obtained:

$$\ln \text{OFDI}_{ij} = -1.569 + 4.656\text{TFI}_j + 0.248 \ln \text{EX}_j + 0.801 \ln \text{POP}_j + 0.254 \ln \text{DIS}_j \quad (3)$$

Table 7. Benchmark regression results

Variables	mixed effect model	random effect model	fixed effect model	
	ln OFDI	ln OFDI	ln OFDI	ln OFDI
TFI	5.822*** (3.395)	5.213*** (4.173)	5.586*** (3.513)	4.656*** (3.820)
ln EX	0.250*** (4.574)	0.605 (4.62)	0.223*** (4.415)	0.248*** (5.821)
ln POP	0.779*** (3.402)	0.241*** (0.853)	0.736*** (3.49)	0.801*** (4.03)
ln DIS	0.102 (0.562)	2.299*** (3.105)	0.115 (0.691)	0.254* (3.736)
ln GDP	0.168 (0.935)	0.684*** (6.013)	0.153 (0.912)	
Cons	-1.721 (-0.802)	-23.59 (-3.441)	-1.394 (-0.688)	-1.569 (-0.779)

Source: Calculated by EViews 10.0 Note: T values in parentheses, ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

The empirical results show that trade facilitation level has a positive relationship with China's OFDI, and the regression results are prominent. The RCEP national trade facilitation level increase by 1%, and China's direct investment stock will increase by 4.656%. The improvement of trade facilitation in host countries will reduce investment costs and improve the investment environment, thus attracting foreign investment. Meanwhile, When RCEP countries rise by 1%, China's stock of direct investment will increase by 0.248%. The higher exchange rate shows a country's currency depreciation, thus reducing the cost of Chinese investment in it and expanding its investment scale. In addition, the expansion of the host country's market size will also promote direct investment in it. If the POP of RCEP countries increases by 1%, China's direct investment in it will increase by 0.801%. Population partly represents a country's market capacity, and the greater the market capacity means the more investment opportunities. Distance was also positively associated with OFDI, but in comparison, the effect was small. With the development of network technology and the improvement of infrastructure, the influence of distance factors will be less and less. In addition, the effect of the GDP of the RCEP countries on China's foreign direct investment is not significant. On the one hand, the GDP growth of the host country means the improvement of its economic development level and optimizing the corresponding investment environment; on the other hand, it means the increase of investment threshold and increasing investment controls, resulting in lower profits and less direct investment. The effects of the two were offset, so the impact was not significant, and it was excluded in the regression model.

5 Conclusion

By establishing the comprehensive index of trade facilitation to calculate the score of RCEP countries' trade facilitation. Significant differences in the level of trade facilitation between the RCEP countries were found. Developed countries generally have higher scores, while developing countries are relatively low, especially Southeast Asian countries, in a state of trade facilitation. Later, China's national direct investment data in RCEP from 2010 to 2019 was used to build a trade gravity model, join the trade facilitation index, and explore the effect of trade facilitation level on China's OFDI. The results show that the host countries' trade facilitation level promotes the OFDI in China actively, and with the development of information technology, the distance is no longer the main factor hindering China's OFDI.

Combining the analysis results of this paper, the following suggestions are made. First of all, from the comprehensive index score, three countries have scored less than 0.6, and most countries are between 0.6 and 0.8. There is still a lot of room for improvement in the RCEP countries' trade facilitation level. From the secondary index weight can be seen, infrastructure construction is an important measure of the trade facilitation level. The infrastructure construction of RCEP countries is not perfect, in particular, especially in Laos, Vietnam, Cambodia and other countries, which hinders economic growth and affects foreign direct investment. The Chinese government should seize the opportunity to increase cooperation with organizational members to jointly promote infrastructure construction. At the same time, the infrastructure construction projects in the region can also be combined with the domestic steel, cement and other manufacturing industries, which not only improves the investment environment of the host country, but also drives the export of domestic related products. Secondly, strengthen the guiding role of policy, and sign bilateral investment agreements with RCEP countries to provide a stable investment environment for domestic enterprises and encourage them to go global. We should develop foreign financial services, expand the scope of services, deeply integrate with the financial market of the host country, and escort China's OFDI. Finally, from the fundamental perspective, China should enhance domestic trade facilitation level, introduce advanced technology, strengthen information construction, and promote the digital development of economy. While promoting foreign direct investment, it can also attract more foreign capital and achieve mutual benefit and win-win results among countries.

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