Research On the Level of Unimpeded Trade of Countries Along The "The Belt and Road" And the Efficiency of China's OFDI

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Abstract. Based on the panel data of 41 countries along the "the Belt and Road" from 2010 to 2017, this paper constructs the evaluation index of trade unblocked level, calculates the comprehensive score of trade unblocked level of countries along the "the Belt and Road" by using the principal component analysis method, and analyzes the trade unblocked level of countries along the "Belt and Road", and draws the following conclusions: the trade unblocked level of countries along the "Belt and Road" is mostly between 0.6-0.4, and even less than 0.4 in many countries, generally at a lower level, there is significant room for improvement. Then, through previous studies and relevant FDI theories, this paper further analyzes the impact of the level of unimpeded trade on the efficiency of China's OFDI, and uses Frontier4.1 software to regression it based on the panel data of 41 countries along the "the Belt and Road" from 2010 to 2017. The results show that there is a positive correlation between the two, that is, a country has a high level of unimpeded trade, The greater the possibility of China's OFDI, the greater the opportunity to improve local investment efficiency. Finally, on the basis of the previous analysis, this paper puts forward some suggestions on how to build the "the Belt and Road" in a quality and efficient manner, improve the level of unimpeded trade among countries, and improve the efficiency of China's OFDI.

Keywords: OFDI, efficiency of OFDI, unimpeded trade, the Belt and Road.

1. Introduction

In recent years, the stock and flow of China's OFDI have steadily increased, and the development momentum has been on the rise. In 2021, China's OFDI flow was 178.82 billion US dollars, an increase of 16.3% compared to the previous year, ranking second in the world. According to the Statistical Bulletin of China's OFDI in 2021, by the end of 2021, China's stock of direct investment in countries along the "the Belt and Road" was $213.84 billion, accounting for 7.7% of China's stock of OFDI in the same year; The investment flow was 24.15 billion US dollars, an increase of 7.1% compared to the previous year, accounting for 13.5% of China's OFDI flow. From a horizontal perspective, China's total and flow of OFDI have performed outstandingly, showing a trend of steady growth year by year. However, from a vertical perspective, compared with developed countries such as the West, China is still at a low level in terms of investment efficiency, investment quality, and investment structure. For example, due to China's national conditions and social system, China's OFDI started decades later than developed countries, resulting in a relatively low proportion of China's investment stock in the global investment total, which has not yet exceeded 10%, while the United States accounts for as much as 50%. Zhe Xiao et al. [1] found that the average investment efficiency of China in countries and regions along the "the Belt and Road" is lower than the average of China's total OFDI efficiency, showing an obvious left trend, which indicates that the overall level of investment efficiency of China in countries and regions along the "the Belt and Road" is low, and there is still much room for growth.

As an important participant in the "the Belt and Road" initiative, there are many countries along the "the Belt and Road". The economic development level of each country is very different. The purpose and results of China's OFDI in different countries are also very different. The latest report shows that investment mainly flows to countries such as Singapore, Indonesia, Vietnam, Thailand, Malaysia, Laos, and the United Arab Emirates from a country by country perspective. From the perspective of investment industry, China's investment fields in countries along the route are

constantly expanding, and by the end of 2021, it has involved 18 major industries, including manufacturing, construction, finance, scientific research and technology services, etc. From the perspective of investment methods, the scale of investment mergers and acquisitions in China has steadily increased, covering up to 59 countries and involving 92 M&A projects. From the perspective of investment objectives, China's direct investment in developing countries along the route is mostly for the purpose of industrial transfer and resource seeking, such as Southeast Asian countries along the route; For developed countries along the route, China mainly seeks strategic resources, learns to absorb high-tech, and improves innovation capabilities. A typical example is China's large-scale investment in Singapore's financial and insurance industry.

2. Literature Review

In the "14th Five Year Plan", China proposed to promote the high-quality development of the "the Belt and Road", and improving the efficiency of China's OFDI in countries along the "the Belt and Road" can accelerate the high-quality development of the "the Belt and Road". However, there are many factors that affect the efficiency of a country's OFDI, and many scholars have discussed various different factors. Feng Delian et al. [2] studied the impact of the "the Belt and Road" symbiotic environment on China's OFDI efficiency from the perspective of the "five links" of the "the Belt and Road" initiative. The study shows that the international mutually beneficial symbiotic environment formed between China and countries along the "the Belt and Road" initiative will significantly improve China's OFDI efficiency. Xu Yukun et al. [3] studied the impact of economic policy uncertainty in China and the United States on the efficiency of China's investment in RCEP member countries. Empirical analysis shows that an increase in economic policy uncertainty in China will significantly inhibit China's direct investment in RCEP member countries, while uncertainty in US economic policy will promote China's direct investment in RCEP member countries. Zhang Haiwei et al. [4] studied the impact of the institutional quality of the host country on China's OFDI from the perspective of the the Belt and Road Initiative. Considering the economic environment of the host country, Song Lin et al. [5] found that low investment and labor freedom in the host country are the main reasons hindering China's investment entry. Internal conflicts, trade freedom, and investment freedom in the host country are negatively correlated with the efficiency of China's OFDI. Shu Jiaxian et al. [6] studied the impact of financial heterogeneity on the efficiency of China's OFDI. The results showed that China's OFDI efficiency is negatively affected by commercial development, foreign trade, and domestic credit, while the exchange rate index and net exports are positively correlated with China's OFDI efficiency. It can be seen that the efficiency of OFDI has become a key research topic in the academic community.

As the key content of the "the Belt and Road" construction, the degree of unimpeded trade in different countries will also fundamentally affect the efficiency of China's OFDI. In particular, since the world economy was hit by the COVID-19 in 2020, some countries have adopted trade protectionism policies, which has led to the rise of trade protectionism and the rise of high barriers to trade. Therefore, it is of great significance to study the impact of the level of unimpeded trade of countries along the "the Belt and Road" on the efficiency of China's OFDI. This paper analyzes the efficiency of China's OFDI from the perspective of the trade unblocked level of countries along the "the Belt and Road", builds an indicator system of trade unblocked level, and analyzes its specific impact on China's OFDI efficiency through the stochastic frontier model.

3. Construction, calculation and analysis of the indicator system for unimpeded trade level

3.1. The Evaluation Index System for the level of unimpeded trade

The boundary of unimpeded trade is far greater than trade facilitation. The construction of unimpeded trade along the the Belt and Road focuses on solving the trade and investment facilitation

problems of countries. During the literature review of this article, it was found that there is currently no unified standard for the content and measurement indicators of trade facilitation.

The construction of evaluation indicators for the level of unimpeded trade is mainly divided into two types: first, the "Five Links Index" issued by the research group of the "the Belt and Road" Five Links Index of Peking University in 2018 is used as a reference to build the unimpeded trade indicators. Dai Xiang et al. [7] used the trade unblocked index in the "five links" index as the evaluation system to measure the trade unblocked level of countries along the "the Belt and Road". Secondly, the trade facilitation indicator system developed by the OECD based on the Trade Facilitation Agreement is used as a reference to construct trade facilitation indicators. Sheng Bin et al. [8] believed that "unimpeded trade" is one of the important components of the "the Belt and Road" initiative, and trade facilitation is an important manifestation of unimpeded trade. Reference the trade facilitation measurement system to measure the level of unimpeded trade. In addition, some scholars have combined the "Five Links" index with trade facilitation indicators to construct trade facilitation indicators. Zhao Jing et al. [9] believe that the meaning of trade facilitation is greater than that of trade facilitation. In addition to trade facilitation, trade facilitation also includes eliminating investment and trade barriers, shaping a good business environment, and other aspects. By combining trade facilitation indicators with the "Five Links" index, a new trade facilitation indicator for measuring ASEAN countries was constructed.

This article takes the trade facilitation indicators compiled by the OECD as a reference, selects government environmental systems, transportation facility quality, customs environment, and financial and technological innovation as primary indicators, and divides the corresponding primary indicators into 17 secondary indicators to construct a trade facilitation level evaluation system. It basically includes the content involved in trade facilitation and has strong reference value, as shown in Table 1. This article is based on the Global Competitiveness Report (GRC) released by the World Economic Forum as the main data source. Considering the completeness of the data and indicators, we analyze the report data from 2010 to 2017, and the indicators are divided into positive and negative attributes. The higher the score of the positive indicator, the better.

Table 1. Index system for evaluating the level of unimpeded trade.

Primary indicator	Secondary indicator		Numerical range	Indicator attribute	Source
Government system(A)	Judicial independence	A1	1—7	+	GCR
	Favoritism in decisions of government officials	A2	1—7	+	GCR
	Burden of government regulation	A3	1—7	+	GCR
	Efficiency of legal framework in settling disputes	A4	1—7	+	GCR
	Transparency of government policymaking	A5	1—7	+	GCR
Quality of transportation facilities(B)	Quality of roads	B1	1—7	+	GCR
	Quality of railroad infrastructure	B2	1—7	+	GCR
	Quality of port infrastructure	B3	1—7	+	GCR
	Quality of air transport infrastructure	B4	1—7	+	GCR
Customs Environment(C)	Prevalence of trade barriers	C1	1—7	+	GCR
	Burden of customs procedures	C2	1—7	+	GCR
	Trade tariffs, % duty*	C3	%	-	GCR
	Efficiency of customs clearance procedures	C4	1—5	+	WB
Finance and Technological Innovation(D)	Affordability of financial services	D1	1—7	+	GCR
	Availability of financial services	D2	1—7	+	GCR
	Availability of latest technologies	D3	1—7	+	GCR
	Firm-level technology absorption	D4	1—7	+	GCR

Source: World Economic Forum, Global Competitiveness Report 2010-2017 and World Bank database

3.2. Claculation of the level of unimpeded trade

This article uses principal component analysis to calculate the level of trade facilitation among countries along the route. Due to the fact that the range of trade tariffs for indicator C3 is not comparable to other indicators, formula (1) is used to process it and standardize its range between 1-7.

$$-6 * \frac{X-min}{max\ min} + 7 \quad (1)$$

In order to calculate the weights of various indicators and calculate the level of trade facilitation in various countries, this article uses principal component analysis to ensure the rationality and

objectivity of the weights and determine the final weights of each indicator. Firstly, process the raw data and standardize the forward and reverse indicator data to ensure that they have the same force and a value between 0 and 1. Secondly, test the correlation between variables and determine whether the data is suitable for principal component analysis. In this article, KMO test and Bartlett's sphericity test were conducted on the data. The KMO test coefficient was 0.9, greater than 0.6, indicating a high correlation between secondary indicators. Moreover, the p-value of Bartlett's sphericity test was 0.000, indicating that variables are suitable for principal component analysis. Thirdly, this article conducts principal component analysis on standardized data to obtain the eigenvalues, contribution rates, and cumulative contribution rates of each factor. According to the analysis results in Table 2, this article selects three principal components with eigenvalues greater than 1, with a contribution rate of 72.94%, which can basically reflect the basic situation of the data, as shown in Table 2.

Table 2. Principal component characteristic values and contribution rates

Comp	Eigenvalue	Proportion	Cumulative	Comp	Eigenvalue	Proportion	Cumulative
Comp1	9.679	0.569	0.569	Comp10	0.255	0.015	0.952
Comp2	1.681	0.099	0.668	Comp11	0.226	0.013	0.965
Comp3	1.041	0.061	0.729	Comp12	0.172	0.01	0.975
Comp4	0.897	0.053	0.782	Comp13	0.133	0.008	0.983
Comp5	0.674	0.04	0.822	Comp14	0.105	0.006	0.989
Comp6	0.63	0.037	0.859	Comp15	0.083	0.005	0.994
Comp7	0.556	0.033	0.891	Comp16	0.059	0.004	0.997
Comp8	0.45	0.026	0.918	Comp17	0.045	0.003	1
Comp9	0.317	0.019	0.937				

Data source: Calculated by the author through software.

Fourthly, calculate the coefficients corresponding to each indicator of the three principal components, as shown in Table 3. Then, multiply the coefficients of each indicator in the three principal component equations by their contribution rates, sum them up, and divide them by the corresponding cumulative contribution rates to obtain the evaluation equation for smooth trade.

Table 3. Composition of coefficients for each index of principal components

	comp1	comp2	comp3		comp1	comp2	comp3
A1	0.2543	0.1118	0.0274	C1	0.2221	-0.1303	0.1803
A2	0.2446	0.4196	-0.0010	C2	0.2681	-0.0270	0.1539
A3	0.1974	0.5384	-0.0157	C3	0.0312	0.0270	0.8919
A4	0.2616	0.3556	-0.1039	C4	0.2382	-0.3286	0.1480
A5	0.2552	0.2376	0.0304	D1	0.2613	-0.0995	-0.2019
B1	0.2610	-0.0293	-0.0314	D2	0.2665	-0.2306	-0.1411
B2	0.1896	-0.0293	0.1029	D3	0.2697	-0.2931	-0.0529
B3	0.2562	-0.1195	0.1019	D4	0.2703	-0.2121	-0.1460
B4	0.2629	-0.0370	-0.0843				

Data source: Calculated by the author through software.

Finally, by normalizing the coefficients of each indicator of the three principal components, the weights of each secondary indicator are obtained. The weight of the primary indicator is the sum of the weights of the secondary indicators, as shown in Table 4. According to the weights of each indicator, an evaluation model for the level of trade facilitation in countries along the route can be obtained:

$$MYCT = 0.0670A1 + 0.0769A2 + 0.0701A3 + 0.0757A4 + 0.0726A5 + 0.0612B1 + 0.0474B2 + 0.0597B3 + 0.0599B4 + 0.0530C1 + 0.0678C2 + 0.0318C3 + 0.0477C4 + 0.0539D1 + 0.0512D2 + 0.0516D3 + 0.0527D4$$

Table 4. Weights of evaluation indicators of unimpeded trade level

Primary indicator	weight coefficient	secondary indicator		weight coefficient
Government system(A)	0.3622	Judicial independence	A1	0.067
		Favoritism in decisions of government officials	A2	0.0769
		Burden of government regulation	A3	0.0701
		Efficiency of legal framework in settling disputes	A4	0.0757
		Transparency of government policymaking	A5	0.0726
Quality of transportation facilities(B)	0.2281	Quality of roads	B1	0.0612
		Quality of railroad infrastructure	B2	0.0474
		Quality of port infrastructure	B3	0.0597
		Quality of air transport infrastructure	B4	0.0599
Customs Environment(C)	0.2003	Prevalence of trade barriers	C1	0.053
		Burden of customs procedures	C2	0.0678
		Trade tariffs, % duty*	C3	0.0318
		Efficiency of customs clearance procedures	C4	0.0477
Finance and Technological Innovation(D)	0.2093	Affordability of financial services	D1	0.0539
		Availability of financial services	D2	0.0512
		Availability of latest technologies	D3	0.0516
		Firm-level technology absorption	D4	0.0527

Data source: calculated and collated by the author.

3.3. Analysis on the level of unimpeded trade of countries along the "the Belt and Road"

Based on the evaluation model of trade facilitation level obtained earlier, the weights of each indicator are multiplied by the original standardized data to obtain the score of trade facilitation level for 41 countries. Table 5 only shows the trade unblocked degree of the top 10 and bottom 10 countries along the "the Belt and Road" from 2010 to 2017. When judging the degree of unimpeded trade, this article refers to the classification criteria of relevant literature: a score greater than or equal to 0.8 is considered very smooth; Between 0.6 and 0.8 is considered relatively unobstructed; Between 0.4 and 0.6 is generally unobstructed; If it is less than 0.4, it is classified as obstructed. Overall, during this period, only Singapore had a level of trade facilitation exceeding 0.8, with 10 countries able to achieve levels between 0.6 and 0.8, and 24 countries with levels between 0.4 and 0.6. It is easy to see that the level of unimpeded trade of countries along the "the Belt and Road" is generally low, and there is much room for improvement. From an individual perspective, the countries with the highest average

ranking include Singapore, Malaysia, Estonia, Saudi Arabia, etc., while the five countries with the lowest ranking are Ukraine, Mongolia, Moldova, Kyrgyz Republic, and Myanmar. We can infer that there is a certain correlation between a country's level of trade facilitation and its economic development level. From the geographical location of each country, Central and Eastern Europe has the smoothest trade flow, followed by Southeast Asia, and South Asia has a relatively low level of trade flow.

Table 5. Scores of 41 countries along the Belt and Road from 2010 to 2017

Year	2010	2011	2012	2013	2014	2015	2016	2017	Mean	Ranking
Singapore	0.9490	0.9483	0.9371	0.8932	0.9174	0.9575	0.9619	0.9705	0.9419	1
Malaysia	0.7150	0.7290	0.7759	0.7413	0.7148	0.7103	0.7049	0.6525	0.7180	2
Estonia	0.6633	0.6528	0.6155	0.6601	0.6663	0.6639	0.6775	0.6801	0.6600	3
Saudi Arabia	0.6106	0.6133	0.6181	0.6080	0.6280	0.6767	0.7189	0.6765	0.6438	4
Israel	0.6594	0.6283	0.5751	0.5346	0.5507	0.5774	0.6291	0.6267	0.5977	5
Jordan	0.5223	0.5502	0.5319	0.5170	0.5439	0.5277	0.4997	0.5282	0.5276	6
Lithuania	0.5007	0.5196	0.5156	0.5434	0.5497	0.5281	0.5192	0.5306	0.5259	7
India	0.5578	0.5516	0.4904	0.4595	0.5185	0.5050	0.4985	0.5140	0.5119	8
Sri Lanka	0.4095	0.4659	0.5040	0.5062	0.5291	0.5663	0.5577	0.5311	0.5087	9
Thailand	0.4844	0.4738	0.4722	0.4860	0.5114	0.5100	0.5265	0.5710	0.5044	10
Iran	0.3529	0.3396	0.3220	0.3030	0.3363	0.3568	0.3438	0.3400	0.3368	32
Lebanon	0.3177	0.3352	0.3236	0.2695	0.3057	0.3477	0.3730	0.3985	0.3339	33
Russian	0.4096	0.3778	0.3774	0.3604	0.3128	0.2552	0.2544	0.2725	0.3275	34
Bangladesh	0.3528	0.2965	0.2777	0.2854	0.2978	0.3249	0.3467	0.3481	0.3162	35
Nepal	0.2904	0.2788	0.2834	0.2712	0.3040	0.3055	0.2964	0.2790	0.2886	36
Ukraine	0.2684	0.3055	0.3192	0.3093	0.2841	0.2894	0.2531	0.2502	0.2849	37
Mongolia	0.2650	0.2929	0.3246	0.2858	0.2845	0.2985	0.2640	0.2478	0.2829	38
Moldova	0.2613	0.2385	0.2828	0.2649	0.2509	0.3030	0.2929	0.2883	0.2728	39
Kyrgyzstan	0.2986	0.2851	0.2712	0.2639	0.2152	0.1854	0.1850	0.2009	0.2382	40
Myanmar	0.1796	0.1776	0.1757	0.1686	0.1558	0.1495	0.1432	0.1369	0.1608	41

Data source: calculated by the author.

4. Analysis of the level of unimpeded trade and the efficiency of China's OFDI

4.1. Theoretical analysis

From the perspective of transaction cost theory, compared to domestic trade, international trade is more complex and riskier, and more cost consumption will occur in the process. There are communication barriers, geographical differences, and cultural conflicts between countries, which can increase the uncertainty of trade and increase transaction costs. The best way for enterprises to handle risks is to avoid them, as the vast majority of enterprises have already undergone a long period of site selection when investing. Smooth trade can effectively limit the occurrence of transaction costs. A good level of smooth trade should have efficient customs clearance services, loose and reasonable government systems, high-quality logistics and transportation facilities, and developed financial services to overcome information gaps and geographical barriers between countries. When enterprises enter countries along the route for OFDI, they will directly or indirectly receive the impact of smooth trade. They can reduce investment barriers and review systems through the interconnection of rules and regulations in smooth trade and reduce investment costs; It is also possible to obtain relevant investment information through good financial and technological innovation, improving the probability of investment returns. Therefore, the transaction cost reduction effect generated by smooth trade will increase the possibility of China's OFDI into countries along the route.

Japanese economist Kojima Kiyoshi proposed in his theory of marginal industry expansion that a country's OFDI should start from marginal industries, strengthen its advantageous industries, increase the comparative cost gap between the two countries, and create more trade possibilities. There is a universal connection between things, so can the expansion of international trade feedback foreign international investment? Regarding this, literature has confirmed that OFDI can generate trade substitution effects or trade creation effects, and a country's investment activities can drive the development of trade between the home and host countries. However, there is relatively little research on the impact of trade on OFDI. Foreign scholar Robert [10] stated that there is a strong positive relationship between trade surplus and international investment. Domestic scholar Huang Xing [11] used the GMM two-step method to confirm that there is a significant negative correlation between bilateral trade costs and OFDI between China and the host country. This proves that the development of trade can affect a country's OFDI through certain mechanisms, and the improvement of the level of smooth trade among countries along the route has the possibility of promoting China's OFDI.

Based on existing research and the guidance of China's policies, the level of unimpeded trade of countries along the "the Belt and Road" has an impact on the efficiency of China's OFDI to a certain extent. By combining China's OFDI stock with the level of unimpeded trade of countries along the "the Belt and Road" previously measured in this paper, it is not difficult to find that China's investment stock is relatively high in countries with high level of unimpeded trade.

4.2. Empirical analysis

4.2.1 Model Setting and Variable Selection

According to existing literature, the academic community's measurement theories and methods for the efficiency of OFDI are basically consistent, with most using stochastic frontier models (SFA). This model is suitable for China's outbound direct investment, which has many uncertain and complex factors. This article refers to Wang's [12] assumption that if China's OFDI is in an ideal state and there are no uncertain factors, the frontier level of China's OFDI is:

$$OFDI_{ijt}^{*} = f(X_{ijt}, \beta)exp(\upsilon_{ijt}) \tag{2}$$

when investment behavior actually occurs, there are often a series of uncertain factors that make the actual investment scale smaller than the ideal investment scale. Therefore, the actual OFDI level in China is:

$$\mathrm{OFDI_{ijt}} = \mathrm{f(X_{ijt}, \beta)exp(\upsilon_{ijt})exp(-u_{ijt}), u_{ijt} \geq 0} \tag{3}$$

The ratio of actual investment level to ideal investment level is the efficiency of OFDI, which is:

$$OFDIE_{ijt} = \frac{OFDI_{ijt}}{OFDI_{ijt}^{*}} = exp(-u_{ijt}) \quad (4)$$

The above model, X_{ijt} refers to a series of factors that affect China's direct investment in countries along the the Belt and Road. This article refers to Battese and Coelli [13] and sets the invalid rate term as:

$$u_{ijt} = \sigma_i Z_{ijt} + \omega_{ijt} \quad (5)$$

Among them, Z_{ijt} represents a series of factors that affect the non-efficiency of China's direct investment in countries along the route.

This article studies the impact of different countries' level of trade facilitation on the efficiency of China's OFDI, among which $OFDI_{ijt}$ adopts the stock of China's OFDI in country i during the t period. This article refers to existing literature and introduces the actual GDP, total population, resource abundance, geographical distance, whether there is a common boundary, and whether a common language is used as factors affecting China's OFDI into a stochastic frontier gravity model. The model constructed is as follows:

$$OFDI_{ijt} = \beta_0 + \beta_1 POP_{it} + \beta_2 \mathrm{RESGDP}_{it} + \beta_3 CHNGAP_{jt} + \beta_4 \ln DISCAP_{it} + \beta_5 \mathrm{CONTIG}_{it} + \beta_6 COMLANG_{it} + \upsilon_{ijt} - u_{ijt} \quad (6)$$

The non efficiency equation in this article is set as:

$$u_{ijt} = \sigma_0 + \sigma_1 MYCT_{ijt} + \omega_{ijt} \quad (7)$$

Among them, $MYCT_{ijt}$ represents the level of trade facilitation between China and the investment host country i constructed earlier during the t period.

Combining the investment frontier equation and the investment non efficiency equation, the equation for the impact of smooth trade on China's OFDI is obtained as follows:

$$\ln OFDI_{ijt} = \beta_0 + \beta_1 \ln POP_{it} + \beta_2 \ln RESGAP_{it} + \beta_3 \ln CHNGDP_{jt} + \beta_4 \ln DISCAP_{it} + \beta_5 \mathrm{CONTIG}_{it} + \beta_6 LANG_{it} + \upsilon_{ijt} - (\sigma_0 + \sigma_1 MYCT_{it} + \omega_{ijt}) \quad (8)$$

The descriptive statistics of the variable meanings and data involved in this article are shown in Table 6:

Table 6. Description of relevant variables and descriptive statistics

	Variables	Meanings	Source	Mean	Std. Dev.	Min	Max
Explained Variable	LnOFDI	China's OFDI stock	Bulletin on China's OFDI	9.866	2.664	3.989	15.31
Frontier equation	LnPOP	The total population of the host country, which is a measure of the adequacy of the country's labour force	WDI	16.627	1.591	14.089	21.026
	LnRESGDP	The value of the host country's natural resources as a percentage of the country's GDP	WDI	0.53	1.958	-7.7	3.916
	LnCHNGDP	China's Gross Domestic Product	CEPII	29.923	0.167	29.653	30.168
	LnDISCAP	The distance between Beijing, China, and the host capital	CEPII	8.556	0.403	7.067	8.952
	CONTIG	Whether China shares a border with the host country	CEPII	0.244	0.43	0	1
	LANG	Whether China shares a border with the host country	WDI	0.049	0.216	0	1
Non efficiency equation	MYCT	Overall level of unimpeded trade	Calculated above	0.437	0.143	0.137	0.97

4.2.2 Empirical Result Analysis

Based on the panel data of 41 countries along the "the Belt and Road" from 2010 to 2017, this paper uses Frontier4.1 software to calculate. The regression results are shown in Table 7:

Table 7. Stochastic frontier regression results from Frontier 4.1

		coefficient	standard-error	t-ratio
	constant	-92.3206***	17.7887	-5.1898
LnPOP	beta 1	0.8083***	0.0603	13.4116
LnRESGDP	beta 2	0.1761***	0.0427	4.1239
LnCHNGDP	beta 3	3.1821***	0.5612	5.6700
LnDISCAP	beta 4	-0.2311	0.2529	-0.9136
Contig	beta 5	1.6922***	0.2060	8.2152
Lang	beta 6	3.2683***	0.2431	13.4421
	constant	6.3963**	3.2009	1.9982
MYCT	delta 1	-2.8517***	0.9249	-3.0832
	sigma-squared	3.2034	0.2384	13.4382
	gamma	0.9988	0.0936	10.6711
	LR	10.3445		

Note: *** p<0.01, ** p<0.05, * p<0.1

Data source: Collated according to software data

The above table shows the impact of the level of smooth trade among countries along the route on the efficiency of China's OFDI, with an estimated coefficient of -2.8517, which is significant at the

1% level. This shows that the degree of unimpeded trade of the countries along the "the Belt and Road" can indeed significantly improve the efficiency of China's OFDI, which is consistent with the above assumptions.

From the perspective of relevant variables, there is a significant positive correlation between the total population of countries along the route, China's domestic GDP, the proportion of natural resources in GDP of the host country, whether China and the host country share a common language, and whether the host country is adjacent to China. This indicates that the more abundant the labor force and natural resources of countries along the route, the closer the language and culture between the host country and China are, and the more similar the language and culture between the host country and China are, the greater the possibility for Chinese enterprises to directly invest in them, the more significantly they can improve the efficiency of China's OFDI. The variable DISCAP did not show strong significance in the results, and its coefficient was negative. This may be due to differences in data processing in this article. At the same time, it may also indicate that with the development of the economy and the accumulation of investment experience, distance gradually weakens its impact on Chinese enterprises' OFDI and is no longer a key factor.

5. Conclusions

Based on the panel data of 41 countries along the "the Belt and Road" from 2010 to 2017, this paper constructs the evaluation index of trade unblocked level, uses the principal component analysis method to calculate the comprehensive score of trade unblocked level of countries along the "the Belt and Road", and analyzes the trade unblocked level of countries along the "Belt and Road", and draws the following conclusions: the trade unblocked level of countries along the "Belt and Road" is mostly between 0.6-0.4, and even many countries are below 0.4, which is generally at a low level, There is significant room for improvement. Then, through previous studies and relevant FDI theories, this paper further analyzes the impact of the level of unimpeded trade on the efficiency of China's OFDI and uses Frontier4.1 software to regression it based on the panel data of 41 countries along the "the Belt and Road" from 2010 to 2017. The results show that there is a positive correlation between the two, that is, a country has a high level of unimpeded trade, The greater the possibility of China's OFDI, the greater the opportunity to improve local investment efficiency.

Since the "the Belt and Road" initiative was put forward, China has become more closely connected with countries along the Belt and Road, and the economy, trade, investment, etc. of countries have been improved to varying degrees. But today, the "the Belt and Road" construction is still on the way, and the achievements have also produced problems and conflicts in the environment, human rights and other aspects. How to build the "the Belt and Road" in a quality and efficient manner is still a problem worth thinking about today. Based on the research findings, this article proposes the following suggestions:

Firstly, strengthen AEO mutual recognition and optimize customs services. Based on the current customs situation and world economic situation in various countries, tariff levels still need to be lowered, and customs barriers between countries are still high. Strengthening the promotion of the AEO system and mutual recognition among operators from various countries is an effective means to optimize the customs environment and strengthen customs management.

Secondly, carry out infrastructure investment and improve the level of investment facilitation. The economic development level of the "the Belt and Road" countries is uneven, and the infrastructure level of most countries is also relatively backward. The underdeveloped infrastructure seriously hinders the development of local economic activities and also makes many Chinese enterprises hesitant.

Thirdly, standardize the institutional environment of participating countries. When a country's government has a good institutional environment, it will attract foreign investment and promote financial and investment development. Countries along the the Belt and Road should jointly maintain a good regulatory environment.

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