The Impact of Tax Treaties on China's Outward Direct Investment

——Empirical Analysis Based on "the Belt and Road" Countries

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Abstract. "the Belt and Road" Initiative has been in development for ten years, with the tax treaties service, China's outward foreign direct investment (OFDI) has steadily increased, and the role of tax treaties in it has received international attention. This paper conducts an empirical analysis based on the data of China's OFDI to 56 countries along "the Belt and Road" from 2016 to 2020. The study finds that: tax treaties significantly promote China's OFDI in countries along "the Belt and Road", and are less affected by the level of economic development of country. In order to further play the role of tax treaties, China should continue to improve tax agreement related work, optimize tax services for investment enterprises from both state and tax authorities, and expand new ways of cooperation in tax treaties to adapt to the development trend of digital economy.

Keywords: "the Belt and Road" Initiative; Tax Treaties; Outward Direct Investment (OFDI)

1 Introduction

2023 marks the 10th anniversary of "the Belt and Road" Initiative for international cooperation. As of January 6, 2023, China has signed more than 200 cooperation documents on Belt and Road cooperation with 151 countries (regions) and 32 international organizations. Under this initiative, China's foreign direct investment has reached a new high. In 2022, Chinese enterprises will invest 141.05 billion yuan in non-financial direct investment in countries along "the Belt and Road", an increase of 7.7% over the previous year. The major measures of high-quality opening up have improved China's ability to open up.

China's foreign direct investment tax policy is improving constantly. As of the end of June 2022, China has signed double taxation avoidance agreements with 109 countries, including 87 countries (regions) along "the Belt and Road", and a total of 105 countries' agreements have come into force.

In the post-epidemic era, China's foreign direct investment development and the signing of tax treaties are facing challenges, so it is particularly necessary to study the

relationship between tax treaties and China's foreign direct investment and related influencing factors.

2   Literature review

Tax treaty refers to an agreement signed between countries to avoid double taxation of income and capital, prevent tax evasion and other acts, and provide legal protection for the settlement of tax-related disputes [1]. Foreign scholars believe that there may be three situations between tax treaties and OFDI: positive impact, negative impact or double impact, and the role of tax treaties will produce heterogeneity according to the nature of different host countries [2-3]. Davies and Gresik (2003) [4] used the general equilibrium model to prove that signing tax agreements can promote enterprises' OFDI. Azemar, Desbordes and Mucchielli (2007) [5] introduced the dummy variable of tax concession clause, and there was a positive effect between the two. Egger et al. (2006) [6] found that tax treaty inhibited OFDI by using the differential differential method. Baker (2014) [7] also believed that there were contradictions between tax treaty and domestic tax law, which weakened the preferential effect. Millimet and Kumas (2018) [8] used the quantile regression method to find that when the investment scale is small, tax treaties have a positive promoting effect and vice versa.

Domestic scholars Xiao Xuewang et al. (2019) [9] believe that Chinese enterprises' OFDI is affected by both tax and non-tax factors. Wang Yongqin et al. (2014) [10] found that Chinese enterprises prefer to invest in countries rich in natural resource endowments. Liu Xiaoning (2018) [11] and Yang Huan (2022) [12] believe that small geographical distance can attract investment of Chinese enterprises. Pan Chunyang (2018) [13], Hu Bing (2019) [14] and Zhang Yutang (2020) [15] believe that good economy, perfect infrastructure and political stability in host countries can promote China's outbound investment. Deng Liping (2019) [16] and Gu Chengjin (2021) [17] found that the tax business environment can promote China's OFDI.

In summary, based on the existing research methods of scholars, this paper makes use of the relatively new data of countries along the "Belt and Road" to conduct in-depth research.

3   Mechanism analysis

In theory, tax treaties have a comprehensive effect under the influence of various factors in the host country, and play a role in the following three aspects to promote OFDI:

First, reduce the tax burden on enterprises and raise expectations for their after-tax returns. Tax treaties can effectively avoid the risk of double taxation, and the Multilateral Convention on the Implementation of Measures Relating to Tax Treaties to Prevent Base Erosion and Profit Shifting (BEPS) can also combat international tax avoidance and prevent abuse of tax treaties [13].

Second, reduce enterprise tax costs and dispute resolution costs. Tax treaty provisions reduce tax differences between countries and keep the cost of paying taxes at

the same level. In the event of tax-related disputes, the Mutual consultation procedure (MAP) will be initiated to adjust and reduce coordination costs [13].

Third, reduce the tax burden uncertainty and information asymmetry of enterprises' overseas investment. China has set up a special web page on tax services for the "Belt and Road" to help enterprises understand the tax information of host countries and ensure that foreign investment enterprises enjoy fair tax treatment in host countries [18].

4   Data selection and model setting

4.1   Variable selection and description

Explained variable: China's stock of foreign direct investment (OFDI). The stock data can comprehensively reflect the investment motivation and optimal location selection motivation of enterprises investing abroad, with good continuity and logarithm.

Explanatory variable: Whether the tax treaty is in force (TA). The tax treaty will only play its intrinsic role after it enters into force, which is set as a dummy variable, with TA=1 from the year it enters into force and TA=0 from the year it does not enter into force.

In order to reduce the empirical research error, the following control variables were introduced:

National economic development level (PGDP). Per capita GDP reflects the economic strength and people's living standards of the host country, and the level of residents' demand and purchasing ability are directly proportional to per capita GDP. The per capita GDP level of the countries along the route is measured by the 2015 US dollar price (unit: thousands of US dollars), and logarithm is taken.

Degree of political stability (POL). Countries and regions with a stable political environment can create a fair and orderly competitive environment, protect the intellectual property rights of enterprises, promote the negotiation and signing of agreements, and influence enterprises' decisions on FDI.

Natural Resource endowments (NR). The acquisition of natural resources with low cost is one of the purposes of enterprises' foreign investment. With reference to the practice of Hamilton (2003) [19], the proportion of total rent of natural resources in GDP is selected as the sample.

Internet penetration (IP). The Internet has improved the tax transparency of countries and reduced the cost of obtaining tax information. According to Pan Chunyang (2018) [13], the proportion of individuals using the Internet in the national population is selected as a sample.

Tax Business Environment (DBS). The quality of the business environment has a great impact on enterprises' estimation of external risks and tax costs of foreign investment. With reference to the practice of Wang Xiaoying (2018) [20], ease of doing business is selected as a sample.

Select the Geographical Distance (DIS). Geographical distance linear distance between the capital of countries along "the Belt and Road" and the capital of China (unit: km) is selected as the sample.

Language commonality (CL). Language commonality is set as a dummy variable. If the host country is consistent with the official language of our country, it is denoted as CL=1; otherwise, it is denoted as CL=0.

The variable descriptions and sources are shown in Table 1.

Table 1. Description of variables and data sources

Variable type	Variable name	Data source
Explained variable	OFDI	Annual Bulletin of China's Foreign Direct Investment issued by the Ministry of Commerce
Explanatory variable	TA	State Administration of Taxation
	PGDP	World Bank World database
	POL	World Bank World database
	NR	World Bank World database
Control variable	IP	World Bank World database
	DBS	World Bank World database
	DIS	CEPII database
	CL	CEPII database

4.2   Data screening and processing

The latest version of China's OFDI communique is "China's OFDI Statistical Communique 2021". The statistics of the affected data of countries along the "Belt and Road" are not timely, and the latest update time is 2020. After comprehensive consideration, panel data of 56 countries along the "Belt and Road" from 2016 to 2020 are selected for research.

In order to further study the impact of tax treaties on China's foreign direct investment in countries with different income levels, 56 countries were divided into 20 countries with lower middle-income level and 36 countries with higher middle-income level according to the per capita GNI standard of the World Bank, as shown in Table 2.

Table 2. Classification of countries along the "Belt and Road" according to the 2022 per capita GNI standard

Standard	Nation	Number	Group
GNI per capita in low-income countries <$1085	Afghanistan, Syria	2	Group of countries below the middle-income level (20)
$1086< Per capita GNI in low - and middle-income countries <$4255	Egypt, Pakistan, Timor-Leste, Philippines, Kyrgyzstan, Laos, Lebanon, Mongolia, Bangladesh, Myanmar, Nepal, Sri Lanka, Ukraine, Uzbekistan, Iran, India, Indonesia, Viet Nam	18	
$4256< GNI per capita in middle - and high-income countries <$13205	Albania, Azerbaijan, Belarus, Bulgaria, North Macedonia, Bosnia and Herzegovina, Russian Federation, Georgia, Kazakhstan, Montenegro, Maldives, Malaysia, Serbia, Thailand, Armenia, Iraq	17	Group of countries above the middle-income level (36)
$13205< GNI per capita in high-income countries	United Arab Emirates, Oman, Estonia, Bahrain, Poland, Czech Republic, Qatar, Kuwait, Croatia, Latvia, Lithuania, Romania, Saudi Arabia, Slovakia, Slovenia, Brunei, Singapore, Hungary, Israel	19	

At the same time, the 5-year moving average method was used to estimate the missing values, and the data was contracted to ensure the stationarity of the data. stata15.0 was used for regression analysis.

4.3   Model setting and description

The mixed OLS regression model can greatly mitigate the impact of the empirical results on the variables that do not change with time, such as short year, small sample size, geographical distance and language commonality. The econometric model is shown in formula (1):

$$\ln(OFDI)_{it}=\alpha+\beta_1 TA_{it}+\beta_2 PGDP_{it}+\beta_3 POL_{it}+\beta_4 NR_{it}+\beta_5 IP_{it}+\beta_6 DBS_{it}+\beta_7 DIS_{it}+\beta_8 CL_{it}+\varepsilon_{it}$$

$$(1)$$

In the formula, i represents the countries along "the Belt and Road", and t represents the year; ln(OFDI) represents the stock of China's foreign direct investment in a country along the "Belt and Road" and takes logarithm; TA is a dummy variable indicating whether the tax treaty is in force. Seven control variables are introduced: PGDP represents the economic development level of each country, POL represents the political stability of each country, NR represents the natural resource endowment of each country, IP represents the Internet penetration rate of each country, DBS represents the tax and business environment of each country, DIS represents the distance between each country and China, and CL represents whether the language of each country is consistent with that of China. α is a constant term; β represents the effect coefficient of the tax treaty on China's foreign direct investment; ε represents the random error term.

The descriptive statistics of the above variables are shown in Table 3.

Table 3. Descriptive statistics

Variable	Observed	Mean	Standard deviation	Minimum	Maximum
ln(OFDI)	280	10.550	2.447	4.466	15.601
TA	280	0.871	0.335	0	1
ln(PGDP)	280	8.814	1.099	6.315	11.069
POL	280	-0.329	1.040	-3.006	1.616
NR	280	7.022	10.972	0.001	72.219
IP	280	64.961	23.871	11	100
DBS	280	66.411	11.841	37.101	86.217
DIS	280	5.640	1.683	1.172	7.723
CL	280	0.036	0.186	0	1

5   Empirical test and result analysis

Firstly, the correlation analysis of variables is carried out, and it is found that the correlation coefficient between variables is significant, indicating that the selected variables are reasonable. Secondly, the collinearity test of the variables is carried out, and the variance inflation factor Vif<10, indicating that there is no collinearity problem between variables. The regression results of the model under different conditions are shown in Table 4. The R2 calculated by the model and the revised R2 are both between 0.3-0.75, indicating a good degree of fitting of the model.

Table 4. Results of model regression

Variable	1	2	3	4
TA	0.943**	0.882*	0.955	2.169***
	(2.38)	(1.76)	(1.41)	(6.18)
ln(PGDP)	1.575***	0.922***	2.004***	1.848***
	(7.47)	(2.72)	(6.68)	(8.23)
POL	-0.728***	-0.123	-1.206***	-0.559***
	(-5.17)	(-0.62)	(-5.47)	(-3.95)
NR	0.044***	0.051***	0.030	0.050***
	(3.73)	(3.13)	(1.49)	(4.79)
IP	-0.065***	-0.045***	-0.066***	-0.047***
	(-6.11)	(-3.67)	(-3.36)	(-4.74)
DBS	0.063***	0.079***	0.067**	-0.051***
	(3.44)	(2.92)	(2.23)	(-3.70)
DIS	-0.795***	-0.780***	-0.708***	2.665***
	(-9.69)	(-6.79)	(-5.40)	(8.04)
CL	0.212	-3.008***	2.443**	2.273***
	(0.32)	(-3.51)	(2.51)	(3.44)
Intercept term	-0.162	4.006	-5.010	-1.964
	(-0.10)	(1.60)	(-1.59)	(-1.18)
Observed value	280	100	180	280
R^2	0.492	0.572	0.513	0.457
After revision R^2	0.477	0.535	0.491	0.441
F	32.79	15.23	22.56	28.50

Note: *, ** and *** indicate significant differences at the significance level of 0.1, 0.05 and 0.01, respectively.

5.1   Full sample baseline regression

The full sample baseline regression results are reported in column 1 of Table 4. The results show that the estimated coefficient of tax treaty and ln(OFDI) is significantly positive at the level of 5%, indicating that signing tax treaty can promote China's OFDI to countries along the "Belt and Road". Because the tax treaty can avoid double taxation, the tax sparing clause provides preferential policies, and the mutual consul-

tation procedure can be started when the tax-related disputes occur, so as to reduce the negotiation cost and promote the growth of China's foreign direct investment.

The estimated coefficients of the three control variables, per capita GDP, natural resource endowment and tax and business environment, are all significantly positive at the level of 1%, because the higher the degree of economic development of the host country, the larger the potential market size. Abundant natural resources and low raw material costs; The business environment is relatively stable, it can create a fair competitive environment, so as to attract Chinese enterprises to invest abroad.

The estimated coefficients of the two control variables, political stability and Internet penetration, are significantly negative at the level of 1%, because the political chaos in the host country will affect the long-term development, strategic planning and personal safety of enterprises, and enterprises will avoid investing in the country. The higher the Internet penetration rate, the more transparent the basic national conditions of each country, and enterprises can easily and comprehensively obtain information about the host country for investment evaluation, and abandon some countries according to the results.

In addition, the estimated coefficient of the geographical distance variable is significantly negative at the level of 1%, indicating that the distance between the host country and China is far, the transportation cost increases, and the investment is hindered. Sharing the same official language with the host country can break down communication barriers and promote investment.

5.2   Group check

Columns 2 and 3 in Table 4 report the regression results of countries below the middle-income level and countries above the middle-income level respectively. The results show that the symbols of explanatory variables in the regression results of the two groups are consistent with the baseline regression, indicating that the research results are not affected by the national income level, and effectively compensate for the negative impact of control variables.

The promotion effect of natural resource endowment and tax business environment is more significant in countries below the middle-income level, because most of these countries are developing countries with large natural resource reserves, and a good tax business environment can make up for the negative impact of national political environment. The promotion effect of economic development degree is more significant in middle-income countries, because the economic development speed of this group of countries is faster and the market expansion opportunity is greater.

The negative effects of political stability and geographical distance are more significant in countries below the middle-income level, because terrorist attacks often occur in this group of countries, and China's foreign investment ratio is significant. The inhibitory effect of Internet penetration is more significant in middle-income countries, because the higher transparency of national information is easy to reveal its internal contradictions, and the endogenous problems of this group of countries are extremely harmful.

Language commonality is negatively correlated in countries below the middle income level, but positively correlated in countries above the middle income level, which may be because the former has a relatively low level of education and is less likely to use the same official language with China, thus hindering investment.

5.3   Robustness test

In this paper, the values of the following three variables are replaced. Column 4 of Table 4 reports the regression results of the stability test.

Alternative explanatory variable: Tax treaty implementation time (TA). It is still set as a dummy variable, from the execution year to TA=1, and from the non-execution year to TA=0.

Alternative control variable: Tax business environment (DBS). Instead of tax payment indicators in the Doing Business Indicator system, the data is directly derived from the World Bank's Doing Business database.

Replacement control variable: Geographical distance (DIS). It is replaced by the dummy variable of whether it has a common border. If it has a common border with our country, it is denoted as DIS=1; if it has a common border with our country, it is denoted as DIS=0.

The results show that the empirical sign is consistent with the baseline regression, and the significance level is improved compared with the baseline regression, indicating that the tax treaty can promote China's OFDI to the countries along the "Belt and Road".

6   Conclusion and suggestion

Based on China's OFDI stock data of 56 countries along the "Belt and Road" from 2016 to 2020, this paper studies the impact of tax treaties on China's OFDI. The results show that: First, tax treaties significantly promote China's foreign direct investment to countries along the "Belt and Road", and are less affected by national economic development level. Second, the host country's economic development level, natural resource endowment, tax and business environment promote China's OFDI to countries along the "Belt and Road", the degree of political stability and geographical distance have a inhibiting effect. Third, the Internet penetration rate has a negative effect, and the influence of language commonality on China's foreign direct investment is different in countries with different income levels. Therefore, the following three suggestions are put forward:

First, we need to improve work related to tax treaties. Promote the negotiation and signing of tax agreements between China and countries along the "Belt and Road", and amend and supplement the content already signed. Focus on the negotiation and signing of tax concession provisions in tax treaties, and timely sign the Multilateral Convention on the Implementation of Measures Related to Tax Treaties to Prevent Base Erosion and Profit Shifting (BEPS). Pay attention to the establishment and sign-

ing of mutual consultation procedures to protect the legitimate rights and interests of enterprises.

Second, we will optimize tax services for enterprises investing abroad. Countries can draw on advanced experience, consider the deepening reform of the comprehensive limited-credit law, and collect the latest data of host countries for analysis. Staff of tax authorities should be trained on time to improve risk prevention and control ability, so as to reduce the various risks faced by enterprises when investing abroad.

Finally, explore new ways to cooperate on global tax treaties. Through the existing cooperation mechanism, the tax institute or the establishment of a new information exchange platform to train foreign investment tax professionals, share successful dispute settlement cases, preferential tax policies, and tax handling experience, reduce the cost of obtaining tax information, and create a good tax business environment.

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