
Research on the effect of China's direct investment on countries along the Belt and Road based on RMB internationalization

Abstract:

Over the past decade or so, China has steadily promoted the internationalization of the RMB on the basis of market-driven and independent business choices, providing strong support for the smooth operation of the real economy. In 2022, the report of the Second Tenth Party Congress proposed to "promote the internationalization of the RMB in an orderly manner." This shows that the internationalization of RMB has moved from the prudent stage of exploration and accumulation of experience to a new stage of orderly institutional design and action. Therefore, by constructing panel model and intermediary effect model, this paper empirically analyzes the impact of RMB internationalization on China's OFDI along the "Belt and Road". The results show that the current RMB internationalization has a positive impact on China's OFDI along the "Belt and Road", and the impact varies with the increase of geographical distance; Secondly, the internationalization of RMB can also affect foreign direct investment by affecting foreign trade. This paper proposes that China should seize the opportunity of the development of the "Belt and Road" strategy, use the internationalization of RMB to promote the foreign direct investment to the countries along the "Belt and Road", expand bilateral foreign trade, and achieve common development.

Key words: OFDI; RMB internationalization; The Belt and Road

1 Introduction

The internationalization of RMB is an important factor for the sustained development of China's economy, and it is also a sign that China's economy is going global and becoming strong. Improving the internationalization level of the RMB will help the RMB go global, which will help Chinese multinational enterprises reduce financing constraints and outward foreign direct investment (OFDI). In addition, in recent years, China has accelerated the implementation of the "going out" strategy, and the foreign direct investment as an important part of China's "going out" strategy, will help our national economy into the benign track of internal and external double cycle,

but also effectively promote the optimization and adjustment of China's industrial structure.

On the one hand, the supply and demand of reserve currencies in the current international monetary system face the danger of asymmetry, and the internationalization of RMB will greatly alleviate this crisis, so a stable international monetary system also requires the internationalization of RMB. On the other hand, in the exploration of a new round of RMB internationalization mode, investment-driven and leading peripheralization and regionalization have gradually become a consensus. As a pivotal step in China's "going global" strategy, "One Belt and One Road" has steadily increased the stock of China's foreign investment since its proposal. China has signed bilateral investment agreements with more than 100 countries along the Belt and Road, and established financial service institutions such as the Silk Road Fund and the Asian Infrastructure Investment Bank to solve financial financing problems, promote outbound direct investment and financial cooperation, and steadily realize the convertibility of the RMB under capital accounts, vigorously promoting the internationalization of the RMB.

2 Literature review

In recent years, with the continuous deepening of China's opening up policy, especially the deepening of the "Belt and Road" initiative, domestic enterprises have accelerated the pace of "going out", and with the acceleration of the process of RMB internationalization, OFDI has also increased sharply. The theoretical context of currency internationalization and OFDI corresponds to international financial theory and international factor flow. Therefore, this paper reviews the existing literature and discusses it from the following three aspects.

2.1 RMB internationalization

In recent years, with the growth of China's economy and the enhancement of its global market position, the demand for RMB both at home and abroad is gradually increasing (Cheung,2021). The internationalization of RMB has gradually become a hot topic of research. Various scholars conduct analysis based on different perspectives and reach different conclusions. Brummer(2017) believes that RMB internationalization is emerging in a way that is completely different from that predicted by historical precedents and traditional macroeconomic theories, and the development of this monetary strategy will bring new systemic risks to the global financial system, including the risk of RMB liquidity crunch. Zhang&Zhang(2017) shows that due to deleveraging and the downward

adjustment of the real estate market, the development of RMB internationalization will inevitably lead to the increase of cross-border arbitrage activities, and thus increase the risk.

In 2016, the International Monetary Fund announced that RMB would be included in the basket of currencies of Special Drawing Rights, which made RMB gradually become an important choice of foreign exchange assets in neighboring countries and regions, and the international demand for RMB showed a rising trend. Subsequently, a number of banks and research institutions began to build and calculate the RMB internationalization index, including the RMB Global Index (RGI) released by Standard Chartered Bank, the RMB Internationalization Index (CRI) released by the People's Bank of China, and the RMB Internationalization Index (RII) released by the Monetary Research Institute of Renmin University of China. All of them show a fluctuating upward trend in the level of RMB internationalization. Taking various factors into consideration, this paper selects the RMB Internationalization Index (RII) compiled by Renmin University of China as the proxy variable for the degree of RMB internationalization, and its changes are shown in Figure 1 below

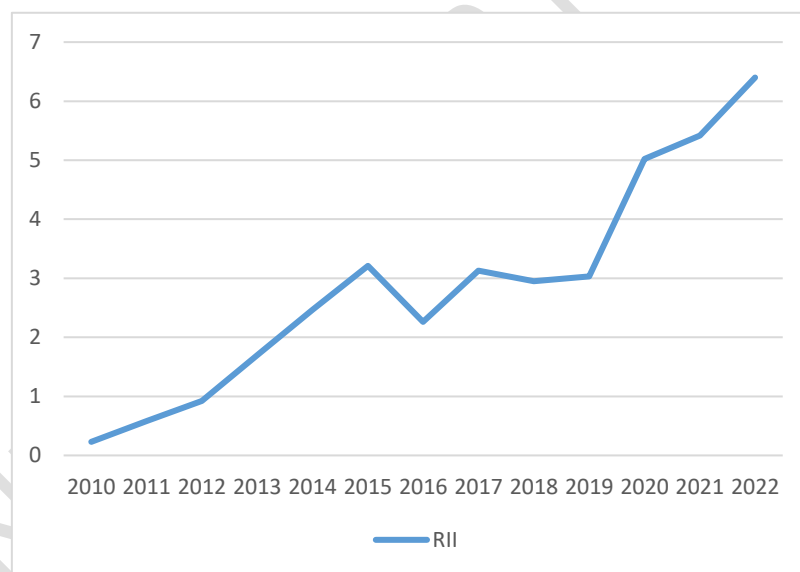


Figure 1. Trend chart of RMB internationalization index

2.2 Foreign direct investment

With the development of economic globalization, the flow of factors among countries in the world has become increasingly close, and foreign investment has gradually become an indispensable link in the process of international cooperation. In the 1970s, Knickerbocker proposed the oligopolistic reflection theory. He believed that maintaining the equilibrium among oligopolistic firms was the motivation for foreign investment. Some scholars also found that there is an influence

between OFDI and foreign trade. Mundell(1957) proposed through the H-O trade model that FDI has a substitution effect on export trade. However, LipseyandWeiss(1984), WongandGoh(2013) et al. believe that FDI has a complementary impact on the export of the home country. In recent years, China's OFDI and exports have both achieved growth, but their growth tracks are different, so whether OFDI promotes or replaces exports is still controversial. It is of great significance to study the influencing factors of China's foreign investment to optimize the layout and structure of China's foreign investment and improve the efficiency and return of China's foreign investment.

2.3 Research on the relationship between RMB internationalization and China's OFDI

International capital and other factors in the cross-border flow, often can not be separated from the help of international currency, and international currency in the international investment as an important intermediary function. On the contrary, the internationalization process of currency also needs to be promoted through cross-border investment and cross-border trade channels, which shows that the two are closely related.

Most of the literatures on the relationship between RMB internationalization and China's OFDI focus on the influence of China's OFDI on RMB internationalization, and most scholars believe that China's OFDI is an important influencing factor to promote RMB internationalization. Most scholars believe that foreign investment can expand currency internationalization, and the international trade surplus brings huge foreign exchange reserves to accumulate funds for foreign direct investment of the country. Moreover, with the continuous appreciation of the local currency, domestic investors are more inclined to use their own currency for foreign direct investment, thus increasing the stock and flow of domestic currency overseas, thus improving the degree of currency internationalization. On the one hand, the internationalization of RMB will reduce the cost of FDI and promote the development of FDI. On the other hand, the internationalization of RMB can benefit China's overseas investment enterprises and export enterprises. Allowing them to use RMB for pricing and better access to the global market can improve their international competitiveness, but at the same time, this requires the marketization of RMB exchange rate, which may increase exchange rate risks. (He,Q.2021b.)

3 Theoretical mechanism

3.1 The direct impact of RMB internationalization on China's OFDI

As we all know, whether foreign or domestic, sufficient capital is the lifeblood of the country's economic market and the basis for sustainable operation. With the improvement of the internationalization level of RMB, it can not only effectively reduce its investment cost, its solvency and liquidity are also providing the strong guarantee for the development of our country's foreign investment, that is, the internationalization of RMB will create convenient conditions for foreign direct investment and promote the rapid development of China's foreign direct investment. Its direct impact can be explored from the following two aspects: First of all, Josef Phritchhelbing (2013) believes that RMB internationalization can reduce the exchange rate risk in cross-border investment. In order to hedge the exchange rate risk in the process of trading in the foreign exchange market, domestic investors need to pay a great deal of manpower and material costs. It can not only reduce the cost [Sauvant&Davies], but also reduce the fee expenditure. Secondly, Li&Rengifo (2018) believes that the increasing demand for the international use of RMB will promote the appreciation of RMB exchange rate, which means that the relative increase in the wealth of enterprises in the investor countries denominated in RMB will be conducive to OFDI. Based on this, the first hypothesis is proposed

H1: The improvement of RMB internationalization level has a positive effect on OFDI.

Due to the differences in the endowment conditions of countries along the Belt and Road, the adjustment function of RMB internationalization may also be affected. On the one hand, according to the foreign direct investment theory of Kojima, foreign investment can be divided into market seeking, efficiency seeking, resource seeking and other types. Based on the differences in economic development status and resource endowment of countries along the Belt and Road, China's purpose of investment in them is also different. On the other hand, the difference in trade distance between different countries will also have an impact on their investment. Based on this, the second hypothesis is proposed.

H2: The positive effect of RMB internationalization on OFDI will be different due to the host country's different economic base and distance.

3.2 RMB internationalization, export trade effect and OFDI

According to the marginal industry transfer theory of Kojima (1978), there is a complementary relationship between the internationalization of RMB and international trade. The improvement of

the internationalization level of RMB can increase the trade creation effect between China and the host country, and expand the opportunities and scale of foreign trade, thus promoting the development of OFDI. The mechanism of the effect of RMB internationalization on China's trade with countries along the Belt and Road may be completed through the following two ways. First, a higher degree of internationalization of RMB will promote export trade to a certain extent, while a higher degree of internationalization of RMB can reduce the constraints of operating costs, competition and other factors on the market development of the host country, so that multinational companies and institutions can make different choices when investing in the host country. In addition, the willingness to use RMB caused by the introduction factor will affect China's foreign direct investment. Second, the development of RMB internationalization will have an impact on China's export creation mechanism to some extent. Specifically, when the RMB is more and more recognized in the international market, the preference of countries along the Belt and Road for Chinese products will also increase, and Chinese investment in them will also play a greater role. Based on this, a third hypothesis is proposed.

H3: The internationalization level of RMB indirectly improves China's OFDI by increasing the effect of foreign export trade.

4 Empirical analysis

The first half of the paper starts with the study of relevant supporting theories, explores the relevant research hypotheses of RMB internationalization and China's OFDI of countries along the Belt and Road, and analyzes its development status according to existing data. In this chapter, based on the hypotheses mentioned above, we construct appropriate mathematical models for empirical analysis.

4.1 Model Construction

4.1.1 Reference regression model

With reference to the existing literature on foreign investment and trade, this study constructs the following regression model to identify the impact of RMB internationalization on China's OFDI.

$$\ln OFDI_{it} = \alpha_0 + \alpha_1 RII_t + \alpha_2 \ln OPEN_{it} + \alpha_3 Dis_{it} + \varepsilon_{it} \quad (1)$$

In the above model: $\ln OFDI_{it}$ is the value of China's direct investment in the Belt and Road i countries, RII_t indicates the degree of RMB internationalization, $\ln OPEN_{it}$ is the value of the

trade openness of the Belt and Road i countries in the period t, Dis_{it} is distance variable, This variable is determined by D_i and T_{it} calculate, Where D_i is the geographical distance between China and countries along the Belt and Road, T_{it} is the trade volume between China and countries along the Belt and Road in period t, and ε_{it} is the random error term.

4.1.2 Intermediate effect model

The method of causal stepwise regression (Baron&Kenny,1986) was used to analyze the intermediary effect, and the regression model was built as follows:

$$\ln OFDI_{it} = \alpha_0 + \alpha_1 RII_t + \varepsilon_{1t} \quad (2)$$

$$\ln EX_{it} = \alpha_0 + \alpha_1 RII_t + \varepsilon_{2t} \quad (3)$$

$$\ln OFDI_{it} = \alpha_0 + \alpha_1 RII_t + \alpha_2 \ln EX_t + \varepsilon_{3t} \quad (4)$$

The above model: $\ln OFDI_{it}$ to China all the way to the area I direct investment for numerical, RII_t to express the degree of RMB internationalization, $\ln EX_{it}$ to China all the way to the area I export trade amount of value. ε_{1t} 、 ε_{2t} 、 ε_{3t} are the random error terms of model (2), (3) and (4), respectively.

4.2 Variable selection and data source

Based on the availability of research and data, the data of China and 141 countries along the Belt and Road from 2010 to 2022 will be selected as samples to ensure sufficient sample observations. China's OFDI stock data of countries along the Belt and Road were selected as the explained variable, and RMB internationalization index RII was selected as the core explanatory variable. In addition, other factors that may affect China's OFDI along the Belt and Road are selected as control variables, such as the host country's trade openness, Dis of the trade distance between China and the host country's capital, and lnGDP of the host country's own economic development level.

4.2.1 Explained variable

Compared with the flow data of OFDI, the stock data is less volatile, and more stable and reliable analysis results can be obtained by using this data. Therefore, this paper selects the stock data of China's direct investment to countries along the Belt and Road to measure the level of China's OFDI, and carries out natural logarithm processing ($\ln OFDI$) on the data. Data from the national Belt and Road website.

4.2.2 Core explanatory variable

In 2016, the International Monetary Fund (IMF) announced the inclusion of the RMB in the new Special Drawing Rights (SDR) currency basket, which reflects the rising status of the RMB in the international monetary system and is conducive to the establishment of a more robust international monetary and financial system. With the continuous improvement of the internationalization level of RMB, many banks and financial institutions have begun to construct and calculate the RMB internationalization index. In this paper, the RMB Internationalization Index (RII) compiled by the Monetary Research Institute of Renmin University of China is selected as the core explanatory variable. Table 1 lists the RII index indicators.

Table 1 Index System of RMB Internationalization

Primary index	Secondary index	Three-level index	Index interpretation
International pricing	Trade	Proportion of RMB trade settlement	RMB currency for cross-border trade volume and total world import and export trade
		RMB credit ratio	The ratio of RMB offshore credit to global external credit
Payment function	Finance	Proportion of RMB bonds and bills	The ratio of renminbi international bond and note issuance to global issuance
		Proportion of outstanding RMB bonds and bills	The ratio of renminbi international bonds and bills to global balances
		Proportion of RMB direct investment	The ratio of RMB direct investment to global direct investment
International reserve	Official reserve	Proportion of RMB reserves	The ratio of official renminbi reserves to global foreign exchange reserves

Data Source: 《RMB Internationalization Report 2012》

4.2.3 Intermediate variable

In this paper, China's export volume (EX) to the countries along the Belt and Road is selected as the intermediary variable to represent the scale of China's export trade to the countries along the Belt and Road. When mediating effect regression is carried out, natural logarithm processing is needed, and the processed data is represented by $\ln EX$. Data from the national Belt and Road website.

4.2.4 Other control variables

Based on the completeness and availability of data, host country trade openness (OPEN), host country economic development level (lnGDP), and trade distance between home and host countries (Dis) were selected. The proportion of the annual import and export value of the countries along the Belt and Road in the total GDP of the year is selected for the degree of trade openness of the host country, and the data are from the official website of the Belt and Road and CEIC database. The economic development level of the host country (lnGDP) reflects the degree of economic development of the host country, and the data is from the official website of IMF. Trade distance between home and host countries (Dis) The ratio of the distance between China and the capital of the countries along the Belt and Road (D) and the trade scale (T) is used to measure the trade distance between the two countries, and the data is from the CEPII database of the French Institute for International Economics.

4.2.5 Descriptive statistics

This section makes descriptive statistics on the variables selected in the article, and the statistical results are shown in the table below. It can be seen that except for the relatively large standard deviations of China's OFDI and trade distance, the standard deviations of other variables are all lower than 2, which indicates that the degree of dispersion of the selected data in this paper is small and no outliers are found.

Table 2 Descriptive Statistics of Variables

Variable symbol	Variable Name	Observed value	Mean value	Standard deviation	Minimum value	Maximum value
lnOFDI	China's foreign direct investment	1833	9.716	2.432	2.485	15.810
RII	Internationalization level of RMB	1833	2.871	1.792	0.230	6.400
lnEX	Export trade	1833	11.705	2.039	4.885	16.594
lnGDP	Level of economic development	1833	14.945	1.925	9.651	19.251
OPEN	Trade openness	1833	0.111	0.169	0.001	2.212
Dis	Trade distance	1833	3.280	7.412	0.006	47.681

4.3 Model regression and empirical analysis

4.3.1 Reference regression

Table 2 reports the test results of baseline regression: In columns (1) and (2), when only the

internationalization level of RMB is used to regression China's direct investment in the countries along the Belt and Road, the coefficient obtained is positive and significant at 1%, indicating that the improvement of the internationalization level of RMB and China's direct investment in the countries along the Belt and Road have a significant complementary effect. To explore the reasons, on the one hand, the internationalization of RMB continues to improve. In the international trade settlement, RMB is more and more selected as the foreign investment currency; On the other hand, when China's OFDI increases, the depth and breadth of the use of RMB in the international market will also be improved. After adding other control variables, the regression results are still significant, indicating that the improvement of the internationalization level of RMB will indeed help to enhance China's OFDI effect on countries along the Belt and Road. In columns (3), (4) and (5), the estimated coefficient of RMB internationalization level (RII) is significantly positive in the regression, which indicates that the continuous advancement of RMB internationalization has a significant creative effect on China's OFDI. Finally, according to the regression results of each control variable, the increase of bilateral distance has a certain impact on China's OFDI, which is because the increase of trade distance increases the investment cost and thus has a certain negative impact. And the improvement of trade openness helps to strengthen China's OFDI. Then hypothesis 1 and hypothesis 2 are tested.

Table 3 Benchmark Regression Results

	(1)	(2)	(3)	(4)	(5)
	lnOFDI	lnOFDI	lnOFDI	lnOFDI	lnOFDI
RII	0.282*** (4.698)	0.284*** (13.640)	0.279*** (13.13)	0.246*** (10.281)	0.227*** (9.226)
OPEN			0.250* (1.791)	0.855* (1.709)	0.205* (1.350)
lnGDP				0.382*** (2.691)	0.274* (1.957)
Dis					-0.116* (-1.420)
Costant	8.905*** (13.715)	9.312*** (15.548)	9.317** (1.806)	3.810* (1.866)	3.087* (1.556)
Year FE	No	Yes	Yes	Yes	Yes
Country FE	No	Yes	Yes	Yes	Yes
N	1833	1833	1833	1833	1833
Adjusted_R2	0.043	0.914	0.731	0.915	0.916

Note: * p<0.1, ** p<0.05, *** p<0.01; t statistics in parentheses

4.3.2 Intermediate effect regression results

As can be seen from the regression results of intermediary effects in Table 4, columns (1), (2) and (3) are the results of China's export trade effect on countries along the Belt and Road as the intermediary variable, where the coefficient of column (1) is 0.137 and significant at 1%, indicating that the promotion of RMB internationalization can promote the development of China's export trade effect. The coefficient of column (2) is 0.282 and significant at the 1% level, indicating that the promotion of RMB internationalization can promote the development of China's OFDI. The coefficient of column (3) is 0.182 and significant at 1%, indicating that the promotion of RMB internationalization can promote the development of China's OFDI by increasing the effect of export trade. In short, the improvement of the internationalization level of RMB can affect China's OFDI through indirect effects, that is, the intermediary variable export trade effect has a significant indirect impact on China's OFDI. The validity of hypothesis 3 is effectively verified.

Table 4 Intermediate Regression Results

	(1)	(2)	(3)
	lnEX	lnOFDI	lnOFDI
RII	0.137*** (5.2072)	0.282*** (9.1029)	0.182*** (7.4341)
lnEX			0.733*** (34.1580)
Costant	11.310*** (126.6295)	8.905*** (84.8234)	0.610** (2.3795)
N	1833	1833	1833
Adjusted_R2	0.015	0.043	0.415

Note: * p<0.1, ** p<0.05, *** p<0.01; t statistics in parentheses

4.4 Robustness test

4.4.1 Alternate explanatory variable

The core explanatory variable selected in this paper is the RMB Internationalization Index (RII) compiled by the Institute of Monetary Studies of Renmin University of China. According to the regression results, it can be seen that the improvement of RMB internationalization has a promoting effect on China's OFDI. However, it is not clear whether RMB internationalization index or international economic development has a promoting effect on China's OFDI. Therefore, in order to solve this problem, the RMB Global Index (RGI) produced by Standard Chartered Bank is

considered to replace the original index and conduct a regression test again. The results are shown in Table 5 below. The results of columns (1) and (2) in Table 5 show that RMB internationalization still has a significant positive impact on China's OFDI at the level of 1%, thus confirming the robustness of the above benchmark regression results.

4.4.2 Double clustering adjustment

Referring to Petersen's (2009) method, this paper adjusts the robust standard error of baseline regression by double clustering at the firm and year levels. The following table (4) shows the significance level of the regression coefficient of RII after cluster adjustment. Compared with the regression result column (3), there is no significant change, so the robustness of the above benchmark regression results can be confirmed.

Table 5 Robustness Test Results

	(1)	(2)	(3)	(4)
	lnOFDI	lnOFDI	lnOFDI	lnOFDI
RGI	0.588*** (16.111)	0.496*** (13.640)		
RII			0.282*** (4.698)	0.284*** (13.640)
Costant	5.444*** (16.519)	7.092*** (29.980)		
Year FE	No	Yes	No	Yes
Country FE	No	Yes	No	Yes
N	1833	1833	1833	1833
Adjusted_R2	0.048	0.914	0.043	0.914

Note: * p<0.1, ** p<0.05, *** p<0.01; t statistics in parentheses

4.4.3 Endogeneity test

From the perspective of risk, RMB internationalization can promote the development of China's OFDI, but at the same time, DierkHerzer(2010) believes that OFDI has a significant positive impact on RMB internationalization and is a new driving force for the further development of RMB internationalization. In order to solve the endogenous bias caused by the above two-way causation, referring to the practice of Arellano&Bond(1991), this paper selects the core explanatory variable with a one-stage lag as the instrumental variable and uses the GMM method for testing.

According to Table 6, columns (1) and (2) show the estimation results obtained by differential GMM and system GMM respectively. Compared with benchmark regression, the coefficient

symbols and significance of core explanatory variables and other control variables are consistent, indicating that the assumed model in this paper can eliminate the interference of endogeneity problem to a certain extent. Moreover, in the column regression results, the coefficients of lnOFDI are all significantly positive, which further proves that the increase of RMB internationalization leads to the expansion of investment market demand and promotes the development of China's OFDI.

Table 6 GMM Estimation Results

	(1)	(2)
lnOFDI	0.976*** (381.833)	0.973*** (54.367)
RII	0.059*** (32.899)	0.059*** (3.553)
OPEN	0.084* (7.023)	0.109* (0.837)
LnGDP	0.044* (9.445)	0.046* (1.467)
Dis	-0.001* (-0.672)	-0.001* (-0.071)
Costant	0.077* (0.176)	0.077* (1.193)
N	1692	1692

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; t statistics in parentheses

5 Conclusion

Based on the analysis of the impact path of RMB internationalization on the direct investment of countries along the Belt and Road, this paper uses empirical analysis to analyze the impact of RMB internationalization on the OFDI under the background of the Belt and Road Initiative. The results show that RMB internationalization has a positive promoting effect on the direct investment of countries along the Belt and Road, and this effect varies with geographical distance. On the other hand, due to the low internationalization of RMB in China at present, the development effect of China's direct investment to countries along the belt and road is not obvious, and there is still a large development space and potential. When the development reaches a certain level, the OFDI can also react to the internationalization of RMB. Secondly, the internationalization of RMB can also promote the development of foreign direct investment through its effect on foreign trade. With the improvement of the internationalization level of RMB, more and more countries choose RMB as

the settlement currency, thus promoting foreign exports, increasing the volume of foreign export, and reserving more international currencies for the domestic market, thus promoting China's foreign direct investment.

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