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Research on China's OFDI to ASEAN under the Background of "Belt and Road"

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Abstract: With the promotion of the "Belt and Road" initiative, China's direct investment in ASEAN countries, which are located at the important nodes of the "Belt and Road", has increased dramatically. This has pushed forward the economic and trade development between China and ASEAN, and facilitated the flow of labor factors in the regional market, which has brought about the issue of social security for transnational workers. At present, China and ASEAN have the basis and demand for social security cooperation, but still face the difficulties of cooperation, such as the different levels of social welfare needs, the limited ability of ASEAN to coordinate interests, and the different degrees of development of social security systems. Based on this, we can actively promote international cooperation on social security through the existing dialogue mechanism, gradually form the basic rights and interests of transnational workers by utilizing the standards of international conventions, and improve the infrastructure of international cooperation on social security, so as to promote the deepening development of international cooperation mechanism on social security between China and ASEAN under the "Belt and Road" initiative.

1. Introduction

"The Belt and Road Initiative is a major initiative of economic cooperation between the Chinese Government and countries along the route in recent years. Among the routes along the Belt and Road, East ASEAN is an important node in the development path of the Belt and Road Initiative. Economic and trade cooperation between China and ASEAN has maintained a strong momentum in recent years. With the promotion of the "Belt and Road" initiative, ASEAN and China have been engaged in close economic and trade exchanges, and in 2020 China-ASEAN trade amounted to 684.60 billion U.S. dollars, with ASEAN becoming China's top trading partner for the first time. However, while economic policy cooperation between China and ASEAN has deepened, the synchronized and coordinated development of bilateral social policy cooperation has been relatively slow, especially social security cooperation between China and ASEAN has lagged behind the process of economic integration between China and ASEAN. This not only restricts the free flow and rational allocation of labor, an important factor of production in the China-ASEAN region, but also aggravates the vicious competition of labor cost among the countries in the region, reduces the welfare of workers in the China-ASEAN region, and hinders the healthy development of regional

integration. International cooperation in social security is an inevitable product of economic globalization [1], along with the completion of the social security system covering the whole population, the construction of China's social security system should be gradually extended from the domestic workers to the transnational workers, and the international cooperation in social security should be promoted to better adapt to the needs of the reform of social security system in the process of opening up to the outside world in the new era[2]. In this context, the study of the main factors affecting China's OFDI to ASEAN countries and the magnitude of its influence is of great practical significance and policy implications for further opening up the bilateral market to promote the optimization and upgrading of the bilateral economic structure, as well as deepening the economic and trade cooperation between the two sides under the background of the “Belt and Road”.

2. Literature Review

The implementation of the “Belt and Road” initiative is of great significance to China and the countries along the route, and scholars have been increasingly rich in studying outbound investment in this context. Based on the extended gravity model and gravity model, Wen Ge Yajun analyzed the motives affecting China's investment in countries along the “Belt and Road” and measured the investment potential of the countries along the route. Some scholars analyzed the political system or political risk of China's investment in countries along the route[3].

The multilateral cooperation between China and ASEAN is themed on connectivity. ASEAN proposed the ASEAN Connectivity Master Plan 2025 in 2016, aiming to strengthen ASEAN's internal connectivity, while the Belt and Road Initiative mainly focuses on the “five links” as the framework for cooperation, which is highly consistent with ASEAN's connectivity in terms of content. In recent years, China has been actively connecting ASEAN with the Community of Human Destiny, promoting connectivity projects with ASEAN in energy, finance, infrastructure, transportation, scientific research, economic zones and other aspects, and has reached agreements with Cambodia, Laos and Myanmar to build a community of destiny since 2019, which not only strengthens the construction of regional economic integration, but also strengthens the political mutual trust between China and the ASEAN countries [4]. The upgrading of the cooperative relationship between China and ASEAN has provided a front-loaded foundation for cooperation on social security systems, an internal matter.

Collaboration on social security within ASEAN has also laid the practical foundation for further deepening China-ASEAN social security cooperation. The basic goal of intra-ASEAN multilateral agreements is economic and trade integration, and a large number of bilateral agreements or memorandums of understanding (MOUs) within the ASEAN countries have made corresponding provisions for the free movement of labor, an important factor of production.The 2007 ASEAN Declaration on the Protection and Promotion of Transnational Labor Rights and the 2013 ASEAN Declaration on the Enhancement of Social Protection emphasize the need to protect the basic rights and interests of transnational laborers within the ASEAN region. Cooperation on social protection within the region should be strengthened. Social protection cooperation within ASEAN countries provides an existing basis and policy reference for China-ASEAN social protection cooperation[5].

In summary, to analyze China's outward FDI, scholars have mostly adopted the gravity model, and the difference embodied lies in the selection of variables. This paper intends to empirically analyze China's OFDI to ASEAN countries, which has received less attention from academics, by selecting the data from 2012-2022, expanding the gravity model by adding variables on the basis of focusing on the actual environment of China and ASEAN, and analyzing the influencing factors of China's OFDI to the ASEAN region[6].

3. Foundations of China-ASEAN Economic Cooperation

3.1. Economic cooperation

Social security is a product of socialized production. Due to the gradual refinement of the social division of labor, social risks are spread to each individual in society, and when individuals cannot rely on their own ability to defend themselves against the accumulated risks, social security plays the role of underwriting to maintain the order of social production. The implementation and promotion of the “Belt and Road” initiative has promoted the free flow of factors of production in the markets of China and ASEAN, and the social division of labor between China and ASEAN has been further refined, gradually forming an integrated economic market, which lays an economic foundation for the social security cooperation between China and ASEAN countries [4].

China has long been committed to forming institutionalized economic cooperation with ASEAN countries and has signed many economic agreements. In the context of the global economic recession and protectionism caused by the impact of the new crown epidemic, China and ASEAN trade relations have become increasingly close, with the total value of bilateral trade reaching US$878.2 billion in 2021, an increase of 28.1% year-on-year, and making each other the largest trading partner for 2 consecutive years [5]. China and ASEAN signed the Agreement on Trade in Goods, the Agreement on Trade in Services, and the Agreement on Investment in 2004, 2007, and 2009, and established a free trade area in 2010. Building on this cooperation, China and the 10 ASEAN countries signed the Regional Comprehensive Economic Partnership (RCEP) in 2020, which aims to cut tariff and non-tariff barriers and form a regional economic whole covering 15 countries in East Asia[7]. The current bilateral economic agreements include market access for trade in goods, trade in services, and investment, as well as trade facilitation, intellectual property rights, e-commerce, competition policy, government procurement, and a large number of other contents, which greatly promote the level of economic integration within the region of China and ASEAN, accelerating social division of labor within the integrated market, and laying a solid economic foundation for the cooperation of bilateral social security.

3.2. Regional mobility of people

The rapid development of economic integration between China and ASEAN and the geographical convenience of being connected by mountains and rivers have accelerated the continuous deepening of bilateral labor cooperation, and the number of transnational workers has shown a clear upward trend. Most of the ASEAN countries are in the early stage of industrialization, with huge demand for inward investment and infrastructure construction. The Asian Development Bank predicts that in order to maintain the current pace of economic development, the East ASEAN countries will need to invest 1.7 trillion U.S. dollars annually in infrastructure construction during the 2016-2030 period. China, on the other hand, is in the stage of capacity export, only in 2021, China's direct investment in ASEAN 14.35 billion U.S. dollars, in ASEAN new engineering contract amounted to 60.64 billion U.S. dollars. The production capacity cooperation between China and ASEAN makes the scale of China's labor export will usher in the opportunity to expand again. China's foreign labor cooperation is mainly concentrated in engineering contracting, processing and manufacturing, transportation and other labor-intensive infrastructure industries, due to the absorption of a large number of expatriate laborers, the social security problem becomes prominent, at the same time, social insurance contributions as an important expenditure of labor costs, but also attracted the attention of multinational enterprises.

Social security as an important factor affecting labor mobility, the development of reciprocal arrangements in social security between countries will facilitate such mobility. Social security

agreement is currently the mainstream way for countries to carry out social security cooperation, the current 12 countries that have concluded social security agreements with China, mainly Europe and developed countries, however, China's labor cooperation region is concentrated in Asia and Africa, in 2019, China's end of the period of the number of foreign laborers ranked in the top ten destination country areas, four of which are ASEAN countries, reaching nearly 170,000 people. However, China has not signed a bilateral agreement on social security with any ASEAN country so far, so the number of transnational workers that can be benefited by social security agreements is very limited and does not provide good protection for transnational workers. Under the demand for free movement of factors of production in economic integration, the lack of reciprocal arrangements for social security is not conducive to the further strengthening of labor cooperation and exchange of talents between China and ASEAN, and it is necessary for China and ASEAN to respond to this market demand in a timely manner.

4. Theoretical Assumptions

East ASEAN region is rich in energy resources. For a long time, China has been using energy and resource consumption in exchange for economic growth, facing the serious problem of resource depletion. In order to get rid of the constraints of the resource bottleneck and promote sustained economic growth, there is a need to transfer domestic excess production factors—labor and capital—to countries with relatively abundant natural resources. These local energy and natural resources, combined with an epitaxial expansion of natural resource endowment, provide an opportunity. Therefore, it is necessary for Chinese enterprises to make direct investments in countries with abundant natural resource endowments, rationally utilize local resource advantages, and solve their own resource constraints. Therefore, it can be assumed that the rich natural resources of ASEAN countries and the competitive advantages of primary products represented by raw materials, minerals and energy products are the important reasons for attracting China's OFDI, and hypothesis 1 is proposed on this basis:

H1:Chinese OFDI is positively correlated with the natural resource endowment of ASEAN countries, and the richer the natural resources such as minerals and oil, the more the inflow of Chinese OFDI.

The deepening of globalization has promoted the specialized division of labor among countries, with some countries producing intermediate products and some countries finally assembling these parts and components, facilitating intra-industry trade among countries with each other. Although ASEAN countries are rich in natural resources, their industrial system is incomplete, their industrial structure is single, and they have long relied heavily on imports of manufactured goods, which has created a strong intra-industry trade relationship with China, which imports low-quality, low-processed primary products and exports high-quality, deep-processed finished products to ASEAN countries. If the stronger the degree of intra-industry trade between the two sides, it means that China's demand for resources and primary products such as metals and minerals from its trading partner countries is stronger, and China has stronger incentives to transfer part of its processing industries to these countries, to take advantage of the cheap local labor force and abundant high-quality resources, and to make direct investments in the establishment of offshore production and processing bases, and hypothesis 2 is proposed on this basis:

H2:China's OFDI is positively correlated with the level of intra-industry trade in ASEAN countries, the higher the level of intra-industry trade, the greater the attraction of China's OFDI.

5. Model setup and data description

Two hypotheses are put forward through the above theoretical analysis, and the panel data of

China's OFDI to ASEAN countries from 20012 to 2022 are next utilized to empirically test the above arguments, with the help of the gravitational model widely used in the field of international investment research, referring to the benchmark gravitational model of outward foreign direct investment (OFDI), and adding the variables required for the study, the specific model is derived as follows:

$$LN(OFDI_{it}) = \alpha_0 + \alpha_1 \ln（\text{cgdp}_{it}）+ \alpha_2（\text{hgdp}_{it}）+ \alpha_3 \ln（D_{it}）+ \sigma_t + \varepsilon_{it}$$

In equation (1), α_0 is a constant term, and and are country and time effects, λ_j and μ_t are residual terms. λ_j and μ_t are the observed variables. The variables and data description are shown in Table 1.

Table 1 Variable Settings and Data Descriptions

variable	variable symbol	Variable Description
explanatory variable	ofdi	China's direct investment stock in the 10 ASEAN countries (due to the data vacancy of Brunei and Singapore's investment direction is different from the other countries, so the data of these two countries are excluded to choose the remaining 8 countries for research), the data from the "China's Outward Foreign Direct Investment Statistical Bulletin" of the past years.
Core explanatory variables	res	Host country exports of hydrocarbons and mineral resources to China as a share of total exports to China, data from the United Nations UNCOMTRADE database
	iit	Extent of intra-industry trade between host countries and China, using the G-L intra-industry trade index, data from the United Nations UNCOMTRADE database
control variable	cgdp	China's GDP from 2012 to 2022 was used to represent the level of economic development of investor China, with data sourced from the World Bank and chosen to be based on 2015 constant dollar prices
	hgdp	The GDP of the 10 ASEAN countries from 2012 to 2022 is used to represent the market size of the host country, with data from the World Bank, chosen to be based on 2015 constant dollar prices
	dis	Bilateral trade distance, representing investment distance costs, data from CPEII database
	ps	Representation of host country regimes by the political stability index, data from the World Bank database
	mcs	In this paper, the variables of cell phone holdings per capita per 100 people (mcs) and Internet users per 100 people (inter) in the host country are selected to represent the level of infrastructure, with data from the World Bank database
	inter	

6. Empirical Research

6.1. Comparison of different measurement models

The columns in Table 2 show the results of regressing the model using the 3 methods of robust mixed least squares (RPOLS), panel fixed effects (FE), and panel random effects (RE), respectively. In order to obtain accurate results, it is informative to compare these 3 types of results: first, mixed least squares and panel fixed effects and panel random effects. Comparing the regression results in column 1 and the panel fixed effects and random effects regression results used in columns 2 and 3, it is found that the regression results are basically the same and the difference between the coefficients in columns (1) and (3) is very small, which indicates that there is not much difference between the analysis using RPOLS and RE. Secondly, RE and FE. columns 2 and 3 show the regression results of RE and FE respectively, after Hausman test, the value of the test statistic is 9.54 and the p-value is 0.049, the alternative hypothesis is accepted, therefore, the fixed effect estimation is chosen.

Table 2 Model estimation results

Variables	(1)	(2)	(3)
lncgdp	0.311**	0.428**	0.311**
	(2.617)	(2.059)	(2.027)
lnhgdp	0.519***	6.381***	0.519***
	(0.504)	(1.637)	(0.344)
lndis	-3.923***	-3.936***	-3.924***
	(1.993)	(5.236)	(5.000)
lnres	0.003***	0.011***	0.003***
	(0.015)	(0.019)	(0.027)
lnitt	0.378**	0.522**	0.378**
	(0.313)	(0.259)	(0.363)
lnps	0.028	0.017**	0.029**
	(0.130)	(0.176)	(0.259)
lnexc	-2.137**	-0.051**	-2.137**
	(2.668)	(0.944)	(1.182)
lnmcs	2.137**	0.140**	0.813**
	(2.668)	(0.470)	(0.601)
lninter	2.380**	0.021***	2.380***
	(1.837)	(0.921)	(0.963)
cons	48.356	-34.054	48.356
	(32.301)	(21.678)	(57.224)
obs	60	60	60
R^2	0.9234	0.9462	0.9211

Note: “***”, “**”, and “*” indicate significance at the 1%, 5%, and 10% levels, respectively; standard errors are in parentheses.

6.2. Robustness Testing

In order to further verify the reliability of the empirical results obtained above, a robustness test is carried out: the core explanatory variables reflecting the concepts of resource intensity and intra-industry trade index are replaced, and then OFDI is subjected to a robust regression analysis to observe the results. Resource intensity is replaced by energy production, which is also an important indicator of the natural resource endowment of the host country, and if the host country has abundant natural resources, then the energy production of the country is also sufficient, and the data of energy production is obtained from the World Bank database. Overlapping demand theory suggests that the most important reason affecting a country's demand structure is the average income level. Therefore, the difference between the per capita GNI of the two countries is chosen to replace the index of intra-industry trade. Due to the development of the economy, the level of per capita income will change, and this index can also reflect the changes in mutual demand in different periods to a certain extent, which in turn can reflect the degree of intra-industry trade. In general, the smaller the difference in GNI per capita and the more similar the ability to match supply and demand, the more likely intra-industry trade will occur. The model and estimation methods used in the robustness test are consistent with those above, and the results are shown in Table 3: the coefficients of the core explanatory variables, energy production and the marginal intra-industry trade index, are both significantly positive, which indicates that natural resources and the degree of intra-industry trade are important influences on China's OFDI to ASEAN-8, and verifies the assumptions above, and the significance of the coefficients of the other explanatory variables in the robustness test is also basically the same as the empirical evidence above. The significance of the coefficients of other explanatory variables in the robustness test are also basically consistent with the above empirical results.

Table 3 Robustness testing

Variable	(1) RPOLS	(2) FE	(3) RE
lncgdp	7.099** (1.197)	5.677** (2.717)	7.099** (2.286)
lnhgdp	1.186*** (0.227)	7.263*** (2.201)	1,186*** (0.127)
lndis	-4.028*** (1.710)	-3.665*** (5.876)	-4.028** (1.150)
Lnres	1.506*** (0.359)	1.166*** (0.485)	1.506*** (0.292)
Lnitt	0.158** (0.323)	0.350** (0.272)	0.158** (0.323)
lnps	0.281 (0.169)	0.069 (0.234)	0.281** (0.129)
lnexc	-1.987** (2.668)	-0.419** (0.957)	-1.987** (0.698)
lnmcs	2.835** (0.884)	1.742** (0.542)	2.835** (0.658)
lninter	1.803** (0.335)	0.601*** (0.483)	1.803*** (0.615)
cons	100.192 (22.385)	14.421 (20.278)	100.192 (26.3382)

7. Conclusion

In recent years, with the steady promotion of the “Belt and Road”, this paper is based on the data of China's OFDI to 8 ASEAN countries from 2012 to 2022, and analyzed by panel fixed effect model under the analytical framework of investment gravity model, and the conclusion of the study shows that:

Consistent with the expectation of the traditional gravity model, OFDI is positively correlated with bilateral market size and negatively correlated with the distance to the host country. According to the core explanatory variables, China's implementation of OFDI is positively correlated with the natural resource intensity of the ASEAN-8 countries, and the Chinese government's OFDI is to a large extent aimed at ensuring a continuous supply of domestic scarce resource inputs, while the ASEAN-8 countries are rich in mineral, oil and gas resources, which happen to be complementary to China. At the same time, the higher the degree of bilateral intra-industry trade, the more OFDI inflows. Once the trend of intra-industry trade is formed in some industries between the two countries, it will induce one country to invest directly in the other country in order to take advantage of the cheap local labor force and abundant high-quality resources, to set up offshore production and processing bases, to engage in vertical specialization of production, to increase the efficiency of the production segmentation, to give full play to the advantages of economies of scale in production, and even to transfer some of the industries and even transfer some industries to neighboring developing countries. In terms of control variables, the coefficient of exchange rate is negative, and the coefficients of political stability variable and infrastructure are positive. Under the indirect markup method, the appreciation of RMB is not conducive to China's exports and export-led OFDI; meanwhile, China's outward investment enterprises follow the market-oriented behavior of enterprises, and the host country's political factors have a positive impact on their investment behavior; and the perfect infrastructure of the host country attracts more foreign enterprises to invest and set up factories and engage in production activities.

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