

Research on Factors Affecting South Korea's OFDI Based on a Spatial Measurement Model

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Abstract

Purpose – This paper empirically investigates via a spatial lag model from the perspective of space economy to find the influencing factors of South Korea's OFDI along with 60 countries.

Design/methodology – In the study of regional economic phenomena, we must first test the corresponding spatial correlation, and on this basis, complete the construction of the spatial model. For the target research object, after testing the spatial correlation, if there is spatial correlation, a spatial measurement model is needed. This paper uses the global Moran's I index for calculation. Based on the characteristics and research needs of the research object, this paper selects the spatial lag model to verify the existence of the spatial effect and factors affecting OFDI.

Findings – Our results show that export scale, infrastructure, technology level, political stability, resource endowment, market size, distance and labor cost have a certain impact on Korea's OFDI, but at present the distance and market size factors are the most important influencing factors for South Korea's OFDI, The technical level and political stability have little effect on South Korea's OFDI, and are not main factors determining South Korea's OFDI.

Originality/value – Through spatial measurement verification, it was found that the spatial effect has a significant impact on OFDI, along with more than 60 countries. On this basis, relevant suggestions are put forward, which have strong practical significance for South Korea's OFDI to achieve healthy and sustainable development.

Keywords: OFDI, South Korea, Spatial Measurement Model, Sustainable Development

JEL Classifications: D12, F14, O53

1. Introduction

In the context of globalization, overseas direct investment, an important means of promoting national economic development, has received widespread attention. Many scholars at home and abroad have conducted analyses and research on overseas direct investment. In the past, the main research objects of academic circles were multinational companies and host countries. For multinational companies, in order to achieve strategic expansion in the context of globalization, are eager for overseas direct investment. Host countries, in order to achieve domestic economic development goals, are eager to attract foreign investment. It is precisely because of the coincidence of the needs of the two parties that the host country and multinational company are the two parties involved in multinational investment. In the past, most studies focused on the impact of overseas direct investment on host countries and

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multinational corporations, and there was very little research on the home country of multinational corporations. With the continuous expansion of the research content of transnational investment theory, the impact of transnational investment on investing countries has attracted attention. Policy circles and academic circles generally believe that, on the whole, the overseas investment of multinational companies has a positive impact on the country's employment, asset upgrading, and foreign trade. Even if different types of investment have different impacts on the domestic economy, in general, overseas investment has a positive impact on the home country's economy. Under the conditions of an open economy, the outflows and inflows of foreign direct investment are an important channel for an economy to enter the global market. For economies that are still in the developing stage, the introduction of overseas investment can help solve the lack of funds, promote the stability of the domestic economic structure, and play a very important role in promoting domestic economic development. For economies in a mature stage, investing overseas can help expand overseas markets in the context of economic integration, promote the upgrading of the domestic economic structure, and drive export trade. As an export-oriented economy, South Korea is guided by the international market and has a high degree of dependence on foreign countries. Overseas direct investment and foreign trade have developed rapidly, and a relatively complete foreign trade policy and overseas investment policy have been formed.

Since South Korea's dependence on foreign trade (the ratio of total imports and exports to GDP) has exceeded 80%, South Korea hopes to participate in the "Belt and Road" initiative to find an effective way to promote economic growth. For example, the focus of the "Belt and Road" initiative is infrastructure construction. The "New Eurasian Continental Bridge" construction plan to reach Europe from Lianyungang via Zhengzhou-Lanzhou-Urumqi-Almaty-Tashkent (Uzbekistan) will allow the transportation of Korean goods to Europe provides a more convenient channel, which is conducive to the growth of Korean enterprises and foreign trade. It plans to actively promote exchanges and cooperation between South Korea and China through the publication of the academic journal "The Belt and Road". On the whole, South Korea has a positive and affirmative attitude toward the "Belt and Road" initiative, and agrees with the government's participation in its construction.

The purpose of the study to guide the smooth progress of OFDI in South Korea. It is necessary to re-examine the main factors affecting OFDI in South Korea, and find and propose countermeasures accordingly. In view of this background, this article uses the relevant statistical data of 60 countries from 2004 to 2018 to empirically analyze factors affecting OFDI in South Korea from a spatial perspective, and propose relevant suggestions accordingly, and a view of providing certain ideas for the formulation of the top-level design of the relevant suggestions are put forward, which has a strong practical significance for South Korea's OFDI to achieve healthy and sustainable development.

2. Literature Review

2.1. Research on the Influencing Factors of OFDI

Domestic and foreign scholars have done substantial research on OFDI in South Korea, and have made significant contributions to research in this field. Some scholars have found that the size of the host country market is positively correlated with the level of South Korea's foreign direct investment, and that South Korea's foreign direct investment has motivation to

seek the market (Zhang and Daly, 2016). The scale of transactions between South Korea and the host country and the degree of openness of the host country have a positive impact on South Korea's OFDI, but if the trade costs are low, foreign trade companies may choose to export rather than choose foreign direct investment (Zheng Zhousheng, 2018 and Huang Shengtao, 1997).

PravakarSahoo and AshwaniBishnoi (2021) confirmed the positive effect of OFDI on economic growth, but found a substitution effect for domestic investment. This indicates that OFDI positively affects growth through its effect on trade and other positive spillover effect, rather than domestic investment.

KhelifaMazouz et al. (2021) found that OFDI from Latin America is more likely to be located in geographically proximate countries and in countries with a similar culture and language than that of OECD counterparts.

MuhammadArif et al. (2020) had empirical results that indicated that exchange rates, inflation, and corruption had a negative and statistically significant effect on OFDI in the host country. In contrast, law and order situations have an insignificant association with OFDI. The findings further demonstrate that the error correction term is negative and highly significant at a 1 % level of significance.

Jason Heavilina and Hilmi Songur (2020) empirically examined the relation between institutional distance and OFDI. They also found that host country political stability, government effectiveness, control of corruption, and rule of law attract OFDI.

Ryu Hanbyul and Jeong Young Sik (2020) examined how South Korea's OFDI was affected by an increase in the labor costs of the manufacturing industry in host countries. The results indicated that worker wages in Asian developing countries generally have a negative impact on South Korea's OFDI, but it did not find evidence that labor costs had a significant impact on South Korea's OFDI to European or developed countries.

Lee Joun Wo and Lee Jong Ha (2019) analyzed the spillover effect of technology on R&D investment. In particular, they analyzed the effect of setting the OFDI path of the technology.

Lee et al. (2015) found that firm R&D had significant effects on exports and OFDI increased directly and indirectly through TFP estimate increases, where its magnitude of effectiveness was stronger on exports than OFDI.

Kim et al. (2019) introduced a revised gravity model on exports and OFDI using 7,000 firms with survey and financial data from 2006 to 2017. Through fixed effects panel models and PSM methods, it rejected many of the prior studies by incorporating various gravity factors in the empirical models, such as the distance to the host country, average tariff rate, foreign exchange rate, and population, etc.

Jin Mingyu and Wang Dachao (2009) found that South Korea's OFDI promoted the optimization of domestic industrial structure, reduced the proportion of the domestic primary and secondary industrial structure, and significantly increased the proportion of domestic tertiary industrial structure.

Zang Xin et al. (2006) found that South Korea's OFDI developed rapidly in recent years, and investment in China has increased significantly. At the same time, South Korea has begun to implement a new round of industrial policies to further increase the pace of industrial restructuring.

Guo Zi-Han and Oh Dae-Won (2021) used panel data of Southeast Asian countries from 2003 to 2017 and introduced structural indicators of host countries to analyze the impact of the industrial upgrade of host countries on the flow direction of China's OFDI. As a result, it

found that China's OFDI has a preference of "low value-added industry", "low GDP per capita", and "high total factor productivity".

Dai Yunhai (2020) empirically studied determinants of China's OFDI to South Korea, with PANELDATA data introduced combining time series with a cross-section. It showed that GDP per capita, foreign exchange rate, internet utilization rate, service industry count, consumption index per capita were all verified as determinants of Chinese OFDI to South Korea, and several suggestions were proposed for South Korea to attract Chinese OFDI.

2.2. Research on Factors Affecting OFDI from the Spatial Model

There is representative literatures on the influence factors of the research spatial model and OFDI.

Hyojin Kwak et al. (2021) utilized a spatial panel model that considered cross-sectional dependency among firms, and examined the productivity spillover effects of multinational firms toward other firms within South Korea's electronic component industry, which is the most active in OFDI.

Shin Beumseok (2017) used a spatial econometric model and the methodology was basically that same as Blonigen et al. (2007). It is difficult to clearly cut the determinant of South Korean OFDI and pinpoint a single one of these two because the spatial lag variable shows quite different signs from model to model. All told, it may be safe to say that the determinant of South Korea's OFDI can be either depending on the conditions of host countries.

Huiqun Liu et al. (2022) used the Spatial Durbin Model (SBM) to measure the total factor energy efficiency (TFEE) in 29 provinces in China and constructed a panel vector autoregressive (PVAR) model to empirically analyze the dynamic influence of OFDI on TFEE. There is an interaction relationship between OFDI and technological innovation. OFDI can improve TFEE to a certain extent, but the role is still weak and has lagging characteristics.

Fei Shi et al. (2021) analyzed OFDI enterprises in China using geographical information system (GIS) spatial analysis methods, and the change in the spatial distribution of OFDI enterprises in 2018. It explored the influencing factors that had an impact on this change. The factors influencing the spatial distribution of OFDI enterprises have been gradually changing from one dominant factor, technological innovation capability, to four core factors, namely, urbanization level, economic development level, technological innovation capability, and degree of economic openness.

Li, SY and Fabus, M (2019) used a spatial measurement method to test China's spatial pattern change of OFDI in EU member states, and found there were spatial agglomeration effects and spatial spillover effects. The spatial panel analysis method was used to test factors affecting the spatial distribution of China's OFDI in the EU. It is found that market size, technology level, and investment freedom of the host country have positive effects on the location selection of China's OFDI in the EU.

In summary, many scholars have made fruitful achievements in the study of the influencing factors of South Korea's OFDI, and have formed a sound theoretical system, which provides a solid theoretical basis for research in the field. However, combined with the current global economic pattern, it was found that research in this field still has room for expansion. First, in the selection of influencing factors, scholars start from the layout of OFDI in South Korea, mainly considering more economic factors, with a lack of research on the impact of economic factors. Second, in the empirical analysis, the cross-section data is selected to construct more models, resulting in fewer data samples, which makes the model estimation results biased.

Third, there are few studies that incorporate spatial effects into the model, and it is possible to generate biased estimates that affects the accuracy of the results. Therefore, this paper considers the spatial effect to construct an econometric model, empirically analyzes the main factors affecting South Korea's OFDI, and further strengthens the recommendations for different countries.

3. Empirical Method and Data

3.1. Spatial Correlation Test

In the study of regional economic phenomena, we must first test the corresponding spatial correlation, and on this basis, complete the construction of the spatial model. For the target research object, after testing the spatial correlation, if there is spatial correlation, a spatial measurement model is needed. Generally, the spatial autocorrelation in existence can be tested by the following two methods. Method 1, verifies the global spatial autocorrelation, and the most commonly used is the global Moran's I. Method 2, tests the local spatial autocorrelation, and mainly uses the Local G index or the local Moran's I index. This paper uses the global Moran's I index to calculate:

$$Moran's\ I = \frac{\sum_{i=1}^n \sum_{j=1}^n W_{ij} (Y_i - \bar{Y})(Y_j - \bar{Y})}{S^2 \sum_{i=1}^n \sum_{j=1}^n W_{ij}}$$

$$W_{ij} = \begin{cases} 1 & \text{Area } i \text{ and area } j \text{ are adjacent} \\ 0 & \text{Area } i \text{ and area } j \text{ are not adjacent} \end{cases}$$

Where Y_i , Y_j represent observations for the i -th or j -region, and n represents the number of regions. The Moran's I index reflects the spatial correlation of spatially adjacent inter-regional variables. The value is usually between -1 and 1. Greater than zero is a spatial positive correlation, and less than zero is a spatial negative correlation. The greater the absolute value, the larger the absolute value, indicating the degree of autocorrelation is large. If it is zero, it is irrelevant. In this paper, the spatial correlation is verified using OFDI as an example.

3.2. Spatial Measurement Model

3.2.1. Model Selection

Hordijk and Paelinck (1976) first proposed spatial econometrics. If the region has spatial autocorrelation, a spatial econometric model is needed in the construction of the econometric model. Based on the characteristics and research needs of the research object, this paper selects the spatial lag model to verify the existence of the spatial effect and the factors affecting OFDI.

The main function of the spatial lag model is to verify the spatial spillover effect caused by the dependent variable. At the same time, with the spatial conduction mechanism, the influence factors of the dependent variable can be used in other regions, and the spatial lag

model is expressed with the following formula:

$$Y = \rho W_y + X\beta + \varepsilon$$

Among these, W_y , W , X , and Y represent the spatial lag dependent variable, the spatial weight matrix, the explanatory variable matrix, and the dependent variable vector, respectively. ρ denotes a spatial regression coefficient, the significance of which is to reflect the degree of overflow or diffusion for adjacent spatial units. The meaning of the parameter β is to reflect the influence of the independent variable X on dependent variable Y , and the role of W_y lies in the spatial distance. The influence of the spatial distance is reflected, and ε represents the random error vector.

3.2.2. Variable Selection and Data Source Description

Based on the different characteristics of South Korea's OFDI, along with more than 60 countries, this paper selects the host country infrastructure (INFR) of the host country, the labor cost of the host country (WAGE), the distance between South Korea and the host country (DIST), the political stability of the host country (Poli), and the host country. The level of technological innovation (TECH), export level (EX), host country resource endowment (RN), market size (GDP) and other indicators are included to verify the impact on South Korea's OFDI.

On the basis of considering the availability of data, this paper selects more than 60 countries as the research object, except for countries where data is difficult to obtain and missing. This paper selects 60 countries along the route as research samples. The data selection interval of this paper is from 2004 to 2018, mainly from the "Korea Foreign Direct Investment Statistics Bulletin", "World Bank Database" and the Global Governance Indicators (WGI) Database.

3.2.3. Model Construction

The empirical analysis of this paper consists of two parts. One verifies the influencing factors of Korea's OFDI, and the other verifies the existence of South Korea's OFDI spatial effect. In a study by Baltagi et al. (2007), two models were constructed. One does not include spatial effect. The second included a spatial effect to verify the impact of South Korea's OFDI. The traditional econometric model that does not contain spatial effects (no "spatial effect") is:

$$\begin{aligned} \ln OFDI_{i,t} = & \alpha_i + \beta_1 \ln GDP_{i,t} + \beta_2 \ln WAGE_{i,t} + \beta_3 \ln AGDP_{i,t} + \beta_4 \ln RN_{i,t} + \beta_5 \ln TECH_{i,t} \\ & + \beta_6 \ln EX_{i,t} + \beta_7 \ln POLI_{i,t} + \beta_8 \ln DIST_{i,t} + \beta_9 \ln INFR_{i,t} + \gamma_t + \varepsilon_{i,t} \end{aligned}$$

Where t represents the year, i represents the country, α_i and γ_t represent regional and temporal disturbances, respectively, and $\varepsilon_{i,t}$ represents the disturbance term. The model mainly verifies that South Korea's OFDI is affected by the host country itself, regardless of the influence of neighboring countries on Korea.

The spatial econometric model containing the "spatial effect" is:

$$\begin{aligned}
 Lneco_{i,t} = & \alpha_i + \beta_1 LnGDP_{i,t} + \beta_2 LnWAGE_{i,t} + \beta_3 LnAGDP_{i,t} + \beta_4 LnRN_{i,t} + \beta_5 LnTECH_{i,t} \\
 & + \beta_6 LnEX_{i,t} + \beta_7 LnPOLI_{i,t} + \beta_8 LnDIST_{i,t} + \beta_9 LnINFR_{i,t} + \gamma WX_{-i,t} \\
 & + \gamma_t + \mu_{i,t}, \quad \mu_{i,t} = \rho W\mu_{-i,t} + \varepsilon_{i,t}, \quad |\rho| \leq 1
 \end{aligned}$$

Where t represents the year and i represents a country along the Belt and Road. α_i and γ_t represent regional and temporal disturbances respectively, $\varepsilon_{i,t}$ represents the disturbance term, and ρ is the spatial lag coefficient. WX -it is a spatial lag term used to verify the spatial effect affecting South Korea's OFDI. If WX -it is not significant, there is no "spatial effect"; conversely, if one or more WX -it are significant, then the spatial effect exists, and the coefficient and significance level of WX -it reflects the explanatory variable direction and size of impact.

4. Empirical Results

4.1. Results of the Spatial Correlation Test

This paper introduces the Rook first-order neighbor weight matrix to measure the spatial correlation of South Korea's regional per capita GDP. The results using the GeoDa software to calculate the global Moran's I index are shown in Table 1.

Table 1. Statistics of South Korea's Foreign Direct Investment Moran's I Index

Year	OFDI		Year	OFDI	
	Moran	Pvalue		Moran	Pvalue
2004	0.5012	0.0011	2012	0.5213	0.0011
2005	0.5430	0.0004	2013	0.5231	0.0014
2006	0.5213	0.0012	2014	0.5565	0.0009
2007	0.5089	0.0010	2015	0.5343	0.0010
2008	0.5334	0.0024	2016	0.5321	0.0006
2009	0.5090	0.0004	2017	0.5334	0.0002
2010	0.5121	0.0015	2018	0.5349	0.0022
2011	0.5334	0.0024			

Source: GeoDa software's calculate.

It can be seen in Table 1 that the Moran's I index of OFDI is positive and the magnitude is greater than 0.5, indicating that there is a strong positive correlation spatial effect of OFDI; that is, OFDI is not only affected by the inflow region factor, but also the influence of neighboring countries in the region, such as the impact of resources, talents, information, and technology in neighboring countries in the region. According to this conclusion, the spatial measurement model should be selected when studying the factors affecting OFDI in South Korea, which can more accurately reflect the problem.

4.2. The Results of Spatial Econometric Regression Analysis

In this paper, the maximum likelihood method (ML) proposed by Elhorst (2016) was used, and a space measurement regression analysis is performed via Matlab software. Maximum Likelihood Estimation (MLE) can not only effectively overcome the estimation bias caused by endogenous problems, it can also scientifically reflect the spatial dependence of countries and accurately measure the direction and extent of the influence of the “spatial effect”. The estimated results are shown in Tables 2 and 3 below.

Table 2. Regression Results for Spatial Effects Not Considered

Variable	Central Asia	West Asia	South Asia	Southeast Asia	CIS	EU
LnGdp	0.012***	0.142***	0.133***	0.203***	0.244***	0.171***
LnWage	-0.934	-0.124*	0.218**	0.106**	-0.135 *	-0.494**
LnRn	0.504***	0.586***	0.304***	0.481***	0.419***	0.619***
LnTech	0.203	0.278	0.304	0.328	0.217	0.117
LnEx	0.304*	0.124*	0.621***	0.317*	0.205*	0.319*
LnPoli	-0.221	-0.124	0.218	0.332	-0.232	0.121
LnDist	0.117*	0.142	0.124*	0.688*	0.176	0.118
LnInfr	-0.317*	-0.222*	0.517*	0.664*	-0.117*	0.688**

Notes: 1. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

Source: Matlab calculation.

Table 3. Regression Results for Spatial Effects are Considered

Variable	Central Asia	West Asia	South Asia	Southeast Asia	CIS	EU
LnGdp	0.316***	0.217***	0.287***	0.435***	0.323***	0.235***
LnWage	-0.401**	-0.217**	0.342**	0.125**	-0.144**	-0.521***
LnRn	0.518***	0.786***	0.338***	0.533***	0.532***	0.766***
LnTech	0.312	0.324*	0.318*	0.318	0.339*	0.417
LnEx	0.434**	0.438**	0.717***	0.438**	0.333**	0.611***
LnPoli	-0.328*	-0.226	0.338*	0.318*	-0.387*	0.328*
LnDist	0.158**	0.218**	0.555**	0.838***	0.122	0.137
LnInfr	-0.332**	-0.237**	0.539**	0.676**	-0.323**	0.872**

Notes: 1. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

Source: Matlab calculation.

4.2.1. Without Considering Spatial Effect

In this paper, the spatial effect is not included in the spatial econometric model. It can be seen from Table 2 above that at least 6 variables are significant.

Market size of the host country: Among the six regions verified, the elasticity coefficient of market size's impact on South Korea's OFDI is positive; that is, there is a positive impact relationship, and the level of significance is high. Among these, the market size(GDP) of the countries in the Commonwealth of Independent States (CIS) and Southeast Asia have the highest elasticity coefficient for South Korea's OFDI, and when the market size decreases by

1%, OFDI increases by 0.244% and 0.203%. The market size of countries that attract South Korea's OFDI shows that market size is the main factor affecting South Korea's OFDI.

Labor costs in the host country: From the regression results, the labor costs of countries along the CIS, Western Asia and the EU are inversely related to South Korea's OFDI; that is, the lower the wage level, the more attractive OFDI in South Korea. Labor costs in countries along the coast of the EU, West Asia, and CIS are negatively correlated with South Korea's OFDI, and for every 1% decreases, investment increased by 0.494%, 0.124%, and 0.135%, mainly because labor costs in these countries are much lower than South Korea's. Recently, South Korea has a large investment value in the region relative to the labor cost of domestic labor.

The political stability of the host country: From the regression results, the degree of political stability has an insignificant coefficient of elasticity on South Korea's OFDI, and is positively related to countries along Southeast Asia, South Asia, and the EU, and was negatively related to Central and West Asia and the CIS. The low level of significance means that the political stability of the host country is not an important factor affecting South Korea's OFDI.

Scale of exports: Among the six regions studied, the scale of exports is positively correlated with South Korea's OFDI, with South Asia being the most significant, with a high coefficient of elasticity and a 1% level of significance. When the scale of exports increases 1%, OFDI increases by 0.621%, mainly because South Asia has a larger population and a larger consumption potential determines that the huge consumption potential of South Asia's economy has attracted foreign direct investment willingness and promoted the level of foreign direct investment in South Asia.

The resource endowment of the host country: The resource endowment has a great influence on South Korea's OFDI. From estimation results, the EU, West Asia, and Central Asia have the most significant impact on South Korea's OFDI level, and when the resource endowment of the host country decreases by 1%, OFDI increases by 0.619%, 0.586%, and 0.504%, which is mainly due to abundant energy resources such as oil and gas in the region. The development of the economy is limited by the total amount of energy. Every year, a large amount of energy resources need to be imported to meet domestic demand. In countries with resource endowments, South Korea can directly participate in energy mining projects in the host country and increase the pricing power of energy. It is of great significance to the improvement of South Korea's energy supply.

The level of technological innovation in the host country: From the estimation results, the influence of the technological innovation capability of the host country on the level of South Korea's foreign direct investment is not significant. Only when considering the spatial effect, several regions have an impact on South Korea's OFDI at a lower level of significance. Mainly, countries along the Belt and Road are mostly developing, their economic development is relatively backward, the investments in technological innovation is lower, and the overall innovation ability is not strong, so South Korea's OFDI is less affected by the host country, indicating South Korea's OFDI is not technology seeking.

The distance between South Korea and the host country: It can be seen from the regression results that the distance between South Korea and the host country has a greater impact on South Korea's OFDI. The performance is more prominent in Southeast Asian countries. The elastic coefficient of the distance index reaches 0.688%, and is significant at 10%. At the Statistical P value level, West Asia, CIS, and European countries with relatively long distances have no significant impact on South Korea's OFDI. In reality, South Korea's investments are

mainly concentrated in countries along Southeast Asia, accounting for more than 70% of the total, mainly related to distance, and indicating that distance is one of the main factors affecting South Korea's OFDI.

Host country infrastructure: The empirical results show that the infrastructure of the host country reflects different directions of influence in different regions. The better the infrastructure Southeast Asia, South Asia, and European countries, the stronger the willingness of South Korea enterprises to invest. The elastic coefficient of host country infrastructure index reaches 0.688, and is significant at 5%. In Central and Western Asia and the Commonwealth of Independent States, the coefficient of elasticity is negative, and the degree of infrastructure construction in the host country is negatively correlated with South Korea's OFDI. This also shows that South Korea and relevant countries have cooperated on infrastructure, and South Korea is constantly intervening. There is a negative correlation between investments in the field.

4.2.2. Under Consideration of the Spatial Effect

In this paper, the spatial effect is included in the spatial econometric model. It can be seen from Table 3 that at least 8 variables after the inclusion of the spatial effect are significant.

Market size of the host country: Among the six regions verified, the elasticity coefficient of market size impact on South Korea's OFDI is positive; that is, there is a positive impact relationship, and the level of significance is high. Among these, the market size (GDP) of countries in Southeast Asia and CIS has the highest elasticity coefficient for South Korea's OFDI, and the market size of countries decreases by 1%, and OFDI increases by 0.435% and 0.323%. The market size can attract South Korea's OFDI, and shows that the market size is the main factor affecting South Korea's OFDI.

Labor costs in the host country: From the regression results, the labor costs of the EU, and Central and Western Asia, and CIS are negatively related to South Korea's OFDI. The lower the wage level, the more attractive OFDI in South Korea. Among these, the labor cost of European countries has the highest elasticity coefficient for South Korea's OFDI, and when the labor cost decreases by 1%, and OFDI increases by 0.521%.

The political stability of the host country: From the regression results, the degree of political stability has a significant coefficient of elasticity on South Korea's OFDI, and is positively related to Southeast Asia, South Asia, and European regions, and is negatively related to Central Asia and the CIS. The low level of significance means that the political stability of the host country is an important factor affecting South Korea's OFDI.

Scale of exports: Among the six regions studied, the scale of exports was positively correlated with South Korea's OFDI. South Asia was the most significant; with a high coefficient of elasticity and a 1% level of significance, and when the scale of exports increased by 1%, OFDI increased by 0.717%.

The resource endowment of the host country: The resource endowment has a great influence on South Korea's OFDI. From the estimation results, European regions, and West Asia have the most significant impact on South Korea's OFDI level; When the resource endowment of the host country decreases by 1%, OFDI increases by 0.786% and 0.766%, which is mainly due to abundant energy resources such as oil and gas in the region.

The level of technological innovation in the host country: From the estimation results, the influence of the technological innovation capability of the host country on the level of South Korea's foreign direct investment is significant. Only when considering the spatial effect,

several regions have an impact on South Korea's OFDI at a 10% level of significance. The level of technological innovation West Asia, South Asia, and CIS are positively related to South Korea's OFDI. The lower the wage level, the more attractive OFDI in South Korea. Among these, CIS has the highest elasticity coefficient for South Korea's OFDI, and when the level of technological innovation in the host country increases by 1%, OFDI increases by 0.339%.

The distance between South Korea and the host country: It can be seen from the regression results that the distance between South Korea and the host country has a greater impact on South Korea's OFDI. The performance is more prominent Southeast Asian countries. The elastic coefficient of the distance index reaches 0.838%, and is significant at 1%. At the Statistical P value level, the CIS and European countries with relatively long distances have no significant impact on South Korea's OFDI.

Host country infrastructure: The empirical results show that the infrastructure of the host country reflects different directions of influence in different regions. The better the infrastructure in Southeast Asia, South Asia, and European countries, the stronger the willingness of South Korea enterprises to invest. The elastic coefficient of the host country infrastructure index reaches 0.872%, and is significant at 5%.

5. Conclusions and Suggestions

5.1. Conclusions

This paper used a spatial panel data model to analyze factors affecting South Korea's OFDI from the perspective of a spatial model. South Korea's OFDI is significantly affected by spatial effects. In addition, from a traditional perspective, host country heterogeneity factors such as the availability of natural resources, infrastructure levels, and labor costs in the host country also have an important impact on South Korea's OFDI, and have been affected by host countries at different levels of development. The factors are different. Specifically, the main conclusions of this paper are as follows.

The Moran's I index of OFDI is positive and the magnitude is greater than 0.5, indicating that there is a strong positive correlation spatial effect of OFDI. OFDI is not only affected by inflow regional factors, but also affected by neighboring countries in a region. Therefore, the spatial measurement model should be selected when studying the factors affecting OFDI in Korea, which can more accurately reflect the problem.

Among factors affecting South Korea's OFDI, distance, market size, and resource endowment are the most important factors affecting South Korea's OFDI. Technical level and political stability have little effect on South Korea's OFDI, which are not the main factors determining South Korea's OFDI. In general, Korea has a strong desire to invest in countries with large markets, abundant natural resources, and low labor costs. At the same time, the empirical results show that the significance level of each indicator under the third-party effect is significantly improved and the goodness of fit is also improved, indicating that South Korea's OFDI in the 60 countries has a significant impact on spatial effects. South Korea should attach importance to the existence of special effects, continuously strengthen exchanges and cooperation with countries, and promote the healthy development of South Korea's OFDI.

It can be seen that the significant spatial effect means that South Korea's OFDI in more than 60 countries is not only related to the two main bodies of South Korea and the host country, it is also closely related to the neighboring countries of the host country.

This study used a spatial model and the methodology was basically the same as Shin Beumseok (2017) and Hyojin Kwak et al. (2021) but the selection data period and the subject countries were better.

Therefore, in the process of foreign investment, South Korea should not only focus on bilateral relations, it should also establish a cooperative win-win mechanism and strive to achieve regional coordinated development. South Korean enterprises should pay attention to the agglomeration effect of South Korea's OFDI, pay attention to experience accumulation, help, maintain a good investment image, establish good long-term cooperative relations with the host country, reduce the blindness of foreign investment or economic and trade cooperation, and more actively and effectively "go out". The paper will explore the countermeasures and suggestions based on the current state of OFDI in South Korea.

5.2. Suggestions

This paper has several suggests to improve the industrial level of investment cooperation and achieve sustainable development of investment cooperation. Through empirical analysis, labor cost, basic implementation, resource endowment and distance all had a significant impact on Korea's OFDI. Furthermore, the results seem somewhat different from the factors of other OECD countries and China's OFDI (KhelifaMazouz et al.,2021, and Guo Zi-Han, Oh Dae-Won 2021) which is in a relatively early stage.

Therefore, we should make full use of the advantages of countries along the route to improve the level of industrial cooperation and improve the quality of investment cooperation. For example, South Korea should make full use of the advantages of countries along the route to carry out investment cooperation, such as low-cost labor in countries, advantages of distance, and advantages of resource endowments, which can make the layout of South Korea's foreign direct investment more reasonable and scientific, which can not only promote the upgrading of the domestic industrial structure, it can also promote the upgrading of traditional industries in the host country and achieve a technology-intensive economic growth mode.

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