



A Research of the Location Choice of Foreign Direct Investment

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Abstract. The scale of China's outward foreign direct investment (OFDI) has been increasing in recent years, and OFDI has become an important way for China to participate in the world economy. In this paper, we use the data from 2007 to 2015 to analyze in detail the problems of China's outward foreign direct investment in the process of location choice. Eviews regression is used to analyze the panel data. We find that China pays more attention to the scientific and technological level and market size of the host country when investing, and distance has little effect on it. Finally, we give China's reasonable investment suggestions and opinions from the government and enterprise level.

Keywords: outward investment; location choice; investment motivation

1 Introduction

1.1 Literature Review

GaoYan found that the vast majority of Chinese OFDI is concentrated in moderate and low-risk countries[1]. Combined with previous research, we find that the following aspects have an impact on OFDI. In institutions :Keng Lin suggests that the LP-FDI nexus is contingent on the perceived level of institutional quality[2]. And Donnelly found how institutions influence location decisions[3]. In technology :Ramasamy find that, access to the larger EU market, technology is main reasons for investing[4].And Belderbos René submit that there are important trade-offs between internal and external agglomeration because internal knowledge transfer associated with collocation of various value-chain activities of the MNC is confronted with greater risk of knowledge spillovers to rival firms if there is a substantial local cluster[5].In labor costs : Susana found that differentials between France and the investing countries in labor costs play a significant role in understanding the foreign location decisions[6].And Hoang Hong Hiep show that FDI are attracted by the cheap labor cost of the host province[7].On other hands, Kurtović have found that traditional (GDP per capita and GDP growth rate), have a positive impact on the choice of FDI location[8]. Ren Xiaoyan show that geographical distance will significantly promote Chinese OFDI[9]. Huang Youxing show that narrowing institutional distance has an effect on OFDI[10].

1.2 Innovation

Firstly, most of the previous researches have been conducted on western developed countries such as Europe and the United States, but few researches have been conducted on developing countries. China is not only a developing country, but also the country with the fastest economic growth in the world, and FDI has ranked the second in the world. In order to ensure the long-term healthy development of China's outward FDI and macro-economy, this paper aims at analyzing the factors influencing the choice of location of outward FDI. Secondly, previous studies have focused on the impact of one type of relevant factors on OFDI, without integrating all factors together to discuss the impact on OFDI. This paper puts several types of factors together to discuss the impact of five factors on OFDI in a comprehensive manner.

2 Analysis of Factors Related to Location Choice

2.1 Gross Domestic Product

In this paper, we measure the size of the host country's market in terms of GDP.

2.2 Straight-line Distance Between the Two Countries

If the distance between two countries is too far, the climate, language, environment, and culture of the two countries may be very different. In this paper we introduce the straight-line distance between China's capital, Beijing, and other countries (data from Baidu Maps) to observe the relationship between distance and total OFDI flows.

2.3 Per Capita Income

Hiring cheap labor can reduce the cost of production. So when technology and management experience reach a certain level, enterprises prefer to invest in developing countries with cheap labor. But when the enterprise develops a new product which in the promotion period, the enterprise prefers to choose the developed countries with higher salary to invest. In this paper, Real GDP per capita is introduced to measure the per capita income of the country to concern how remuneration effect OFDI.

2.4 Number of Patent Applications

When the country already has monopoly advantages, it can invest directly in the host country in order to expand its own scale. Correspondingly, the country does not have a monopoly advantage, in order to improve the level of science and technology through invest in the country which technology has been mature, in the process of investment to learn from the essence of its science and technology, to make up for their own shortcomings. There-fore, we introduce the patent application volume (PAT) to represent the relationship between the level of science and technology and the total flow of OFDI.

2.5 Corruption Perceptions Index

The political system can make firms more productive and at the same time attract more direct investment from more countries. Therefore, this paper introduces the cleanliness index (TI) to measure the political system of a country.

3 Empirical Analysis of OFDI

3.1 Modelling

Through the theoretical analyses and assumptions above, we understand that the five factors mentioned above may have an impact on the total flow of China's outward FDI. So we make the following model:

$$FDI = \alpha_0 + \alpha_1 GDP + \alpha_2 DIS + \alpha_3 RGDP + \alpha_4 PAT + \alpha_5 TI + \partial_i \quad (1)$$

In the above formula, the variable ∂_i represents those individual differences that we have not estimated in this formula.

We can also transform the above formula into a more intuitive linear relationship and reduce outliers and residuals non-normally distributed and heteroskedasticity by deforming the above formula into a logarithmic number, the above formula can be transformed into:

$$\ln FDI = \alpha_0 + \ln \alpha_1 GDP + \ln \alpha_2 DIS + \ln \alpha_3 RGDP + \ln \alpha_4 PAT + \ln \alpha_5 TI + \ln \alpha_6 + \partial_i \quad (2)$$

In this paper we have chosen the measure of panel data to analyze the data because time series data and cross-sectional data do not take into account the differences that exist between separate individuals of the data and do not take time into account. Comparatively, panel data provides a more thorough study of the differences caused by different indices across countries.

In this regression, we eliminate some factors that may affect the location choice of OFDI, such as political friendliness and foreign education factors. The fixed effects model can eliminate these heterogeneous qualities that have not yet been considered or cannot be observed among the different sample countries, which in turn leads to an improvement in the accuracy of the regression.

For this data analysis, we looked for annual data for 17 countries over the nine-year period from 2007 to 2015, for a total of 765 data. In this regression test, we ensure that China's investment in these sample countries is continuous, and every year there is investment in these countries, so that the sample data is complete and continuous.

At the same time, in order to make the results more accurate, the data selected are all independent countries, which have been excluded from the relevant investment data of the Cayman Islands and so on.

As the amount of outward investment between enterprises is difficult to calculate and operate, all the Chinese outward investment flows mentioned in the text refer to the total flow of Chinese outward FDI and all the flows invested in each host country.

3.2 Empirical Tests

With the previous analyses, we hypothesize the results of the test:

Hypothesis 1: The market size of the host country, as measured by GDP, is significantly and positively related to Chinese OFDI. Hypothesis 2: The straight-line distance between Beijing, the capital of China, and each host country is significantly negatively related to the total flow of Chinese OFDI. Hypothesis 3: There is a strong relationship between Chinese OFDI and employee compensation, but whether the relationship is significantly positive or significantly negative is uncertain. Hypothesis 4: Total OFDI flows are related to the level of science and technology, but whether this is a positive or a negative correlation cannot be determined yet. Hypothesis 5: There is a positive correlation between China's OFDI and the integrity index.

Prior to the formal test, the correlation coefficient test was first performed on each variable and the results of the correlation coefficient test are as Table 1:

Table 1. Matrix of correlation coefficients

	lnFDI	lnGDP	lnDIS	lnRGDP	lnPAT	lnTI
LnFDI	1					
LnGDP	0.28	1				
LnDIS	-0.03	0.03	1			
LnRGDP	0.07	0.64	0.08	1		
LnPAT	0.29	0.75	0.17	0.13	1	
lnTI	0.11	0.5	0.14	0.47	0.17	1

Through the correlation coefficient test, it can be concluded that the correlation coefficient between the number of patent applications and GNP is 0.75, and the correlation coefficients of the other variables are less than 0.7. The correlation between the number of patent applications and the GNP is too large, which may be due to the fact that when a country's economy is more developed, the national demand does not only stay on the basis of meeting the food and clothing, and the country also has more funds for research and development, and the country will also have relatively more patent applications. Similarly, when a country is good at innovation and research and development of advanced science and technology, it will also bring a large amount of economic inflow to the country, so GDP and patent applications are complementary and inseparable. Therefore, among the above variables, patent applications and GNP cannot be regressed together because of the high correlation. Next, the unit root test is conducted for each variable. The results of the unit root test are shown in Table 2 below:

Table 2. unit root test

variant	Levin test statistic	ADF test statistic	P	steady or not
FDI	-0.6611	41.8138	0.2541	not
Δ FDI	-12.4562	128.2900	0.0000	steady
GDP	-2.0800	41.3437	0.0188	steady
RGDP	-2.8290	22.9394	0.0023	steady
PAT	-5.7269	51.4963	0.0276	steady
TI	-4.8130	56.4733	0.0091	steady

Note: Smooth conclusions are based on a 5% significance level.

Through the test, we find that RGDP, PAT, TI are smooth at 5% significant level, and China's OFDI can not reject the original hypothesis at 5% significant level, it is unstable, but first-order difference is smooth. Next, the model is regressed.

After removing LnGDP, regression analysis is carried out for the remaining variables. The regression results are shown in the table 3 below, except for the distance (DIS), all the other values are less than 0.10, and the R-square is 0.939040, which is a good fit. the F-test result is 18.979, and the DW value is 1.958635, which indicates that there is no serial autocorrelation problem in the selected variables. The regression results have a high degree of confidence.

Table 3. Regression analysis results

Dependent Variable: LNFDI				
Method: Pooled				
Least Squares Sample: 2007-2015				
Included observations: 9				
Cross-sections included: 17				
Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	5.401086	1.473488	3.665512	0.0003
LNRGDP	-0.337268	0.139321	2.420801	0.0167
LNPAT	0.262251	0.062465	4.198404	0.0000
LNTI	-0.563290	0.318881	1.766456	0.0194
LNDIS	-0.202149	0.141099	1.432677	0.1441
R-squared			0.939040	
Adjusted R-squared			0.921176	
Durbin-Watson stat			1.958635	
F-statistic			18.97914	
Prob(F-statistic)			0.000000	

Note: For comparison purposes, all T-values have been taken as absolute values.

Combining the above theory with the results of the regression, the following conclusions can be drawn from the analysis:

The coefficients of LnGDP and LnPAT are positive and have a significant positive relationship, and for every increase of 0.262251 units in patent applications, China's direct investment in that country will increase by 1 unit. This result is consistent with previous hypothesis 1. This means that if a country has a large market size and advanced technology, China will be more inclined to invest in it. At the same time, the correlation coefficient between the number of patent applications and GNP is very high, which also indicates that when a country's economy is more developed, the country's patent applications will be relatively high; when a country is good at innovation and R&D and has advanced science and technology, it will also bring a large amount of economic inflows to the country.

The P value of LNDIS is 0.1441, which is invalid, indicating that distance has no effect on the location choice of China's outward investment. This is inconsistent with hypothesis 2. This may indicate that with the advancement of globalization, communication between countries has become closer. And the convenient transport also makes it more convenient for field visits, and the arrival time of the goods in the two countries is shorter, which reduces the impact of the transport cost on the production cost. At the

same time, staff training costs and management costs will not be affected by the distance because of the more convenient transport. The distance has little impact when China considers whether to invest in it.

The result of $\ln\text{RGDP}$ is negative, GNP is negatively correlated with China's outward FDI. Every 0.337268 units of reduction in the host country's per capita GNP, the total flow of China's outward FDI rises by 1 unit. This could test hypothesis 3. As China's strength has gradually increased, the living standards of the Chinese people have also improved significantly, so labor costs are no longer as advantageous as before. OFDI is a good proposal to solve the problem of rising domestic salaries and China's current overloaded productivity. This suggests that China's current investment is efficiency-orientated. The GNP per capita of the host country or the availability of cheap labor in that country will influence to some extent whether China invests in it or not.

The coefficient of LNTI is negative with a P value of 0.0194, which is highly significant. It indicates that LNTI is negatively correlated with China's outward FDI, and the lower the LNTI of the host country, the more the enterprises are inclined to invest in it, and the flow of China's FDI in the host country will be increased by 1 unit for every 0.563290 unit decrease in the LNTI of the host country. This is contrary to hypothesis 5. China prefers to invest in countries with less perfect political systems.

To sum up, when China invests abroad, it pays more attention to the scientific and technological level and market size of the host country, the more advanced the scientific and technological level and the bigger the market size, the more attractive the Chinese investment is, and the lower the average wage and the cleanliness index are also able to attract the Chinese investment. Distance has little effect on this.

4 Conclusions and Recommendations

4.1 Conclusions

In this paper, by analyzing the data of 17 countries from 2007 to 2015 with panel data, we find more technological level and the larger the market size, the more attracted China's investment, and the lower the average wage and the cleanliness index can also attract China's investment. Distance has little effect on this.

4.2 Recommendations

4.2.1 Government Aspects.

The government should strengthen the support policy, provide appropriate guidance to enterprises, maintain a good relationship and close contact with the host government, provide timely information for enterprises interested in OFDI, and provide timely feedback to domestic enterprises on the international situation and political situation of the host country, so as to ensure that the enterprises are safe and secure in their investment.

4.2.2 Enterprise Aspects.

Currently, Chinese enterprises should pay attention to the level of science and technology, focus on cultivating international talents, improve the internal assessment system, support and provide funds to the formula for employees to go out to study opportunities. At the same time more internal training to improve the overall quality of the enterprise staff.

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