Outward Foreign Direct Investment from China to ASEAN

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ABSTRACT

The paper combs the relevant theories of the determinants of foreign direct investment, using a gravity model for regression analysis, the determinants of China's FDI in ASEAN were studied. Based on previous research and data availability, select relevant variables and use gravity model to establish China's FDI flow to ASEAN and the ASEAN country's market size, exchange rate, inflation rate, labor force, economic openness, infrastructure construction, Confucius Institute, China's interest rate, the number of patents issued and the relationship between government support and the geographic distance between China and ASEAN, using panel data from 2003 to 2018, to test the serial autocorrelation of panel data, and perform regression analysis. Finally, based on the conclusion drawn from the above analysis, this paper puts forward relevant suggestions from both the government and enterprises perspectives on how to better promote foreign direct investment by Chinese enterprises in ASEAN.

Keywords: FDI; Belt and Road; Gravity Model; ASEAN.

1. Introduction

Under the wave of economic globalization, the rapid development of China's economy has attracted a large amount of foreign direct investment (FDI) into China. In 2012, China has become one of the world's largest recipients of FDI, however, the flow of capital is a two-way process. While the Chinese government is actively attracting a large number of FDI to "walk in", relying on the "Belt and Road" initiative, China's outward foreign direct investment (OFDI) has also begun to "Going Global". The Chinese government actively advocates the "Belt and Road" initiative, which provides major opportunities for Chinese enterprises to make foreign direct investment. By the end of 2018, Chinese domestic investors had established more than 10,000 overseas enterprises in 63 countries along the "Belt and Road", these countries have increasingly introduced Chinese enterprises' capital, technology, services and facilities. China's foreign direct investment in countries along the "Belt and Road" is a mutually beneficial cooperation for both parties. In the context of the "Belt and Road" Initiative, ASEAN is China's important trading partner and investment partner. The stock and flow of China's FDI in countries along the "Belt and Road" are mainly concentrated in ASEAN countries, which are rich in labor force, rich in resources, and geographically close to China, with a large number of Chinese and overseas Chinese, and similar culture, therefore, it has become a key area of China's investment in countries along the "Belt and Road" route. Although the stock

and flow of China's FDI to ASEAN countries has been in a stage of rapid growth in recent years, and the investment field involves various aspects, but China's FDI to ASEAN has still had a large development space. Therefore, analyzing and studying the location characteristics of China's foreign direct investment in ASEAN is the key to studying the relevant issues of China's foreign direct investment in ASEAN at this stage, and the focus and hot issues of continuing research at this stage when studying the influencing factors of Chinese foreign direct investment in ASEAN.

2. Objectives of the study

This paper focuses on the analysis of various factors affecting China's outward foreign direct investment in the ASEAN countries, and selects appropriate variables to measure the impact of various factors on specific investment amounts, and draw relevant conclusions through empirical analysis. In this way, it is not only the accurate measurement and correction of ambiguity in the related research results in the past, but also the in-depth research and development of this problem.

3. Literature Review

Risk is the core issue of an enterprise's foreign investment. Compared with economic risk, non-economic risk is not only harmful, but also more difficult to predict and prevent, especially for developing country companies that lack comparative advantages. Institutional theory holds that the good institutional quality of the host country can effectively reduce the external uncertainty of foreign companies, reduce transaction costs and risks, and is an important factor in attracting foreign investment (Busse and Hefeker, 2007). A study by Kolstad and Wiig (2012) found that the size of China's OFDI has a negative correlation with the quality of the host country's system. Dong Yan (2011) researched Chinese direct investment in Africa found that Chinese companies prefer to invest in host countries with higher institutional risks. This shows that Chinese companies' OFDI behavior is different from traditional multinational companies and has its own uniqueness.

One possible explanation for this is that Chinese companies have been assisted by the proactive protection mechanism of the home government. The main body of China's direct investment is state-owned firms, and the government plays a big role in Chinese FDI. Zuo (1998) studied that in the late 1980s, the Chinese government not only continues to implement liberalization processes but also welcomes foreign capital, technology, and management experience with an open policy. It also encourages Chinese companies to expand overseas investments and FDI becomes part of an economic development strategy based on institutional changes. The institutional fabric of an emerging economy can determine the ability and will of domestic firms to invest overseas. A direct, consistent and liberal policy on outward FDI will encourage this approach. This has the potential to help explain distinctiveness in the behavior of outward investing Chinese firms.

According to the existing theory, scholars (Johanson and Vahlne, 1977; Lau, 2003; Wells, 1983) have shown after research that the early investment of firms often occurs in counties with similar cultural backgrounds as the home country, or countries that can use the relationship assets with the form of ethnic or family relationships formed with specific minority populations in the host country. Standifird and Marshall (2000) found that strong economic connections amongst overseas Chinese and the importance of "Guanxi" (which means the ancient system of personal relationships and social connections based on mutual interest and benefit) in Chinese business dealings may also influence patterns of Chinese outward FDI. Buckley, Peter J., and Clegg, Jeremy and Cross, Adam R. and Liu, Xin and Voss, Hinrich and Zheng, Ping (2007) used log-linear model to test their hypothesis using official Chinese ODI data collected between 1984 to 2001, they found Chinese outward FDI to be associated with high levels of political risk in, and cultural proximity to, host countries throughout, and with host market size and geographic proximity and host natural resources endowments.

Culture is the harmonization of social value systems, involving multiple levels of material, system, spirit and has a profound impact on human economic behavior (Hofestede, 2003). FDI involves the collision and conflict between the cultures of the two countries. The host country's cultural specialties and cultural differences form an important potential impact on FDI. More studies have found that cultural differences are the main obstacles to foreign direct investment. The same language and similar cultures can effectively avoid the risk of cultural differences, increase the host country's recognition of foreign investment, reduce corporate transaction costs, and attract more foreign investment (López and Vidal, 2010; Selmier and Lien, 2011). Buckley (2007) and Quer (2012) found that the number of ethnic Chinese in the host country helps reduce the negative impact of cultural differences between the two countries on China's OFDI. Wu (2015) selected panel data of China's direct investment in 22 host countries from 2001 to 2012, and used the gravity model of trade and investment to incorporate the number of Confucius Institutes into the core explanatory variables. The empirical results show that the impact of the establishment of the Confucius Institute on China's trade exports is not significant, but it has a more significant impact on China's FDI.

4. Analysis of FDI Determinants: Data and Methodology

To explain the factors affecting China's outward foreign direct investment, each choice variable is considered independently. The simplified form of the relevant selection variable is as follows:

$$OFDI = f(GDPP, GGDP, EXCH, INF, INTERATE, LAB, OPEN, PATENT, DIS, INFRA, FINANCE, CI)$$

For the purposes of this study, the equation of logistic linear form of the extended gravity equation for China's outward FDI flows is as follows:

$$\ln OFDI_{it} =$$

$$\alpha_i + \beta_1 \ln GDPP_{it} + \beta_2 GGDP_{it} + \beta_3 EXCH_{it} + \beta_4 INF_{it} + \beta_5 INTERATE_t + \beta_6 \ln LAB_{it} +$$
$$\beta_7 \ln OPEN_{it} + \beta_8 \ln PATENT_t + \beta_9 \ln DIS_i + \beta_{10} \ln INFRA_{it} + \beta_{11} \ln FINANCE_t + \beta_{12} CI_i + \varepsilon_{it}$$

where, $OFDI_{it}$ represents the flow of Foreign Direct Investment from China to host country i in year t, $GDPP_{it}$ is the gross domestic product per capita of host country i in year t, $GGDP_{it}$is the growth rate of gross domestic product of host country i in year t, $EXCH_{it}$ represents the exchange rate of the host country i in year t against the US Dollar, INF_{it} is host country i's inflation rate in year t, $INTERATE_t$ is China's interest rate in year t, LAB_{it} is labor force participation rate of host country i in year t, $OPEN_{it}$ is openness of economy of host country i in year t, $PATENT_t$ is technological patents of China in year t, DIS_i is the geographic distance between China to host country i, $INFRA_{it}$ is the state of the infrastructure of host country i in year t, which is represented here by mobile cellular subscriptions per 100 people, $FINANCE_t$ is the balance of RMB loans issued by financial institutions as a percentage of GDP. in year t, CI_i is dummy variable which represent the host country i establish Confucius Institute or not, ε_{it} is an error term.

The table 1 summarizes the expected signs of parameter estimates on the explanatory variables used in modeling the gravity model equation, a positive sign (+) indicates an expected positive impact on FDI, a negative sign (-) indicates an expected negative impact on FDI.

Table 1 Variables Measurement and Expected Signs

Variable	Measurenment	Expected Sign	Data Source
GDP per capita	Host country GDP per capita	+	World Bank
GDP growth rate	Host country GDP growth rate	+	World Bank
Exchange rate	The exchange rate of host country against the US Dollar	-	China State Administration of Foreign Exchange
Inflation rate	Host country consumer price index	-	UNCTAD Database
Interest rate	Interest rate of China	-	China Banking Regulatory Commission
Labor Force	The labor force participation rate (% of total population ages 15-64) of host country	+	UNCTAD Database
Openness of economy	The economy openness (the ratio of the export plus import divided by GDP) of host country	+	UNCTAD Database
Technological patent	The number of technological patents registed in China	+	The Statistical Bulletin of China's Outward Foreign Direct Investment
Geographic distance	The geographic distance between China and the host country's capital	-	www.indo.com/distance
Infrastructure	The mobile cellular subscriptions (per 100 people) of host country	+	UNCTAD Database
Fiscal support	Balance of RMB loans issued by financial institutions as a percentage of GDP	+	People's Bank of China China Insurance Regulatory Commission
Confucius Institutes	The host country established Confucius Institute or not, CI = 0 represents that China has not established a Confucius Institute in the country, and 1 represents that a Confucius Institute has been established	+	http://www.hanban.org

6. Analysis of FDI Determinants: Empirical Results

In order to get a general understanding of the selected variables, this paper first conducts a descriptive analysis of variables, and the specific results are as follows:

Table 2 Descriptive Analysis of Variables

	Mean	Median	Maximum	Minimum	Std. Dev.
OFDI	576.3893	200.175	10452.48	0.05	1196.076
GDPP	10196.59	2554.545	64581.94	4.09	16070.72
GGDP	5.749063	6.07	14.53	-2.47	3.206629
EXCH	0.202	0.02	0.82	0	0.276783
INF	4.676125	3.385	36.59	-1.26	5.676092
INTERATE	1.694375	1.86	5.53	-2.3	2.369168
LAB	73.46163	72.235	87.21	61.87	7.110614
OPEN	126.9707	109.755	437.33	0.17	94.89769
PATENT	191800.4	153611.5	432147	37154	137271.7
DIS	3580.582	3327.49	5220.88	2330.8	850.9024
INFRA	86.88725	98.105	180.18	0.14	49.91813
FINANCE	119.2681	115.86	151.39	94.95	16.7998
CI	0.5625	1	1	0	0.497636

From the results of the descriptive statistics of the above variables, we can see: The mean value of the dependent variable OFDI is 576.39, the median is 200.18. there is a large gap between the two, the maximum value is 10452.48, the minimum value is 0.05, there is a significant gap between the extreme values; it shows that the variable OFDI has certain differences in different countries. The independent variable GDPP has an average value is 10196.59, the median is 2554.545, and there is a large gap between the two; the maximum value is 64581.94 and the minimum value is 4.09, there is also a clear gap between the extreme values. It shows that there is also a large gap in the development status of GDP per capita between countries. Similarly, from the descriptive statistical results of other independent variables, there are large fluctuations in the independent variables, indicating that there is a large gap in the development status of variables in various countries.

The basic regression models for panel data include fixed-effect models and random-effect models. The number of countries studied in this paper is 10, the variable is 13, and the number of samples is greater than the number of variables, which is not suitable for random effect models. And from the above series of tests, it was found that there is a long-term cointegration relationship between variables, so the fixed effect model is selected, as follows is the regression results of the sample.

Table 3 Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnGDPP	0.562092	0.207565	2.708025	0.0076
GGDP	0.008755	0.041625	0.210327	0.8337
EXCH	-0.621586	2.889673	-0.215106	0.83
INF	0.012236	0.020401	0.599756	0.5496
INTERATE	-0.033819	0.038613	-0.875831	0.3826
lnLAB	13.76352	4.712557	2.920606	0.0041
lnOPEN	0.283369	0.170127	1.665635	0.098
lnPATENT	1.541477	0.392052	3.931813	0.0001
lnDIS	-0.83622	0.08472	-9.923104	0
lnINFRA	0.244125	0.22455	1.087174	0.2788
lnFINANCE	0.907877	1.473636	0.616079	0.5388
CI	0.192886	0.297997	0.647275	0.5185
C	-72.83894	21.31059	-3.417969	0.0008
R-squared	0.845287			
Adjusted R-squared	0.823026			
F-statistic	37.97193			
Prob(F-statistic)	0			

From the above model regression results, the R-squared of the model is 0.85, which is significantly greater than 0.5, indicating that the model has a good fit. At the same time, it can be seen that the probability values corresponding to the F statistic of the model are significantly less than 0 and less than 0.05, indicating that the model passes the F test. The specific equation is as follows:

$$lnOFDI = -72.84 + 0.56lnGDPP + 0.01GGDP - 0.62EXCH + 0.01INF - 0.03INTERATE + 13.76lnLAB + 0.28lnOPEN + 1.54lnPATENT - 0.84lnDIS + 0.24INFRA + 0.91lnFINANCE + 0.19CI$$

It can be seen from the regression equation that the regression coefficients of variables lnGDPP, GGDP, INF, lnLAB, lnOPEN, lnPATENT, lnFINANCE and CI are positive number, indicating that the above variables lnGDPP, GGDP, INF, lnLAB, lnOPEN, lnPATENT, lnFINANCE and CI all have a positive promotion effect on the variable lnOFDI.

In studying the determinants of China ’s foreign direct investment in ASEAN countries, it is found that factors such as the host country ’s market size (GDPP and GGDP), inflation rate (INF), labor force (LAB), economic openness (OPEN), infrastructure construction (INFRA), Confucius Institute (CI), the number of Chinese enterprises patents issued (PATENT) and the financial support from Chinese government (FINANCE) and China’s interest rate (INTERATE), these factors have a significant impact on China ’s foreign direct investment in ASEAN countries. The coefficient of the host country ’s market size (GDPP and GGDP), inflation rate (INF), labor force (LAB), openness of economy (OPEN), infrastructure construction (INFRA), Confucius Institute (CI), the number of Chinese enterprises patents issued (PATENT) and the financial support from government (FINANCE) are

positive, and these factors are positively correlated with China 's foreign direct investment in ASEAN countries. In the regression results of the proxy variables of these factors. The t-statistical value is greater than the significant level, and R^2 is greater than 80 after adjustment, indicating that the fitting condition is good. The coefficient of the host country 's exchange rate (EXCH), China 's interest rate (INTERATE), and the geographic distance between China and the host country (DIS) are negative. These factors are negatively correlated with China 's direct investment in ASEAN countries. The host country 's inflation rate (INF) is contrary to expectations, but its positive effect is not significant.

7. Conclusion

This paper uses the panel data of the ten ASEAN countries from 2003 to 2018 to conduct an empirical analysis. The results show that the market size, labor force, economic openness, infrastructure construction and cultural similarity of ASEAN countries, and the technological patents of Chinese companies are factors such as China's The significance of direct investment is an important factor. However, the exchange rate and China's interest rate have a small degree of influence, and the impact of inflation rate is not significant. The host country's labor force has the most significant impact. Although China has a large population, nowadays, due to China's social and economic development and popularization of education, more young people choose to continue to receive higher education. Due to the lack of labor force and high labor force, the labor force of the host country has a significant impact on China's foreign direct investment in its region.

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