

Charles University

Faculty of Social Sciences
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MASTER'S THESIS

**Gravity analysis of outward Chinese FDI -
tests of the Silk Road effect**

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Study program: **Corporate strategy and Finance in Europe**

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Declaration of Authorship

I hereby declare that I independently compiled this thesis, using only the materials and literature mentioned, and that the thesis was not used to achieve a different or the same degree.

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Prague, Jan 2, 2021

Peng Liu

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Abstract

New Silk Road is a strategy of China to make more trade, investment as well as other activities in different fields with more countries, which points out the new direction for China's future investment. In 2019, Chinese firms have invested US\$ 15.04 billion directly in 56 countries along the One Belt and One Road in non-financial industries. The FDI from China to OBOR countries can be influenced by many factors. This paper would study the investment characteristics of Chinese FDI during recent years and use an extended gravity model to analyze the factors that can influencing FDI.

By taking "One Belt and One Road" countries as research objects and adopting the extended gravity model, this paper find which factors are attractive for Chinese FDI to OBOR countries. On the other hand, the article also calculates the investment potential index, which plays a specific complementary role in the research of China's FDI in different areas and finally give policy reference for Chinese FDI.

JEL Classification

F21 F42

Keywords

Foreign Direct Investment, One Belt and One Road , Gravity Model, Investment Potential Index

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Master's Thesis Proposal



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Proposed Topic:

Gravity analysis of outward Chinese FDI - tests of the Silk Road effect

Motivation:

China's OFDI has played a positive role in deepening international economic and trade relations, expanding import and export, fostering competitive advantages of enterprises, promoting industrial transformation, and enhancing the level of opening-up. With the changes in the global investment system rules, the investment facilitation criteria, property rights protection, capital flows and competition policies have become more important to improve the investment environment, reduce transaction costs, and improve investment efficiency (Jinyong Lu, 2006; Fan Cui, 2013).

Undoubtedly, the Belt and Road Initiative (BRI) is the most significant foreign undertaking that China has pursued since 2013 (Swaine, 2015; Winter, 2016). From 2013 to 2018, with the development of "One Belt and One Road", the direct investment of Chinese firms in "One Belt and One Road" countries surpassed \$90 billion, with an average annual growth rate of 5.2 percent year by year. In OBOR countries, the amount of newly contracted international ventures exceeded \$600 billion, an average annual rise of 11.9 percent (Xinhuanet2019). With the transformation and upgrading of China's economy and the gradual opening of its capital account, China's overseas investment is attracting more and more attention. Therefore, it is of certain practical significance to study this issue.

Businesses are entering the world market according to recent literature, and can be affected by external factors and internal factors (Puljeva Anna, 2007; Widén Peter, 2007). Secondly, from the perspective of international trade theory, the selection of production location should focus on resource endowment, technology and transportation cost (Dunning, 1977). Thirdly, about the theory of OFDI, expect from the perspective of location economics (market entry) and international trade theory, the availability of resources and raw materials, labor costs, government policies, market and other relevant factors would also affect the choice of production location (Alan A. Bevan, 2004; Saul Estrin, 2004).

Gravity equations have been shown to work well in foreign direct investment stocks. A model in which FDI takes the shape of acquisitions is considered by Head and Ries (2008). They construct a gravity equation for FDI that matches the data well, using the discrete choice system in a way that parallels Eaton and Kortum (2002). De Sousa and Lochard (2011) expand the concept to greenfield investment by imagining that each organization chooses the best "investment project" among all host nations instead of bidding for money (Keith Head, 2013; Thierry Mayer, 2013).

In view of the development and problems of OFDI among OBOR countries, I will study the investment location selection of investment based on the relevant theories and gravity models of enterprises' location decisions in the international market, and use the Investment Potential Index to test if China's OFDI among OBOR countries follow the way as gravity model shows, so as to provide references for enterprises to invest in OBOR countries. Specifically, we want to find out to what extent has the status of a market as "OBOR country"

influenced the Chinese outward FDI after all other traditional determinants and factors have been taken into account.

Hypotheses:

Hypothesis	Variable	Correlation with Chinese OFDI
1	Economic development level of the and the market size of the host country as well as China	Positive
2	Investment cost including labour costs, tax cost caused by different level of tax rate, transportation cost and currency cost caused by exchange rate volatility in the host country	Negative
3	Resource endowment, infrastructure level and technology level of the host country	Positive
4	China's export level to the host country	Positive
5	Political environment quality of the host country.	Positive
6	Language	Positive if Host country speak English

Methodology:

On the first step, I would use the data from Statistical Bulletin of China's Outward Foreign Direct Investment to compare Chinese FDI in all countries and test whether the investment in OBOR countries have different trends.

On the second step, I would make two kinds of classification on OBOR countries ,one is based on the area(ASEAN 10 countries, West Asia 16 countries, South Asia 6 countries, Commonwealth of the Independent States and Mongolia 6 countries, Central and Eastern Europe 10 countries) because of their similar characteristics and the other is based on economic development, using World Bank classification (low income, middle income, etc.).

On the third step, based on the existing research literature and the characteristics of OBOR countries, the main influencing factors on the decision of OFDI would be selected. Based on the theoretical analysis, an inference hypothesis would be made on the influence direction of each factor on OFDI, which would be compared with the subsequent empirical analysis results. I would choose China's stock of OFDI as the dependent variable, select the market size of host countries, the labor cost of host countries, the resource endowment of host countries, China's export level to host countries, the infrastructure level of host countries, the tech-innovation capability of host countries, the political environment of host countries, and other factors as explanatory variables, use the gravity model and empirical data to do empirical analysis.I would do full sample test and sub-sample test respectively. The former will analyze the main influencing factors of China's OFDI by taking "One Belt And One Road" countries as a whole, and the latter will divide "One Belt And One Road" countries according to their characteristics. I would use the whole sample test to find the overall influencing factors, and use the sample test to specifically understand the different investment motives for different regions so as to fully describe the investment along OBOR countries.

For the gravity model, fixed effects estimation as well as PPML estimation would be important methods for empirical analysis of international trade. Based on the gravity model of investment and taking China's national conditions into consideration, I would reasonably

use the explanatory variables to establish a gravity model suitable for China's OFDI, test each hypothesis and draw conclusions through empirical test of the model. Finally, I would use Investment Potential Index, calculated by the actual value and predicted value of Chinese OFDI and research the capacity of Chinese investment to OBOR countries.

Expected Contribution:

Since "One Belt and One Road" is a concept that was proposed in 2013, there are few studies and little empirical research on China's investment in countries along the route, including the risks and problems faced by investment, the overall layout of investment, and recommended measures. The existing literature on China's investment in the "Belt and Road" countries mainly uses macro data to describe the current investment situation, and the recommendations are relatively macroscopic. I would try to find the reasons why FDI could be motivated to go to the OBOR countries by the theoretical analysis, compare the general trends and characteristics of investment in OBOR countries with previous literature, analyze whether China's OFDI to the OBOR countries is following the gravity model, and try to find the reasons if the facts do not conform to the theory, so as to provide references for enterprises to invest in OBOR countries and provide reference to One Belt And One Road policy implementation.

Theoretical contribution: At present, most literatures use gravity model to analyze international trade, while this paper uses extended gravity model to analyze foreign investment, which has certain innovative significance. By taking "One Belt And One Road" countries as research objects and adopting the extended gravity model, this paper would study the investment characteristics of China from the overall and sub-regional perspectives, and calculate the investment potential, which plays a certain complementary role in the research of China's outward foreign direct investment in different areas and are supplements to the gravity model and the literature on the OBOR study.

Practical contribution: This article would select OBOR countries as the research sample, employ the current historical data of each country, with the help of the economic analysis tool gravity model, to find the important influential factors of investment layout. At the same time, I would use the gravity model obtained from the empirical analysis to estimate the investment scale of countries along OBOR, and make comparison with the actual investment, to determine the investment potential of the country, in order to provide direction and reference on further investment in the OBOR countries, which have certain realistic directive significance.

Outline:

1. Introduction
2. The review of world literature
3. The description of Chinese FDI (Compare the OFDI between OBOR countries and other countries)
4. Empirical analysis of China's direct investment in OBOR countries (Use of Gravity model)
5. Concluding remarks
6. References / Bibliography

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Introduction

With the deepening of political multi-polarization and economic globalization, various countries participate in the global economy in different ways. With the economic internationalization increasing, the allocation of labour and other resources is changing as well. In the current world, a state can enter the global economy by actively integrating into the international market, fostering good international relations with more countries, and taking advantage of both domestic markets and international markets. Under other condition, taking part in the competition of the international market can face some challenges. In 2008, the sub-prime mortgage crisis occurred in America and spread in the global scope, which turned the world economic development to the lower-development path. After the financial crisis, countries around the world began to seek a new arrangement and partnership in the world to make global economic cooperation more efficient. As shown in Table 1.1 in the appendix, China's FDI development has showed a greater increasing trend compared to the overall FDI of the world after China joined the WTO in 2001, which is helpful to the global economic recovery and growth. But there are still some factors in international society that prevent economic globalization. In recent years, the ongoing trade war between China and America has led to decreased trade volume and higher prices paid by consumers in the international market. UNCTDA also points out that the trade war is a global warning for the global market in the report (2019). In such a complex and volatile international context, China government came up with the policy of OBOR (One Belt and One Road) strategy in 2013. The established bilateral and multilateral trading structures between China and the countries included in the OBOR are the basis of this policy. In addition to increasing trade and investment, China will also further strengthen friendly exchanges with countries along the OBOR and improve relations to a higher stage in the economic development, cultural exchange as well as other fields.

According to the research on the internationalization, there are two major types of entry modes: One type of entry modes is contract-based, such as exports, licensing and franchising while the other type of entry modes is ownership-based such as joint venture, outward foreign investment and wholly-owned subsidiaries (Zhao et al.,2004). In China, Reform and Opening-up policy was in force since 1978, and Chinese export-oriented enterprise gradually developed and began providing foreign countries with more goods and services through trade. Until 2013, "One Belt and One Road" strategy began and provided a broader space on investment and trade for enterprises from China and countries along the OBOR, which made companies arrange overseas investment more effectively. Consumption, investment and exports have been essential driving factors for China's development. Since 2002, FDI in China has grown rapidly, and it accounts for an increasing share of the world's outbound investment as shown in Table 1.2 in the appendix. In 2017, the growth rate of China's outbound direct investment declined. Still, the industrial structure of FDI has been changed from single industry structure to diverse industrial structures; the scope of FDI has been further expanded as well as investments with low efficiency have been reduced (Statistical Bulletin of China's

OFDI,2017). On the whole, China's FDI has shown a trend of relatively stable development. The introduction of the strategy of "One Belt and One Road" might be an attempt at an effective way for China to cope with international economic challenges and achieve stable development in the new global situation. Under this strategy, increasing FDI to other countries as well as expanding the breadth and depth of investment can make a difference. Since "One Belt and One Road" works as a concept that was proposed in 2013, there are few studies and empirical researches on China's FDI in OBOR countries, including the risks and problems faced by investment, the overall layout of investment, recommended measures and so on. One problem is that the existing literature on China's FDI in the OBOR countries mainly uses macro data to describe the current investment situation, and the recommendations are relatively macroscopic. In general, the study of the paper has the following significance.

Empirical research for results: This paper would use an extended gravity model to analyze a foreign investment and this work considers the method of Ordinary least squares estimation, Poisson pseudo-maximum likelihood estimation as well as Fixed effect estimation. By taking "One Belt and One Road" countries as research objects and adopting the extended gravity model, this paper would study the investment characteristics of China from the overall and sub-regional perspectives. And this article also calculates the investment potential index, which plays a specific complementary role in the research of China's FDI in different areas. The investment potential of the OBOR can provide direction and reference on further investment in the OBOR countries, which may have specific significance to help make an investment decision.

The writing content of each part of the article is arranged as follows:

The first part is the research and literature review, which also summarizes the domestic and foreign research on the influencing factors of FDI from the theoretical and empirical aspects.

The second part is the concept definition and introduction of "One Belt and One Road strategy", the theory of investment motivation, gravity model, potential investment index as well as global competitiveness index used in this paper, which provides a theoretical basis for the subsequent writing of this paper.

The third part mainly introduces the status of China's investment in the "OBOR" countries, including the total amount, regional structure and industrial structure, and summarizes the characteristics of FDI from China to OBOR countries.

The fourth part is to establish an expanded gravity model of investment attraction, select influencing factors, and use Stata 14 to conduct full sample and sub-sample tests and measure the influence of each factor on China's direct investment.

In the fifth part, the gravity model is used to calculate the investment potential of China to the countries along OBOR. This work also makes cross analysis of investment potential Index and Global Competitiveness Index.

The sixth part summarizes the current situation, motivation and potential of China's direct investment in OBOR countries, and puts forward policy suggestions for further promoting China's FDI in OBOR countries.

Chapter 1 Research and literature review

With the changes in the global investment system, the investment facilitation measures, property rights protection, capital flows and competition policies have become more critical to improve the investment environment, reduce transaction costs, and improve investment efficiency (Meng, 2016). A study by Bosworth and Collins (1999) shows that attracting more international capital would bring significant benefits to the development of developing countries. Foreign capital inflows can enable a country to increase capital accumulation and enhance long-term prospects for growth. On the one hand, using foreign capital can improve local infrastructure construction and increase the employment rate, which can increase population wealth and meet the need of local development. On the other hand, it can combine the advantages of different countries to improve competitiveness in the international capital market. Although there are many benefits for governments to take FDI inflows, many challenges and issues also exist. Tian, et al. (2015) reveal that FDI is a double-edged weapon because it cuts both ways. Not only does it contribute to and promote an economy's growth, but it also induces capital flight or replaces local capital, which in turn affects a host country's development. It's also essential to analyze the challenges and issues so that Chinese companies can value its effect and result objectively.

FDI from China to other countries can help deepen international economic and trade relations, promote industrial transformation, and enhance the level of opening-up. The Chinese FDI outflow also faces many challenges and risks. Firstly, political risks can influence Chinese FDI, such as weak government governance, serious corruption, wars in countries and unstable social environment. Secondly, China often occupies a leading position in investment projects and does not pay enough attention to the particularity of local conditions, such as regional cultural difference, environmental governance and ecological protection (Stephan & Alice, 2017).

For China, the growth of FDI became fast after China joined the WTO in 2001. As is shown in Table 1.1 in the appendix, the growth rate of Chinese FDI (net outflow) among different countries in the whole world was not stable from 2001 compared to growth rate of the whole world's FDI (net outflow). But the FDI is unevenly distributed, and developing countries face more difficulties than developed countries in attracting FDI (Botrić, 2006). Still, most OBOR countries, including China, are developing countries. It's meaningful to study the FDI from China as a developing country to other developing countries along the Silk Road and find the difference in factors attracting FDI between developing countries and developed countries. On the other hand, this paper would also focus on the difference in attractive factors for FDI inflow when considering the OBOR countries as well as non-OBOR countries.

1.1 The Introduction for OFDI and related theories

1.1.1 Definition of Outward foreign direct investment

When the present writer looks at the capital flows or capital stock from China to other countries, there can be multiple kinds of capital flows such as OFDI, loans, and other capital flows. OBOR has steadily gained popularity since 2013 and recently become more realistic as China has added capital to Silk Road Funds, and Asian Infrastructure Investment Bank offers loans. The Chinese government has promised to invest in the OBOR project more than \$1 trillion (OBOR Forum for International Cooperation, 2017). The OBOR international cooperation in investment, trade and infrastructure construction can be strengthened through the provision of loans by policy banks to foreign governments, investment by the China-ASEAN Investment Cooperation Fund and other methods. Overall, China is likely to play an increasingly significant role in global infrastructure financing with the function of Asian Infrastructure Investment Bank.

What this work would use in the paper is just the OFDI from China to other countries. Outward foreign direct investment refers to the Chinese mainland enterprises, organizations (i.e., mainland investors) who invest in foreign countries and Hong Kong, Macao and Taiwan regions by cash investment, object investment, intangible assets investment and others (Statistical Bulletin of China's OFDI, 2017). FDI companies apply to international companies directly owned or with 10% (or higher) of voting rights or alternatives held by Chinese owners. (Statistical Bulletin of China's OFDI, 2017).

Greenfield investment, transnational mergers and acquisitions and so on are among the forms of OFDI. Greenfield investment is the primary mode of China's OFDI. After the increase of China's foreign exchange reserves, China made changes in the foreign investment policy and adjusted enterprises' foreign investment strategies. Increasingly, cross-border acquisitions and mergers have been a major part of China's OFDI. Except for above investment methods, other OFDI forms are constantly emerging, such as buying shares of foreign companies, asset reorganization, equity exchange and the establishment of overseas economic and trade cooperation zones and technology R&D centres, etc., which have become the new trend of OFDI development in China to other countries.

In this paper, this work would focus on the data of Chinese FDI outflow to other countries using the data of the Statistical Bulletin of China's OFDI from 2004 to 2017.

1.1.2 Theories of OFDI

(1) Flying Geese Paradigm and Theory of Marginal Industry Expansion

Both Flying Geese Paradigm and Theory of Marginal Industry Expansion are related theories proposed by Japanese scholars in response to the development of Japanese

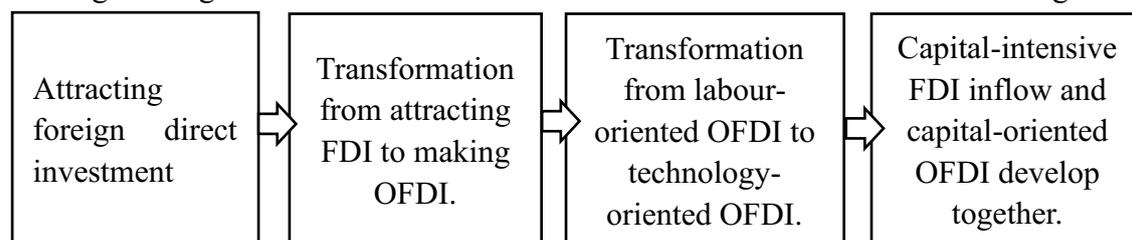
industry.

In the 1930s, Akamatsu proposed that Flying Geese Paradigm could evolve in different countries as one industry shifted from prosperity to decline. An industry develops continuously in Japan, from generation to maturity. With the constant change of production factors, the industry gradually moves from maturity to decrease. It then transfers to other countries or regions and starts the development of the industry in other countries or regions.

Kiyoshi Kojima proposed the Theory of Marginal Industry Expansion in the 1970s. Given Japan's OFDI, Kiyoshi Kojima (1973) discovered that foreign direct investment could come from industries with a comparative disadvantage in the home country and flow to the host country with a comparative or potential comparative advantage in the industry. In this way, the FDI can expand the scope of comparative advantage, create better terms of trade, promote the adjustment of industrial structure in the invested country, and make the investing country gain more income.

(2) The Eclectic Theory of International Production

The Eclectic Theory of International Production was proposed by John Dunning (1977). This theory takes the advantages of ownership, internalization and location as the premise of companies' FDI. It puts forward that the process of developing countries gradually transforming from a pure country attracting foreign investment to a country making a foreign direct investment to other countries can be divided into four stages.



(3) The Theory of Small-Scale Technology

Louis J. Wells (1977) put forward the small-scale technology theory in a thesis about transnational companies in developing countries. The comparative advantage of transnational firms in developing countries lies largely in their low cost of output, according to this concept. Even if the technology of developing countries is not advanced enough, the business scope is not broad enough, and the production scale is small, they can participate in international investment with their advantages.

(4) Dynamic Comparative Advantage Theory

In the 1990s, The Japanese scholar Ozawa put forward the "Dynamic Comparative Advantage Investment Theory" by combining Porter's competitive advantage theory with his research. This theory combines international direct investment with the comparative advantage of a country. It holds that the comparative advantage of an industry is not static but dynamic during the development. Therefore, when transnational corporations choose OFDI industry, they need to adjust constantly according to the change of advantages. Ozawa pointed out that when selecting industries for OFDI of developing countries, they should combine with their industrialization strategy to promote economic transformation of the country through dynamic comparative advantage. It can gradually help transform developing countries

from a country purely attracting foreign capital inflow to a country with OFDI.

(5) Technological accumulation Theory

John and Paz Estrella (1990) put forward Technological Accumulation theory to explain the trend of accelerating growth of OFDI for developing countries, they believe that improving the technical capability of companies in developing countries and regions is directly linked to OFDI development. The current level of technological competence is a deciding factor influencing their international production activities and growth rate of FDI inflows in developing countries. Based on the innovations accumulation and the transition in the industrial structure, more and more FDI has started to participate in high-technology production activities.

1.2 Research on the influencing factors of FDI

1.2.1 Theoretical research on the factors influencing FDI

(1) From the perspective of the home country

Many studies focus on the influence from the home country because companies are often influenced by the home countries' economic condition, investment policy, as well as other factors. Hymer (1960) introduced monopoly advantage of the company by researching the country-specific position and the relationship between country-specific advantage and firm-specific advantage, which can be the influencing factors for companies to make a foreign investment. Dunning (1977) put forward the eclectic paradigm, which considered the location endowment of the country and the ownership endowment of the enterprise considering the situation of the home country. Based on past studies, this paper would also study what conditions are required for enterprises to invest in OBOR countries and find the attractive domestic factors of Chinese investment.

(2) From the perspective of the host country

With the investment location theory developing, to analyze the location selection of FDI by enterprises becomes more crucial. About seeking a theoretical rationale for industrial location and trade patterns, many economists wish to find an analytical scheme linked with orthodox economics. An example is location theory, founded on the early contributions of Johann (1826) and Alfred (1909), which aims to explain industrial location by appealing to the economic logic of profitability and cost minimization: industries will gravitate towards sites with the lowest labour, transport and trading costs. Caves (1971) introduced transaction cost and information cost to develop the cost theory further, and distinguished horizontal FDI from vertical FDI as well as put the importance on product differentiation for FDI. Porter (1990) demonstrated that to be successful, firms must consistently increase the organizational efficiency of their operations. While the idea of territorial competition is defined by Krugman (1994) as a "dangerous obsession" to state that competitiveness is misleading and wrong between a nation and a corporation in parallel. Although Paul Krugman and

Porter have different opinions about competitiveness, they both emphasize the importance of factors that can appeal to foreign capital. Aliber (1973) elaborated the influence resulting from the change of exchange rate level on the flow of foreign capital in his theory of currency advantage and found that money flowed from strong currency countries to weak currency countries. It is generally believed that the lower the cost of labour, the more advantages a country has in attracting foreign investment. The company often seeks out "the least cost locations for each activity" (Buckley & Casson, 2009). So, it's essential to take economic factors including the production and transportation costs, political factors and human capital factors of the host country into the gravity model and consider the geographically divided samples.

There are also some theoretical researches on FDI from China to other countries. Lu (1999) assumed that the host country's economic, institutional and infrastructure factors would affect the company's FDI behaviour and get the results supporting his assumptions. Jiang (2004) proposed a comprehensive theory of motivation and believed that China should take the host country's situation into consideration when implementing FDI. Li and Yu (2011) believe that the FDI behaviours can be influenced by their ownership advantage, internalization advantage and location advantage. When researching China's FDI to OBOR countries, to take the characteristics of China's outbound investment and other factors that affect China's choice of foreign investment together can lead to a relatively reasonable outcome according to the theoretical research on the influencing factors of FDI.

1.2.2 Empirical research on factors influencing FDI

(1) From the perspective of the home country(investor)

The relationship between home country's GDP and FDI inflow	
Positive	<p>Dunning (1981) studied the relationship between home country's economic level and FDI flow, and he found that a country's FDI flow was positively correlated with its economic development level.</p> <p>Andreff (2002) selected the home country's GDP, GDP growth rate, technical level, population, industrial structure and exchange rate fluctuations as explanatory variables. He used transition countries as the sample, found economic growth and domestic market's scale can impact on the flow of FDI.</p> <p>Jason and Yackee (2007) used FDI flow as an explained variable, select home FDI/GDP, GDP growth and population, the exchange rate, the urban population, the education degree of the host country, quantity of scientific research personnel, the rate of</p>

	<p>inflation, unemployment as explaining variables. They also found that home-country economic level has an important influence on investment decisions.</p> <p>Through empirical analysis, Zhou (2005) found that export, GDP growth rate and exchange rate have important influences on investment flows from China, among which export scale has the most significant impact.</p> <p>Zhang and Xie (2012) proved that the size of China's economy, the proportion of private investment in fixed assets, the export level, the exchange rate and the policy environment had significant positive pulling effects on FDI.</p>
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The development of China's economy has increased fastly, and a large number of companies have gradually developed, grown and matured. For more and more Chinese firms, the need to increase the room for production and market competitiveness has made OFDI an active long-term strategy. In 2001, China joined the WTO, which help create a more open and transparent investment environment than before for domestic enterprises to make foreign direct investment.

(2) From the perspective of the host country

Through the literature sorting, it shows that kinds of literature study the relationship between FDI and variables of host countries, mainly focus on the economic strength of home countries, the size of the host countries' market, the bilateral trade, labour costs, investment risk, culture difference, infrastructure, tax level and so on.

In Bevan and Estrin 's (2004) empirical work, they find that FDI can be different between developed Western countries and transition countries because of the different influence from unit labour costs, country size, and proximity between host countries and home countries. Sotirios and Turan (2011) used the generalized moment method (GMM) to estimate the gravity model of bilateral FDI stock. Their conclusions show that distance and income play a significant role in foreign direct investment. Trading system, transportation costs, level of economic development and macroeconomic stability can also influence the bilateral foreign direct investment stock.

All the paper above showed that FDI is influenced by different factors of host countries in empirical research. Still, the obtained conclusion sometimes is inconsistent because of the difference between the selected samples and measurement method.

The following part shows the past research on the relationship between the FDI inflow and some explaining variables that this work would use.

The relationship between host country's GDP and FDI inflow	
Positive	Tsai (1994) used a two-equation model to find that the local market size has a significant positive impact on the investment inflow in

	<p>developing countries.</p> <p>Li and Yu (2011) choose data of 74 countries from 2003 to 2007 as samples and used GMM method to study the factors affecting FDI in China, and also showed that a country often invests more in the countries with the considerable market size.</p>
Negative	<p>Xiang (2009) selected panel data from 2000 to 2007 using the GMM estimation tool to test the influence factors of China's OFDI position distribution and found that the local business size had a substantial negative effect on China's investment in the host country.</p> <p>The research of Zhang and Yang (2010) also verified the direct negative correlation between the market size of the host country and China's investment in the host country.</p>

From the perspective of the market scale, many studies show that companies' overseas investment activities have the strong market motivation, which means that enterprises tend to invest in the states with a relatively large market scale. In existing studies, the host country's GDP level can be used to measure the market size. Under OBOR strategy, most of the countries involved are in the economic transition period, and the host countries' market has potential demand for China's direct investment, so studying the relationship between China's FDI and the market scale of the host countries along the New Silk Road is important.

The relationship between labour cost of the host country and FDI inflow	
Negative	<p>London and Ross (1995) found that enterprises would choose regions with cheap labour cost to invest. Ross (1995) believes that the wage level of the host country can have a negative influence on the foreign investment inflow, so FDI generally flowed into the region with cheap labour force to reduce the production cost and obtain benefits.</p> <p>Zhang and Yang (2010) studied the influencing factors of FDI location decision of the host country. In their study, Partial least squares (PLS) was used, and they found the cost of production factors have significant negative influence on the FDI by Chinese enterprises.</p>

Not significant	Zhang and Xie (2012) used the country data of China's manufacturing industry's OFDI from 2003 to 2008 to conduct an empirical test on the factors affecting the manufacturing industry's OFDI tendency. The results also show that the local income level is attractive to the direct investment of enterprises, but not significant.
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From the perspective of the labour cost of the host country, with the improvement of economic development and people's lives, the domestic labour production costs rise. Thereby most of the enterprise shift production to countries and regions, where the labour cost is relatively low through foreign direct investment, to keep the cost of the product advantages. With China's "demographic dividend" gradually disappearing, and labour costs rising, the advancement of the "Silk Road" strategy can make a difference. It can make China shift production activities to Vietnam, Laos, Cambodia, and other countries with low labour cost, to keep product competitiveness, and make more profits. In this paper, the per capita GNI of the host country would be used as an indicator to measure the labour cost. Low labour cost is an attractive variable for enterprises to consider production, and foreign investment and construction also require the participation of local labour, so it is meaningful to consider the impact of labour cost on China's foreign investment.

The relationship between infrastructure of the host country and FDI inflow	
Positive	Zhao and Lv (2011) use the panel data analysis of China's FDI to ASEAN countries from 2005 to 2008, and found that communication infrastructure environment of the host country can be an attractive factor for China's direct investment in ASEAN countries. Song (2013) used the data of China's investment in 47 countries from 2002 to 2011 and also finds that perfect local infrastructure can have an positive effect on direct investment inflow. Good infrastructure can help decrease the transportation cost and market information cost as well as provide better the production condition for physical capital. As a result, the infrastructure for FDI has a crucial decisive role. Globerman and Shapiro (2003) used a two-stage estimation model and get a

	result indicating that governance infrastructure is an essential attractive factor for FDI.
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From the perspective of the infrastructure of the host country, the level of infrastructure is an essential factor in determining a country's investment. The regular and sound operation of a company requires kinds of infrastructure such as a developed transportation network, efficient communication facilities and convenient financial system. The existing infrastructure is an essential factor for enterprises to decide the direction of investment. Generally speaking, the higher the infrastructure level, the more convenient the vital services are, and the more likely it is to attract foreign capital. The complete service facilities in transportation, logistics, communication and finance can ensure the efficient operation of enterprises' capital in the host country, to obtain the benefits of overseas investment. But considering the situation of China's Belt and Road Initiative, a lot of China's foreign direct investment flows into infrastructure construction. In some countries with lower infrastructure level, they have a higher demand for investment inflow, so the paper would focus on if China's FDI in the OBOR countries can be negatively related to local infrastructure construction.

The relationship between home country's exports to host country and FDI inflow	
Positive	<p>Markusen (1984) predicted that a complementary relationship can exist between the home country's exports to the host country and vertical FDI. Using a general equilibrium model, he predicted that direct investment could supplement trade in goods if identical countries produced identical bundles of goods.</p> <p>Bevan and Estrin (2004) found that FDI and trade were complementary. Because in their research, it can be found that some countries have more trade with EU countries and have close trade exchanges, which can often obtain more FDI.</p> <p>Wang and Tian (2013) established an investment gravity model to analyze the differences of the influencing factors of China's FDI location selection and found that economic and trade exchanges promote more China's FDI.</p>
Negative	Brainard (1997) proposed a differentiated product trade model to show that there is a dynamic balance

	between exports and horizontal FDI. The basic assumption of the model is that if companies face higher transport costs and trade barriers, they are more likely to choose FDI over exports, which made FDI as the alternative for exports.
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From the perspective of the volume of bilateral trade, Export and FDI are two important methods for a country's enterprises to take part in global business. Their development is conducive to the expansion of enterprises' popularity and influence overseas and the expansion of market share. In terms of the relationship between export and direct investment, there are two main viewpoints: one is that the two are complementary, and export can promote more FDI. Another view is that the two are negatively correlated with each other, with the expansion of exports squeezing overseas investment.

The relationship between official exchange change of host countries and FDI inflow	
Negative	Froot and Stein (1991), and Blonigen and Feenstra (1996) found that exchange rate changes had a negative impact on FDI. If the exchange rate of a country is unstable, it will reduce the investment inflow.
Not significant	Hai et al. (2017) find that the volatility of the exchange rate displays a negative but insignificant influence on OFDI, suggesting that the influence from ER volatility to Chinese OFDI is unclear.

From the perspective of the official exchange change of host countries, Jun and Singh (1996) put forward that the exchange rate risk can influence investment inflow from other countries. In general, changes in bilateral exchange rate levels and exchange rate fluctuations between countries can indicate the impact of exchange rates risk on FDI. Theoretical and observational analyses of FDI describe the correlation between exchange rates and FDI, but the relationship is also unclear. This paper would focus on the influence of change in the exchange rate to FDI from China and find if Chinese enterprises would decrease outward foreign direct investment when facing more exchange risks within host countries.

The relationship between technology level of host countries and FDI inflow	
Positive	Kuemmerle(1999) analyzed the empirical data of 32 large electronic enterprises as well as pharmaceutical enterprises. He concluded that the technological innovation ability of the host country had a significant influence

	<p>on the direct investment inflow.</p> <p>Through empirical analysis, Jiang (2012) also found that Chinese enterprises' overseas investment had obvious motivation to seek strategic assets, and the technology of the host country had an obvious attraction to the Chinese capital.</p>
Not significant	<p>Hai et al. (2017) study the determinants of Chinese Outward FDI in OBOR countries. To calculate the technical level of local countries, they use the natural logarithm of the ratio determined by the host country's high technology exports to nominal GDP and find the technology level has an insignificant influence on OFDI from China to OBOR countries.</p>

On the one hand, enterprises enter the market of the host country through OFDI. They establish companies or participate in local enterprises, which is a crucial way to obtain the host country's patents, cutting-edge technologies and other strategic assets because many countries set barriers in the field of scientific and technological innovation. On the other hand, high-tech exports are related to high-intensity R&D goods that can calculate the level of technology in the host countries. So, this work would use the Medium and high-tech exports to reflect the technology production level in the host country. The economic and technological development level of most countries along the OBOR line lags behind that of China, so the impact of their scientific and technical innovation ability on China's investment direction may not be significant, but it should also be positively correlated.

The relationship between tax level of host countries and FDI inflow	
Negative	<p>Devereux and Griffith (1998) argued that 1% higher tax rate reduces the probability of investment by 0.5% to 1.3% through setting out a framework to research the influence from tax rate change on FDI inflow.</p> <p>Gorter and Parikh (2003) used the OLS and find that a 1% increase of tax rate reduces the stock of foreign investment by 5%. They both agree that the tax burden has a significant influence on investment decisions and higher tax burden lead to lower investment inflow.</p> <p>Previous empirical studies often show that changes in corporate tax rates of host</p>

	and home countries have an important impact on FDI flows and ultimately influence the location choice of international companies (Feld & Heckemeyer, 2011).
Not significant	Li and Qi (2017) used data from the micro-enterprise level to test the influence of enterprises' actual tax burden on the probability and frequency of FDI. The results showed that the high tax burden in the home country significantly promoted the FDI of enterprises to the host countries with the low tax burden. In contrast, the effect of the actual tax burden on FDI of enterprises is not significant.

From the perspective of the tax level of host countries, different tax situations may have different influences on FDI. Tax types and the tax treatment can all make a difference to the effect of tax level on OFDI. Another key issue is that transnational enterprises often face the problem of double taxation, and different companies have different solutions to double taxation, which made the expected impact of taxation on FDI more complicated. Furthermore, MNCs can reduce or redistribute their tax liabilities by using some tax strategy, such as transfer pricing, which can make them less sensitive to tax rates (Gordon&Mason,1995).

The relationship between culture difference(language) of host countries and FDI inflow	
Negative	Lazear (1999) found economies of scale showing language skills can reduce transaction costs and information costs to improve returns. Hoon, Selmierb and Lienc (2011) examined the impact of major trading languages (English, French, Spanish, Arabic, etc.) on international trade and foreign direct investment flows. The empirical findings confirm that it can have a positive effect on trade and FDI flows if the host country and the home country use the same language, and the role of language in FDI is more significant.

From the perspective of the culture difference, language is an essential factor influencing China' FDI to other countries. In China, the official language is Chinese. Though the vastest number speaks Chinese in the world, only China's official language

is Chinese, so there is no way to use Chinese as the common language of other countries. This paper can distinguish the language between the English and other languages using dummy variables. This work used English and Chinese as 1 and other languages as 0, then study the language' influence on China's FDI in OBOR countries.

The relationship between transportation cost and FDI inflow	
Positive	Previous papers have shown that companies are more likely to invest in more remote markets (Buckley & Casson, 1981; Barba & Venables, 2004). Because physical distance is less conducive to trade, outbound investment can become an important way to develop local markets to avoid transport costs, tariffs and other types of trade costs.
Negative	Some gravity models predict that this relationship between transportation cost and FDI inflow is negative because investment costs increase with distance (Kolstad and Wiig, 2010; Pradhan, 2009);
Not significant	According to the research of Wang and Tian (2013), based on panel data from 2003 to 2011, they used gravity model to analyze the country-specific differences of factors influencing the location selection of OFDI in China. The research shows that transportation cost and technology level of the host country has no significant influence on FDI inflow.

From the perspective of the transportation cost between China and the host countries, this paper would use the distance from the home country multiplied by the oil price as a proxy for trade costs. Generally speaking, the greater the geographical distance between the home country and the host country, the higher the business costs and the less the international direct investment will be. Considering most OBOR countries are in Asia, Chinese companies may invest without full consideration of the transportation cost.

The relationship between Host country political environment and FDI inflow	
Positive	Political instability increases the risk level in the economic environment and thus reduces the incentive for foreign investors to invest in host countries. (Khan et al., 2013). In most cases, government corruption is

	<p>not attractive for investment because it increases the risk and uncertainty for potential investors, which affects investment returns and enterprise development. Hence, the political risk of corruption prevents investors from further investment (Getz and Volkema, 2001).</p> <p>Wang and Fang (2012) used "political stability" to measure the political quality of the host country, and they found that Chinese enterprises tend to invest in countries and regions with close contacts with China and low political risk.</p>
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From the perspective of the Host country political environment, politics and economy are inseparable from each other. In theory, there seems to be a relationship between FDI and political risk, which could be analyzed in this study. Many previous studies have used corruption as an indicator of political risk, focusing on the impact of corruption in host countries on FDI. The political stability, government organization structure and public governance level of the host country will affect the choice of FDI of a country's enterprises. Generally speaking, the stable political situation of the host country can help the country attract foreign investment. A high-quality political environment is often an essential guarantee for the return of FDI for companies, which can reduce the uncertainty risk of enterprise investment. In this paper, this work would choose The Political Stability and Absence of Violence of host country as well as the Voice and Accountability of host country to be the proxy for political environment. One Belt and One Road" spans more than 60 countries, and there are differences in political governance among countries. In the early stage, the investment flow of Chinese enterprises should be inclined to countries with more political stability.

The relationship between natural resource of host country and FDI inflow	
Positive	<p>Empirical studies on China's FDI (Buckley et al., 2007; Zhang & Qian, 2008) indicates that China's investment motivation is mainly to meet the increasing demand for primary resources. Buckley (2007) used 1984-2001 China's direct investment for the world's significant countries data as the sample. The empirical analysis found that the host country of the resource's endowment has a significantly positive influence on China's direct investment flows.</p>

From the perspective of the natural resource of the host country, the model used in this

paper would include the total rent of natural resources as a percentage of GDP. On the one hand, according the statement of World Bank, “the contribution of natural resources to economic output is essential for attracting foreign investment. In some countries, income from natural resources, mainly from fossil fuels and minerals, accounts for a considerable part of gross domestic product, and much of that income is in the form of economic rents.” On the other hand, enterprises obtain relatively low cost and stable resources from host countries through investment to solve the problem of a domestic energy shortage, which is also an important reason for their overseas layout. Various factors will restrict a country's economic development to a certain level, and the lack of energy resources is a common bottleneck. Still, at the same time, some countries are rich in resources and not fully utilized. Enterprises through the investment to build factories in the resource-rich region, on the one hand, can obtain stable security resources protection, on the other hand, investment activities also promote the optimal allocation of global resources. Chinese companies intend to invest in the resources rather than buy the resources because they want the resource supply to be safe and under control (Wang,2011). At present, the domestic resources shortage is an obstacle to the further development of the Chinese economy. At the same time, OBOR countries are rich in energy resources reserves, such as the five central Asian countries, Southeast Asia, Russia and so on, which are rich in oil and gas and mineral resources. To invest these countries and use energy resources, China can alleviate the shortage of domestic resources and gain further development of the economy.

The relationship between the status of host country and FDI inflow (OECD or not)	
Significant	According to the research of Blonigen et al. (2006), they found that it may be inappropriate to collect observations from different countries into a single sample for empirical studies of FDI. Blonigen and Davies (2004), as well as Blonigen and Wang (2005), used samples from developed and developing countries to conclude that countries with different economic levels and in various stages of development have significant differences in factors affecting FDI.

From the perspective of the economic conditions and international status, it seems useful to divide the sample into OECD and non-OECD countries. Economic level of different countries can influence foreign direct investment motivation. International direct investment flows into countries with relatively low development because it is associated with low wages. Still, the cause of attracting foreign direct investment into the developed countries are more likely to be adequate infrastructure, perfect system and advanced technology level. This paper considers dividing the samples into OECD countries and non-OECD countries. A clearer result can be obtained by using a model which provides some additional flexibility (dummies for intercept and slopes).

To some extent, the spatial nature of the samples can influence the estimation of the FDI gravity equation, so it is necessary to examine the coefficient differences between different geographical subsamples to compare the effects of different regions on investment (Bruce a. Blonigen,2007). About the OBOR countries until 2017, some are developed countries mainly located in Central and Eastern Europe and East Asia (like Czech Republic and Korea), others are developing countries located in other places. It may be useful to divide the OBOR countries to samples according to their geographical location by introducing the dummy variables. On the one hand, the countries in the same region often have similar economic conditions, political levels, and national development levels. On the other hand, the countries in the same area are roughly the same distance from China, and the transportation costs are not much different.

1.3 Research on China's direct investment in "New Silk Road" countries

At present, Chinese scholars' study about the strategy of the Chinese FDI to OBOR countries is limited, and more researches mainly revolve around the relationship between the "OBOR" countries and China's investment, including current investment situation, investment risk, and how to deepen the investment strategy.

Zhang, Wang and Chen (2015) think "Silk Road" strategy is put forward to further expand investment from China to other countries, which provided a new chance of cooperation. Based on the existing situation, China should strengthen the relationship between the China and countries along "OBOR". The strategy should also improve cooperation in various fields using national geographic advantage, which can promote China's industrial transformation and upgrading. Zhou (2015) analyzed the national investment mode of "OBOR", China's investment to Southeast Asia occupies the most significant proportion of China's OFDI. At the same time, Chinese invest mostly in Singapore, Indonesia and Myanmar, the author thinks the deepening of international cooperation and promotion of the "OBOR" strategy are essential means of making use of China's advantages and the development of the host countries. Yang and Yan (2015) believe that further expansion of the "Silk Road" strategy is conducive to promoting the depth and breadth of FDI of Chinese enterprises. The government should improve the relevant legal system and speed up the construction of the information service system, to better provide services for enterprises' outbound investment.

In the empirical study, Meng (2016) analyzed the data of "Silk Road" in the countries in which China invested from 2003 to 2013. He found that market efficiency, resource power, infrastructure construction level of the host country, current trade policy and tax rate had essential influences on China's FDI stock. Ni, Wang and Jing (2016) set the investment gravity model using the data from 2009 to 2014. Through empirical analysis, they found that China's investment scale is related with the level of China's economic development, the host country's market size, the host country labour costs, and China's trade partnership with the host country. Zhang (2016) find a big difference in each area of OBOR countries. Through the empirical study, he also finds that GDP, the employment, resources endowment conditions and convenient degree of investment have a significant impact on direct investment, and improving the investment

environment can enhance the quality of the investment.

1.4 Literature review summary

Many kinds of literature have formed a relatively complete and mature theoretical system of FDI, which provides a basis for studying China's investment in countries along the Silk Road. Most of the studies on outbound investment are based on economic interests. Still, the difference is that China's plan of carrying out One Belt and One Road and carrying out outbound investment is not only from the economic perspective. Since the "Silk Road" was proposed in 2013, there have been few empirical studies on China's investment in OBOR countries. Among the works of literature, mostly studies focus on the risks and problems faced by investment, the overall layout of investment and the proposed measures.

On the other hand, the existing literature on the current situation of China's investment in the "Silk Road" mostly uses macro data to describe the current investment situation and rarely carries out the in-depth and specific analysis. Therefore, based on the existing literature on the influence factors of FDI, this article would choose the relevant variables to do the empirical study. Concerning the hypotheses, the paper would focus on the specific strengths of the host countries, such as economic development and risk, the trade relationship with China, culture difference, and so on. The paper would also pay attention to the investment environment and investment potential of countries along the Silk Road, and put forward the corresponding policy recommendations, to further optimize the Chinese direct investment in the OBOR country.

Chapter 2 Definition of Relevant Concepts and Theoretical Background

This chapter describes the concept and the related theory involved in the article, including a brief description of the strategy of "OBOR", the opportunities and challenges, the introduction about Gravity Model and the description of the investment potential index as well as the Global Competitiveness Index. This chapter aims to provide theoretical support and prepare related concepts and theories.

2.1 "One Belt and One Road" strategy overview

New Silk Road is included in the Thirteenth Five-Year Plan of China and points out the new direction for China's future investment. Its official stated purpose is to build a community of shared future for humanity and strengthen the cooperation of countries along the OBOR (Yuan, 2014). The "One Belt and One Road" policy has a specific foreign and domestic history and will also influence the development of China and the OBOR countries.

At present, there are no relevant documents to clearly define the scope of countries and regions along the "One Belt and One Road". By March 2019, In order to jointly develop the One Belt and One Road, China has signed 171 partnership documents with 123

nations and 29 international organizations.

Based on the "OBOR Trade Cooperation Report 2018", the paper determines the scope of the countries along the "OBOR" and choose OBOR countries which signed some relevant cooperation documents with China as shown in table 2.1 in the appendix. In the empirical part, this work also considers the country included based on the data availability. This work would eliminate the countries without variables available and involves 54 countries in the Chapter 4. According to the geographical location, this paper divided the sample into East Asia, Middle Asia, West Asia and North Africa, South Asia, Central Asia, Central and Eastern Europe and Southeast Asia as following table:

Areas [↵]	Countries [↵]
Central and Eastern Europe [↵]	Albania, Bulgaria, Bosnia and Herzegovina, Belarus, Czech Republic, Hungary, Lithuania, Macedonia (the former Yugoslav Rep. of), Poland, Romania, Slovakia, Slovenia, Ukraine [↵]
East Asia [↵]	Japan, Korea, Mongolia [↵]
Middle Asia [↵]	Kazakhstan, Russian Federation, Tajikistan, Uzbekistan [↵]
South Asia [↵]	Afghanistan, Bangladesh, India, Sri Lanka, Nepal, Pakistan [↵]
Southeast Asia [↵]	Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Myanmar, Malaysia, Philippines, Singapore, Thailand, Viet Nam [↵]
West Asia and North Africa [↵]	United Arab Emirates, Armenia, Azerbaijan, Bahrain, Egypt, Georgia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, Yemen [↵]

2.1.1 Background of "One Belt and One Road" strategy

The present world is moving towards multi-polarization and the globalization of the world economy. Countries are seeking more development opportunities on a global scale to enhance the ability to resist risks and enhance national discourse power. However, it's urgent for developing countries to attract investment to support the development of local industrialization, economic diversification and structural transformation. Many of the new industrial policies adopted in recent years in both developing and developed countries have relied more on attracting investment. Meanwhile, the net OFDI are on the decline, as shown in Table 2.3 in the appendix. In 2018, global FDI flowed continued to decline, falling 13 per cent to \$1.3 trillion (World

Investment Report 2018). It was the third year in a row that FDI flows fell; one reason is that American multinationals repatriated large amounts of accumulated foreign earnings because of US tax reform at the end of 2017. As countries in the world participate in the global economy, the degree of internationalization of companies is increasing, the international division of labour is deepening, and the economic relations between countries are getting closer and more complex.

The United States officially put forward the TPP (Trans-Pacific Strategic Economic Partnership Agreement) framework agreement in November 2011. In 2013, while accelerating the negotiation process of TPP, United States announced the formal launch of TTIP (Transatlantic Trade and Investment Partnership Agreement) negotiations with the European Union in June 2013. The US government proposes to complete the TPP negotiations in 2013, complete the TTIP negotiations within two years and plan to sign the US-EU Free Trade Agreement. The eventual completion of the Free Trade Area of the Asia Pacific (APEC) and the United States' Free Trade Area of the European Union (EU-US) would represent a significant shift in the global trade map if the US intends to achieve this on schedule. In such a complicated international background, president Xi in 2013, successively put forward to build economic belt "New Silk Road" and the "Marine Silk Road" in the 21st century based on China and the countries concerned along the OBOR. According to the official statement (Vision and Actions on Jointly Building OBOR, 2015), the New Silk Road strategy further strengthens the economic exchanges with the country along OBOR, build a new relationship between the national and strengthen the link between each other, to build shared prosperity of the community economy corridor and fate.

China's economic growth, judging from the domestic situation, has reached a "new stage" and faces downward pressure on the economy. As China's growth has shifted from high speed to medium-high speed, it is necessary to establish new growth drivers (Dong & Dai, 2014). At the same time, the former comprehensive "high consumption, high pollution and high emissions" mode of growth has steadily exposed the pitfalls of China's long-term economic development (Dong & Dai, 2014). In essence, domestic energy resources are becoming tighter, environmental pollution is severe, and many enterprises have excessive production capacity. To meet the needs of transformation and upgrading of Chinese industries, China is promoting supply-side structural reform to make the supply system better, which are also crucial for promoting the improvement of China's economic development quality (Sun & Shi, 2016). The international transfer of industries can be an important way to reduce overcapacity. Therefore, the implementation of OBOR strategy would help solve the problem of the market demand of China's excess industries production such as cement, building materials, steel and energy. It also can create space for the transfer of excess industrial capacity, which can help optimize the internal supply structure and meet the needs of transformation and upgrading of Chinese industries. Chinese outbound investment will help address the problem of overcapacity (Cheng, 2016). Consumption, investment and exports have been essential drivers of China's economic growth. Seeking production advantage in overseas markets, making integration of domestic and foreign resources and optimizing the production structure can help China further improve the quality and competitiveness

of products and expand the influence of companies, which also improve China's status in the world economy. For China, the implementation of the OBOR strategy provides a broader investment space and more choice for Chinese enterprises. (OECD report,2018) Combining the different characteristics of OBOR countries with the development needs of Chinese domestic enterprises, the OBOR strategy enables Chinese companies to arrange overseas investment better.

The introduction of OBOR strategy not only adapts to the current development trend of global economic integration but also help seek solutions to Chinese domestic development problems through OFDI to countries along the OBOR.

2.1.2 Main contents of "One Belt and One Road" strategy

The OBOR strategy aims at strengthening cooperation between China and other countries in economic field as well as other fields, realizing mutual complementary advantages and shared prosperity among states (Vision and Actions on Jointly Building OBOR, 2015). In the context of "OBOR" strategy, China seeks further coordinated development based on existing cooperation. At the same time, the strategy pushes countries to set up new partnerships in more fields, such as economy, politics, and so on. As a result, it can steadily expand the scope of "OBOR" strategy, expand its influence and achieve the mutual benefit of countries along the OBOR (Andrew, 2015). Unlike the Marshall Plan, The NSR (New Silk Road) initiative does not require participating countries to take specific steps to liberalize their trade policies but promote policy coordination and more cooperation between different countries (Stephan & Alice, 2017). In the process of advancing the strategy, it's essential to enhance political understanding and enhance policy communication through in-depth consultations. The OBOR project attaches great importance to strengthening cooperation with countries along the OBOR in infrastructure construction, improves the provision of transportation, telecommunications, Internet and other facilities along the OBOR, to make China achieve infrastructure connectivity with countries along the OBOR. By the elimination of trade barriers, the project can help expand the scope of trade, achieve unimpeded trade and promote cooperation in other areas.

The NSR could also improve the financial service system of the countries along the OBOR, provide more financial support for the promotion, and ensure the smooth flow of funds. Besides, it is necessary to enhance mutual understanding at the political level among countries along the OBOR, to achieve cultural identity and mutual understanding among people. Through the implementation of "NSR" strategy, China can take the initiative to develop partnerships with countries along OBOR in economic cooperation and political consultation, increase interconnectivity between countries, enhance the overall regional influence in the world. It's not only beneficial to the development of China but also to promote China and neighbouring countries mutually to realize economic development (Liu, 2015).

The policy of OBOR is broad and complicated in terms of geographical range and substance of cooperation. In the field of cooperation, economic cooperation is the

engine driving the collaboration in other areas, and cooperation in other fields can be promoted through the continuous strengthening of economic ties with countries along the OBOR.

The motivation and driving force behind China's OBOR initiative are a fairly complex set of goals, mainly economic, but also geopolitical and ecological. This work would discuss the goals of OBOR proposed by experts analyzing the policy:

(1) Improve transport links and reduce trade costs with Europe and other parts of Eurasia

The OBOR initiative is the basic idea of a better connection between the East Asian economic circle and the European economic cycle at first (China State Council, 2015). As the predecessor of the "New Silk Road", the silk road tradition has experienced ups and downs, connecting China with the two main traditional centres of economic activity in Europe (Barisitz, 2017). China hopes to reduce the transportation cost of goods to other destinations through the implementation of OBOR strategy.

(2) Solve the problem of overcapacity in China

The OBOR initiative can be used in response to the recent sharp downturn or slowdown in the Chinese economy. China's infrastructure-related industries and service sectors face overcapacity after completing many of the Chinese infrastructure projects (Stephan & Alice, 2017). The economic aspects of One Belt and One Road include generating more foreign demand to reuse these domestic resources. Besides, Chinese companies have accumulated rich experience in high-speed rail construction at home country, which is also an advantage of cooperation with foreign countries.

(3) To promote the development of the mainland and border areas

China's economic growth has supported the country's eastern and coastal provinces in recent decades; the northwest of China has been transformed into a gateway to central and western Asia. The OBOR strategy can help increase investment opportunities and strength economic activity in this remote and less developed region. For example, in the southwest, Yunnan province could be a modern "gateway" to South Asia and the Indian Ocean. As all OBOR corridors start from central or western provinces, the planned geo-economics rebalancing can help mitigate these differences between east of China and west of China (Grieger, 2016).

(4) Hedge in case of the possible trade war

At present, China relies heavily on the United States for trade, and the trade war between China and the United States could become more intense at any time, thus affecting China's economic interests. Through the OBOR policy, the Chinese government has established closer ties and cooperation with NSR countries, especially with European partners, to mitigate the impact of some possible trade conflicts with the United States.

(5) Ecological goal: to reduce China's heavy reliance on highly polluting coal

China relies on coal for about 40 per cent of its heating and electricity, which is mostly responsible for the pollution problem. The authorities have set ambitious goals, including moving from coal to renewable energy sources, to combat emissions. So far, it has been mainly imported energy, such as gas from central Asia and Russia.

The OBOR initiative also face many challenges and risks proposed by experts

analyzing the policy as follows:

(1) Local government management is weak, bureaucratic and possibly unstable

As the report of the World Bank, OBOR countries have different political and economic situations, which can lead to legal and financial challenges. Given that many partner countries are from different fields of political or economic integration, border constraints may occur. In the absence of good performance and accountable government procurement systems, China's FDI in infrastructure projects can even increase local corruption or governance challenges.

(2) China's frequent dominance in projects and lack consideration of local conditions

While China's project partners are typically leading the way in the financing, managing and deploying Chinese companies and their employees to participate in One Belt and One Road projects. This can help speed up the project process but may not be conducive to broad positive spillovers to the local economy. In some cases, improper and ill-considered behaviours by investors can cause local anger or even protest.

(3) The risk of the political problem

An entirely different risk is the negative consequences of military tensions, such as in the south China sea. Another problem is that the project may become the victim of an outbreak of geopolitical competition with other powers (Giret, 2016).

2.2 Introduction for Gravity Model

2.2.1 Origin of the Gravity Model

The word "Gravity" as the physics concept was first put forward by Newton and used to describe the size of the force between two particles. Newton proposed that the size of the force is equal to the mass of the point of two objects, and that the distance between two particles is inversely proportional. That is to say, the heavier of the two particles, the shorter distance, the attraction is more significant between them. The law of universal gravitation, expressed in the formula is as follows:

$$F = G * \frac{m_1 * m_2}{r^2}$$

F: The gravitational force between two objects ←

G: the gravitational constant←

m₁: The mass of object 1←

m₂: the mass of object 2←

r: The distance between two objects←

A variety of gravitation models have been established to explain the phenomena in social life and help people discover social science laws. The gravity model is a popular mathematical model used to predict the activities between two or more places. Ravenstein (1885) later applied these principles and the gravity model concept to the social sciences related to migration patterns. According to Reilly's Law of Retail Gravity (1931), if a large retail centre is more attractive to customers, then customers are willing to go further to a larger retail centre. In Reilly 's formula, the attraction of a retail centre becomes an analogy of size (mass) in the laws of physical gravity. The gravity model has since been widely developed and applied in the fields of economics, tourism and other social sciences.

2.2.2 Application of the Gravity Model in the Field of Trade and Investment

The gravity model is introduced to the field of a trade by Netherlands econometrician Tinbergen (1962) at first. He established the gravity model of bilateral trade between the two countries. He argued that the scale of the economy measured by GDP and the geographical disparity between the two countries had a significant effect on the trade. On the one hand, the market scale and the level of economic development have a positive effect on the volume of trade between the two countries. On the other hand, the long geographic distance, which means higher transportation cost, would reduce the trade volume between the two countries. The following formula can express the above bilateral trade gravity model:

$$TRAD_{ij} = a * \frac{Y_i Y_j}{D_{ij}}$$

$TRAD_{ij}$: The trade volume between country i and country j

Y_i : The level of GDP of country i

Y_j : The level of GDP of country j

D_{ij} : The distance between country i and country j

Initial trade gravity model contains only the host country's market size and the geographic distance between the two countries as the two influence factors. In the actual situation, many factors are influencing the scale of the trade between countries, including political environment, the per capita national income, consumption structure, tariffs and trade preferential policies, etc. Therefore, in order to explain the actual state of foreign exchange between the two nations, many researchers have increasingly incorporated more influential factors into the formula and built up an expanded gravity model. For the convenience of econometric analysis, they usually use the log in a formula on both sides to better reflect the reality of international trade. The extended gravity model is usually expressed as a formula:

$$\ln TRAD_{ij} = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \dots + \beta_n \ln X_n + u_{ij}$$

$TRAD_{ij}$: The trade volume between country i and country j

X_1 to X_n : The influencing factors

u_{ij} : random disturbance term

In the field of trade, the gravity model has gained more and more interest and is used to describe and forecast the flow of trade between various countries and regions and the characteristics of the factors affecting them. As foreign investment and trade activities have some similar feature, it also makes many scholars gradually turn from trade analysis to the investment in the field of the gravity model. In the application of the investment field, the investment stock or flow between two countries is generally selected as the explained variable in the model. The factors influencing the investment decision of a country in the host country or home country are chosen as the explanatory variables to establish an econometric model in the form of formula.

Although gravity model has been successfully applied in the empirical analysis of international trade, Jakab (2001) used gravity model to estimate a country's potential trade capacity, and Balistreri (2006) used gravity model to estimate the boundary cost of trade barriers, etc. However, the micro-foundation for the gravity model is essential. There might be a high risk when the gravity model is used if the author didn't address it. It's difficult to include all the important variable in the gravity model. The predicted result can be biased for lack of important explaining variables. Due to the lack of theoretical basis and micro-foundations, the gravity model as an analytical tool has been questioned by many scholars. For example, Anderson (1979) pointed out that the application of the gravity model in trade policy would be hindered by the unidentifiable properties of the model itself in the economic sense, which is widely recognized. Bergstrand (1985) believed that although the gravity model successfully explained the international trade flow from the perspective of econometrics, its lack of a solid theoretical basis made it very limited in predicting the potential trade volume.

2.2.3 The micro-foundations for gravity model

The study of micro-foundations for gravity model	
1.Gravity Model based on Constant Elasticity of Substitution (CES)	2.Gravity model based on Translog demand function
<p>Anderson (1979) first introduced CES demand function in the structured gravity model and indicated in his conclusion that the gravity equation can be derived from properties of expenditure systems, which promotes the study of the micro-basic theory of the gravity model.</p> <p>A general equilibrium world trade model was proposed by Bergstrand (1985), in which a gravity equation was derived by assuming the full substitutability of foreign goods.</p> <p>Anderson and Van Wincoop (2003) believed that the gravity equation had little theoretical basis and there was an estimated deviation because of missing variables, and the comparative static analysis was unwarranted. They developed a method to rederive the gravity model using price as an endogenous variable.</p>	<p>In the gravity model, CES demand function assumes that the elasticity of trade flows to trade costs is constant. Novy (2013) pointed out that this CES assumption does not conform to the trade reality. Therefore, Translog demand function should be introduced in the gravity model. The advantages of using Translog demand function in the gravity model mainly lies in elasticity of trade flows to trade costs become endogenous. The less a country imports from its trading partners, the more sensitive its trade flows are to the changes in trade costs, which have different effects on different trading objects.</p>
3. Gravity model based on Ricardo's theory	4. Gravity model based on the theory of heterogeneous firms
<p>A Ricardian trade model was created by Eaton and Kortum (2002) that integrates realistic geographical features into the overall balance. It offers a bilateral trade gravity equation with parameters relating to absolute advantage, comparative advantage (trade promotion) and geographical barriers (resisting trade). This model is used to examine topics such as trade gains, the role of trade in disseminating the advantages of emerging technology, and the effects of reductions in tariffs.</p>	<p>In the previous theoretical analysis of the gravity model, it is generally believed that enterprises are homogeneous and countries either choose to trade or remain closed. Once a nation trades, country exports to every country in the world. This makes it challenging to explain some common trade phenomena -- such as the fact that only a few firms trade and zero trade volumes. The heterogeneous enterprise theory represented by Melitz (2008) emphasizes the influence of heterogeneous enterprise productivity on export decision-making. The gravity model based on the heterogeneous</p>

	enterprise theory has become an essential branch of gravity model theoretical research because it can better explain the number of export enterprises and zero trade volume.
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Transnational patterns of FDI can be well estimated by "gravity" relations (Ekholm 1998; Shatz, 2003). This ties the bilateral FDI to each country's income, distance between nations, and other potential considerations between home country and host country. Therefore, FDI between neighboring countries often follow the regional pattern (Navaretti & Venables,2004). Examples of these forms of investments are numerous: foreign direct investment within the European Union, investment in Mexico and Canada by the United States, investment in Central and Eastern Europe by the European Union, and investment in other Asian countries by Japan. Although gravity relations provide a useful benchmark, almost all space economic interactions (such as trade flows, telecommunications, cross-border equity and technology transfer) have very similar relationships (Navaretti & Venables,2004). Shatz (2003) and Ekholm (1998) used separate data sets and found that about 60% of cross-country differences in affiliate behavior could be explained by the gravity structure.

There are relatively few micro-theoretical foundations of gravity equation applied to FDI. The theoretical foundations for FDI was given by Bergstrand and Egger (2007) and Head and Ries (2008). These papers, in theory, include general hypotheses for FDI. Head and Ries(2008) suggest a cross-border M&A model in which a parent corporation has the benefit of random allocation in managing the host company, but faces a monitoring technology drawback that, with the rise in geographical distance, becomes more serious. For a gravity equation for FDI, their model gives a range of micro-foundations. In the information capital model, Bergstrand and Egger(2007) added moving foreign capital and found that the "corrected" gravity model suited the data better. In a manner consistent with estimating exchange gravity equations, they also propose a formal N-country statistical rationale for estimating gravity equations of FDI flows. The Bergstrand-Egger model, analogous to Head and Ries, stresses the value of relative distance.

Helpman et al. (2004) proposed the relationship between FDI and trade, Camarero and Tamarit et al. (2004) and Camarero et al. (2018) also proposed the relationship between FDI and trade from an empirical perspective. According their studies, many FDI drivers can be linked to trade drivers. The relationship between the two indicates that the microscopic basis of trade gravity equation is also applicable to investment gravity equation on a specific basis.

2.2.4 The methodology of application of the Gravity Model

When selecting data for empirical research, an effective way is to choose panel data. Past literature has shown that the use of cross-sectional data to estimate gravity models may produce biased results because of heterogeneity between countries, which is often not properly controlled (Cheng and Wall, 2005; Zheng and Cai, 2008). The use of panel

data can effectively alleviate this problem. Joakim and Fredrik (2009) proposed that the gravity model should be estimated through panel data, and the use of panel data could alleviate the deviation caused by the failure to control the heterogeneity of countries fully. Besides, the author mentions a prevalent method, which firstly linearizes the model by taking the logarithm, and then applies the traditional fixed effect least squares estimator. From past literature, the advantages of using panel data are outstanding. First of all, panel data contains a larger sample size than cross-sectional or time-series studies, and the increased sample size can improve the accuracy of estimates. Secondly, endogeneity problems caused by unobservable individual heterogeneity can be addressed. Thirdly, it is helpful to avoid problems such as missing variables bias and heterogeneity in the cross-sectional survey. (Sotirios & Turan,2011)

According to most of the current literature, the use of fixed effects to estimate gravity equations does not require strong structural assumptions about the basic model (Head & Mayer,2013). For the gravity model, fixed effects estimation has been shown as an essential method for empirical analysis of international trade. Dealing with the problem of endogeneity is necessary when using the gravity model. However, in their paper on the gravity equation, Head and Mayer(2013) note that when using the gravity equation, there are endogeneity problems caused by policy variables. Cross-sectional data or pooled panel estimates can cause relatively low stability results even if the country or country-year fixed effects are used. One solution, they suggest, is to find the right instrumental variables. But in the absence of a credible instrumental variable, the country-pair fixed effect can be used. Therefore, it is necessary to use a fixed effect and country-pair fixed effect in the gravity model to study the influencing factors of FDI. PPML method is also recommended in the gravity model. In the study of Santos and Tenreyro (2006), Poisson Pseudo Maximum Likelihood estimator can be used to estimate the gravity model using exporters and importers dummies based on cross-sectional data and can get relatively stable and reliable results. Silva and Tenreyro (2006)'s regression of bilateral export flows (136*135 country pairs) shows that the OLS formula for estimating gravity model with heteroscedasticity can exaggerate the influence of GDP, distance and trade agreement. However, the PPML formula can make elasticity of several variables significantly less than that of OLS and can provide unbiased estimates (Head and Mayer, 2013). Soren et al. (2013) reviewed the recent literature in their study, showing that Poisson's Pseudo maximum likelihood (PPML) is a reliable estimating method available. Other estimates are often biased due to model misdescription and size dependence (Prehn and Brummer, 2011). Studies by Fernandez-Val and Weidner (2017) show that for two-dimensional panels with a large number of objects and long asymptotic time, PPML estimator can consistently estimate slope parameters without asymptotic deviation. Besides being consistent under heteroscedasticity, this method also provides a natural approach to deal with zero value of the dependent variable. Therefore, PPML will also be used as the estimation method of gravity equation in this paper, and the results obtained by other ways will be compared.

In the article by Chang et al. (2011), they employ a country-fixed, country-pair random and year-fixed effects model in the gravity equation simultaneously, which can be a

useful way to make a prediction. Summing up the previous literature, one effective way used in this paper is to use multiple methods to estimate the results of the gravity model and then compare the results of them. This paper would use OLS, PPML, fixed-effects, respectively, to test the results of the gravity model.

2.3 The Investment Potential Index

According to the host country's market size, resource endowment, labour cost, infrastructure, scientific and technological development level, political environment quality and the specific situation of the host country, the corresponding gravity model can be used to calculate the reasonable investment scale between the two countries theoretically. With the existing investment scale, the present writer would recommend that this work can make a comparison by using the ratio and then analyze the investment potential of the host country. In previous studies, many people estimated the potential trade efficiency by the estimated value of the gravity model compared with the actual value. Nelson (2000) and Egger (2002) calculated the theoretical value by using the gravity model and compared the theoretical value with the actual value to analyze trade efficiency. Based on the research of Nelson and Egger, Martinez (2003) adopted an extended gravity model to examine the potential of Merco-SUR trade with the EU. It was found that the ratio between the theoretical and actual value was greater than 1, and there was good potential trade between the two sides. Both trade and investment are essential means of foreign economic exchanges. Wu (2007) obtained the potential index of China's OFDI by comparing the actual value of a country's direct investment in China with the simulated value calculated by the gravity model. An index greater than one would be defined as the "excessive" investment, while less than one as "underinvestment". Yan and Zhang(2008) used the historical data of investment activities to estimate the corresponding econometric model. Based on the host country's market scale, resource endowment, labour cost, infrastructure, science and technology development level, the political environment quality as well as the specific circumstances of the motives of the host country's domestic, they calculated theoretically reasonable investment scale between the two countries. Then they compared the existing investment scale to calculate the ratio between them to further analyzed the investment potential of the host country. In this paper, this work will calculate the estimated value of China's OFDI by establishing an extended gravity model and put the historical investment data of various countries into the corresponding gravity equation. Then the ratio of the estimated value to the actual investment amount would be calculated, and the index of the investment potential index (FDIPPI) can be used to judge the investment potential of the host country through the investment potential index, providing a reference for Chinese future investment.

2.4 The Global Competitiveness Index

Competition is an essential condition for economic globalization and the development of One Belt and One Road policies. Past economic literature (Snieska, 2008; Snieska, Bruneckiene, 2009) pointed out some competitiveness indexes that measure the competitiveness level of a country. The World Economic Forum has separately calculated several indices measuring competitiveness from different angles. The definition of the competitiveness of a nation has not had a simple and direct sense until now. Different economists stress various facets of the term and use several different approaches to measure the productivity of a region (Stanovnik & Kovacic, 2000). The metric used in this article is the World Economic Forum's Global Competitiveness Index, which is one of the most famous indicators for measuring competitiveness. The World Economic Forum (2015) identifies a country's competitiveness as "a set of institutions, policies and factors that determine a country's level of productivity" and argues that productivity "is the main long-term engine of growth, living standards and prosperity". This description implies that the higher the productivity ranking, the more efficient the economy of a nation would be, leading to economic growth that is higher and more sustainable. Moreover, economic development contributes to higher quality of living and the well-being of the people of the country. According to this definition, Vaiva Petrylė (2016) studies the Global Competitiveness Index based on the hypothesis: if a country's competitiveness ranking is higher, then the country's ability to cope with an economic crisis should be more efficient than the countries with relatively low competitive level. In other words, higher and more sustainable economic growth rates should be available to more competitive countries than to less competitive countries. In Vaiva's study, he made the hypothesis test and got the result that global competitiveness index shows whether the country can effectively avoid the sharp fluctuations in GDP growth, and maintain sustainable economic growth during the whole.

In the study of Oana-Cristina and Adrian (2015), economic competitiveness is included in the location determinants of FDI. They found that some of the variables that describe the Global Competitiveness Index had significant relationships with FDI. They analyzed a sample of 10 Central and Eastern European countries, and their findings are consistent with economic theory, which suggests that competitiveness - greater labour efficiency or higher levels of production - boosts economic growth. In addition, improvements in competitiveness are often found to be attractive to foreign investors in the FDI theoretical literature. And they also found that half of the ten analyzed countries could see the essential quality in FDI/capita if only making institutions more competitive.

According to the past literature, the Global Competitiveness Index not only can reflect the level of sustainable economic growth but also can be a factor attractive to FDI inflow. By comparing the investment potential index and global competitiveness index, this paper would analyze whether One Belt and One Road countries with higher investment potential level also have higher competitiveness index and study whether there are differences between countries group identified by two indexes.

Chapter 3 Description of China's investment to OBOR countries

3.1 Distribution Status of China's FDI

After joining the World Trade Organization since 2001, China's enterprises have participated in the world economy more actively than before, which lead to the increase of total amount and flow of outbound investment. In recent years, the world pattern is developing from the hegemony of the United States to multi-polarization, which became one of the driving forces of regional development across the globe. The OBOR strategy conforms to the trend of international economic growth and regional development, which brings new investment prospects and development space for Chinese cooperation with local countries along OBOR.

OBOR project has also become an essential carrier of China's outbound investment. In May 2017, the first OBOR Forum for International Cooperation was successfully held in Beijing. The Initiative for Promoting Unimpeded Trade of the OBOR (2017) stated that all participants would strengthen investment cooperation, explore innovative models of investment cooperation, and promote more high-quality and efficient investment. In this part, this work would focus on Chinese FDI outflow to other countries using the data from the Statistical Bulletin of China's OFDI from 2004 to 2017. This part would also analyze the total amount of China's FDI in the OBOR countries and summarize the characteristics of China's FDI to fully grasp China's investment status along the OBOR.

3.1.1 Scale of investment for OBOR countries

Throughout the last decade, China's FDI to OBOR countries has experienced faster growth than the overall growth rate of China's investment in the whole world. The average growth rate year on year of Chinese FDI in the whole world from 2004 to 2017 is 33.9% while the average growth rate year on year of Chinese FDI in the OBOR countries is 38.4%.

In 2017, Chinese domestic investors invested directly in nearly 3,000 overseas enterprises in OBOR countries (Statistical Bulletin of China's FDI, 2017). The flow of China's direct investment in 65 countries along the OBOR increased from \$451.98 million in 2004 to \$21280.92 million in 2017, accounting for a corresponding increase in the share of China's OFDI from 8.2 per cent in 2004 to 13.4 per cent in 2017. The stock of direct investment of China rose sharply from \$2657.13 million in 2004 to \$164185.12 million in 2017, accounting for a corresponding increase in the stock share of China's FDI from 5.9% in 2004 to 9.1% in 2017.

Although China's OFDI to countries along the OBOR is enormous, relative to the total outbound investment, China's investment to countries along the OBOR takes up about 10%. According to the report of the Chinese National Information Center (2017), by the end of 2016, the GDP of 64 countries along OBOR had a total of about 12 trillion dollars, accounting for 16.0% of the global GDP, China's investment in the OBOR

countries is relatively low if the economic size is considered. China invests more on some western developed countries, and the countries who are rich in resources and may not belong to OBOR countries. However, China's investment in the countries along the OBOR has broad space for development and is expected to grow rapidly.

*The increase rate of China's FDI in OBOR countries and the whole world
(Data based on Statistical Bulletin of China's FDI)*

The average rate of growth of FDI to world is 33.89%

The average rate of growth of FDI to OBOR is 38.42%

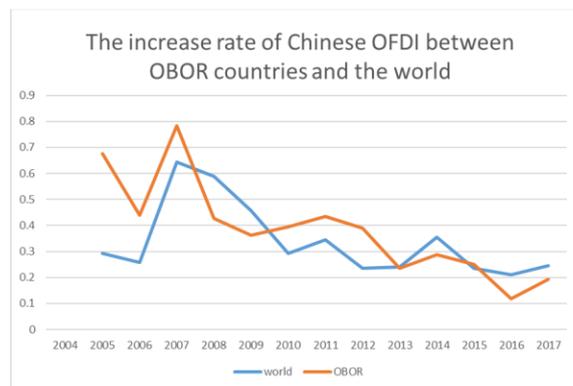


Table 1

*The scale and proportion of China's FDI in OBOR countries
(Data based on Statistical Bulletin of China's FDI)*

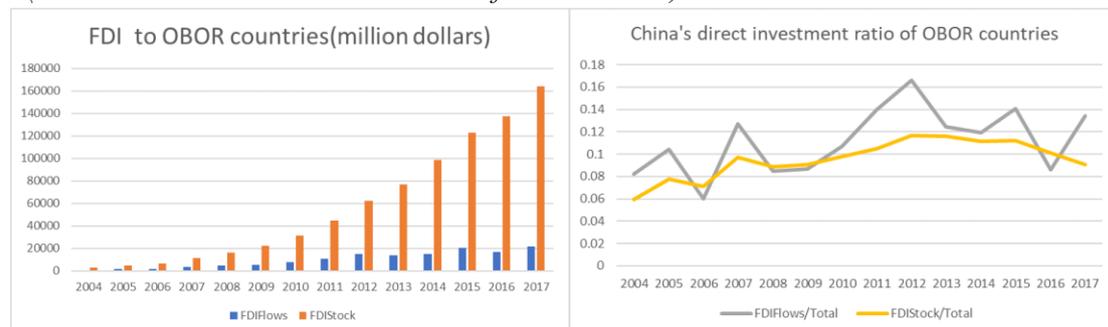


Table 2

3.1.2 Regional distribution of investment for OBOR countries

The regional distribution of China's direct investment in OBOR countries is uneven. Southeast Asia is the region where China invests the most in OBOR countries. China signed a free trade agreement with ASEAN and kept close trade exchanges and sound economic and trade cooperation with Southeast Asia. In Southeast Asia, labour costs are low, and resources and energy are plentiful. Still, infrastructure is relatively weak, some sectors such as power generation, mining and manufacturing are demanded. From 2003 to 2017, China's direct investment flow in Southeast Asia totaled \$77567.57 million, accounting for 57.24% of China's investment in OBOR countries.

In recent years, China's FDI mainly flows to ASEAN countries of Southeast Asia. As the OBOR relationship deepened, China and ASEAN cooperation space can become

more expansive. At present, the two sides have signed "Master Plan on ASEAN Connectivity 2025" and "OBOR" initiative, which can deepen the economic cooperation for Association of Southeast Asian Nations (ASEAN) and China. The two sides have been working together on trade and investment to create more economic opportunities for prosperity, also deepen international cooperation on various production sectors.

Compared to the investment in Southeast Asia, China's FDI to Central and Eastern Europe is relatively low. China needs more research to delve deeper into EU trade laws, bidding procedures and national regulations, which are often overlooked in Chinese investment at present. Since Chinese investors tend to hire their workers and are better off relying on their resources, the direct spillover impacts on the local economies of these projects are likely to be limited. (Stephan & Alice, 2017). For China and Europe, it is now possible to redefine their relationship and pull closer together. The EU is the largest trading partner of China, while China is the second largest trading partner of the EU after the US according to the report of China International Contractors Association (2020). With European investors still facing major obstacles in the Chinese economy, trade liberalization negotiations are accelerating between China and the EU. Chinese direct investment in Europe will also play an important role after the conditions for European investors to invest in China have been improved. (Stephan and Alice, 2017).

*The comparison of China's direct investment in different areas
(Data based on Statistical Bulletin of China's FDI)*

The data are calculated to the sum value from 2003 to 2017

FDIF-Foreign Direct Investment Flow

FDIS-Foreign Direct Investment Stock

TOTAL-Total Foreign Direct Investment Flow/Stock to all OBOR countries

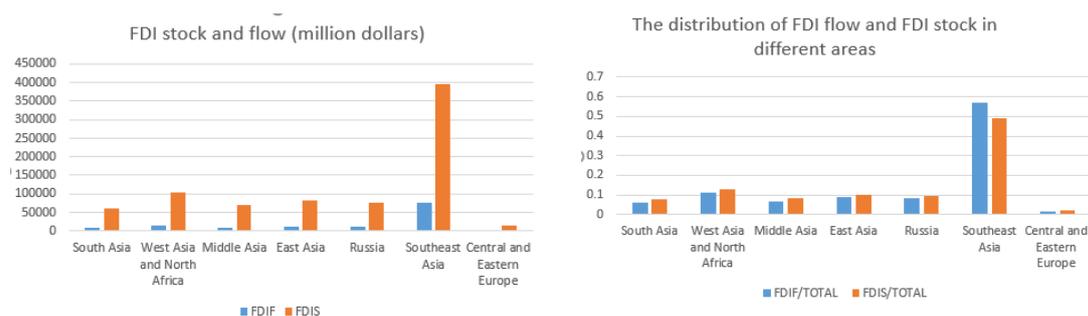


Table3

China and Singapore are significant economic and trade partners. In recent years, collaboration has further deepened with more bilateral economic and trade cooperation. Chinese investors have seen Singapore as a crucial overseas investment destination, and the rapid growth of mergers and acquisitions in Singapore in 2017 has made Singapore the top FDI destination in 2017, with transport, technology, telecoms and life science industries most favoured by Chinese investors. At present, Singapore enterprises and Chinese enterprises are actively working together to expand projects

and explore investment opportunities. The investment fields along the way include energy development and transportation, infrastructure building, logistics, property development and others.

The reasons why Singapore has been the critical economic and trade partner are as follows: First, Singapore's political society is very stable, the business environment is excellent, and the establishment of companies is straightforward and transparent. Second, Singapore's infrastructure is complete, the container terminal is very efficient, and there are well-known airports and ports. Third, Singapore also has signed the treaty of cooperation with China. Many free trade agreements, investment protection agreements, and many agreements have also been signed to protect the interests of investors adequately. Fourth, Singapore is also an important regional financial centre, with more than 500 financial institutions providing comprehensive financial products. Complete business services are also very convenient for financing in Singapore. Fifth, Singapore and China have similar cultures. Many people there can speak as well as write Chinese and have little barriers to communication.

The geographical distribution of China's FDI to Southeast Asia countries along the "OBOR"

(Data based on Statistical Bulletin of China's FDI)

The data are calculated to the sum value from 2003 to 2017

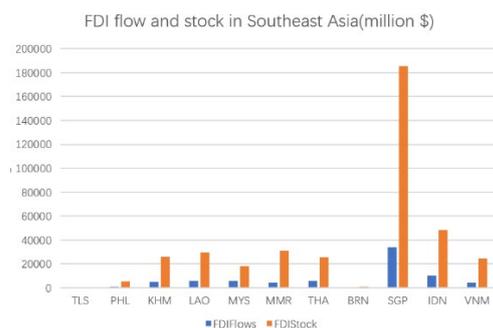


Table 4

3.1.3 The industry structure of large-scale projects

The industrial structure of China's investment in large-scale projects along OBOR has developed from a single energy industry at the beginning to a diversified structure focusing on different fields, such as transportation, technology and so on. As Statistical Bulletin of China's OFDI (2017) showed, In 2017, Chinese investors made direct investments in almost 3,000 overseas firms in 57 countries alongside the OBOR., covering 17 sectors of the national economy. Investments by China in OBOR countries and regions have been highly diversified and investment stocks have been spread across a range of industries, including manufacturing, leasing and business services, wholesale and retail, mining, heat and power generation, construction, agriculture, forestry, livestock and fisheries.

For example, Chinese companies invest in the Association of Southeast Asian Nations

(ASEAN) mainly in five industrial sectors, including leasing and business services, manufacturing, warehousing and retail, mining and the production and supply of electricity, heat, gas and water.

Industrial structure unit of Distribution of China's stock of direct investment in ASEAN at the end of 2017

(Data from Statistical bulletin of China's outbound direct investment in 2017)

Sector	Amount	Investee
Leasing and business services	17.483 billion US dollars	Singapore (15.637 billion US dollars, accounting for nearly 90%)
Manufacturing industry	15.569 billion US dollars	Indonesia (the US \$3.79 billion), Thailand (the US \$2.774 billion), Vietnam (the US \$2.714 billion), Malaysia (the US \$1.827 billion) and Singapore (the US \$1.75 billion).
Wholesale and retail trade	11.877 billion US dollars	Singapore, Indonesia, Thailand, Vietnam, Malaysia, etc.
Mining industry	10.32 billion US dollars	Singapore, Indonesia, Myanmar, Laos, Vietnam, Thailand, etc.
Production and supply of electricity/heat/gas and water	\$9.619 billion US dollars	Myanmar, Singapore, Laos, Indonesia and Cambodia

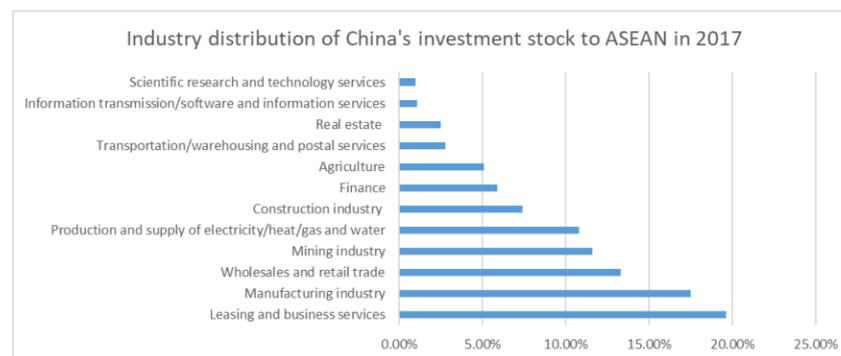


Table 5

3.1.4 The scale of engineering construction

China's engineering construction in the OBOR countries includes new contracts and turnover. The new contract amount is “the amount of the legal and effective foreign contracting project that the Chinese enterprise has signed with other countries in the reporting period”. The completed turnover is “the amount of work that the Chinese

enterprise has completed in the form of money in the reported period”. China's labour export capacity in the OBOR initiative is growing. The project contract amount and the number of cross-border mergers and acquisitions from China to the countries along the OBOR have increased significantly, and the countries along the OBOR have become important markets for China's infrastructure, equipment, technology, services and brands. According to the public data in the website of “Ministry of Commerce of the People’s Republic of China”, in 2013, the new contract amount of the OBOR country was \$71.94 billion, accounting for 49.10% of the new contract amount signed with the whole world, and the total completed turnover was \$64.05 billion of the same period, which accounted for 46.7% in the world. In 2018, the new contract amount of foreign contracting projects in the OBOR country is increasing, which was \$125.78 billion, and accounted for 52% of the new contract amount in China's international contract project. The completed turnover was \$89.33 billion, up to 52.8% of the total value. As a result, China has a large proportion of the investment in the contracting engineering business of the OBOR country and presents a stable growth.

The scale of China’s engineering construction project investment (Data based on China international contractor’s association)

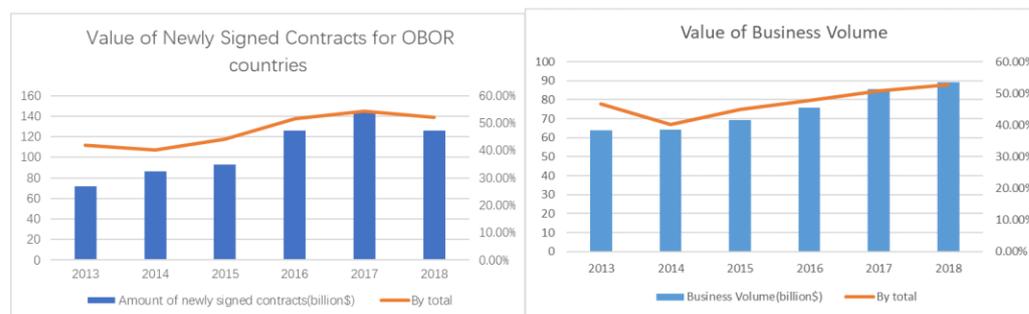


Table 6

3.2 The characteristics of China's direct investment in OBOR countries

Based on the data of China's investment in OBOR countries, this paper analyzes the total amount, sub-region and industrial status of China's investment, and find that China's current investment shows the following characteristics.

(1) The total amount of investment is considerable, but the proportion is relatively low. The "One Belt and One Road" covers a wide range of countries, mainly in Asia and Central and Eastern Europe, including more than 60 countries until 2017, with substantial economic potential and more economic chances for China and host countries. In recent years, the total amount of investment volume to OBOR countries increased, with the stock size rising from \$2657.13 million in 2004 to \$164185.10 million in 2017. On the other hand, the average growth rate year on year of FDI in OBOR countries is large than the average growth rate of Chinese foreign direct investment in all over the world. On the whole, China's investment in relevant OBOR countries shows a strong momentum of development. However, the proportion of direct investment in OBOR

countries is still low at around 10%, which is relatively low compared to the economic status of OBOR countries, and China's investment in countries along the OBOR still needs to be strengthened.

(2) Extensive regional coverage but unbalanced investment region distribution

By using regional analysis, it can be shown that China's investment in the OBOR countries focuses on Southeast Asia (ASEAN) as well as the neighbouring country of China. For OBOR countries in West Asia, North Africa, Central and Eastern Europe, which have a relatively far distance, the FDI stock and FDI flow are relatively low, and there is less investment cooperation. However, in recent years, China's investment with the countries in all OBOR countries has been on the rise, promoting countries concerned to achieve more economic development and cooperation.

(3) Relatively single investment field and low level of industrial cooperation

By the analysis of the main industry distribution for China's investment to OBOR countries, it shows that China's investment in the countries along OBOR is given priority to resource seeking by the means of manufacturing industries as well as mining industry. For example, more investment is given to the areas which include access to the local natural resources, such as oil, natural gas, coal, metal and cheap labour resources. At the same time, infrastructure including production and supply of electricity/heat/gas and water is also a concern for Chinese enterprises. More investments focused on transportation projects and actively participate in highway, railway construction investment. On the other hand, investment fields are continually expanding on manufacturing, agriculture, finance, real estate industry, high-tech industry, chemical industry and other areas, and the development is still relatively slow. To some extent, China's foreign investment is characterized by simplification and low-end industries. With the deepening of investment, domestic enterprises constantly enter a higher level of the production stage, combine their product characteristics and the advantages of the host country, and continue to expand the investment field.

(4) The scale of engineering construction project grows rapidly

China has a large proportion of the investment in the engineering construction of the OBOR country and presents a stable growth. The One Belt and One Road initiative help integrate existing projects and expand new ones. Both new contracts and turnover of engineering construction project have a significant increase from 2013 to 2018. More engineering construction of the OBOR country can bring developing transport and communications infrastructure, which can help China achieve economic goals as well as promote more considerable trade and financial integration, policy coordination, and stronger cultural ties with OBOR countries.

Chapter 4 Factors influencing China's FDI in the OBOR countries

In chapter 4, based on the existing literature and the characteristics of Chinese investment to OBOR countries, this paper would select the main factors that affect the decision of FDI. Based on the theoretical analysis, the following would make inferential assumptions on each factor influencing direct investment and compare with the results

of subsequent empirical research. The paper would select Chinese foreign direct investment stock to OBOR countries as the dependent variable, determine the host country's GDP per capita, exports to the host countries and other variables as explanatory variables. This part would use the gravity model and empirical data for empirical analysis to find the influence factors of the whole, understand on the different investment motivation, and fully grasp the investment situation of the country along OBOR.

4.1 Factors and assumptions

In the research on the influencing factors of direct investment, scholars mainly choose the elements from the perspective of the home country and the host country. However, due to the different sample countries, data, variables and research methods, the conclusions are not consistent. This paper study factors impacting investment, choose economic strength of home countries, host country market scale, the host country resources endowment, labour costs, technology level, China's exports to the host country, host country's political environment of science and host country infrastructure level and other variables, to analyze the influencing factors of direct investment. According to the relevant literature research and the specific situation of OBOR countries, the following qualitative analysis and assumptions are made as to the following table.

Hypothesis	Variable	Correlation with Chinese OFDI
1	Economic development level of the and the market size of the host country as well as China	Positive
2	Investment cost including labour costs, tax cost caused by different level of tax rate, transportation cost and currency cost caused by exchange rate volatility in the host country	Negative
3	Resource endowment, infrastructure level and technology level of the host country	Positive
4	China's export level to the host country	Positive
5	Political environment quality of the host country.	Positive
6	Language	Positive if Host country speak English

Based on the availability of data and the purpose of this article, this work would select the empirical data of 54 countries as well as 13 variables as research samples, and a total of 702 observations were collected (The country list is shown in table 2.1 in the

appendix).

4.2 Model specification

This paper constructs a gravity model to measure the OBOR countries' determinants of FDI and assess the effect of various variables on the stock of inward FDI. The gravity model has been an admired method for evaluating the meaning of the appealing variables for FDI, according to the Buch, Okta and Piazzolo's (2003) report. The gravity model can be an analytical structure to understand FDI and to define its common determinants between countries (Bevan & Estrin, 2004).

Egger and Pfaffermayr (2003) took a three-stage modelling approach for examining trade effects with the use of a gravity model. This method is also adopted in this paper to establish the following model:

$$FDI_{ijt} = \alpha + \beta X_{ijt} + \gamma X_{ij} + \delta_t + \theta_j + \varepsilon_{ijt}$$

FDI_{ijt} is China's direct investment in country j in year t . X_{ijt} include the variables to affect China's direct investment in host countries changing with time while X_{ij} is the variable that affects China's investment in the host country and does not change over time; δ_t is the fixed effect of control time; θ_j is the fixed effect between control countries.

	The name of the variable	Description
X_{ijt} the variables changing with time	China's GDP(CGDP)	To show the economic development of China
	Per Capita GNI of host country (PGNI)	To be a proxy as the wage level of host countries
	Host country's GDP (HGDP)	To show the market size as well as economic development of host countries
	Export from China to host country (EXP)	To show the trade exchange between China and host countries
	Host country's level of tax (TAX)	Total tax and contribution rate (% of profit)
	Host country exchange rate fluctuations (EX)	Percent change of Official exchange rate
	Infrastructure construction level of host country (QPI)	Port Infrastructure Quality of host countries (1 means very underdeveloped, 7 means very developed and efficient)
	Transportation costs between host country and China (TRAN)	Distance between China and the host countries*oil price at reported year
	The natural resources of the local countries (TNR)	Total natural resources rents (% of GDP)
	Proportion of technology export	Medium and high-tech exports (%)

	(TEC)	manufactured exports)
	The Political Stability and Absence of Violence of host country (PV)	The degree to which local residents take part in practices such as government selection, freedom of speech, freedom of association and freedom of the press
	The Voice and Accountability of host country (VA)	To represent the risk of political instability, terrorist attacks or military struggle in the host country and politically driven crime
X_{ij} the variable not changes over time	Whether the Investment in both sides has a common language/English-speaking (LAN)	1 means the official language of host country is English or Chinese ,0 means other languages

In terms of estimation methods, this paper adopts the approach of Poisson's Pseudo-Maximum Likelihood estimation (PPML) proposed and developed by Santos and Tenreyro (2006) as well as Westerlund and Wilhelmsson (2011) to estimate the model. Santos and Tenreyro (2006) found that the PPML estimator should be used as a substitute for the standard log-linear model when there is evidence of heteroskedasticity. Besides, some countries may have zero values of the explained variables, so it is impossible to make linearization of the explained variables logarithmically. According to Silva and Tenreyro (2009), even if the explained variable has zero value and the model random disturbance term has heteroskedasticity, PPML can still obtain a consistent estimator. Because of this advantage of PPML method, PPML method has been widely used in the study of international trade flow. This method is used for analysis in this paper. The specific gravity model based on the traditional specification used in this kind of literature (Chang, 2014) is set as:

$$\begin{aligned}
 FDI_{ijt} = & \alpha + \beta_1 \ln EXP_{jt} + \beta_2 \ln PGNI_{jt} + \beta_3 \ln HGDP_{jt} + \beta_4 \ln CGDP_{it} + \beta_5 TNR_{jt} \\
 & + \beta_6 EX_{jt} + \beta_7 QPI_{jt} + \beta_8 TAX_{jt} + \beta_9 \ln TRAN_{jt} + \beta_{10} PV_{jt} \\
 & + \beta_{11} VA_{jt} + \beta_{12} TEC_{jt} + \gamma_1 LAN_{ij} + \delta_{ij} + \varepsilon_{ijt}
 \end{aligned}$$

On the other hand, according to most of the current literature, the use of fixed effects to estimate gravity equations is widespread because it does not require strong structural assumptions about the basic model (Keith & Thierry, 2013). Controlling the fixed effect between countries can not only eliminate the influence of factors that are related to the trade flow of bilateral countries and do not change with time but also eliminate the impact of possible missing variables on the results (Sun and Ni, 2013). For the gravity model, fixed effects estimation has also been shown as an essential method for empirical analysis of international trade. After comparing the applicability of the fixed-effect model and the random effect model, the Hausman test results show that the fixed effect model should be adopted (as shown in Appendix Table 4.1). Therefore, the panel

fixed effect model is adopted. This method is also used for analysis in this paper. The specific gravity model is set as:

$$\begin{aligned} \ln FDI_{ijt} = & \alpha + \beta_1 \ln EXP_{jt} + \beta_2 \ln PGNI_{jt} + \beta_3 \ln HGDP_{jt} + \beta_4 \ln CGDP_{it} + \beta_5 \ln TNR_{jt} \\ & + \beta_6 EX_{jt} + \beta_7 QPI_{jt} + \beta_8 TAX_{jt} + \beta_9 \ln TRAN_{jt} + \beta_{10} PV_{jt} + \beta_{11} VA_{jt} \\ & + \beta_{12} TEC_{jt} + \gamma_1 LAN_{ij} + \delta_{ij} + \varepsilon_{ijt} \end{aligned}$$

4.3 Model estimation and testing

4.3.1 The summary of variables and the correlation between variables

The summary of variables

(Data based on the World Bank Database)

Variable	Obs	Mean	Std. Dev.	Min	Max
lnFDI	702	9.330274	2.646263	2.302585	15.30994
lnEXP	702	12.53705	1.858872	7.579168	16.53431
lnPGNI	689	9.476401	1.027903	6.886811	11.73045
lnHGDP	702	15.66328	.5992826	8.733778	16.30872
lnCGDP	702	15.6717	.5404176	14.64406	16.30872
lnTRAN	702	12.8132	.5792721	10.68111	13.82107
TNR	702	10.75514	14.93141	0	65.34953
TEC	702	34.27364	23.70394	0	87.22852
EX	700	.0419538	.7801545	-10.73834	13.63894
QPI	702	3.512303	1.652305	0	6.830574
TAX	702	37.30085	17.64481	7.4	137.2
VA	702	-.47195	.8762578	-2.233271	1.175189
PV	702	-.3748965	1.047938	-2.974081	1.615338
LAN	702	.3703704	.4832482	0	1

Table 7

First, to eliminate the effect of missed values and extreme values on the model calculation, the missing values and outliers in the original data need to be processed. After processing, this work obtained a balanced panel of data for 54 countries from 2005 to 2017. Table 7 reports descriptive statistics for the significant variables of the model, including number of observations, mean value, standard deviation, minimum value, median value and maximum value. It can be seen from Table 7 that most variables have a relatively small range from Mean value to Min/Max value. The Total natural resources rent, Total tax and contribution rate and Proportion of technology export all have a big range from Min value to Max value.

Total natural resources rent has a mean value of 10.76 while the fluctuation is from 0 to 65.35. According to the World Bank Database, “The sum of oil rentals, natural gas rents, coal rents (hard and soft), mineral rents, and land rents are the overall rents of natural resources.” Some countries have abundant resources and are mainly in Western Asia such as Turkey, Kuwait, Iraq and so on. In contrast, some countries have scarce resources such as the Republic of Kazakhstan, Slovakia, Lebanon and so on.

Total tax level has a mean value of 37.30 while the fluctuation is from 0 to 137.2. According to the World Bank Database, “The Total Tax Rate measures the amount of the taxes and fees payable to the corporation since the permitted deductions and expenses have been paid for in the form of a portion of the business profits.” Some countries such as Belarus, Sri Lanka, Uzbekistan, Tajikistan have a very high rate while

some countries have very low rates, such as Macedonia, Bahrain, Kuwait and so on. The Proportion of technology export has a mean value of 34.27 while the fluctuation is from 0 to 87.23. For Proportion of technology export, it means “The proportion of medium and high-tech manufactured exports to overall exports of manufactured goods” according to the explanation of World Bank Database, which measures the technical level of the host country. Some countries such as Afghanistan, Myanmar and Uzbekistan have a relatively low level of Proportion of technology export. In contrast, some countries such as the Philippines, Hungary and the Czech Republic have a relatively high level.

*The correlation between variables
(Data based on the World Bank Database)*

	lnFDI	lnEXP	lnPGNI	lnHGDP	lnCGDP	lnTRAN	TNR	
lnFDI	1.0000							
lnEXP	0.7235	1.0000						
lnPGNI	0.0346	0.2460	1.0000					
lnHGDP	0.4359	0.2796	0.1818	1.0000				
lnCGDP	0.4508	0.2765	0.1619	0.9285	1.0000			
lnTRAN	-0.3525	-0.2330	0.2104	0.0524	0.0465	1.0000		
TNR	0.0309	0.0139	0.0451	-0.1108	-0.1337	0.1486	1.0000	
TEC	0.0860	0.3500	0.4239	0.0847	0.0712	-0.0465	-0.0834	
EX	0.0215	0.0186	0.0160	0.0735	0.0814	0.0437	-0.0390	
QPI	0.0787	0.4219	0.6314	0.1004	0.0782	0.0663	-0.1480	
TAX	-0.0588	0.0334	-0.3639	-0.1603	-0.1791	-0.0049	0.0018	
VA	-0.1459	0.1517	0.2557	-0.0021	-0.0140	0.0429	-0.1512	
PV	-0.0017	0.0709	0.6165	0.0118	-0.0122	-0.0382	-0.1203	
LAN	0.1515	0.3226	0.3483	0.0108	0.0000	0.0748	0.0065	
		TEC	EX	QPI	TAX	VA	PV	LAN
TEC		1.0000						
EX		0.0134	1.0000					
QPI		0.4040	0.0093	1.0000				
TAX		0.0842	-0.0011	-0.3958	1.0000			
VA		0.5314	0.0022	0.3474	-0.0189	1.0000		
PV		0.4297	-0.0017	0.4082	-0.1310	0.4086	1.0000	
LAN		0.0273	-0.0016	0.4126	-0.2861	-0.1816	-0.1090	1.0000

Table 8

This work needs to consider the correlation between the model's key variables before the regression analysis to see whether there is an issue of device multicollinearity in the model. The correlation coefficient matrix of model variables is listed in table 11. According to this table, the correlation coefficient among most variables is relatively low while the correlation coefficient between ln HGDP and ln CGDP variables is 0.93, and the correlation coefficient between ln FDI and ln EXP variables is 0.72, which are relatively high. Therefore, there may exist a collinearity problem and whether the model has a system multicollinearity problem needs to be further tested.

*The Variance Inflation Factor (VIF) of variables
(Data based on the World Bank Database)*

Variable	VIF	1/VIF
lnCGDP	7.55	0.132400
lnHGDP	7.23	0.138251
lnPGNI	3.16	0.316278
QPI	2.69	0.371404
PV	2.32	0.431951
lnEXP	2.04	0.489959
LAN	1.83	0.546549
TAX	1.55	0.645172
VA	1.44	0.692180
lnTRAN	1.41	0.708904
TNR	1.24	0.805699
TEC	1.22	0.820779
EX	1.01	0.991143
Mean VIF	2.67	

Table 9

To accurately judge whether the model has the problem of systemic multicollinearity, this work needs to study the Variance Inflation Factor (VIF) of the model variables. According to table 9, the maximum variance inflation factor of the model variable is 7.55, and the mean-variance inflation factor is 2.67. According to the rule of thumb, if the maximum variance inflation factor of the variable is less than or equal to 10, it indicates that there will be less systemic multicollinearity problem in the model in most instances.

4.3.2 Full sample test of the model

Prat of the testing results of PPML and Fixed Effect using Gravity Model for OBOR countries

(Data based on the World Bank Database)

	PPML b/se/_star	ppml_dummies b/se/_star	PPML_gni b/se/_star	PPML_reg b/se/_star	FE_basic b/se/_star	FE_dummies b/se/_star
lnEXP	.7845171 .0533878 ***	.8924962 .0641255 ***	.7695541 .0540938 ***	.4849241 .0414119 ***	.2557458 .1608597	.2802406 .1661579
lnPGNI	-.3581187 .089598 ***	-.4960731 .0925792 ***	.1557123 .264939	.2774096 .0901824 **	.6113228 .7153997	.6179519 .765897
lnHGDP	.2879947 .0840237 ***	.4084852 .0604308 ***	.4903373 .0643317 ***	.3913489 .0496596 ***	.5180472 .0402049 ***	.5277474 .0424319 ***
lnCGDP	1.695102 .2931936 ***	1.275531 .2380575 ***	1.500736 .2355079 ***	1.536783 .1649407 ***	1.22238 .2539047 ***	2.18692 1.351865
lnTRAN	.0231112 .0951791	.4492099 .1452504 **	-.0428432 .1000423	-.0086278 .090067	-.2668318 .1539496	-.5161058 .523933
TEC	-.0088259 .0038109 *	-.0075354 .0036933 *	-.0098803 .0042914 *	-.020991 .0028783 ***	.0086927 .0085168	.0091059 .0086073
TNR	.0171234 .0038358 ***	.0161295 .0037104 ***	.0190681 .0038398 ***	.0112439 .003718 **	-.0033272 .0177875	-.0040129 .0177308
EX	.1064391 .0819054	.1393271 .0700694 *	.0965333 .0765249	.0070995 .0788963	.0228948 .0227631	.01708 .0236785
QPI	-.1614091 .053632 **	-.2394414 .0621818 ***	-.1251133 .0534685 *	.0438857 .0496987	-.202188 .1043766	-.2193697 .108953 *
TAX	-.0250629 .0070955 ***	-.0331282 .0068977 ***	-.023985 .0060353 ***	-.0213531 .0045935 ***	-.0123083 .0126221	-.0119643 .0126739
VA	-.224752 .0857198 **	-.1586202 .0853985	-.2996071 .0868467 ***	-.1553032 .1133753	.1169079 .2479002	.1059674 .2588041
PV	.6002699 .103324 ***	.6570923 .0949391 ***	.6108465 .0915234 ***	.1236065 .0723658	-.0109702 .1608493	-.0109939 .1667588
LAN	.6834093 .131351 ***	.7068704 .1266312 ***	.6268513 .1235017 ***	.2922016 .1314082 *	0 .	0 .

Table 10

The detail of empirical results is in Appendix table 4.1

In all the tests, the influence of the host country's GDP is significantly positive for foreign direct investment. China's FDI increases when the host country economy rises. Besides, GDP growth also means the market scale becomes more extensive, which can be an attractive factor for China's FDI in local market. The influence of China's GDP on FDI from China is also very significant in all the tests, indicating that with the growth of China's economic strength, the intensity of outbound investment is also increasing. The determinants of FDI from Western countries to Central and Eastern European countries are analyzed in Bevan and Estrin's analysis (2004) using a panel dataset and a random effect. And they also find that the source and host GDP have a major positive effect on the FDI from the source country to the host country.

As for China's exports to the host country, PPML tests show a significant positive correlation between China's FDI to the host countries and China's exports to the host countries, while the result from Fixed Effect tests is not very significant. In order to analyze the relationship between China's OFDI and its imports and exports, Zhang (2005) researched the relationship between foreign exchange and outbound investment. The outcome concluded that exports were one of the reasons why foreign investment had shifted, and that exports still encouraged foreign investment. From the viewpoint of the process of internationalization theory, exports are the starting point, and

investment will rise as the market share of goods rises. Besides, with the expansion of China's foreign trade scale, it is subject to more and more restrictions of tariffs and non-tariff barriers set by foreign governments, so China can increase its outbound investment, thus reducing potential trade protection threats.

As for the transportation costs between China and the host country, a strong correlation between transport costs and FDI from China to host countries is seen by the PPML with time dummy test. Higher transportation cost maybe not conducive to China's export to in the host country. Then Chinese enterprises may consider choosing the FDI as the alternative for single trading. The higher the trade cost is, the more incentive enterprises will have to make OFDI to avoid the trade cost, so there would be a positive relationship between trade cost and OFDI. Other tests show that transportation cost has little influence on China's FDI. Chinese companies would consider less about the transportation cost, and one reason may be that investment often flows into the local industries and need less transportation compared to trading directly. In the literature review, many scholars support the negative relationship between trade costs and FDI. For example, Grosman and Helpman (2004) find that low trade cost may promote FDI, which also depends on the characteristics of an industry.

As for the tax rate in the host countries, it looks significant in the PPML test, but not in Fixed Effect tests. The higher tax rate in the host countries, the lower investment from China. Many studies show that higher taxes discourage FDI. De Mooij and Ederveen (2003) made a more detailed discussion of the literature and found that the median elasticity of FDI tax in 25 studies was -3.3, proving that higher tax rates had an impeding effect on FDI inflow. However, some well-placed literature suggests that such numbers may be somewhat deceptive. The after-tax advantages enjoyed by foreign firms do not rely exclusively on the host country's tax treatment. Many countries provide preferential tax policies to foreign-funded enterprises, but whether foreign investors can directly enjoy such preferred tax benefits depends not only on the tax laws of the host country but also on the tax laws of the investor's home country. Besides, preferential tax policies only play an auxiliary incentive role in attracting foreign investment in the host country (Pan & Huang,2016). What Chinese investors most want to invest in the host country is not only the preferential tax policies of the host country but other favourable conditions such as stable social and political environment, low labour cost and huge domestic market.

As for the Medium and high-tech exports (% manufactured exports), it's interesting that the result shows that it has a significant negative influence on the OFDI under PPML. In contrast, it has a positive but not significant impact on the OFDI under Fixed Effect. The result is contrary to the past study like Jiang (2012) who think the relation is positive. The reason may be the Chinese investment to the Central and East Europe is relatively low, although in many countries there has a high level of technology. Most Chinese investment flow into countries in Southeast Asia where many countries there have a low level of Medium and high-tech exports (% manufactured exports), such as Cambodia, Laos and others.

As for the fluctuation in the exchange rate, PPML tests show that it has a positive impact, indicating that Chinese companies tend to invest the countries with relatively high

exchange rate fluctuations. Other results show a not significant relationship between Chinese FDI and exchange rate fluctuations. Many papers believe in the current analysis that the host country's exchange rate volatility has a detrimental impact on FDI inflows, which is contrary to the test outcome. In the wholesale sector, Campa (1985) uses FDI figures in the US and finds proof that greater uncertainty in the exchange rate increases the incentive for firms to wait before they participate in a sector, which can minimize FDI. The local currency devaluation or undervaluation is conducive to foreign direct investment inflows and not conducive to foreign direct investment. On the other hand, the exchange rate fluctuations include currency appreciation or currency depreciation, which have different influence on foreign direct investment, making the empirical results not significant.

About the Total natural resource's rents, PPML tests show that it can be an attractive factor for China's FDI. This result is consistent with the resource-seeking motivation of China's FDI. If a country has higher total resource rents, it often means that the country has rich resources, which is an attractive factor for China's investment. Song and Xu (2012) took the panel data of China and 51 host countries from 2005 to 2009 as samples to investigate the determinants of location selection of OFDI by Chinese enterprises. The findings suggest that the host country's nature resource endowment has a major positive impact on China's OFDI's position selection.

Regarding the quality of infrastructure, it shows a significantly negative correlation between the quality of infrastructure and China's FDI to the host countries in PPML tests. This conclusion is contrary to previous studies, and one of possible explanations is the policy drive of China's outbound investment. The poor infrastructure of the host country provides more investment opportunities for Chinese infrastructure construction enterprises. The infrastructure conditions are still backward in many OBOR countries, which is a good investment opportunity. If the host country has relatively complete infrastructure, its investment potential for Chinese FDI is relatively small. At the same time, local governments pay great attention to improving infrastructure to attract foreign investment. More and more local governments are making more efforts to attract FDI inflow in infrastructure due to the poor infrastructure in their own countries (Zhao, 2005). This shows that the potential market for infrastructure construction in OBOR countries is also an essential factor for Chinese enterprises to consider when investing in host countries.

The empirical part makes language as a dummy variable. 1 means the official language of the host country is English or Chinese, while 0 means other languages. It is significant in PPML tests, although no country makes Chinese as the first language, if the countries speak English, it's more accessible for foreign entrepreneurs to enter the domestic market and promote investment. Hejazi and Ma (2011) use a gravity model to measure language distance's influence on foreign direct investment flows between OECD countries. The study found that native English speakers in the OECD countries have more advantages in international trade and foreign direct investment activity. In all non-English speaking countries, the smaller the language distance between the native language and English, the investment advantage is more significant (Hejazi, Ma, 2011). As the United States has achieved global superpower status, in international

dialogue, English has been the dominant language in the world. It is also the lingua franca of many sectors and countries (science, navigation, law, etc.). In China, English is also thought as the most important foreign language and the most used in international trade and economic activities.

From the point of Political environment, World Bank defined voice and accountability as “the extent to which citizens of a country can participate in the choice of government, freedom of speech, freedom of association, and a free press.” The PPML estimated result of the system is contrary to the conclusion of the mechanism analysis of other paper, the level of Voice and Accountability reflecting the quality of the democratic system of the host country has a negative impact on China's FDI. One explanation can be that China was providing funding for projects without asking questions on the political system level (e.g., on corruption, on democratic freedom, etc.) which other providers like World Bank would have asked. And China's enterprises often made more FDI to developing countries. According to China's Foreign Direct Investment Statistical Bulletin in 2017, the investment China made in developing countries (mainly in Asia, Africa, Latin America region) accounted for 81% of the total amount of investment to the whole world. Developing countries can be imperfect on the construction of the policy system than developed countries, so the estimated results show that voice and accountability are negatively related to the FDI from China to OBOR countries.

Concerning political stability and the absence of violence/terrorism, World Bank defined political stability and the absence of violence/terrorism as “To represent the risk of political instability, terrorist attacks or military struggle in the host country and politically driven crime” On the one hand, these unstable factors pose a severe threat to the personal safety of Chinese migrant workers. On the other hand, it also directly affects the income of investment and the smooth progress of the investment project. Besides, the outbreak of armed conflict in the host country also severely restricts the development of overseas investment by Chinese enterprises. In 2011 the outbreak of the Libyan armed conflict led to the loss of nearly \$20 billion for Chinese companies and the anti-China riots in Southeast Asia and other countries in recent years also have caused a lot of losses for Chinese enterprises in overseas investment.

About host countries GNI, this paper uses the integer of the log of host countries' GNI Per Capita as dummy variables to differentiate emerging countries and rich countries. In the PPML tests, it showed that the income level of the host country's effect on China's foreign direct investment is negative and significant (The detail of empirical results is in Appendix table 4.1); there are two possible reasons as follows. Local labour wage is the critical cost factor for enterprise to make a foreign investment. Current China's foreign investment is relatively low in technical content and mainly focus on labour-intensive industries. From the incentive to cut costs, with wages rising, the cost of the investment increase and will reduce the investment motivation of Chinese entrepreneurs. On the other hand, since China's overseas investment targets are mostly for developing countries (most of the countries in the One Belt and One Road are developing countries), and the wage level of developing countries is comparatively low compared to that of developed countries, lower-wage countries can attract more Chinese investment.

4.3.3 Sub-sample test of the model

*Part of the testing results of PPML for OECD countries and non-OECD countries
(Data based on the World Bank Database)*

	PPML b/se/_star	PPML_dummies b/se/_star	PPML_OECD b/se/_star	ppml_T_OECD b/se/_star	PPML_nonOECD b/se/_star	ppml_T_non~D b/se/_star
lnEXP	.7845171 .0533878 ***	.8924962 .0641255 ***	1.388959 .4378932 **	1.340828 .3349204 ***	.761575 .0516926 ***	.8779708 .0596926 ***
lnPGNI	-.3581187 .089598 ***	-.4960731 .0925792 ***			-.3481078 .089478 ***	-.4921488 .088297 ***
lnHGDP	.2879947 .0840237 ***	.4084852 .0604308 ***	2.017585 .9899294 *	2.972208 .5130219 ***	.305205 .0812242 ***	.4480319 .0564498 ***
lnCGDP	1.695102 .2931936 ***	1.275531 .2380575 ***			1.693263 .2941709 ***	1.217442 .2311479 ***
lnTRAN	.0231112 .0951791	.4492099 .1452504 **	-1.159671 .540755 *	-1.118472 .636149	.1394032 .1065405	.6917409 .1608385 ***
TEC	-.0088259 .0038109 *	-.0075354 .0036933 *	.1683804 .0345284 ***	.0468902 .0245699	-.0069498 .0038639	-.0041596 .0036581
TNR	.0171234 .0038358 ***	.0161295 .0037104 ***	.957506 .4542396 *	1.71466 .2625912 ***	.0131999 .0038795 ***	.0092142 .0038644 *
EX	.1064391 .0819054	.1393271 .0700694 *	.0637016 .080898	.0896315 .1052509	.1575553 .1587826	.2582443 .1559434
QPI	-.1614091 .053632 **	-.2394414 .0621818 ***	.5514621 .5338735	1.336479 .2855302 ***	-.1870656 .0529903 ***	-.2966643 .0642688 ***
TAX	-.0250629 .0070955 ***	-.0331282 .0068977 ***	-.0396074 .0681625	.2866126 .0590184 ***	-.0254027 .0073915 ***	-.0352833 .0067774 ***
VA	-.224752 .0857198 **	-.1586202 .0853985	1.225125 .9967124	-2.987399 1.029838 **	-.1554805 .0885243	-.0392463 .0881114
PV	.6002699 .103324 ***	.6570923 .0949391 ***	-1.400248 .5466076 *	2.997626 .8784921 ***	.6344144 .1038529 ***	.707192 .0929817 ***
LAN	.6834093 .131351 ***	.7068704 .1266312 ***		12.03542 1.846942 ***	.5965428 .1255889 ***	.579566 .1123773 ***

Table 11

The detail of empirical results is in Appendix table 4.2

For developing countries and developed countries, because of the apparent differences in the level and degree of market development, enterprises have different motivations in carrying out OFDI. In developed countries, the inspiration for enterprises to choose OFDI is relatively concentrated -- most of them are driven by the host country market, technical level, better political environment and others. In developing countries, enterprises choose FDI with various motivations and relatively complex behaviours, which are generally greatly influenced by host countries' domestic factors. In the sample, this paper would use OECD countries as countries with a good economy while non-OECD countries as countries with relatively low economic performance.

From the above chart, the influence of local natural resources has significantly positive influence on FDI from China both in OECD countries and non-OECD countries. The natural resources are often the relative advantage for non-OECD countries in early

development. For example, China's growing economy has created a tension between demand and domestic supply, particularly in terms of oil, gas and natural resources, which the Middle East and North Africa happens to be able to provide. Many Chinese enterprises seek for the resource-rich countries to investment with the propose of developing Resource-intensive industry.

As for China's economic strength, higher GDP of China leads to more increased OFDI to both OECD countries and non-OECD countries. This part omitted the log of GDP of host countries in OECD samples because the economic strength of OECD countries along the OBOR is similar. And the GDP of host countries has a significant impact on the investment from China. China tends to invest the non-OECD countries with good economic strength and a big market size.

Medium and high-tech exports (the proportion of produced exports) have a major positive influence on OECD countries' FDI. By contrast, technology level in non-OECD countries have a negative and non-significant impact on FDI. It shows that higher-technology for OECD countries can draw more FDI from China. One of the reasons for non-OECD countries is that Chinese FDI to developing countries often seek for rich resource, low labor cost and others and consider less about the technology.

The transportation cost has a positive influence on the FDI to non-OECD countries while it has a negative impact on FDI to OECD countries. Maybe the reason is that the OECD countries along the OBOR exist in Europe which is far from China. However, the non-OECD countries in the sample are distributed in different places around China, which lead to little difference in the transportation cost for China's FDI.

The tax rate of host countries also has a negative influence on the non-OECD countries but not OECD countries. The reason may be that OECD countries have a similar tax policy while non-OECD countries have different tax policy which Chinese enterprises pay attention to.

The quality of infrastructure of host countries has a negative influence on the non-OECD countries but positive impact on OECD countries. The lower the Port Infrastructure Quality of host non-OECD countries, the higher investment is from China because of the high investment potential for infrastructure construction. The quality of infrastructure also has significantly positive influence on OECD countries because the good quality of infrastructure is a competitive factor to attract investment inflow, which can provide more convivence for economic activities.

The Political Stability plays important roles in consideration of Chinese enterprises to invest the non-OECD countries. More Chinese companies would like to invest in the countries with stable political environment. It's not significant in OECD countries because OECD countries are developed countries and often have a better condition of the policy environment.

The language also has a positive impact on investment from China in OECD countries as well as non-OECED countries. If the host country uses English or Chinese as a major language, it's more attractive for Chinese enterprises because they can enter the host market more efficiently.

The wage level plays an essential role in non-OECD countries, indicating that the non-OECD countries with lower wage level can attract more investment inflow from China,

which can help reduce the investment cost for Chinese companies.

4.3.4 Empirical result between OBOR countries and non- OBOR countries

In this sample this work uses non-OBOR countries including 58 countries to make comparative analysis with OBOR countries.

Areas↵	Countries↵
Africa↵	Angola, Nigeria, South Africa, Burundi, Botswana, Cameroon, Gabon, Ghana, Kenya, Morocco, Madagascar, Mozambique, Mauritius, Malawi, Namibia, Rwanda, Senegal, Tunisia, Tanzania, Uganda ↵
America↵	Argentina, Brazil, Canada, Chile, Mexico, Panama, United States, Bolivia, Côte d'Ivoire, Colombia, Ecuador, Jamaica, Peru, Paraguay, Uruguay↵
Oceania↵	Australia, New Zealand↵
Europe↵	Austria, Belgium, Switzerland, Germany, Denmark, Spain, Estonia, Finland, France, United Kingdom, Greece, Croatia, Ireland, Italy, Luxembourg, Latvia, Moldova, Madagascar, Netherlands, Norway, Portugal, Sweden↵

*Part of the testing results of PPML for OBOR countries and non-OBOR countries
(Data based on the World Bank Database)*

	PPML_OBOR b/se/_star	ppml_T_OBOR b/se/_star	PPML_nonOBOR b/se/_star	ppml_T_non-R b/se/_star
EX	.1064391 .0819054	.1393271 .0700694	.1106626 .5221291	.4538253 .5667917
TNR	.0171234 .0038358 ***	.0161295 .0037104 ***	.0925021 .0102809 ***	.0907819 .0108419 ***
TEC	-.0088259 .0038109 *	-.0075354 .0036933 *	.0019964 .0034474	.0013874 .0035165
lnPGNI	-.3581187 .089598 ***	-.4960731 .0925792 ***	.359518 .0683803 ***	.3672485 .0675575 ***
lnEXP	.7845171 .0533878 ***	.8924962 .0641255 ***	.2617194 .0385945 ***	.2670487 .0385602 ***
lnHGDP	.2879947 .0840237 ***	.4084852 .0604308 ***	.3617329 .0491635 ***	.3734571 .0494273 ***
lnCGDP	1.695102 .2931936 ***	1.275531 .2380575 ***	2.394908 .1333061 ***	2.375406 .1592757 ***
lnTRAN	.0231112 .0951791	.4492099 .1452504 **	-.4629757 .0929201 ***	-.6958998 .1512349 ***
TAX	-.0250629 .0070955 ***	-.0331282 .0068977 ***	.0061351 .0035124	.0060217 .0035631
QPI	-.1614091 .053632 **	-.2394414 .0621818 ***	.0324825 .1212683	.0328145 .1226151
LAN	.6834093 .131351 ***	.7068704 .1266312 ***	1.055172 .1289284 ***	1.040011 .133073 ***
VA	-.224752 .0857198 **	-.1586202 .0853985	1.134242 .2102117 ***	1.06104 .2033408 ***
PV	.6002699 .103324 ***	.6570923 .0949391 ***	-.0190832 .116521	-.0038612 .114107

Table 12

The detail of empirical results is in Appendix table 4.3

According to the result of OBOR countries and non-OBOR countries, the influencing factors for FDI inflow are not the same.

In the sample countries, exchange rate changes have no significant impact on China's investment in the non-OBOR country, mainly because the effect of exchange rate changes on foreign capital inflows may cause uncertainty. According to the research conclusions of Yu (2007), the excessive fluctuation range of exchange rate inhibits the inflow of risk-averse international direct investment. Still, it attracts global direct investment from risk appetite investors for more market opportunities. Therefore, large exchange rate fluctuations may have both positive and negative impacts on China's investment in the host country, resulting in an insignificant effect on the whole.

Among the sample countries, the natural resource level of both OBOR and non-OBOR countries is attractive to China. The natural resource endowment of the host country is an essential factor affecting the location selection of resource-seeking OFDI. Kolk and Pinkse (2005) believe that energy and minerals are the main targets of resource-seeking OFDI. In recent years, China's resource-seeking OFDI has increased significantly and mainly flows to resource-rich countries and regions, especially after the 2008 financial crisis, the overseas investment and merger and acquisition activities of resource-based

enterprises have increased significantly.

The technology level of the host country influences China's investment in OBOR countries but has little influence on non-OBOR countries. One of the key reasons for OFDI is the quest for technologies both for emerging countries and developed countries. Analysis by Kogut and Chang (1991) also shows that spending in high-technology countries has a reverse spillover phenomenon. Investment in companies in developed countries is an effective means of gaining information assets for emerging market and developing country firms. However, according to the test results of the sample countries, the technical level of the host country is limited to attract foreign capital inflows. The main reason is that the industrial development of China's outbound investment still tends to be labour-intensive, and the development of capital-intensive and technology-intensive industries is relatively backward.

GNI per capita is different for China's investment in OBOR countries and China's investment in non-OBOR countries. The main reason is that most countries in the OBOR sample are developing countries, the higher the per capita GNI is, the higher the local wage level is, the higher the labour cost is, and the less the inflow of foreign capital. London & Ross (1995) found through research that enterprises would choose areas with cheap labour to invest in reducing production costs. For non-OBOR countries mainly including developed countries such as Europe, the United States and Australia, as well as developing countries in South America and Africa, the wage level of developed countries is higher than that of developing countries. At the same time, China invests more in developed countries than in developing countries in non-OBOR samples.

In the OBOR sample, an increase in transportation costs will increase China's investment in the host country. In contrast, in the non-OBOR sample, an increase in transportation costs will significantly reduce China's investment in the host country. Brainard (1993) studied a model of two-way horizontal FDI caused by transportation costs, indicating that when transportation costs are high enough, multinational companies will undertake FDI. On the one hand, the main reason lies in the increase in transportation costs and the decrease of trade, while foreign investment can be used as a substitute for exports to exploring the international market. On the other hand, OBOR countries are mostly Asian countries, which are located near China. Therefore, Chinese enterprises pay less attention to transportation costs when making overseas investment choices.

For OBOR countries, a local tax increase would significantly reduce Chinese investment in the host country. In contrast, the impact of taxes on non-OBOR countries is limited. Studying the relationship between taxation and investment inflows, Alejandro et al. (2010) found that taxes in the host country are very relevant for FDI inflows, but only for non-OECD countries. Because most OBOR countries are non-OECD countries, local tax revenue has a significant negative impact on China's outbound investment.

For Port Infrastructure Quality of host countries, most of the countries in which China invests in OBOR are developing countries with relatively backward infrastructure, which attract more investment inflow. In contrast, for non-OBOR countries, the impact

is not apparent. In the study of Halaszovich and Kinra (2020), using case studies in the Asian field, they researched the relevance of various aspects of national transport systems to FDI and trade trends. Port infrastructure impacts international trade for the most part, but not foreign direct investment.

In the sample countries, language is positively correlated with China's investment in the host country. Because the countries where Chinese is spoken are relatively limited, English is adopted as the common language here. The experimental results show that the countries that use English are relatively more attractive to China's FDI.

In the sample countries, Voice and Accountability show a negative correlation with China's investment in OBOR host countries, but a positive correlation with China's investment in non-OBOR host countries. The reason may be that China's investments in OBOR have little consideration for political freedom. For non-OBOR countries, China's outbound investment mainly flows to developed countries represented by the United States and Europe, with relatively high political freedom, and most developing countries in Africa and South America, with somewhat insufficient investment. In the sample countries, Political Stability has a significant positive correlation with China's investment in OBOR countries. In contrast, its impact on non-OBOR countries is relatively small. Chinese FDI tends to flow in the countries with stable political environment in OBOR countries.

4.4 Results and Discussions

In the fourth chapter, through the study of the existing relevant literature, based on the gravity model, the paper makes an empirical analysis of the influencing factors of direct investment from China to One Belt and One Road countries. On the one hand, this work uses three tests to get a comprehensive understanding of the investment driving factors for China's FDI: The first test is using PPML and Fixed Effect to estimate Gravity Model for OBOR countries, which studied the influencing factors for Chinese FDI by different methods; The second test is using PPML to estimate Gravity Model for OECD countries and non-OECD countries in the OBOR sample, which studied if there are some difference in influencing factors between OECD countries and non-OECD countries; The third test is using PPML to estimate the Gravity Model for OBOR countries and non-OBOR countries, which studied if there are some difference in influencing factors between OBOR countries and non-OBOR countries. This chapter also enriches the content of the explanatory variables based on the traditional gravity model. Except for the market size and geographic distance (transportation cost), the expanded gravity model includes the host country labour costs, resource abundance, quality of existing infrastructure, tax level, the natural resource, the technological level, exchange rate fluctuations, the cultural differences (official languages), quality of political governance, export to host countries, a total of 13 variables, to make a comprehensive analysis of the influential factors of international investment and motivation.

Based on setting the extended gravity model, regression analysis of the equation was carried out by using the empirical data and Stata 14 to estimate the gravity coefficient

of the relevant variables and determine the influencing factors affecting the stock of China's direct investment in the countries along the "One Belt and One Road". According to the availability, 702 observations from 54 countries during 2005 and 2017 were selected as samples for empirical analysis. At the same time, in the process of empirical research, with the 54 states as a whole, the gravity model used all variables to estimate and grasp the influence factors China's investment. And then according to each country whether belong to the OECD, the sample 54 countries were divided into the OECD countries and the OECD countries to make the empirical analysis. The paper also chooses 54 OBOR countries and 58 non-OBOR countries to make further research. From PPML full sample analysis results, explained variables of direct investment effect are not entirely consistent with the theoretical expectations. The GDP level of China and the host countries, resource endowment, China's exports to the host country, Speaking English or Chinese, and political stability all have a positive impact on investment stock in the OBOR countries. And labour costs, infrastructure level, the technical level and voice and accountability levels show the negative correlation to the scale of investment in China. In addition to transportation costs and exchange rate fluctuations have no significant impact on the range of China's FDI, other variables have a substantial effect on China's investment stock in countries along the OBOR with the gravitational coefficient at the confidence level of 0.05 under the PPML test.

In the sub-sample test, the PPML empirical analysis results show that China's investment in OBOR countries with different levels of economic development has various driving factors. For OECD countries, the technical level, and quality of infrastructure have a significantly positive influence on investment inflow. In contrast, the technical level and quality of infrastructure have a negative impact on investment inflow in non-OECD countries. The transportation cost has a positive influence on non-OECD countries but negative influence on OECD countries. China's GDP level, resource endowment, China's exports to the host country, political environment and the official language all have a similar influence on the investment scale form China to OECD countries and non-OECD countries.

If the paper considers the non-OBOR countries, the result is also different. Compared with non-OBOR countries, for OBOR countries, the technological level, tax level, infrastructure quality and political stability have a more significant impact on China's outbound investment. The Voice and Accountability have a negative influence on OBOR countries but positive influence on non-OBOR countries. The transportation cost has a positive effect on China's FDI in OBOR countries but a negative effect on non-OBOR countries. Other variables, including labour cost, China's export, GDP level of China and the host countries, official language all have a similar impact on OBOR countries and non-OBOR countries.

Chapter 5 Measurement of potential investment index

In the fourth chapter, based on the traditional gravity model and the specific situation of "One Belt and One Road" countries, 13 explanatory variables are selected to establish an extended gravity model. The similarities and differences of influencing factors of China's direct investment in relevant countries along OBOR are comprehensively understood through full sample test and sub-sample test. Based on the last two chapters, this chapter would use the empirical analysis to calculate the investment potential of the OBOR countries to analyze investment prospects and provide more theoretical basis for the corresponding policy recommendations on promoting China's investment in "OBOR" countries.

5.1 Measurement method of investment potential

In this section, the investment potential of countries along the OBOR would be measured. This method used the expanded gravity model with fixed effects including time dummy, and the historical data of the selected samples to calculate the theoretical value of direct investment stock. Then this work used the actual investment stock divided by the theoretical value to get the investment potential index FDIPI. Based on the relevant theories and the review of existing literature (Wu,2007), this paper adopts the following criteria to judge the investment potential:

if $FDIPI > 1$, it indicates that China may have relatively "excessive investment" in the countries along OBOR;

If FDIPI around 1, it indicates that China's investment in the countries along OBOR has reached "saturation";

If $FDIPI < 1$, it indicates that China's investment with these countries and regions is "insufficient" and there is still great potential and space for development.

If the actual value is different from the predicted value, there may be three reasons. The first reason is that Chinese companies really invested less, maybe because they didn't have full knowledge of the local market and the investment potential;

The second reason is that China invested less in the target country because of some random intervention;

But most importantly, there is a third reason that the model is not quite perfect, and there is some additional determinant which is causing the actual investment are systematically different from the predicted ones.

In this paper, this work assumes the gravity model is relatively suitable based on the results of past research and focus on the first reason to analyze the current situation.

5.2 Investment potential index in different regions

Given the various factors affecting China's direct investment in countries in different areas along OBOR, the potential index of direct investment is compared through the different areas to predict China's investment potential scientifically, to provide a basis

for making targeted policy Suggestions.

5.2.1 Central and East Europe

*The investment potential index of OBOR countries in Central and East Europe
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ALB	0.61	0.60	0.56	0.53	0.79	0.74	0.72	0.69	0.71	0.70	0.69	0.68	0.63
BGR	0.83	0.80	0.79	0.74	0.63	0.83	0.95	0.97	0.97	0.96	0.97	0.92	0.94
BIH	0.90	0.84	0.78	0.74	0.77	0.74	0.72	0.70	0.66	0.63	0.69	0.69	0.60
BLR	0.56	0.50	0.46	0.71	0.74	0.84	0.82	0.88	0.90	0.95	1.01	0.99	0.99
CZE	0.62	0.86	0.85	0.86	0.88	0.85	0.85	0.94	0.91	0.90	0.87	0.86	0.82
HUN	0.69	1.00	1.00	0.98	0.96	1.07	1.04	1.03	1.01	0.99	0.97	0.90	0.89
LTU	0.84	0.78	0.73	0.71	0.70	0.66	0.63	0.67	0.71	0.69	0.69	0.71	0.72
MKD	0.48	0.45	0.41	0.39	0.38	0.36	0.34	0.36	0.57	0.55	0.54	0.53	0.52
POL	0.88	1.06	1.02	0.98	0.95	0.93	0.94	0.92	0.92	0.93	0.92	0.90	0.91
ROU	1.16	1.08	1.08	1.03	1.00	0.98	0.95	0.95	0.92	0.93	0.97	0.95	0.91
SVK	0.31	0.29	0.73	0.69	0.74	0.70	0.77	0.87	0.83	0.86	0.84	0.79	0.78
SVN	0.33	0.61	0.58	0.56	0.69	0.63	0.62	0.61	0.59	0.58	0.57	0.71	0.70
UKR	0.80	0.85	0.89	0.88	0.91	0.86	0.87	0.86	0.87	0.88	0.88	0.86	0.83

Table 13

Since 2005, China's foreign direct investment potential index (FDIPPI) for most countries along OBOR in Central and Eastern Europe (CEE) has shown a slowly rising trend of being bullish on the whole. However, China's investment performance in these countries and regions is still relatively insufficient. By 2017, in the selection of samples of 14 countries, ten countries' FDIPPI lasting less than one and appear "inadequate investment" state from 2005 to 2017. In the selected examples, the investment potential index of Belarus, Romania, Hungary and Poland between 2005 to 2017, are distributed between 0.9 to 1.1, especially in recent years, which shows that the investment scale of China maintained an appropriate increase. However, China's investment to Macedonia, Slovenia, Bosnia and Herzegovina, Lithuanian has shown marked weakness. In general, China's investment in CEE countries along the OBOR is in the stage of "insufficient", with insufficient investment in most states and unbalanced investment in countries in the region. And the investment potential for Central and Eastern Europe is relatively large.

5.2.2 East Asia

*The investment potential index of OBOR countries in East Asia
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
JPN	1.02	1.02	1.08	1.04	1.04	1.03	1.03	1.02	1.01	1.02	1.03	1.02	1.00
KOR	1.25	1.19	1.17	1.10	1.10	1.00	1.06	1.09	1.03	1.03	1.04	1.04	1.05

MNG	1.42	1.45	1.45	1.42	1.39	1.35	1.29	1.29	1.26	1.20	1.19	1.18	1.16
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Table 14

On the whole, China's investment potential in East Asia is greater than one from 2005 to 2017, and the investment scale is between moderate state and saturated state. As for a single country, the investment potential index of Mongolia over the years is greater than 1.3 from 2005 to 2010, which shows that it is overinvestment. According to the past research, China's investment in Mongolia mainly focuses on the energy, agriculture, animal husbandry, processing and manufacturing, and the market size and geographical location of the host country is attractive for China's investment. Since 2006, the investment potential index tends to be reasonable and gradually decreases for Mongolia. In 2017, the investment potential index of Mongolia was 1.16, which shows that Chinese FDI to Mongolia is still excessive but relatively moderate than before. China's investment in Japan and South Korea is relatively reasonable, ranging from 1 to 1.1 since 2010, and the investment market is relatively saturated. China can make use of the market resources and other investment advantages of Japan and South Korea to optimize further and improve the investment structure and reduce unnecessary investment.

5.2.3 Central Asia

*The investment potential index of OBOR countries in Central Asia
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
KAZ	1.30	1.25	1.27	1.31	1.26	1.20	1.23	1.26	1.22	1.20	1.16	1.16	1.18
RUS	1.37	1.37	1.35	1.32	1.31	1.26	1.24	1.23	1.25	1.24	1.28	1.25	1.24
TJK	1.30	1.23	1.32	1.35	1.26	1.19	1.14	1.20	1.18	1.20	1.22	1.21	1.23
UZB	1.25	1.23	1.23	1.25	1.19	1.14	1.18	1.10	1.08	1.06	1.13	1.13	1.09

Table 15

The Central Asian region mainly includes five central Asian countries. Due to the lack of data, Tajikistan, Kazakhstan and Uzbekistan were retained in the sample selection. Since Russia is geographically located across Middle and North Asia and Eastern Europe, this work considers Russia as countries in the Central Asian region. Central Asia is an attractive neighbouring area of China due to its abundant energy resources and advantageous geographical location. The investment fields of China to the countries along the OBOR in this region are mainly focused on energy exploration, exploitation and transportation, to obtain stable energy security and support domestic economic development. The investment potential index of China to the Central Asian countries is all greater than one, which is the "investment saturated market" and the "low investment potential market". China has a large proportion of investment in the energy sector in Central Asia. From 2005 to 2017, the investment potential index of Russia declined but remained at a high level. China can explore new areas by conducting trade, seeking new opportunities for future investment and promoting the joint development of Chinese investment in the region.

5.2.4 South Asia

*The investment potential index of OBOR countries in South Asia
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
AFG	1.58	0.69	0.66	1.38	1.34	1.26	1.34	1.26	1.24	1.21	1.17	1.17	1.17
BGD	1.23	1.17	1.13	1.10	1.09	1.04	1.02	1.03	1.03	1.01	1.00	1.00	1.02
IND	1.04	1.04	1.18	1.20	1.14	1.17	1.17	1.20	1.24	1.24	1.22	1.18	1.21
LKA	1.14	0.99	0.93	1.01	0.96	1.15	1.22	1.09	1.10	1.09	1.14	1.12	1.11
NPL	1.02	0.98	1.04	1.00	1.00	0.95	0.95	0.93	0.99	1.02	1.07	1.04	1.01
PAK	1.45	1.33	1.53	1.50	1.46	1.41	1.37	1.35	1.31	1.32	1.29	1.28	1.28

Table 16

China's potential for direct investment in South Asian countries along the "One Belt and One Road" is relatively stable and saturation. At the same time, China's investment potential in South Asian countries has changed into a reasonable range over the years, in 2005, the investment potential index is from 1.02 to 1.58 while it ranged from 1.01 to 1.28 in 2017. According to the comparison between the theoretical value estimated by the model and the actual value, there is still room for further expansion of China's investment with South Asian countries, such as Bangladesh and Nepal. At the current level, China's investment in South Asian countries is in a state of "relative saturation". China's investment in Pakistan is always greater than 1.2 in 2017. On the one hand, Pakistan is one of the most important partners of the "OBOR" strategy; more Chinese enterprises gradually show the enthusiasm for Pakistan and wish to invest in the local market. On the other hand, Chinese enterprises, the primary investment focus in energy and textile industries of cement, steel, and these industries are the economic backbone of Pakistan.

5.2.5 Southeast Asia

*The investment potential index of OBOR countries in Southeast Asia
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BRN	0.70	0.66	0.73	0.76	0.80	0.81	0.81	0.78	0.78	0.75	0.74	0.84	0.84
IDN	1.22	1.22	1.30	1.23	1.23	1.21	1.20	1.22	1.23	1.24	1.24	1.24	1.23
KHM	1.49	1.43	1.42	1.47	1.48	1.46	1.45	1.43	1.38	1.37	1.34	1.34	1.33
LAO	1.27	1.34	1.44	1.37	1.35	1.32	1.33	1.30	1.35	1.35	1.32	1.32	1.31
MMR	1.16	1.36	1.35	1.37	1.37	1.36	1.31	1.30	1.33	1.29	1.27	1.25	1.24
MYS	1.19	1.15	1.14	1.14	1.12	1.11	1.09	1.07	1.09	1.08	1.08	1.11	1.12
PHL	0.97	0.94	0.98	1.03	1.04	1.08	1.09	1.07	1.06	1.04	1.00	0.98	0.97
SGP	1.20	1.18	1.24	1.31	1.29	1.25	1.28	1.25	1.23	1.23	1.24	1.23	1.24
THA	1.24	1.20	1.20	1.17	1.14	1.17	1.15	1.15	1.13	1.13	1.12	1.13	1.13

VNM	1.43	1.35	1.34	1.31	1.31	1.26	1.24	1.20	1.20	1.19	1.18	1.20	1.17
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Table 17

China's direct investment stock in Southeast Asian countries along the OBOR accounts for more than 70% of China's investment stock in OBOR countries, which is the main area of capital inflow from China. According to the investment potential index between China and Southeast Asian countries shown in the table, China's FDIPPI for most Southeast Asian countries along OBOR is concentrated between 1 and 1.4, which is in a state of "full investment" and "excessive investment". At the same time, for Brunei, the FDIPPI is mainly distributed between 0.6 and 0.9 from 2005 to 2017, which shows relatively insufficient investment. Overall, China's current investment in Southeast Asia is a big stock, and potential investment is relatively small. The factors affecting the layout of China in Southeast Asia investment includes market, labour cost, resources, infrastructure, etc., so China should optimize investment structure further to promote the development of investment in Southeast Asia.

5.2.6 West Asia and North Africa

*The investment potential index of OBOR countries in West Asia and North Africa
(Data based on the World Bank Database)*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARE	1.10	1.06	1.07	1.10	1.09	1.08	1.10	1.08	1.07	1.08	1.13	1.12	1.11
ARM	0.81	0.75	0.70	0.66	0.65	0.61	0.58	0.57	0.75	0.71	0.69	0.68	0.81
AZE	0.93	1.07	0.98	0.91	0.89	0.83	0.91	0.88	0.89	0.92	0.92	0.83	0.82
BHR	0.73	0.43	0.54	0.53	0.52	0.50	0.50	0.68	0.50	0.58	0.57	0.79	0.83
EGY	1.22	1.25	1.22	1.16	1.21	1.17	1.14	1.11	1.09	1.10	1.08	1.09	1.09
GEO	1.32	1.22	1.17	1.16	1.12	1.11	1.02	1.04	1.07	1.10	1.08	1.08	1.06
IRN	1.15	1.18	1.13	1.07	1.12	1.18	1.20	1.23	1.24	1.21	1.18	1.17	1.16
IRQ	1.32	1.38	0.95	0.89	0.82	1.10	1.09	1.08	0.97	0.96	0.93	0.97	0.93
ISR	0.81	0.80	0.79	0.74	0.73	0.76	0.73	0.75	0.72	0.79	0.89	1.10	1.10
JOR	1.07	0.95	0.91	0.85	0.82	0.80	0.77	0.81	0.79	0.80	0.80	0.81	0.86
KWT	0.58	0.74	0.43	0.60	0.65	0.85	0.89	0.85	0.83	0.94	0.95	0.95	0.98
LBN	0.41	0.52	0.49	0.46	0.59	0.58	0.57	0.59	0.60	0.58	0.57	0.55	0.51
OMN	0.87	1.02	0.99	0.84	0.73	0.80	0.82	0.80	0.94	0.93	0.91	0.83	0.83
QAT	0.66	0.77	0.92	0.89	0.85	0.91	0.92	0.93	0.92	0.96	0.94	1.01	1.01
SAU	1.04	1.16	1.15	1.16	1.14	1.10	1.08	1.07	1.08	1.07	1.06	1.05	1.02
TUR	0.79	0.85	0.83	0.87	1.15	1.10	1.06	1.05	1.04	1.05	1.07	1.04	1.04
YEM	1.49	1.24	1.25	1.24	1.18	1.14	1.19	1.15	1.21	1.15	1.12	0.86	1.14

Table 18

Table 18 lists the value of China's direct investment potential index (FDIPPI) for 17 countries of West Asia and North Africa along the OBOR from 2005 to 2017. On the whole, most of China's FDIPPI for this region is higher than 0.50. Many countries are in a state of "relatively reasonable investment" in the range of 0.8 to 1.2, but the

distribution is very uneven. For individual countries, China's investment potential index for the various states maintain stability, almost no significant growth, which suggests that relevant countries in West Asia and North Africa region have limited attraction for the direct investment inflow. West Asia and North Africa region for China's enterprises may not be the main area of China's foreign direct investment flows, because the geographical position is relatively remote, and the political environment is instability.

5.3 Cross analysis of investment potential Index and Global Competitiveness

Index

	Strong Investment Potential Index	Weak Investment Potential Index
Good Global Competitiveness Index	Azerbaijan Bahrain Bulgaria Czech Republic Hungary Israel Jordan Kuwait Lithuania Macedonia (the former Yugoslav Rep. of) Oman Poland Qatar Romania Slovakia Slovenia	United Arab Emirates Georgia India Indonesia Japan Kazakhstan Korea Malaysia Philippines Russian Federation Saudi Arabia Singapore Thailand Turkey Vietnam
Weak Global Competitiveness Index	Albania Armenia Bangladesh Bosnia and Herzegovina Brunei Darussalam Lebanon Ukraine	Egypt Myanmar Cambodia Iran Lao People's Democratic Republic Mongolia Nepal Pakistan Sri Lanka Tajikistan Yemen

In general, combined with investment potential and investment performance, the investment potential of countries with high global competitiveness index is not necessarily high. In the chart, for the investment potential index, some countries have low investment potential but relatively high international competitiveness level. In contrast, some countries have high investment potential but relatively small global competition index.

In this paper, this work calculates the average value of the data as the average investment potential index of each country and the average global competitiveness index from 2013 to 2017. Some countries are omitted because of the lack of relevant data, including Afghanistan, Iraq, Belarus, Uzbekistan, Syrian Arab Republic. The investment potential index greater than 1 is defined as higher investment potential of the country while the investment potential index of less than 1 as low investment potential of the country. At the same time, this work select the average value of world competitiveness index from 2013 to 2017 as a standard, the value greater than the average world competitiveness index as a competitive country while the value less than the average world competitiveness index as a country with weak competitiveness. Through the cross-analysis of investment potential and global competitiveness index, the sample countries are divided into four categories.

Some countries have great investment potential and strong global competitiveness, such as Slovakia, Slovenia, Bulgaria, Czech Republic, Hungary, etc., mainly Central and Eastern European countries, which are currently the best targets for increasing investment. China should pay more attention to project quality, promote transparency, increase investment while reducing related risks, and invest in these countries based on labour market incentives and technological output incentives. Profitable investment deals between countries may benefit the development of The European market.

These countries, such as Lebanon, Armenia, Bangladesh, Albania, etc., have excellent investment potential, but the level of global competitiveness is weak. Although the investment potential is vast, there may be instability in national economic development, which needs to be carefully considered before a large amount of investment. However, there may be a large investment space in these countries that have not been released and can be developed in the future. China should pay more attention to the investment potential of development in this state, and work with local governments to further improve infrastructure and the investment environment, laying the foundation for improving investment performance in the future.

Countries with low investment potential but good competitiveness are not restricted by limited investment potential including United Arab Emirates, Georgia, India, Indonesia, Korea, Malaysia, Philippines, Russian Federation, Singapore, Thailand, Vietnam and others, which are mainly Southeast Asian countries and Russia. On the one hand, China should increase investment in Singapore, Russia and other countries with strong economic strength, invest in labour-intensive industries and industries with high technological development level, and promote technological exchange. For countries with small economies such as India, Indonesia, Korea, Malaysia, Philippines, China should pay more attention to investment cooperation and constantly explore new areas on the existing basis. To make up for the shortage of such countries, Chinese enterprises

can actively invest in industries with high labour input ratio and make full use of local high-quality labour force. On the other hand, Chinese enterprises should earnestly attach importance to the export of technology to industries with low local technology content, to expand the market further.

Countries with low investment potential and modest levels of competitiveness should also receive attention. These countries on the one hand, including rich oil and other resources in Asia and North African countries, such as Egypt, Iran, Yemen, etc., on the other hand, is Central Asia countries with the relatively low economic condition, such as Mongolia, Pakistan, Tajikistan and Southeast Asia countries with a relatively low economic situation such as Myanmar, Cambodia, Laos, etc. China needs to invest not only in resource-intensive industries but also in labour-intensive and capital-intensive industries to improve investment performance. Countries located in Southeast Asia and Central Asia are relatively close to China. Some countries border China and have the advantage of geographical location. These countries have cooperated more with China in recent years and still deserve attention.

5.4 Conclusion and Discussion

The paper divides the samples into six regions by geographical location, including East Asia, Central and Eastern Europe, West Asia and North Africa, Central Asia, Southeast Asia and South Asia. Based on the analysis of the factors influencing China's foreign direct investment to OBOR countries, the paper used the data of relevant countries to calculate the theoretical value of China's investment stock in countries along OBOR. And then the paper estimates the ratio of actual investment and the theoretical value of the investment, to judge the size of the investment potential of different countries under China's investment.

By using the gravity equation to calculate the direct investment potential of countries in each area, it can be found that there is a significant gap in the investment potential index FDIPPI between regions. From the perspective of each part, China's investment scale in East Asia and South Asia is between moderate and saturated. And the investment scale is reasonable, with relatively low development potential. In terms of investment in Central and Eastern Europe, West Asia and North Africa, the vast majority of countries are "development markets with huge investment potential", and there is a severe shortage of investment. In the present situation of investment in the countries along the Middle Asian region and Southeast Asia region, the phenomenon of "sufficient" investment is quite apparent, which is a typical "mature market with small investment potential".

Based on the cross-analysis of 49 countries (5 countries were excluded due to lack of data) in the investment potential index and the global competitiveness index, countries with high investment potential may not have a high level of competitiveness, while countries with a high level of global competition index may not be very attractive for China's investment. This paper divides the sample countries into four groups, and different investment strategies should be developed for different types of countries. From the results, this work can find that the countries far from China, including OBOR

countries in Central and East Europe and West Asia and North Africa, always have relative low value of investment potential index. The main reason maybe that the investment potential index can reduce with the distance between China and host countries longer.

When considering the influence of distance on the FDI from China to OBOR countries, this work used log of transportation cost as a proxy for distance between China and host countries in the previous test. For the test of table 10(The testing results of PPML and Fixed Effect using Gravity Model for OBOR countries). With the method of PPML with time dummy, the result showed that the transportation cost can have positive influence on FDI from China to host countries along OBOR but the other tests show the relationship between transportation cost and FDI is not significant, which means that Chinese companies consider little about distance between China and host countries when they make investment.

To further study the relationship of investment potential index and distance. This work used “lnDIST” as the log of distance between China and host countries and “contig” as a dummy variable (if the country is on the border of China, the value of contig is 1 while the value of contig is 0 under other conditions). This work choose distance between China and host countries and “contig” dummy as explaining variables while investment potential index as explained variable. Then this work use OLS to estimate the relationship between them and get the result as follows.

IPI	Coeff.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnDIST	-.1263972	.0560631	-2.25	0.029	-.2390602	-.0137342
contig	.1867852	.0634074	2.95	0.005	.0593631	.3142072
_cons	2.037966	.4833744	4.22	0.000	1.066589	3.009344

Table 22

The relationship between investment potential index and distance between China and host countries is significant. So, this work can get a conclusion that longer distance between China and host countries can reduce the countries’ investment potential index, which means that the countries in the far distance often have higher investment potential for Chinese FDI. And the contig dummy whether the host country is on the border of China is also significant, which means that host countries on the border of China often have higher investment potential index and lower investment potential for Chinese companies. One explanation for the relationship between investment potential index and distance as well as the neighbouring relations may be that China have more economic activities with the close countries in the past, like trading and other economic exchanges. More economic exchanges can deepen the economic ties between the two countries and enable Chinese entrepreneurs to have a better understanding of the local market. Therefore, China's outbound investment flowed into nearby countries in the past, resulting in a large amount of actual investment and relatively small investment potential.

So, if the gravity model is reasonable, the result can show that OBOR countries in different areas have different investment potential index. And the investment potential can be higher for the countries far from China, which can be a reference for Chinese company to consider when making OFDI.

Chapter 6 Conclusion and Policy Suggestion

6.1 Conclusion

In the face of the complicated international situation, China has put forward the idea of building a OBOR to strengthen economic, political and cultural exchanges with countries along OBOR and seek for more opportunities of development together. The OBOR plan has also become an important strategy of China to make more FDI. The promotion of this strategy requires investment as a means and carrier, and at the same time expands the space for Chinese enterprises to invest overseas, providing more diversified options for the Chinese company to go global. This paper summarizes the characteristics of China's investment in OBOR, and finds out the investment motive and potential of China in OBOR through quantitative analysis, to provide a basis for further promoting China's FDI and help more OBOR countries realize higher economic development.

6.1.1 The characteristics of investment from China to OBOR countries

Based on the data of direct investment from China, the characteristics of investment are summarized. From the perspective of the total amount, the stock and flow of China's investment in the countries along the OBOR are increasing year by year, which is huge in absolute amount, and the annual growth rate is similar to the growth rate of China's FDI. However, in recent years, the investment stock of OBOR countries accounts for about 10% of China's total investment, which is relatively low considering the economic strength of OBOR countries in the world. By region, China's investment in OBOR is extremely uneven. 70% of China's investment along the OBOR flows to developing countries. In contrast, the investment in developed countries is less, showing an uneven state. About 50% of Chinese FDI flows to Southeast Asia, while only about 50% goes to more than 50 countries in other regions, indicating a high concentration of Chinese investment. In terms of industries, although China's investment is distributed in many sectors, it is still dominated by resource-intensive and labour-intensive industries, and the industrial level of investment is relatively single and low-end.

6.1.2 Analysis of influencing factors based on an extended gravity model

A gravity extended model of investment attraction is established to analyze the factors influencing China's investment in OBOR. China's investment stock in each country is the dependent variable, with the economic strength of home countries, host country market scale, the host country resources endowment, technology export, labour costs, China's exports to the host country, host country's political environment, language difference and host country infrastructure level as the explanatory variables. The results of full sample analysis of Table 10 show that, on the whole, China's investment in "One Belt and One Road" is mainly affected by all the variables except for Transportation cost and exchange rate change according to the result of PPML test. In the sub-sample

analysis results, however, both OECD countries and non-OECD countries are mainly affected by the home country economic strength, the level of China's exports, natural resource and official language. For OECD countries, the transportation cost have negative influence on Chinese FDI while technology level have positive influence on Chinese FDI. For the non-OECD countries, the investment is influenced by many variables including economic power of home countries, labour costs, host country's political environment and host country infrastructure level. If the paper considers the non-OBOR countries, the result is also different. Compared with non-OBOR countries, for OBOR countries, the technological level, tax level, infrastructure quality and political stability have a significant impact on China's outbound investment.

6.1.3 Analysis of investment potential for OBOR countries

Based on the gravity equation obtained by empirical analysis, the investment potential of China in OBOR countries is calculated. In terms of sub-region, China's investment in Middle Asia and East Asia is relatively moderate, and there is still potential for further investment in this region. Investment in Southeast Asia is mainly manifested as an excessive investment; China's investment in Central and Eastern Europe is obviously insufficient, and further development of investment potential is needed. The investment in South Asia is moderate scale, can still further expand the investment scale; The scale of China's investment in West Asia and North Africa is relatively unstable, which can further expand the investment field on the basis of maintaining the existing investment layout.

6.2 Policy Suggestion

On the analysis of China's investment to OBOR countries and main influential factors, the present writer would use this section to further put forward policy suggestions, which may be available to promote China's direct investment for OBOR countries.

6.2.1 To improve the financial services system and build an efficient and convenient information platform to provide investment information reference.

The establishment of the Asian infrastructure investment bank (AIIB) provides financial support for the promotion of the OBOR strategy. However, from the result of investment potential index, there is a big investment potential in some areas like Western Asia and North Africa. It may be important to put more capital or make more investment to the areas with high investment potential. The AIIB is a governmental and international financial organization, and its use of funds is subject to strict conditions, and cannot meet the capital needs of every OBOR countries. The Chinese government can provide a platform, which can help combine the enterprise capital and bank funds. This method can not only help Chinese enterprises solve the capital shortage problem but also help banks can also obtain more income through investment project.

The economic and political situation in local countries are complicated, and most Chinese enterprises are lack of efficient source of information, which can cause the problem of information asymmetry. Information asymmetry can cause investment

blindness and uncertainty when OFDI happens, leading to foreign investment potential too high or too low, as shown in chapter 5. The Chinese government can provide information of local market for enterprises with the help of the international think-tank, including resource environment, economic condition political environment and so on, which enhance the efficiency of business investment OBOR countries.

6.2.2 To balance the development of Chinese companies and local economies and realize the upgrading of Chinese industrial structure by industrial transfer.

Central Asia and the Middle East region has abundant energy resources, while Southeast Asian has relatively low labour costs and Central and Eastern Europe has relatively high level of technology, etc. On the one hand, Chinese companies should consider the present situation, like resources shortage, environment worsening as well as increasing production cost; On the other hand, the economic development, resources endowment, the political environment conditions are different in OBOR countries, and every factor has different influence on Chinese FDI. The investment decision of China should consider the research results of gravitation equation on various influencing factors and finds the relatively important influencing factors to make more reasonable investment decisions. Chinese companies can consider the importance of every factor attracting FDI and combine current industry situation with the characteristics of host countries to formulate investment strategies. Taking different investment strategies can promote Chinese enterprises to improve the efficiency of foreign investment as well as leads to improvement of the local economic conditions.

For example, as the "demographic dividend" gradually disappearing and the resource supply becoming tight, the original Chinese enterprises such as labour-intensive and resource-intensive enterprises are progressively losing their comparative advantages. But OBOR countries have different levels of economic development. Many companies in China lost the production advantage may face production opportunities in OBOR countries. The Chinese government can encourage the Chinese companies move to OBOR countries by OFDI where the similar sectors in host countries are needed.

6.2.3 To improve the quality and structure of investment in Southeast Asia while promoting investment in West Asia and North Africa, Central and Eastern Europe through public-private partnerships

At present, OFDI from China to Southeast Asia countries take the most of the total amount of investment according to the distribution of Chinese FDI in 2017, which cause the investment potential to be little. In the past, Chinese OFDI aims to seek rich resources and cheap labour costs in Southeast Asia. With the production costs rising in Southeast Asian countries, the investment should flow to more sectors and put more importance on high and new technology industry. The Chinese government can implement policy to encourage enterprises to seek higher-level investment in countries in Southeast Asia, such as the tourism industry, financial services industry, and so on, which can improve investment stability and sustainability through diversified investment.

At present, although China's investment scale in OBOR is continuously expanding,

China's investment mainly flows to neighbouring countries, especially Southeast Asian countries. The investment concentration is too high, which also makes it difficult for OBOR strategy to make a difference, and it is difficult for countries in other regions to participate. The government can take the form of project bidding, select qualified enterprises and adopt the way of public-private partnerships. Public-private partnership mechanisms can combine the strengths of the public and private sectors, in which the roles of government and the market can be balanced and generate greater value. PPP projects have great potential in attracting private investment in infrastructure and social services, improving the efficiency of public services, and compensating domestic public and private investment. They are expected to become an important promoter of One Belt and One Road. At the same time, public-private partnerships can provide more professional guidance on investment in remote regions, which can give Chinese enterprises more support to make OFDI.

6.2.4 Take more consideration on the policy environment of the host government and increase investment in countries with high global competitiveness index

The result of the testing results of PPML and Fixed Effect using Gravity Model for OBOR countries shows that Voice and Accountability (internal Political system) are negatively correlated with the inflow of foreign investment. In contrast, foreign investment is positively correlated with Political Stability (external Political environment). This may be due to the generally low quality of government governance in countries along the "One Belt and One Road". Enterprises must take more consideration on the policy environment of the host government, strengthen the communication with the relevant departments of the host country government, establish the mechanism to deal with the obstacles of the investment in the host country, and ensure the smooth development of the investment and the realization of benefits.

In countries with a relatively low level of investment potential, the high global competitiveness index can play a significant role in promoting FDI. In the process of investment in "One Belt and One Road" countries, Chinese enterprises can pay attention to the global competitiveness index of OBOR countries, especially for the countries with low investment potential but high level of global competitiveness index. They can take active measures to promote trade and investment activities and create a loose investment environment.

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