

Research on the Influential Factors to China's Direct Investment in Russia Under the Background of the Belt and Road Initiative

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ABSTRACT

With the in-depth development of the strategic partnership of coordination between China and Russia under the "Belt and Road" initiative, the breadth and depth of Chinese enterprises' investment in Russia has further expanded. Based on time series data, this paper empirically analyzes the main factors affecting China's direct investment in Russia by establishing a VAR model. In addition to selecting three traditional economic factors: Russian economic scale, Sino-Russia import and export trade and the prices of Russian production factors, the model also introduces two new variables: China's contracting projects to Russia and the international crude prices. The empirical results show that the prices of Russian production factors have a negative impact on China's direct investment in Russia. Other variables have a positive impact on China's direct investment in Russia. Therefore, it is proposed that the Chinese government should optimize the economic and trade cooperation projects between the two countries; strengthen the cooperation with Russia in the field of science and technology under the guidance of the "Digital Silk Road". The Russian government should actively build new growth points for Sino-Russian economic and trade cooperation; improve the local financial service system. Chinese enterprises investing in Russia should pay more attention to Russian domestic product demands; actively fulfill social responsibilities.

Keywords: *Belt and Road, crude prices, direct investment, VAR model*

1. INTRODUCTION

As an important regional initiative to promote the sustainable development of the global economy, the "Belt and Road" initiative has brought new opportunities for the development of countries in the region. The "Belt and Road" cooperation initiative was proposed in 2013, and the flow of China's direct investment in Russia exceeded \$ 1 billion in the first year. In 2014, under the influence of the Russian financial crisis, the flow of China's direct investment in Russia decreased significantly to \$ 634 million. In 2015, with the economic recovery of Russia and the deepening of the "Belt and Road" initiative, the investment flows reached a high record of \$2.961 billion. In 2016 and 2017, China's direct investment in Russia returned to a stable state. In 2018, the flow of China's direct investment in Russia dropped 53.16% year-on-year due to the impact of the oil production reduction agreement between Russia and OPEC. As of 2018, China's direct investment in Russia is mainly in the primary and secondary industries. The investment regions mainly include Moscow, St.Petersburg and the Far East. The investment stock only accounts for 0.7% of China's total foreign direct investment stock and 47% of China's direct

investment stock in Russia flows to the mining industry. It can be seen that there are still some problems in China's direct investment in Russia, such as the large fluctuation of investment volume, the single focus of investment, the concentration of investment regions, the small scale of investment and so on. These problems will not only affect the long-term investment of Chinese enterprises in Russia, but also have a negative impact on the sustainable development of Sino-Russian economy and trade.

2. LITERATURE REVIEW

The issue of foreign direct investment has been widely concerned by scholars. Addison and Heshmati (2003) believe that traditional foreign direct investment is guided by natural resources and low labor costs, but with the rapid spread of economic globalization, the national governance and economic freedom of the invested countries are becoming more and more important [1]. Kolstad and Wiig (2012) believe that the OFDI of Chinese enterprises is influenced by the host country political system, and countries with similar systems to China are more likely to attract direct investment from Chinese enterprises [2]. Research on China's direct investment in Russia started late. Russian scholars Korbayev and Ostrovsky (2009)

believe that China and Russia should strengthen cooperation in the relevant fields of oil and gas, and at the same time promote the industrial upgrading of both sides through economic and trade cooperation [3]. Hu (2015) proposed that the government should play a leading role in the investment activities of the two countries, especially the Chinese government should actively lead enterprises to expand fields and optimize structures in the process of direct investment in Russia [4].

This paper empirically analyzes the influential factors of China's direct investment in Russia by constructing a VAR model on the basis of "The Eclectic Paradigm of International Production". In addition to adding traditional economic factors to the model, it also introduces two new variables: China's contracting projects to Russia and international crude prices. To a certain extent, it has expanded the depth of existing research and enriched the quantitative research on China's direct investment in individual countries in the context of the "Belt and Road" initiative.

3. ANALYSIS OF INFLUENTIAL FACTORS TO CHINA'S DIRECT INVESTMENT IN RUSSIA

China's direct investment in Russia is affected by various factors. Based on Dunning's "The Eclectic Paradigm of International Production" (1977), this paper proposes that China's direct investment in Russia is mainly affected by the following factors.

3.1. Russian Economic Scale

Generally, the size of a country's economy affects its market size and market potential. In 2009, Russia's GDP fell rapidly under the impact of the global economic crisis in 2008, resulting in a year-on-year drop of 11.89% in China's direct investment in Russia. In 2014, Russia fell into financial crisis again, the ruble exchange rate fell sharply, and GDP fell again, which led to a 38.02% year-on-year drop in China's direct investment in Russia in 2014. The two financial crises had a great impact on the Russian economy, it wasn't until 2016 that Russia's GDP returned to annual growth trend, and China's direct investment in Russia also returned to a steady state in 2016 and 2017. The change of Russian economic scale has a direct impact on China's direct investment in Russia. The bigger Russia's economic scale is, the more per capita disposable income it has, the stronger its residents' consumption power is, the greater the market demand, the more direct investment Chinese enterprises will make in Russia. Thus, we propose **H1**: *A positive relationship exists between Russian economic scale and China's direct investment in Russia.*

3.2. The Prices of Russian Production Factors

The relative prices of production factor of the invested country is one of the important factors affecting FDI. Both Russia and China belong to upper-middle-income countries, but Russia experienced a decline in labor price after the economic downturn in 2014. According to data from the Russian Ministry of Labor and Social Security, Russia's per capita annual income in 2018 was approximately 45792 yuan, and China's per capita annual income in 2018 is about 61,658 yuan, nearly 15,000 yuan higher than that of Russia. The lower the price of Russian production factor, the lower the operating cost of enterprises investing in Russia, the more attractive the investment in Russia is, and the more direct investment Chinese enterprises will make in Russia. Thus, we propose **H2**: *A negative relationship exists between the prices of Russian production factors and China's direct investment in Russia.*

3.3. China's Contracting Projects to Russia

Enterprises' foreign direct investment needs to inspect the market situation of the invested area in advance. Chinese enterprises tend to carry out investment activities in the form of foreign contract projects for economic cooperation to enter the Russian market. Foreign contracting projects are beneficial for contractors to have a comprehensive understanding of the local market environment. When the contracting projects in Russia have obtained high economic benefits, it will attract contractors to make direct investment in Russia. Therefore, we propose **H3**: *A positive relationship exists between China's contracting projects to Russia and China's direct investment in Russia.*

3.4. Sino-Russian Import and Export Trade

Sino-Russian import and export trade will provide more opportunities for China's direct investment in Russia. Under the context of the "Belt and Road" cooperation initiative, when Chinese enterprises' export products sell well in Russia, in order to reduce international transportation costs and avoid customs tariffs, Chinese enterprises will choose to enter Russian market directly for production and operation. It will convert their export advantages into internalization advantage. In addition, Chinese companies that often import goods from Russia will also choose to invest directly in Russia in order to seek resources, technology or labor force. Thus, we propose **H4**: *A positive relationship exists between Sino-Russian import and export trade and China's direct investment in Russia.*

3.5. International Crude Prices

The natural resources of the invested country affect the investment motivation of the investing country. Russia is rich in mineral, oil and gas resources, 47% of the stock of China's direct investment in Russia flows to the mining industry. Changes in international crude prices will greatly affect the scale of China's direct investment in Russia. Russia is one of the world's major crude producers. The increase in international crude prices will promote Russia's spending on mining, which in turn will boost the enthusiasm of Chinese enterprises to invest in the Russian mining industry, thus promoting the increase of China's direct investment in Russia. The decline in international crude prices will expose Chinese enterprises investing in Russia to great market risks, which will reduce the enthusiasm of Chinese enterprises investing in Russia, thereby hindering Chinese direct investment in Russia. Therefore, we propose **H5**: *A positive relationship exists between International crude prices and China's direct investment in Russia.*

4. MODEL AND DATA SELECTION

4.1. Model and Variable Definition

This paper uses the VAR model to select five quantifiable influential factors, and uses 16-year time series data from 2003 to 2018 to conduct an empirical analysis to examine the influence degree of each variable on China's direct investment in Russia. The VAR model is a measurement model suitable for analyzing and predicting time series data and exploring the relationship between random disturbances and system endogenous variables. According to Chen [5], the original formula of the VAR model is:

$$Y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + B_1 x_{t-1} + \dots + B_t x_{t-p} + U_t (t=1,2,\dots,n) \tag{1}$$

Where, A and B is the coefficient matrix to be estimated, y_t is the vector of endogenous variables, x_t is the vector of exogenous variables, P is the lag intervals for endogenous, t is the number of samples, U_t and is the stochastic error term. Bring the research variables of this article into the model to get the formula of this paper as:

$$\begin{aligned} OFDI = & A_1 OFDI_{t-1} + B_1 RGDP_{t-1} + C_1 Ear_{t-1} \\ & + D_1 Cor_{t-1} + E_1 Cru_{t-1} + F_1 Tra_{t-1} + A_2 \\ & OFDI_{t-2} + B_2 RGDP_{t-2} + C_2 Ear_{t-2} + \\ & D_2 Cor_{t-2} + E_2 Cru_{t-2} + F_2 Tra_{t-2} + U_t \end{aligned} \tag{2}$$

OFDI is China's direct investment in Russia. Referring to the evaluation criteria of OFDI by Xiang [6] and Lv [7], this paper uses the amount of the flow of China's direct investment in Russia as a measure. RGDP is Russian

economic scale. this paper uses Russia's GDP (in constant 2010 price) as a measure. Ear is the prices of Russian production factors. Referring to the evaluation criteria of Yang [8] and Cheng [9], this paper uses the average monthly salary of Russian employees as a measure. Cor is China's contracting projects to Russia. Referring to Cai's [10] evaluation criteria for the foreign contracted projects, this paper uses the completion amount of China's contracted projects to Russia as a measure. Tra is Sino-Russian import and export trade. Referring to the evaluation criteria of Cai [10], this paper uses the total amount of customs imports and exports of China and Russia over the years as a measure. Cru is the international crude prices. Most of Russia's crude oil resources are exported to Eurasia. Generally, the price of Brent crude is used as the reference price for crude trading in Europe. Therefore, this paper uses the average annual price of Brent crude as a measure.

4.2. Data Selection

The data of the flow of China's direct investment in Russia is derived from Statistical Bulletin of China's Outward Foreign Direct Investment. The data of Russia's GDP is derived from the World Bank Database. The data of average monthly salary of Russian employees is derived from the International Labour Organization Database. The data of China's completion amount of Russian contracted projects and the amount of customs imports and exports of China and Russia are derived from China Statistical Yearbook. The data of the price of Brent crude is derived from the Energy Information Administration Database.

5. EMPIRICAL RESULTS

Before establishing the VAR model, the data should be tested by ADF. If the ADF value is less than the critical value level, it means that the null hypothesis is rejected, the original sequence is stable. The results of the ADF test are shown in Table 1. According to the ADF test results, indicators Ear, Cor, Tra, and Cru are not stable, but they met the stability requirements after the first-order difference. After the ADF test, the optimal lag order of the pre-estimated model should be determined. This paper uses Eviews10 to determine the optimal lag order of the pre-estimated model is the first order. After determining the optimal lag order of the pre-estimated mode, it is necessary to test the stability of the pre-estimated VAR model. All the reciprocal points of the characteristic roots in this model fall within the unit circle, indicating that this VAR model is stable and can be used for Impulse Response Analysis. By applying impulse response to a variable in the model, the long-term dynamic impact of the variable on other variables in the model in each lag period can be more intuitively demonstrated.

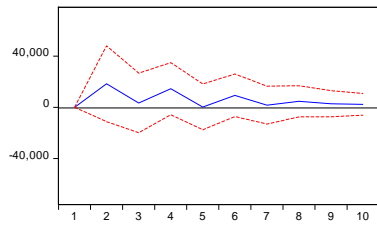


Figure 1 Response of OFDI to RGDP

As can be seen from Figure 1, when a positive impulse is given to RGDP in the current phase, OFDI reaches the highest point in the second phase, and maintains a positive level after fluctuation in the first 8 phases. It shows that the Russian economy scale will be passed an effect of fluctuation to China's direct investment in Russia in the short term, but it will have a positive impact on China's direct investment in Russia in the long term. H1 holds.

When a positive impulse is given to Ear in the current phase, OFDI fluctuates in the first 8 phases and reaches the lowest response in the fifth phase. From the ninth phase, it shows a stable negative influence. It shows that the prices of Russian production factors will have a fluctuation effect on China's direct investment in Russia in the short term, but it will have a negative impact on China's direct investment in Russia in the long term. Therefore, H2 holds.

When a positive impulse is given to Cor in the current phase, OFDI reaches the lowest response in the second

phase and reaches the highest response in the sixth phase. From the eighth phase, it shows a stable positive impact. It shows that due to the different industries, behaviors, and purposes of China's contracting projects to Russia, there are structural problems in the short-term. For example, in order to avoid investment risks, construction enterprises prefer to use contracted projects for foreign economic cooperation rather than direct cross-border investment, resulting in a negative impact on OFDI in the early stage. But this kind of negative impact is short-term. H3 holds.

When a positive impulse is given to Tra in the current phase, OFDI fluctuates up and down in the first 5 phases. Reaches the highest response in the second phase, reaches the lowest response in the third phase, and gradually converges and maintains a certain positive value level after the sixth phase. It shows that some international trade manufacturers will take the way of import and export to carry out economic cooperation with Russia in the short term. But in the long run, some enterprises will turn trade cooperation to investment, which will bring positive impact on China's direct investment in Russia. H4 holds.

When a positive impulse is given to Cru in the current phase, OFDI fluctuates up and down in the first 7 phases, and gradually converges and maintains a certain positive value level after the eighth phase. It shows that the international crude prices has a volatile impact on China's direct investment in Russia in the short term, but in the long term, it will become a positive impact. H5 holds.

Table 1 ADF test results

Variables	ADF value	5% critical value	10% critical value	Results
OFDI	-4.094006	-3.759743	-3.324976	stationary
RGDP	-3.542674	-3.144920	-2.713751	stationary
Ear	-3.324220	-3.759743	-3.324976	nonstationary
Cor	-2.596525	-3.759743	-3.324976	nonstationary
Tra	-2.855387	-3.791172	-3.342253	nonstationary
Cru	-2.088445	-3.081002	-2.681330	nonstationary
dEar	-4.424321	-3.759743	-3.324976	stationary
dCor	-5.296364	-3.759743	-3.324976	stationary
dTra	-3.161231	-3.081002	-2.681330	stationary
dCru	-3.214158	-3.081002	-2.681330	stationary

Table 2 Variance Decomposition analysis results

Phases	OFDI	DCor	RGDP	DCru	DEar	DTra
1	100	0	0	0	0	0
2	67.10	17.81	6.90	1.60	2.77	3.81
3	62.87	21.81	6.19	1.84	2.61	4.68
4	58.90	20.41	9.28	2.07	3.83	5.51
5	56.84	22.02	8.89	2.41	4.55	5.28
6	55.56	21.85	10.02	2.36	4.99	5.22
7	54.91	21.85	9.95	2.46	5.51	5.32
8	54.68	21.80	10.24	2.48	5.50	5.30
9	54.46	21.72	10.31	2.50	5.60	5.41
10	54.37	21.68	10.38	2.55	5.62	5.41

Variance Decomposition analyzes the contribution of each variable to the overall structure of the VAR model from another perspective. The greater the contribution, the higher the degree of interpretation of the model. According to Table 2: the contribution rate of China's contracting projects to Russia, Russian economic scale, Sino-Russian import and export trade and international crude prices to China's direct investment in Russia are 21.68%, 10.38%, 5.41% and 2.55%, and they all have a positive impact in the long run. The contribution rate of the prices of Russian production factors to China's direct investment in Russia is 5.62%, and it has a negative impact in the long run.

6. CONCLUSIONS

This paper introduces five main factors that influence China's direct investment in Russia, using time series data to establish a VAR model for empirical analysis, and draws the following conclusions: (1) China's contracting projects to Russia have a significant promotion effect on Chinese direct investment in Russia. Most enterprises prefer to invest directly to enter the Russian market in order to avoid risks. (2) Russia's economic scale has a positive impact on China's direct investment in Russia. The better the Russian economic environment is, the greater the market potential is, and the more it will attract Chinese enterprises to make direct investment in Russia. (3) The prices of Russian production factors have a negative impact on China's direct investment in Russia. The lower the Russian labor price level, the more it will attract Chinese enterprises to make direct investment in Russia. (4) Sino-Russian import and export trade to Russia has a positive impact on China's direct investment in Russia. In order to expand the overseas market, international trade enterprises with investment ability will directly convert the original product export and import into capital output under preferential policies and market opportunities. (5) International crude prices has a positive impact on China's direct investment in Russia. China's direct investment in Russia is a strong resource-seeking investment type. The higher the international crude prices is, the more Chinese enterprises' interest in mining industry of direct investment in Russia. But because China's direct investment in Russia will also flow to other industries, the impact of international crude prices is limited.

In order to promote the sustainable development of China's enterprises' investment in Russia (1) The Chinese government can start from the following three aspects: the first is to optimize and refine the cooperation projects between the two countries. The second is to build an investment platform to Russia with Chinese characteristics. The third is to strengthen cooperation in technology field with Russia under the context of "Digital Silk Road". (2) The Russian government can start from the following three aspects: the first is to build a new growth point for Sino-Russia economic and trade cooperation. The second is to plan the regional layout of foreign investment reasonably. The third is to improve the local financial

service system. (3) At the level of enterprises, Chinese enterprises should seize the investment opportunity and devote themselves to the value appreciation of Chinese local enterprises and the promotion of their international influence. Chinese enterprises can start from the following two aspects: the first is to pay attention to the demands of Russian local products. The second is to actively fulfill social responsibilities.

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