A Probe into the Risks of Direct Investment in Countries along China's "the Belt and Road Initiative"

Ming Li[1,2]

lvu6830@163.com

School of Economics and Management, China University of Petroleum, Qingdao 266580, China[1]
CNPC Managers Training Institute, Beijing 100096, China[2]

Abstract: In order to realize the effective allocation of international production factors and resources and build a community of interests between China and neighboring countries, a probe into the risk of China's direct investment in countries along the "the belt and road initiative" was put forward. Firstly, this paper discusses the overall situation of China's direct investment in countries along the "the belt and road initiative", and summarizes the characteristics of China's direct investment in countries along the ""from the aspects of investment location selection, industrial distribution, investment enterprises and investment methods. Secondly, referring to the traditional gravity model and production function, based on the panel data of 46 countries along the route from 2006 to 2016, a stochastic Frontier gravity model is constructed, and the full sample regression analysis is carried out by using Stata, Frontier and other software to make an empirical analysis on the factors that affect China's direct investment in countries along the route. The results show that: (1) China's direct investment in countries along the "the belt and road initiative" is developing rapidly, and the future investment trend is stable and positive; (2) The political environment of the host country and the situation of "energy saving and emission reduction" profoundly affect the efficiency and risk of China's direct investment in it. Based on the above conclusions and existing problems, this paper puts forward some countermeasures and suggestions to ensure the sustainability of the belt and road initiative.

Keywords: "the belt and road initiative"; Investment risk; Stochastic frontier gravity model

1 INTRODUCTION

The concept of "Belt and Road" is always based on the principle of mutual consultation, cooperation and sharing. China's cooperation with the countries along the Belt and Road is important and has been well received. The main skeleton of "six corridors, six roads, many countries and many ports" has been built [1]. The opening and operation of Yaji Railway, the completion of Ma Youyi Bridge in Maldives, the opening of Abu Dhabi Wharf in UAE and the newly put into operation of Mozula Wind Power Station in Montenegro are all achievements of the "the belt and road initiative". Together create "Belts and Roads" based on the trend of diversifying the world today, and is beneficial to build a society with a shared future for mankind. ; At the same time, it is still a real need for China's economic development to enter the "new normal" and for China to expand and deepen its opening[2-3].

2 RESEARCH METHODS

2.1 Setting of random frontier gravity model

This paper studies the efficiency of China's investment in "the belt and road initiative" countries and its related influencing factors. Referring to Armstrong's classical gravity model, the influencing factors are divided into natural factors and human factors[4-5].Based on the above model and research strategy, this paper will use China's OFDI flow to countries along the line as the explanatory variables, and join the explanatory variables, such as the economic scale of bilateral investment (usually expressed in GDP), geographical distance, whether there is a common border and the process of host countries, into the stochastic frontier gravity model. First of all, this paper adopts one-step regression method, and brings the inefficiency into the regression model analysis at the same time. Secondly, due to the panel data and the research purpose, the SFA model is established according to Battese & Coelli model $y_{it} = bX_{ij} + (u_{it} - m_{it})$. Finally, we need to get the model random front gravity model expression:

$$InOFI_{ijt} = b_0 + b_1 lnGDP_{it} + b_2 lnGDP_{jt} + b_3 lnDist_{ij} +$$
$$b_4 Contig_{ij} + b_5 Inter_{jt} + b_6 Lang_{ij} + u_{ijt} - m_{ijt} \tag{1}$$

Where $\beta 0$ is the intercept term, $\beta 1$, $\beta 2..\beta 6$ represent the correlation variable coefficients.

2.2 investment inefficiency model setting,

In order to further explore the factors that influence the inefficiency of China's direct investment in countries along the route, an investment inefficiency model is established. The opening degree of the host country, whether to join the WTO, whether to establish a free trade zone with China, the host country's government and legal environment are included in the investment inefficiency model [6].

Technical inefficiency function model:

$$m_{ijt} = a_0 + a_1 Open_{jt} + a_2 WTO_{jt} + a_3 FTA_{jt} + a_4 Cofe_{jt} + a_5 Cotr_{jt} + d_{jt} \tag{2}$$

Among them, $\alpha 0$ represents the constant term to be estimated, $\alpha 1$, $\alpha 2$, ... $\alpha 5$ represents the coefficient of related variables, and δjt is a random error term, which obeys the normal distribution.

$$g = s_m^2 / \left(s_m^2 + s_u^2 \right) \tag{3}$$

$$s^2 = s_m^2 + s_u^2 \tag{4}$$

Whether the established model is reasonable is judged by the magnitude of γ.

2.3 Model applicability test

Because the function form of the stochastic frontier gravity model has a high influence on the estimation method, it is necessary to test the applicability of this model [7]. Firstly, the existence of investment inefficiency is tested hypothetically, that is, whether uij is zero; Secondly, when uij≠0, further test whether inefficiency changes with time, that is, whether η is zero; Finally, in order to avoid the autocorrelation of explanatory variables and check whether there is multicollinearity, the specific idea is shown in Figure 1:
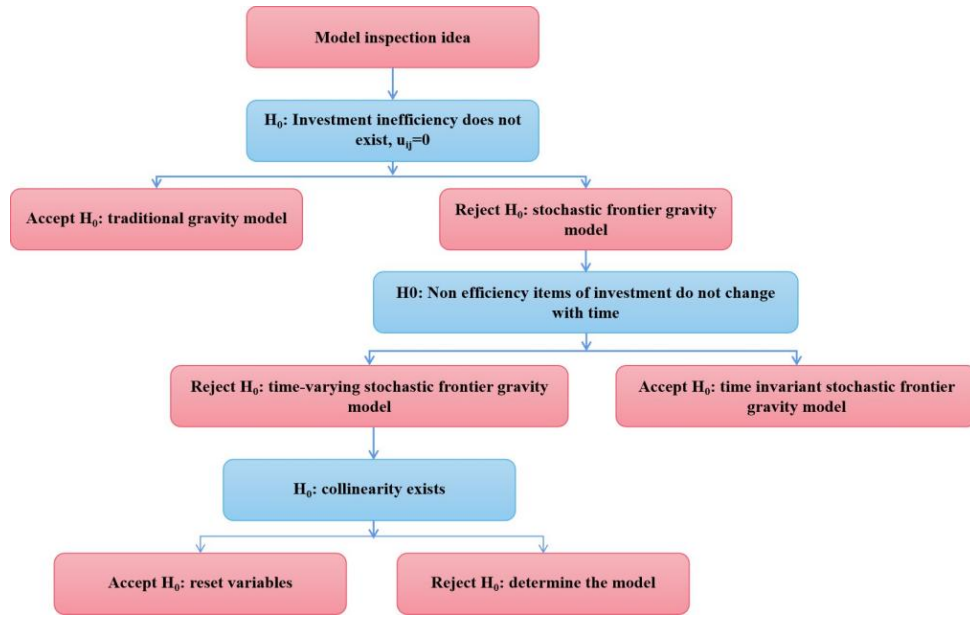

Fig. 1: Thoughts on applicability test of stochastic frontier model

3 RESULT ANALYSIS

3.1 Regression results of time-varying stochastic frontier model

In this paper, Stata14.0 software is used to estimate the models of formulas (5) and (6), and the results are as follows: (1) The estimation results of stochastic frontier are shown in Table 1, and η passes the test at 5% significance level, P=0.045, which indicates that the stochastic frontier model should be a time-varying model, and the corresponding expression is:

$$1nOFDI_{ijt} = 16.32 + 1.451InGDP_{it} + 1.519InGDP_{jt} - 2.522InDist_{ij} +$$
$$0.455Contig_{ij} + 0.014Inter_{jt} + 1.548Lang_{ij} + V_{ijt} - U_{ijt} \qquad （5）$$

Table 1: Comparison between time-invariant model and time-varying model of stochastic frontier

	Time-invariant model				Time-varying model			
Var	Coef	SE	Z	P	Coef	SE	Z	P
InGDPit	1.664	0.1358	11.63	0.000***	1.441	0.2307	3.02	0.000***
InGDPjt	0.510	0.0814	5.47	0.000***	1.508	0.0803	5.58	0.000***
InDistij	-2.386	0.4366	-1.45	0.000***	-2.411	0.5272	-4.58	0.000***
Contigij	0.437	0.4331	1.01	0.302	0.444	0.4307	1.02	0.301
Interjt	0.012	0.145	0.75	0.381	0.013	0.0145	0.80	0.358
Langij	1.508	0.7601	1.86	0.038*	1.537	0.6748	1.84	0.038**
cons	14.101	4.7784	2.80	0.003***	15.21	5.0472	2.05	0.002*

Note: * * *, * * and * * are at the significance level of 1%, 5% and 10% respectively.

It can be seen from the regression results in Table 1 that in the stochastic front the time difference between the crash model, indicating that the market size and economic development level of the host country are important factors to determine foreign investment [8].

3.3 Analysis of the results of direct investment efficiency in countries along the route

Overall, the investment efficiency is at a low level, showing an upward trend. First, as can be seen from Figure 2, whether from the perspective of China's direct investment to countries along the route or investment efficiency, although the investment scale and efficiency are generally low, it still shows a steady upward trend.
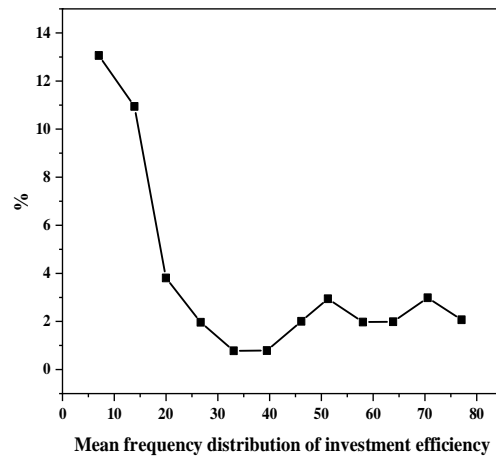

Fig 2: Average Frequency Distribution of Investment Efficiency from 2006 to 2016

To sum up, first of all, the total effect of China's investment in the countries along the "Belt and Road" from 2006 to 2016 has been low, indicating that there is still great room for China to improve the direct work of these countries, and the capacity needed to be tapped; Second, after the "Belt and Road" was put forward, the performance of China's foreign investment did not improve significantly in 2014, and even the performance efficiency of investment in West Asia and North Africa has increased from 0.313 in 2013 to 0.307 in 2014. This may be because although the "Belt and Road" initiative provides new opportunities for China to take the initiative, "Belt and Road" construction is dedicated to the long-term establishment of good cooperation of equality and win-win results, In order to achieve the general business, it is necessary to sacrifice short-term investment income for win-win cooperation in the long term [9-10].

4 CONCLUSIONS

Based on the panel data of 46 countries along the "Belt and Road" from 2006 to 2016, this paper constructs the stochastic forward time difference to analyze the investment of China and these countries, and draw the following conclusions:

The risk of companies has increased affecting the scale of China's foreign investment. The more stable the host country's government, better economic supervision and better laws, can attract China's foreign investment. The adjacent results indicate a neutral effect. The host country is geographically and economically adjacent to China, which can promote China's foreign investment in that country. Fifth, compared with "One Road" countries, "Belt and Road" countries are closer to China, which can better drive the economic scale of China's foreign investment .

REFERENCES

[1]   Chen, Y. ,   Chao, Y. ,   Liu, W. ,   Tao, K. , &   Lian, P. . (2021). Make friends, not money: how chinese enterprises select transport infrastructure investment locations along the belt and road. Transport Policy, 101.

[2]   Hashemizadeh, A. ,   Ju, Y. ,   Bamakan, S. , &   Le, H. P. . (2021). Renewable energy investment risk assessment in belt and road initiative countries under uncertainty conditions.

[3]   Gong, Z. ,   Chan, F. , &   Wu, Y. . (2021). Borrowing hong kong's international standards: a steppingstone for the chinese "belt and road" going out?. Sustainability, 13(6), 3485.

[4]   Galkin, P. ,   Chen, D. , &   Ke, J. . (2020). China's Energy Investment Through the Lens of the Belt and Road Initiative.

[5]   B Gürel, &   Kozluca, M. . (2022). Chinese investment in turkey: the belt and road initiative, rising expectations and ground realities. LSE Research Online Documents on Economics.

[6]   Chen, J. ,   Liu, Y. , &   Liu, W. . (2020). Investment facilitation and china's outward foreign direct investment along the belt and road (vol 61, 101458, 2020). China Economic Review(62-), 62.

[7]   Wang, L. . (2020). Trade and investment along the belt and road region soar amid global economic downturn.

[8]   Lu, C. , Duan, L. , Peng, G. , & Lv, B. . (2020). The promotion effect of the belt and road initiative on china's foreign direct investment: an empirical analysis based on firm level. Conscientia Beam(11).

[9]   Zhou, Y. . (2020). A study of country economic risks in countries along the belt and road: a classification method based on dea sort. Journal of Physics: Conference Series, 1453(1), 012147 (5pp).

[10]   Nugent, J. B. , & Lu, J. . (2021). China's outward foreign direct investment in the belt and road initiative: what are the motives for chinese firms to invest?. China Economic Review.