A study on the economic factors of foreign investment preference under the dual circulation pattern

Zhenbo Zhang[1], Yidan Hui[2]

[1]School of International Economics and Trade of Jiangxi University of Finance and Economics, 330013, China
[2]School of Management Science and Engineering of Central University of Finance and Economics, 100081, China

Abstract: Foreign capital is an important source of investment funds in the national economy. This paper selects the influencing factors of China's economic level to construct the index system, and uses the grey correlation model to analyze the exchange rate, the average wage growth rate of employees, commercial bank debt, and the annual growth rate of GDP. Research shows that: from an economic point of view, The exchange rate and the average wage growth rate of employees have a great impact on foreign investment. It also reveals the close relationship between foreign investment and China's economic development from the perspective of commercial bank debt and GDP annual growth rate. It provides a new perspective for China's foreign investment policy adjustment under the new normal.

Keywords: FDI, Grey correlation analysis, Economic resilience, exchange rate

1. Introduction

Foreign capital is one of the important driving forces of economic growth. Foreign direct investment plays an important role in China's economic development. As early as 1994, China has been the largest FDI inflow among developing countries in the middle and annual. In 2002, For the first time, it surpassed the United States to become the country with the largest annual FDI inflow in the world. Today, with the rapid development of China's economy, many developed countries, led by the United States, have repeatedly introduced unilateral trade protectionism policies, setting policy barriers for their excellent enterprises to invest abroad, which has led to many excellent enterprises returning to their native countries. While many Asian countries are enjoying the dividend brought by the inflow of foreign capital to their own economic development, they are also competing to introduce various preferential trade policies to attract foreign investment. This makes China lose the advantage of single market and increase the pressure of stabilizing foreign investment.

In today's international context, sino-US trade friction will seriously affect the economic and capital activities of the two countries, and even the world. Therefore, under the new normal of China's high-quality economic development, it is far from enough to rely on mainland capital alone. The construction of economy needs the reasonable intervention of foreign capital, so it is particularly important to study foreign capital preference. In this paper, innovation was made in the selection of variables, and the correlation between variables and FDI was obtained under reasonable assumptions. On the basis of analyzing the influencing factors of foreign investment in China and combining with the empirical results, relevant policy suggestions are given.

2. Analysis of research status

In recent years, scholars have been studying foreign capital. Gao Wei made a detailed summary of foreign investment and provided coherent theoretical support for the research of modern foreign capital. Lu Yiting analyzed the inducement of investment in China, and gave the conclusion of creating a soft environment for foreign investment and strengthening policy security. From the perspective of Sino US politics, Wang Panpan draws the conclusion that foreign political uncertainty has an impact on RMB exchange rate, which is then transmitted to China's economy. Tian Jianying studied the current situation of foreign investment in Ningbo, China, and made relevant policy suggestions on the utilization of foreign investment in Ningbo from the perspective of regional economy

China's economy is developing rapidly, but the growth of foreign capital is slowing down. Therefore, it has attracted a large number of scholars to explore the related factors of foreign capital, and the achievements are reflected in the theoretical and empirical aspects. Combined with the above literature, we can see that most of the existing literature research focuses on policy and other aspects. But this paper studies China as a whole. The reasons are as follows: first of all, The macro-economic data do not involve the average, and the errors caused by the imbalance of economic development in different regions are eliminated when the price differences in different regions are ignored; Secondly, China can accommodate the entry of different capital, which not only has flow but also has stock, In this way, the research on China as a whole will be more accurate and reflect China's overall ability to attract foreign investment; The most important thing is that in today's era of economic financialization, the economic ties of various countries are increasingly close. The study of China's overall strength can reveal China's future economic development potential and give foreign investors more reasonable expectations. The study of China's macro data will be more intuitive and clear to get the impact of each data on foreign investment preference, which will help the government to carry out macro-control in policy.

3. Data selection

This paper selects the data from 2008 to 2019 for analysis, and refers to the practice of Xiao Lisheng and other scholars, selects exchange rate as the research variable of China's macroeconomic situation under the international environment, puts forward GDP growth rate as China's macroeconomic resilience from the subjective psychological expectation of foreign investment, and explores whether domestic investment will affect foreign investment. Then we choose the average wage growth rate of Chinese employees to reflect the activity of China's private capital market and the debt ratio of commercial banks to represent the investment potential of Chinese people as variables. The data are collected from China Statistical Yearbook.

Table 1: Economic Indicators

particular year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
exchange rate (USD to RMB)	6.945	6.831	6.769	6.458	6.312	6.195	6.142	6.227	6.641	6.754	6.601	6.900
Average wage growth rate of Employed Persons (%)	16.9	11.58	13.32	14.40	11.89	10.08	9.47	10.06	8.93	9.99	10.89	9.81
Business liabilities (RMB 100 million)	306142	386036	440332	502591	560879	611611	657135	720402	799259	855636	903780	1071312
Annual GDP growth rate (%)	18.20	9.17	18.25	18.40	10.38	10.10	8.53	7.04	8.35	11.47	10.49	7.31

Choosing exchange rate as independent variable, the change of exchange rate increasingly depends on the supply and demand of the market. Therefore, the exchange rate reflects the macroeconomic fundamentals to a certain extent. In the process of economic globalization, exchange rate changes will affect the development of international trade and indirectly affect foreign investment in China. Second, the appreciation of RMB, In the long run, it reflects the overall improvement of China's economic fundamentals. The exchange rate of RMB against the US dollar depends on the degree of economic development differentiation between China and the United States. In this paper, the correlation between FDI and FDI is analyzed, and the correlation degree between FDI and FDI is obtained.

The liabilities of commercial banks reflect the savings of Chinese people to a certain extent, and are also an important manifestation of China's economic strength. In this paper, we will also draw the empirical conclusion that the change of firm debt affects FDI. For China, the rapid growth of GDP makes foreign investors have great confidence in China. After the new normal of China's economy, China's economy has changed from high-speed to high-quality development, and the growth rate is bound to slow down in the short term. However, when China's economy is transforming to high quality, the entry of foreign capital will accelerate China's transformation. This paper also studies this index as one of the influencing factors of foreign investment preference under the new normal.

Average wage growth rate of employed people, while China's economy is developing, the average wage of employed people will increase. Therefore, it is assumed here that while the average wage of employed residents in China increases, the proportion of their property income will also increase. At the same time, it is also an important opportunity to study the correlation between Chinese capital and foreign capital. It is necessary to use it as an indicator to explore whether there is a certain relationship between it and foreign investment.

4. Model select

This paper studies China's FDI and exchange rate, average wage growth rate of employed people, commercial bank liabilities and annual GDP growth rate through grey relational analysis, and obtains the correlation degree.

This method is usually used to analyze the influence degree of each factor on the result, and it can also be used to solve the problem of comprehensive class evaluation that changes with time. The core of this method is to establish the mother sequence that changes with time according to certain rules, take the change of each evaluation object with time as a subsequence, and find out the related conclusions between each subsequence and the mother sequence.

Specific steps:

(1) establishing the original data matrix of each related index x_i

$$x_i = (x_i(1)、\ x_i(2)、\ x_i(3)、\ x_i(4)、\ x_i(5)、\ x_i(6)、\ x_i(7)、\ x_i(8)、\ x_i(9)、\ x_i(10)、\ x_i(11)、\ x_i(12))$$

$$x_k = (x_k(1)、\ x_k(2)、\ x_k(3)、\ x_k(4)、\ x_k(5)、\ x_k(6)、\ x_k(7)、\ x_k(8)、\ x_k(9)、\ x_k(10)、\ x_k(11)、\ x_k(12))$$ among k

Said the original data of firm liabilities in 08-19 years, i Original data indicating the average employment wage in 2008-19 years.

(2) finding the initial transformation matrix $x_i^{'}$

$$x_i^{'} = (x_i(1)/x_i(1)、\ x_i(2)/x_i(1)......) = (x_i(1)^{'}、\ x_i(2)^{'}......)$$

(3) Difference sequence $\Delta_{oi}(k)$

$$\Delta_{oi}(k) = /x_o^{\ i}(k) - x_i^{?}(k)/ \tag{1}$$

(4) Calculate the correlation coefficient. $\xi_{oi}(k)$ And grey correlation degree. γ_{oi}

$$\xi_{oi}(k) = \frac{\min\limits_{i}\min\limits_{k}\Delta_{oi}(k) + \varphi\max\limits_{i}\max\limits_{k}\Delta_{oi}(k)}{\Delta_{oi}(k) + \varphi\max\limits_{i}\max\limits_{k}\Delta_{oi}(k)} \tag{2}$$

Among them, φ For the resolution coefficient, its function is to improve the difference between correlation coefficients, which is generally taken as $\varphi = 0.5$.

Then the grey correlation degree is:

$$\gamma_{oi} = \frac{\sum\limits_{k-1}^{n}\xi_{oi}(k)}{n-1} \tag{3}$$

(5) Sort the correlation degree. When the comparison series has m , the relative correlation value also has. m A, arranged according to its value size, that is, the association order. The degree of correlation directly reflects the relationship between the comparison series and the reference series.

5. Empirical analysis

This paper selects FDI as the dependent variable. x_0 , select four indicators of the same period as independent variables. $x_1 \sim x_4$, use MATLAB2014 to calculate the grey correlation degree of the data and sort the correlation degree according to the results. The results are shown in Table 2 and Table 3 below.

Table 2: Analysis results

particular year	exchange rate (USD to RMB)	Average wage growth rate of Employed Persons (%)	Business liabilities (RMB 100 million)	Annual GDP growth rate (%)
2008	1.0	1.0	1.0	1.0
2009	0.9910	0.7760	0.7777	0.6805
2010	0.8552	0.7378	0.7732	0.8762
2011	0.7547	0.7129	0.7219	0.8038
2012	0.7695	0.6647	0.6167	0.6107
2013	0.7350	0.6041	0.5737	0.5894
2014	0.7098	0.5774	0.5404	0.5484
2015	0.6807	0.5651	0.5039	0.5056
2016	0.7109	0.5454	0.4456	0.5255
2017	0.6921	0.5478	0.4213	0.5598
2018	0.6626	0.5511	0.4019	0.5312
2019	0.6665	0.5229	0.3333	0.4783

Table 3: Ranking of Correlation Strength

Correlation coefficient result		
Exchange rate (USD to RMB)	0.769	1
Average wage growth rate of employed persons (%)	0.650	2
Annual GDP growth rate (%)	0.642	3
Liabilities of commercial banks (RMB 100 million)	0.592	4

As can be seen from the figure above, the correlation degree of exchange rate is the highest, and the correlation coefficient is as high as 0.769, indicating that exchange rate factors have a significant impact on foreign investment in China. Therefore, stabilizing China's exchange rate fluctuations plays an important role in foreign investment, and it is of great significance to study exchange rate issues under the new normal of economy. The average wage growth rate of employed people is highly correlated with FDI. Under the background of double-cycle economic development, this conclusion has certain guiding significance for the coordinated development of internal and external economy. The impact of commercial bank liabilities is relatively weak. The correlation between GDP growth rate and FDI is more significant than that of corporate debt. From the empirical results, it can be seen that the high resilience of economic development makes foreign capital have good expectations on China's economy, which leads to a greater degree of closeness between the actual utilization of foreign capital and the potential foreign capital.

6. Conclusion suggestion

According to the empirical results, the above four indicators are all related to the quantity of FDI in China in different degrees. Therefore, except for liabilities of commercial banks, the other three indicators all have a certain impact on the number of FDI. The increase of the average wage of employed people will also affect the amount of FDI flowing into China to a certain extent. without considering the policy factors, The annual GDP growth rate is one of the important factors affecting the amount of foreign investment. And liabilities of commercial banks, has little influence on foreign investment. Combined with empirical conclusions, this paper gives some suggestions on how to better attract foreign investment in China under the new development pattern.

(1) Stabilize exchange rate fluctuations and ensure the inflow of foreign capital.

Based on the empirical results, the exchange rate has a great impact on the inflow of foreign capital and China's economy, so it cannot be allowed to develop excessively freely. Under the background of double circulation of domestic and foreign economy, the government should stabilize the fluctuation of exchange rate. So as to ensure the inflow of foreign capital, promote the high-quality development of China's economy.

(2) Stimulating the economic vitality of micro-subjects: investment

The growth rate of average wage of employed people in this paper reflects the huge investment potential of Chinese residents in the future. Therefore, the development of China's internal circular economy should fully tap the investment potential of Chinese residents. Stimulate the development of China's domestic investment, and promote China's economic growth through the positive transmission of FDI.

(3) Adjusting interest rates to stimulate China's economic development

China can also adopt relevant policies to attract foreign investment without much impact on domestic consumption and investment market. This conclusion has certain reference significance for promoting the formulation of double circular economic policies at home and abroad.

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