

Empirical Analysis of the Influencing Factors of Foreign Direct Investment (FDI) in China

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Abstract

Since the reform and opening up, China's economy has developed rapidly, and a large number of foreign-funded enterprises have settled in China. It is of great significance and role in clarifying the influencing factors affecting China's foreign direct investment, optimizing China's business environment, enhancing foreign investors' confidence in China's investment, and promoting the high-quality development of China's economy. This paper selects the relevant data of FDI and its influencing factors from 1998 to 2021, takes FDI as the explanatory variable, selects GDP, number of foreign-invested enterprises, per capita disposable wage income, and the proportion of total imports and exports as the main explanatory variables to establish a multiple linear regression model, and uses the measurement software Eviews9 to empirically analyze the above influencing factors, and finally obtains the factors that have a significant impact on foreign investment. It also advises China on enhancing the attractiveness of outbound investment to promote high-quality development.

Keywords

Foreign Direct Investment; Influencing Factors; Multiple Linear Regression Model.

1. Introduction

Since the reform and opening up, foreign direct investment has boosted China's rapid economic growth. In 2021, the number of foreign capital absorbed by China ushered in a record high, and the actual utilization increased by 14.9% year-on-year, breaking the trillion mark and reaching a record 1.15 trillion yuan. Even in the face of the dual pressure of the global new crown epidemic and the adjustment of the global industrial chain and supply chain, the scale of China's use of foreign capital has always maintained stable growth. Explore why China is an "adaptation zone" for foreign investment, what factors affect FDI, and how China and other countries like China can make more attractive to foreign investment and how to make good use of foreign investment.

2. Literature Review

Since the beginning of the 21st century, China has always maintained a high economic growth rate, and foreign investment has obviously been one of the important driving forces to promote China's economic development. The development of FDI in China is key to China's strategy of "bringing in" and "going out" to obtain resources such as capital, technology or markets (Pei Changhong, 2009; Yang Lianxing and Luo Yuhui, 2017). The Investment Development Path (IDP) theory holds that the technological spillover effect of FDI will promote economic development (Dunning, 1981), and scholars at home and abroad have enriched the theoretical and empirical connotation of this theory. Wang Li used data from 1979 to 2001 for modelling and concluded that an increased level of openness would enhance the attractiveness of foreign investment. Using the database of Chinese industrial enterprises from 2000 to 2013 and the data on

minimum wage standards of corresponding cities, Ma Shuang et al. found that the rapid rise in labor costs inhibited the entry of foreign direct investment.

In summary, existing studies have mixed conclusions on the influencing factors of FDI, and few articles have analyzed multiple factors of FDI. Based on the existing research results, this paper selects factors such as foreign direct investment, GDP, number of foreign-invested enterprises, per capita disposable wage income of residents, and total import and export volume to analyze the significant influencing factors of FDI from 1998 to 2021.

3. Variable Selection

3.1. Variables to be Explained:

1) Foreign Direct Investment (FDI)

Foreign direct investment (unit: 100 million yuan). This paper selects only one explanatory variable, namely FDI, which is the most intuitive type of data for the level of foreign investment in China, and the research described in this paper is also directly related to it.

3.2. Explanatory Variables:

1) Gross Domestic Product (GDP)

GDP (in 100 million yuan). This variable reflects the level of China's economic development, and to a certain extent, reflects the Chinese market, since the direct purpose of foreign investment is to find a market, so in theory, GDP and FDI are positively correlated, and the expected sign is positive.

2) Proportion of total imports and exports (OPEN)

Share of total imports and exports (open) = total imports and exports / GDP. The degree of openness to the outside world reflects the degree of integration of the country or region with the international market. Foreign direct investment is closely related to the degree of openness, and the higher the degree of dependence, the greater the proportion of total imports and exports. Therefore, the expected sign is positive.

3) Per capita disposable wage income (WAGE)

Per capita disposable wage income (unit: yuan). To some extent, this variable reflects the wage level of the Chinese labor force. Generally, foreign investors are willing to invest in areas where labor wages are low to reduce costs. However, the low wage level of labor corresponds to low quality and low level of science and technology, which is not conducive to the development of high and new technology, and these areas correspond to higher labor wages. Therefore, the relationship between WAGE and FDI is not clear.

4) Number of Foreign-Invested Enterprises (FIE)

Number of foreign-invested enterprises (unit: households). Generally speaking, the greater the number of foreign-invested enterprises in a region, the higher the amount of FDI in the region, and the more enterprises will have a agglomeration effect and help economic development. The expected sign is positive.

4. Conclusion Details of Data Sources

The data in this article are from the National Bureau of Statistics, as detailed in Table 1.

Table 1. Three Scheme comparing

Year	<i>FDI</i>	<i>GDP</i>	<i>OPEN</i>	<i>WAGE</i>	<i>FIE</i>
1998	454.63	85195.5071	31.65335934	1871.953666	227807
1999	403.19	90564.3758	33.0110264	2004.842817	212436
2000	407.15	100280.1393	39.16353754	2140.608356	203208
2001	468.78	110863.123	38.05018193	2341.380277	202306
2002	527.43	121717.4247	42.21100646	2607.158578	208056
2003	535.05	137422.0349	51.28977318	2880.41549	226373
2004	606.3	161840.1609	59.03299247	3256.647112	242284
2005	603.25	187318.9031	62.41856431	3673.148174	353030
2006	630.21	219438.4748	64.24340131	4158.68256	376711
2007	747.68	270092.3237	55.77650558	4938.183856	406442
2008	923.95	319244.6128	52.28720026	5728.040151	434937
2009	900.33	348517.7437	51.6247661	6314.823415	434248
2010	1057.35	412119.2558	48.94756485	7202.47692	445244
2011	1160.11	487940.1805	48.44896146	8370.865948	446487
2012	1117.16	538579.9535	45.19040458	9497.83498	440609
2013	1175.86	592963.2295	41.17628174	10533.91013	445962
2014	1195.62	643563.1045	38.14745256	11601.62556	460699
2015	1262.67	688858.218	37.47779779	12636.55016	481179
2016	1260.01	746395.0595	35.40240073	13703.69031	505151
2017	1310.35	832035.9486	33.42394526	14942.26322	539345
2018	1349.66	919281.1291	33.17919626	16238.93918	593276
2019	1381.35	986515.2023	31.99416687	17680.00984	627223
2020	1443.69	1015986.197	31.71452929	18517.61418	635402
2021	1734.83	1143669.733	34.18136721	19493.21354	663562

5. Model Estimation, Establishment and Testing

5.1. Variables to Be Explained: Model Estimation and Establishment.

In real life, socio-economic phenomena are often the result of a combination of factors, so multiple linear regression models are usually used to construct multiple linear regression models to estimate the most combination of multiple independent variables and make common predictions. Based on the actual situation and existing literature, this paper selects foreign direct investment (FDI) as the explanatory variables, and gross domestic product (GDP), proportion of total imports and exports (OPEN), per capita disposable wage income (WAGE) and number of foreign-invested enterprises (FIE) as explanatory variables. The multiple regression model is established as follows:

$$FDI = C + C_1 \cdot GDP + C_2 \cdot OPEN + C_3 \cdot WAGE + C_4 \cdot FIE + \varepsilon$$

Among them: convenient calculation, FDI, GDP, OPEN, WAGE, and FIE are counted as Y, X1, X2, X3, X4 respectively. C is the constant term, which is the random perturbation term:

$$Y = C + C_1 \cdot X_1 + C_2 \cdot X_2 + C_3 \cdot X_3 + C_4 \cdot X_4 + \varepsilon$$

5.2. Analysis of Results

The multiple linear regression model was preliminarily established by Eviews9 software, and the regression method was performed using OLS least squares method.

Preliminary return equation for FDI and various influencing factors:

$$FDI = 275.15 + 0.0037GDP + 2.1895OPEN - 0.1596WAGE + 0.0004FIE$$

It can be seen that GDP, the proportion of total imports and exports and the number of foreign-invested enterprises are positively correlated with foreign direct investment, while the per capita disposable wage income of residents is negatively correlated with it.

5.3. Model Testing and Correction

1) Statistical tests

(1) The goodness-of-fit test is used to determine the degree of fitting of the model to the sample observations, which is determined by the R-squared coefficient.

(2) The equation significance test refers to testing whether the linear relationship of all parameter values is significant at a certain significance level. Using the F test, Prob(F-statistic)=0.0000 in the case of significance level = 0.05, indicating that the equation is generally significant and passes the F test.

2) Multicollinearity test

The COR command is used to calculate the correlation coefficient between explanatory variables.

According to the data in the table, except for open, the correlation coefficient value between the explanatory variables is high, the absolute value is greater than 0.9, and there is multicollinearity.

In this paper, the stepwise regression method is used to correct the multicollinearity of the model, in which the explanatory variable GDP has the highest correlation degree with the explanatory variable FDI, so based on FDI, other explanatory variables are added in turn for stepwise regression. Therefore, the optimized equation is:

$$FDI = 155.1784 + 0.0361WAGE + 0.0012FIE$$

$$t = (1.7272) \quad (3.6159) \quad (2.9768), R^2=0.9479, F=190.88.$$

3) Heteroscedasticity test

The white test is used to verify whether the model has heteroscedasticity. At a significance level of 0.05, the threshold value is obtained by looking up the table $\chi_{0.05}^2(4) = 9.488$, Since $nR=12.8613 > 9.488$, Therefore, the null hypothesis is rejected, and the model has heteroscedasticity. In this paper, the logarithmic transformation method is used to correct the heteroscedasticity of the original model, and the logarithm of the original model variables is taken: $\ln^{(FDI)} = c + c_1 \ln^{(WAGE)} + c_2 \ln^{(FIE)} + u_i$, Apply the least squares method to estimate the two-log model, The further optimized model equation is:

$$\ln(FDI) = 0.2166 + 0.4822 \ln(WAGE) + 0.1800 \ln(FIE)$$

It is tested for white, as shown in Table 7. From the test results, $p=0.0576$ is greater than the preset significance level of 0.05, and the heteroscedasticity is eliminated.

6. Research Conclusions and Recommendations

Based on the above empirical analysis, GDP and wage levels are the most directly attractive to FDI. Every 1% increase in wages increases FDI by 52.78%. At the same time, although other variables are multicollinear, their role should not be underestimated.

For the current business environment, China should continue to improve the policy change and promote a higher level of opening up; At the same time, maintaining stable economic growth and accelerating the optimization and upgrading of economic structure are the core essence of attracting investment; Finally, it is necessary to improve infrastructure construction, narrow regional differences in foreign investment, and promote coordinated development.

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