



## An Empirical Analysis on the Impact of FDI on China's Economic Growth

Xiaohong Ma

School of Economic & Trade, Shihezi University

Shihezi 832003, China

Tel: 86-993-2599-494 E-mail: maxiaohong4356@126.com

### Abstract

Since 90s in 20<sup>th</sup> century, along with the establishment of applying the socialist market economy mechanism, China has gained considerable achievements in using foreign capitals. FDI (Foreign Direct Investment) has already become one of important source of capitals for Chinese modernization construction. China is the county attracting the most FDI in the world at present. Therefore, this paper tends to study the benefit of China using foreign capitals in perspective of FDI's impacts on GDP according to data from 1985 to 2008, which is meaningful for China making best use of foreign capitals and driving the economic development in China.

**Keywords:** FDI, GDP, Regression model

### 1. Introduction

In recent years, China's economy develops fast, showing a prosperous trend. One of the most wonderful achievements relies in the use of foreign capitals. China using foreign capitals changes along with the time, from a small quantity of experimenting units in a narrow scope with more restrictions to a comprehensive opening in a wide scope at multiple levels. The introduced foreign capitals rise from hundreds of millions, several billions, to dozens of billions annually. Regions introducing foreign capitals extend from several seaside cities and special areas to all districts. And more and more industries welcome foreign capitals.

Foreign-funded enterprises exert a significant effect on China economy. Jian Yao, a spokesman from the Ministry of Commerce, on Jan. 15<sup>th</sup>. 2009, says: in 2008 China's ability of absorbing foreign capitals keeps in rising. 92.395 billion US dollars are introduced into China in this year, rising by 23.58%, being the No.1 among the developing countries for 17 years. In perspective the industrial structure, in 2008 the service industry realizes a fast rising in absorbing foreign capitals. Excluding data of foreign capitals absorbed by banks, insurances, and securities, in 2008 China's service industry actually absorbs and uses 38.12 billion US dollars, rising by 24.23%, and accounting for 41.26% of the amount used by all industries. By 2007, there are 286,000 foreign-funded enterprises in China. The exports of foreign-funded enterprises account for 57.1% of China's total exports. Therefore, foreign capital is an irreplaceable factor for China's economic development.

### 2. The condition of China using FDI from 1985 to 2008.

By collecting data of China using FDI from 1985 to 2008, we can get the trend chart as follow.

According to this chart, the amount of China using FDI tends to rising during the twenty-four years in general. There are two fast-rising stages. The first stage is from 1992 to 1996, which is originated from Xiaoping Deng's speech. He advocated to enlarging the opening scope. Then, amounts of foreign capitals rush in. The second stage is from 2001 to now. In recent years, China's economy develops fast and the investment environment is improved greatly, what attract more foreign investments. Besides, because of the stable political environment and the nice economic development, many foreign investors are optimistic toward the investment in China.

### 3. The significance of analyzing the benefits of China using foreign capitals

Along with the gradually enlarging scale of China using foreign capitals, the effects of foreign capitals on China's economic and social life tend to be more significant. To analyze the benefits of China using foreign capitals correctly can check the result of using foreign capitals comprehensively, adjust the development strategy of opening and using foreign capitals in time, help to perfect the foreign-related economic and law system, improve the level of managing foreign investment affairs, and help to conclude experiences and lessons from experimenting units and later development, offering references for other areas using foreign capitals.

China using foreign capitals includes foreign direct investment and foreign indirect investment. Compared with foreign indirect investment, FDI can bring about techniques and crafts, organizational management skills, and marketing experiences comprehensively. Due to the impacts of FDI on the national economy, to analyze its relationship with GDP and understand the condition of China using foreign capitals is meaningful in theory and practice.

#### 4. The theoretical model and the empirical analysis

Now we make an empirical analysis of the impacts of FDI on GDP by constructing a regression model. In order to reflect the important effects of foreign capitals on China's economic growth, we introduce two variables, namely the saving and the investment, that driving the national economic growth. Besides, in order to show the driving effect of FDI on national economic growth clearly, we specially introduce the fixed asset investment as a variable that serves as a comparison in the model. The objectives of constructing the model:

- (1) Understand the changes of FDI in China from 1985 to 2008.
- (2) Use data to describe and analyze the impacts of FDI on GDP from 1985 to 2008.

Firstly, set the initial quaternary linear regression model:  $GDP = \alpha_0 FDI + \alpha_1 CO + \alpha_2 S + \alpha_3 FI$

Here, GDP (unit: 100 million Yuan); FDI (unit: 100 million US dollar); CO (unit: 100 million Yuan) stands for total consumption (include household consumption and government consumption); S (unit: 100 million) stands for the total savings of citizens and farmers at the end of the year; FI (unit: 100 million Yuan) means the total fixed asset investment at the end of the year.

Input the data in Table 1 into EVIEWS. The main menu View/Graph/Line draws figures for GDP and FDI as follow.

According to Figure 1, the GDP shows a prominent rising trend from 1985 to 2007. And there is a significant statistical law between FDI and GDP. Make OLS (Ordinary Least Squares) parameter estimation in EVIEWS and get the result as follow.

The regression model:

$$GDP = 10462.45 + 7.32FDI - 0.19CO + 0.80S + 0.49FI$$

(6.88)    (7.42)    (-1.25)    (5.63)    (4.02)

$$R^2 = 0.9984 \quad F = 2824.99 \quad DW = 1.18$$

(1) From the regression result, for this sample,  $\alpha_0 = 7.32 > 0$ . In other words, as FDI rises by 100 million Yuan, GDP will rise by 732 million Yuan.  $\alpha_1 = -0.19$ . It means the consumption is in an inverse proportion with the national economy, which conflicts with Keynes' national economic growth theory and is not in accordance with facts. That may be caused by data collection. Therefore, we delete this variable from this model. Besides,  $\alpha_2 = 0.80 > 0$  means savings are in a positive rising proportion with national economic growth. As savings rise by 100 million Yuan, GDP (gross domestic product) will rise by 80 million Yuan accordingly.  $\alpha_3 = 0.48$  also means fixed asset investment is in a positive correlation with national economic growth. But by comparing the parameters of variables, we find that the driving effect of FDI on GDP is significant.

(2) In the regression equation,  $T_1 = 6.88$ ,  $T_2 = 7.42$ ,  $T_4 = 5.63$ ,  $T_5 = 4.02$ . The values are larger than the 2.08 under the significance level 5%. Therefore, the explanation of variables FDI, S, and FI for GDP is significant.  $T_3 = -1.25 < 2.08$ . It means the variable CO is not significant and can not explain GDP correctly. So, the variable CO should be deleted from the model.

The regression result of F test on the significance of the whole equation is far larger than 4.31 under the significance level 5%. Therefore, the model is significant in general.

$DW = 1.18$ ,  $d_l = 1.08$ ,  $d_u = 1.66$ . Here, 1.18 is between  $d_l$  and  $d_u$ . It could not determine whether there is a sequence correlation for model's variables.  $R^2 = 0.9984$  means the model has a significant fitting effect in general.

From the prediction figure, we know that the regression MAPE is 7.00598.  $TIC = 0.01635$ ,  $CP = 0.999385$ ,  $MAPE < 10$ ,  $0 < TIC < 1$ ,  $CP \approx 1$ . It means the regression realizes high prediction accuracy. The predicted value is close to the real

value.

According to the prediction figure, the rising trends of FDI and GDP is similar. As the economy stays in a better state, FDI rises fast, for example the period from 1992 to 1996. As the economy stays in a worse state, FDI rises slowly, for example the period from 1996 to 2000. During this period, due to the impacts from international financial crisis, the rise FDI in China is slow. In recent years, because of China's entry to WTO, the stable and fast construction of market economy, and the improvement of infrastructure, all these factors form a favorable environment for foreign investors, plus the stable political environment, what are all favorable conditions for attracting more investments from foreigners. Therefore, even under the serious financial crisis, China is still the first choice for investments. Today, the FDI keeps rising and GDP tends to rise either, which indicate that China's economy develops well at present.

## 5. Conclusion

By the empirical analysis, the condition of China using foreign capitals (mainly FDI) is better. Foreign capitals have a significant effect on GDP. In a sense, it proves that foreign capitals exert positive effects on the national economic growth.

As we discuss the effects of foreign capitals on China economy, we should know that foreign capitals are endowed with foreign investors' pursuits, which will inevitably be restricted by foreign investors' market planning and global business strategies. For example, for the sake of interests, a trans-national company usually allocates capitals or reduces the production and exports of child-company in one country and increases the production and exports of child-company in another country, disturbing the market supply of the host country. Therefore, as we introduce foreign capitals, we should pay more attention to the effects of foreign capitals on China's economic growth. Meanwhile, as for the foreign capitals entering China, we should grasp the opportunity and develop the national economy rationally and fast.

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Table 1.

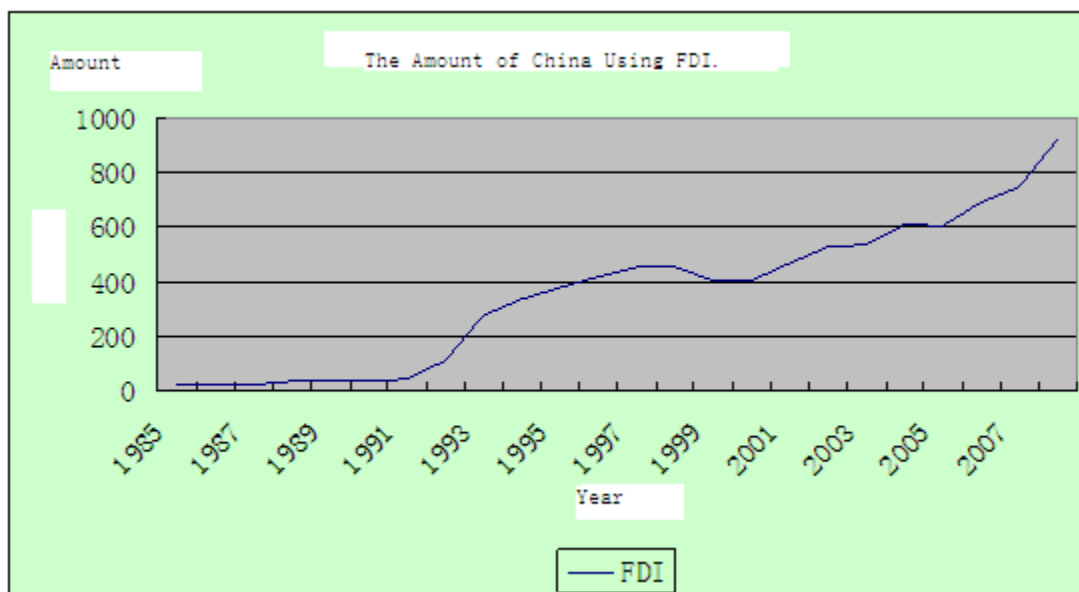


Table 2.

Dependent Variable: GDP				
Method: Least Squares				
Date: 02/19/09 Time: 21:23				
Sample(adjusted): 1985 2007				
Included observations: 23 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10462.45	1521.728	6.875375	0.0000
FDI	7.320399	0.986437	7.421054	0.0000
CO	-0.186012	0.148966	-1.248690	0.2278
S	0.800636	0.142224	5.629387	0.0000
FI	0.489700	0.121764	4.021705	0.0008
R-squared	0.998410	Mean dependent var		81112.25
Adjusted R-squared	0.998056	S.D. dependent var		68842.54
S.E. of regression	3035.180	Akaike info criterion		19.06359
Sum squared resid	1.66E+08	Schwarz criterion		19.31044
Log likelihood	-214.2313	F-statistic		2824.986
Durbin-Watson stat	1.179369	Prob(F-statistic)		0.000000

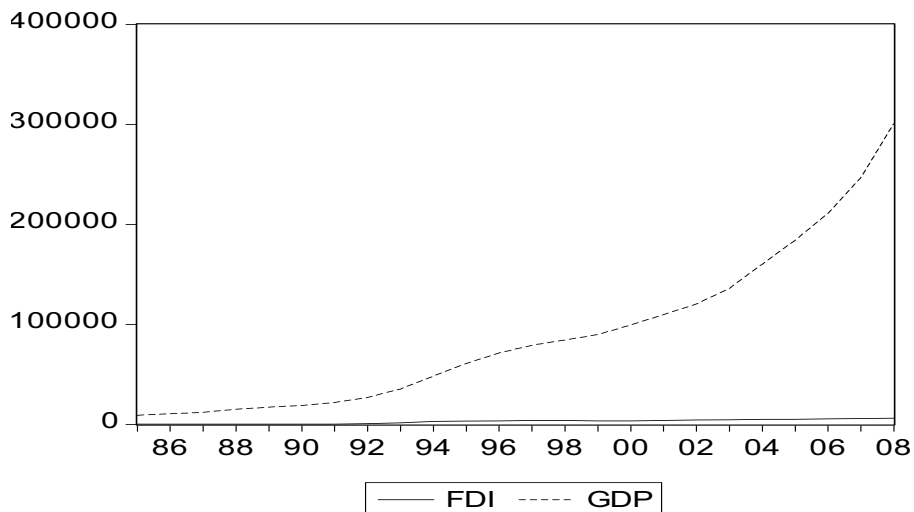


Figure 1. The linear graphs of GDP and FDI.

