

Study on Influence of Chongqing Outbound Foreign Direct Investment on Its Export trade

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Abstract. Based on the particularity of Chongqing inland open economy, adopting Eviews software, this paper, after reviewing the existing literature, makes use of Chongqing's time series data from 2004 to 2014, conducting the empirical study on the influence of Chongqing outbound foreign direct investment on its export trade. The Co-integration test results show that the outbound foreign direct investment of Chongqing has a significant role in promoting local export trade, and it is believed that this is due to the correct policy direction of the Chongqing municipal government and sector differences focused by Chongqing outbound Foreign Direct Investment and its foreign trade.

1. Introduction

After thirty years of reform and opening up, China has further improved the economic level and increased international influence. As the national strategy "One Belt One Road (OBOR)" is gradually pushed forward, Chinese enterprises have accelerated the "going out" pace substantially. Against this context, Chongqing, as one of the five Chinese municipalities, also as the western inland open highland, has made great progress in its foreign investment and foreign trade, mainly contributed by support of the local government policy. In year 2015, Chongqing foreign investment maintained 2 digit growth, ranking 12th in the whole country and top among the central and western regions. Meanwhile, for foreign trade, from the beginning of year 2004, Chongqing has gained steady progress. Especially in recent years, Chongqing has attracted a large number of OEM manufacturers and parts manufacturing enterprises including Foxconn, Inventec etc. driving the development of Chongqing processing trade. Moreover, the "Chongqing-Xinjiang-Europe" railway operated in Chongqing also further promotes its export trade.

Foreign direct investment and export trade are two important ways for a country to participate in the global production network. In Chongqing, the growth rate of foreign trade has declined in recent years, and the outbound foreign direct investment is growing desirably. The question is: will the current outbound foreign direct investment, encouraging our capital to go out on a large scale for local production and local sales, produce a "crowding out" or "alternative" negative impact on our export trade? This paper intends to give explanation for relationship between foreign direct investment and export, and also provide reference for Chongqing and even the whole country to better implement the "going out" strategy.

2. Data and Variable Declaration

This paper uses the time series data from year 2004 to year 2014. The data of Chongqing foreign investment flows and export trade are obtained from the authorities' statistics, like the annual China Statistical Yearbook, China Foreign Direct Investment Bulletin and Chongqing statistical yearbook.

In this paper, the model for empirical test is set as:

$$LEX_t = \varphi_0 + \beta LOFDI_t + \varepsilon_t \quad (1)$$

In (1), t indicating the year, φ_0 indicating the intercept, ε_t is an error term. Variable EX represents the export volume of Chongqing, and variable OFDI represents the foreign direct investment outbound flow. In order to eliminate the impact of price fluctuation, this paper takes

year 2004 as the base year, using the GDP deflator to convert the foreign direct investment data to constant 2004 dollars. This paper also uses the export price index to convert the export data to constant 2004 dollars. In addition, in order to linearize the trend, and eliminate the heteroscedasticity of time series data, we use the logarithmic form of all variables, which will not change the co integration relationship if it exists, namely, LEX and LOFDI respectively represent the natural logarithm of variables EX, OFDI. The data used in this paper is as Table 1 shows:

Table 1 Data used in this paper

year	OFDI	EX
2004	985	209119
2005	590	252054
2006	1691	335192
2007	8713	450772
2008	10448	572182
2009	4747	428008
2010	36109	748875
2011	40125	1983813
2012	52960	3857043
2013	34655	4679749
2014	76676	6340935

3. Co-integration test and Analysis

Most of the macroeconomic models may have problem of spurious regression because most macroeconomic variables are trended. So to solve it, we may take the difference in the series successively until the stationary is achieved. Once the stationary is achieved, we can take this stationary series for regression analysis.

At the formal level, stationarity can be checked by finding out if the time series data contain a unit root or not. Augmented Dickey Fuller (ADF) tests can be used for this purpose.

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i Y_{t-i} + \epsilon_t \quad (2)$$

Here $i = 1, 2, 3, \dots$. ΔY_{t-i} . It shows the i -time lagged value of dependent variable Y_t . ϵ_t is an error term.

The test results given in Table 2 show that the both given 2 time series are integrated of order two, namely $I(2)$, and thus the linear combination of them is stationary.

Table 2 ADF Unit Root Test

Variable	Type (C, T, K)	ADF value	Result
L EX	(C, T, 0)	-2.432867	non- stationary
Δ L EX		1.028776	non- stationary
Δ^2 L EX		-5.227169***	stationary
L OFDI	(0, 0, 0)	3.581318	non- stationary
Δ L OFDI		-1.229422	non- stationary
Δ^2 L OFDI		-2.655902***	stationary

C, T, K represent the constant term, the trend term and the lag order of the test equation. Δ indicates the first difference and Δ^2 indicates the second difference.

The technique for co-integration for long run as well as short run associations for multivariate equation is given by Johansen in 1988. Johansen Co-integration Test is used for series that are integrated of the same order. Table 2 shows that the variables are stationary at second difference, then we may proceed with Johansen Co-integration Test. Co-integration among variables may be examined by Eigen value or maximum likelihood method. According to the two kinds of statistics, the 2 time series variables of the regression equation have at most 1 co integration relationship. See Table 3.

Table 3 Johansen co integration test result

No. of Equations	Co-integ.	Eigenvalue	Trace statistic	Max-Eigen statistic
none		0.990764	51.69186***	51.53130***
at most 1		0.014491	0.160562	0.160562

Assuming that the time series have no deterministic trend, no trend or intercept in CE, lag intervals from 0 to 1.

Since the 2 variables have co integration relationship, according to the Eviews 6 software, the co integration equation can be derived:

$$L EX = 1.65 L OFDI \quad (3)$$

(0.01)

In equation (3), the number in brackets is the value of the standard deviation.

The co integration equation demonstrates that Chongqing's outbound foreign direct investment (OFDI) plays a positive and significant role in promoting the export trade of the city, which is consistent with the research results of the majority of domestic scholars. In the long run, OFDI has no negative impact such as crowding out or substitution effects on export trade, indicating that the municipal government vigorously encourage domestic enterprises to go out, failing to result in the decrease in its exports. This result can be explained by the Chongqing government policy guidance and Chongqing's foreign direct investment and foreign trade focused on the industry sector. Firstly, the government has fully played the functions of the service oriented government, so that enterprises become the main body making investment or production decisions. Secondly, Chongqing OFDI is not concentrated in labor-intensive manufacturing sector, but manufacturing capital and technology intensive industry and services, promoting the related intermediate goods exports, which can promote the overall growth of export trade in Chongqing.

4. Conclusion

For a long time, the relationship between foreign direct investment and export is a hot issue in the field of international economics. However, research conclusions are still unable to reach consensus. The study on Chinese situation basically focuses on the national macro level, which will inevitably hide the heterogeneity of different regions and generate sample estimation error, leading to unconvincing conclusion. This paper, using the Eviews software, based on the particularity of open economy in Chongqing, has conducted the empirical analysis of the impact of Chongqing's outbound foreign direct investment on its export trade from year 2004 to 2014, and results show that the Chongqing OFDI has a significant role in promoting the export trade.

Therefore, in the face of the increasingly complex international environment and domestic economic downturn, Chongqing should take the initiative to integrate into the national OBOR Initiative and the national Yangtze River Economic Belt Construction strategy, and actively adapt to the new normal economic development, continuing to make huge efforts to promote outbound foreign direct investment and export trade at the same time.

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