Research on the Impact of China's Import and Export Trade on the Optimization and Adjustment of Industrial Structure

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Abstract: By collecting the data of China's import and export volume and the three major industrial structures from 1997 to 2016, this paper studies the relationship between China's import and export trade and the third industrial structure by using ADF unit root test and cointegration test, and draws a conclusion that there is a long-term and stable relationship between China's import and export trade and the three major industries. For the tertiary industry, import has promoted its proportion, but export has restrained its proportion. Generally speaking, China's import and export trade has played an optimizing role in the industrial structure, promoting the proportion of tertiary industry to continue to increase, and achieving the "321" industrial structure optimization. At the same time, through the further optimization of the structure of foreign trade commodities and modes, we can better play the role of foreign trade in promoting the optimization of industrial structure.

1. Introduction

Since the reform and opening up, great changes have taken place in China's economic development. With the rapid development of domestic industries, the total volume of import and export trade has made rapid progress. However, China's industrial structure is at a low level and has been at the low end of the industrial chain for a long time. As a result, China is caught in the dilemma of "low technology balance".[1]. Therefore, internal and external economic imbalance is an urgent problem for China to solve, especially the adjustment of foreign trade structure and industrial structure. Although foreign trade may not be the direct driving force for the adjustment of industrial structure in China[2], it will help China reduce international trade frictions, avoid falling into the middle-income trap and promote the sustainable development of China's industry and import and export trade. Exhibition.

Firstly, this paper theoretically analyses the mechanism of foreign trade in optimizing industrial structure. Then it describes the current situation of China's foreign trade and industrial structure, and then analyses the relationship between China's import and export trade and industrial structure evolution from an empirical point of view. Finally, from the perspective of open economy, the paper puts forward relevant policy recommendations for industrial structure optimization.

2. An Analysis of the Functional Mechanism of Foreign Trade on the Optimization of Industrial Structure

Under the condition of open economy, foreign trade provides a broader market for a country. A country is facing more investment and consumption demand, and provides more opportunities for the optimization of its industrial structure. Through previous studies, most economists believe that foreign trade can promote the optimization of industrial structure. Foreign direct investment is more conducive to promoting the development of international trade, enhancing the added value of secondary and tertiary industries [3], and import trade is conducive to improving the competitiveness of superior industries[4].

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There is a positive correlation between import trade and economic growth[5], which can provide a country with more factors of production, including raw materials, primary, intermediate and final products, labor force and so on. By importing, the scarce production factors in the country can be obtained, the production cost can be reduced, and the competitiveness of the corresponding industries can be improved. Export trade structure has a positive impact on industrial structure [6]. On the one hand, it provides a way out for "surplus" products and resolves the backlog problem. On the other hand, it brings new demands, stimulates the development of related industries and promotes the continuous development and expansion of these industries. Generally speaking, a country can effectively improve the unreasonable industrial structure through import and export, thus promoting the continuous optimization of industrial structure.

3. Current Situation of China's Import and Export Trade and Industrial Structure

3.1 Current Situation of China's Import and Export Trade

Over the past 20 years, China's foreign trade has made considerable progress. Apart from the drop in the total import and export volume due to the financial crisis in 2009, China has maintained a relatively rapid growth trend as a whole. In 1997, China's total import and export volume was only 2696.72 billion yuan, nearly doubled in 2002 to 5137.82 billion yuan, doubled again in 2005 to 11692.18 billion yuan, exceeded 10 trillion yuan, reached nearly 18 trillion yuan in 2008, exceeded 2 billion yuan in 2010, and then by 2016, China's total import and export volume reached 2433.86 billion yuan.
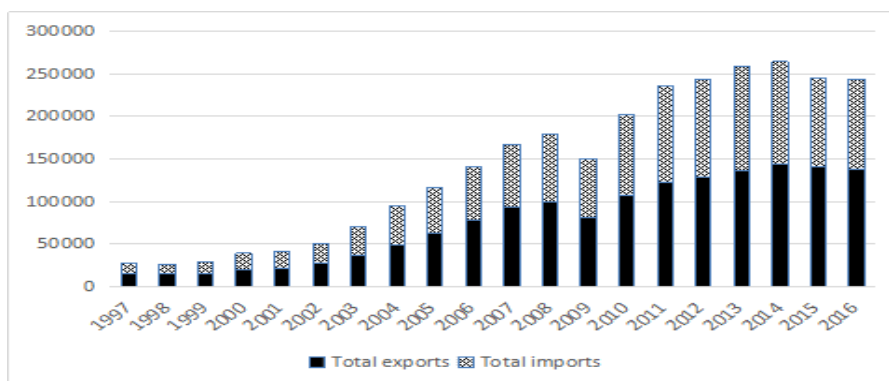

Figure 1: China's import and export data.

3.2 China's Industrial Structure

Generally speaking, China's GDP is in a relatively fast growth stage from 1997 to 2016. From the perspective of the three major industries, the output value of the primary industry is growing slowly, and the corresponding proportion continues to decline. The volatile growth of the secondary industry declined from 47.6% in 2006 to 45.9% in 2009 for the first time. For the second time, it remained 46.4% in 2010 in 2011 and has been declining since then, falling to 39.9% in 2016. The steady growth of the tertiary industry and the trend of accelerated growth in recent years have led to the gradual increase of the proportion of the tertiary industry, which surpassed the second industry in 2012 to become the largest industry, accounting for 51.6%. The tertiary industry reached 51.8% in 2016, exceeding the sum of the first and second industries，the "321" industrial structure has been truly realized.
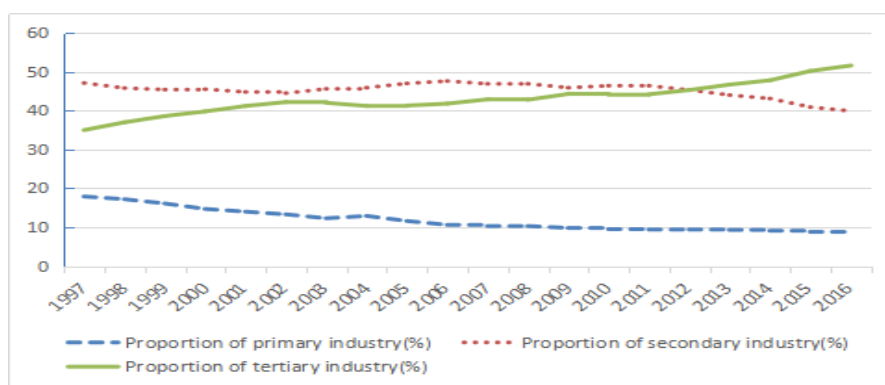

Figure 2: China's industrial share.

4. Empirical Analysis of China's Foreign Trade on Industrial Structure Optimization

4.1 Model Establishment

The proportion of tertiary industry output value to GDP in 1997-2016 and the import and export volume are recorded as Y, X and M respectively. The correlation was tested by co-integration. Relevant variables were logarithmicalized to eliminate the heteroscedasticity of time series. Logarithmic LnY, LnX and LnM are selected in turn to establish regression models.

$$LnY = C_0 + C_1 LnX + C_2 LnM$$

4.2 Unit Root Test

The stability of three groups of variables was tested by ADF unit root test.The ADF statistics of LnX, LnM and LnY are all above the critical value of 5%. Therefore, the original hypothesis that the existence of unit roots in LnX, LnM and LnY sequences is not stable can not be rejected.

Then, the first order difference sequences of variables LnX, LnM and LnY are tested by ADF, and the test values are less than 5% of the critical value. This shows that the original hypothesis is rejected at 95% confidence level. The LnX, LnM, LnY sequences do not have unit roots and are stable.

The horizontal sequence of variables LnX, LnM and LnY is not stationary sequence, while the first-order difference sequence is stationary sequence. Therefore, the variables LnX, LnM and LnY are first-order single-integer sequence, which have the condition of constructing cointegration test.

4.3 Cointegration Test

Through unit root test of three variables, we can know that all three variables are single-integer sequence of first order. Therefore, we can use co-integration test to determine whether there is a long-term stable relationship between variables. Cointegration tests of variables LnX, LnM and LnY are carried out. The results are as follows:

Table 1: Cointegration test results.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob. **
None*	0.892496	54.51726	29.79707	0
At most 1*	0.466678	16.6034	15.49471	0.0339
At most 2*	0.29393	5.916688	3.841466	0.015

lndscyzb	lnM	lnX
1	0.73294	-0.991593
	-0.28269	-0.28092

As can be seen from the table above, the original hypothesis is rejected at the 5% significance level. This shows that there is a long-term stable relationship between variables, and the cointegration equation is obtained as follows:

LnY=-0.991593 LnX+0.73294 LnM

That is, for every unit of import increase, Y increases by 0.73294 percentage points, and for every unit of export increase, Y decreases by 0.991593 percentage points.

5. Conclusion

Empirical analysis shows that there is a long-term stable relationship between China's import and export trade and the tertiary industrial structure. For the tertiary industry, import promotes its proportion, but export restrains its proportion. This prompts us to start with the structure of foreign trade commodities and modes, improve the structure of export products, increase the export of high-tech products, and accelerate the promotion of tertiary industry optimization.

In summary, China's import and export trade has played an optimizing role in the industrial structure, promoting the proportion of tertiary industry to continue to increase, and achieving the "321" industrial structure. At the same time, the structure of foreign trade commodities and modes needs to be further optimized in order to better play the role of foreign trade in promoting the optimization of industrial structure.

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