Study on the Influence of Foreign Trade Factors on Industrial Structure Optimization in Jiangsu Province

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Abstract: In early 2018, the United States, citing its large trade surplus, provoked trade frictions and imposed massive tariffs on Chinese goods. As the second largest foreign trade province in China, Jiangsu is bound to have an impact on its foreign trade. Based on the analysis of the status of Jiangsu province's foreign trade, this paper establishes an econometric model to carry out an empirical analysis of the impact of Jiangsu province's foreign trade on the industrial structure. Find some measures for Jiangsu province to reduce the impact of its industrial restructuring in the trade war.

1. Introduction

Since the beginning of 2018, the United States, citing the high trade surplus between China and the United States, has been stirring up trade frictions against China, and the tariffs on Chinese goods have been rising repeatedly. China then introduced corresponding countermeasures and imposed tariffs on some American goods, thus escalating the trade frictions between China and the United States into a trade war between the two countries.In this context, given that jiangsu is China's second largest foreign trade province, and the United States is its first export market and third largest source of imports, a sino-us trade war is bound to have a significant impact on jiangsu's foreign trade.Since the beginning of the 13th five-year plan, jiangsu province is in a critical period of industrial structure transformation and upgrading.Based on the analysis of sino-us trade war and the status quo of jiangsu province's foreign trade, this paper makes an empirical analysis of the impact of jiangsu province's foreign trade on industrial structure by establishing an econometric model, and then puts forward countermeasures and Suggestions.In order to cope with the trade war and promote the industrial transformation and upgrading of jiangsu province, jiangsu should pay attention to realize the diversification of trading partners,improve thre ability of independent innovation, develop new and high technologies,reduce production costs and increase investment in trade in services.

2. Current situation of Jiangsu's foreign trade and industrial structure

2.1 Jiangsu province foreign trade development status

Since China's accession to the WTO in 2001, the foreign trade of Jiangsu province has maintained a rapid and stable development momentum. In 2003, the total import and export volume reached $113.67 billion, accounting for 13.3% of the total import and export volume of the whole country and ranking second.In 2017, Jiangsu's total import and export volume reached $591.139 billion, accounting for 14.4% of the total import and export volume of the country, with a trade surplus of 135.458 billion dollars.It can be seen that Jiangsu province has been a veritable trade province.

2.1.1 Import and export trade structure of Jiangsu province

From the perspective of the structure of import and export commodities, the absolute import of primary products and manufactured goods in jiangsu province is increasing, but the import

proportion of manufactured goods is decreasing, which indicates that the import substitution of manufactured goods in jiangsu province is developing well.In terms of exports, its exports of primary products have declined and its exports of manufactured goods have increased.In general, the export proportion of manufactured goods has increased to more than 98% in recent years, indicating that manufactured goods have been placed in a leading position among the export commodities of jiangsu province.

2.1.2 Jiangsu province's main export commodities and export markets

According to the 2017 trade statistics, mechanical and electrical products and high-tech products are the two major categories of export products in jiangsu province, accounting for 65.9 % and 38 % of the total export volume respectively.High-tech products have the characteristics of high profits and high added value, and high-tech industry, as a new industry, is an important part of the tertiary industry. High-tech products are getting more and more attention from governments around the world due to their unique advantages.By increasing the import of these products, Jiangsu encourages local manufacturers to copy and search for import substitutes to promote the development of this industry, which can play a better role in promoting the adjustment of the industrial structure of this province.

As of October 2018, the number of wto members has reached 164.Within the multilateral trade framework of the WTO, jiangsu's export market has become increasingly diversified, basically covering all countries and regions in the world.But the distribution of jiangsu's export market is extremely uneven, mainly concentrated in a few markets, among which the United States is the largest export market of jiangsu province.In 2017, jiangsu's exports to the United States reached $85.58 billion, accounting for 24.7 % of the province's total exports.

2.2 Industrial structure development status of Jiangsu province

Since the 13th five-year plan, the economic strength and foreign trade strength of jiangsu province have been significantly enhanced, and the level of productivity has been constantly improved.In 2017, jiangsu's gross domestic product (GDP) reached 85,900.94 billion yuan, accounting for 10.4% of the country's GDP.In recent years, the proportion of primary industry in Jiangsu province has continued to decline, from 11.75% in 2001 to 4.75% in 2017.After 2006, the secondary industry began to show a slow decline, and its proportion dropped to 45% in 2017.The proportion of the tertiary industry is on the rise, from 34.57% in 2004 to 50.25% in 2017, surpassing the secondary industry for the first time in 2015.Obviously, the industrial structure of Jiangsu province is constantly being adjusted and optimized, from the original "two- three-one" structure type, into the "three-two-one" structure type.It can be seen that Jiangsu province has achieved remarkable results in industrial transformation and upgrading in recent years.

3. Empirical analysis

In an open economy, if a country or region wants to maintain a healthy and stable economic development, it must ensure the coordinated development of internal economy and external economy. Foreign trade fully reflects the international competitiveness of a country or region's industry, and the evolution of trade structure also has a certain impact on the transformation and upgrading of industrial structure to a certain extent.

3.1 Data selection and model building

Cao wenpei (2010) studied the foreign trade and industrial structure of Jiangsu province on the basis of the semi-logarithmic equation of Channery and Serkun and the modeling idea of Yang quanfa, omitted the time variable and replaced the net capital inflow with the import and export volume of primary products and manufactured goods of Jiangsu province.

$$\ln(Y_i S) = C_{i0} + C_{i1} \ln Y + C_{i2} (\ln Y)^2 + C_{i3} \ln N + C_{i5} \ln PE \quad (1)$$

$$\ln(Y_i S) = C_{i0} + C_{i1} \ln Y + C_{i2} (\ln Y)^2 + C_{i3} \ln N + C_{i5} \ln ME \quad (2)$$

$$\ln(Y_i S) = C_{i0} + C_{i1} \ln Y + C_{i2} (\ln Y)^2 + C_{i3} \ln N + C_{i5} \ln PI \quad (3)$$

$$\ln(Y_i S) = C_{i0} + C_{i1} \ln Y + C_{i2} (\ln Y)^2 + C_{i3} \ln N + C_{i5} \ln MI \quad (4)$$

In the above formula, the YiS (I = 1, 2, 3), respectively in Jiangsu province, the proportion of three industries in GDP, Y per capita GDP in Jiangsu province, N Jiangsu province at the end of the total population (ten thousand people), PE, PI respectively primary products of export and import trade, the ME, MI respectively of manufactured goods export and import trade in Jiangsu province.

The data of primary products, manufactured goods and tertiary industries in Jiangsu province in this paper were selected from the statistical yearbook of Jiangsu province from 2001 to 2017.

3.2 Empirical results

After data processing, using the above formula and Eviews8.0 processing, the empirical data of the impact of the import and export of primary products and manufactured goods on the three industries of Jiangsu province were obtained.

Table.1. Empirical result on the impact of foreign trade on primary industry structure

Dependent variable: the logarithm (Y1S) of the proportion of primary industry production				
	Formula(3.1)	Formula(3.2)	Formula(3.3)	Formula(3.4)
C10	101.5873 (1.377879)	76.97484 (0.887079)	57.84712 (0.708712)	87.80582 (0.997428)
lnY	-1.596752 (-0.900909)	3.895344 (0.93908)	-3.713287 (-1.576587)	2.58865 (0.774339)
$(\ln Y)^2$	0.069389 (1.026186)	-0.165778 (-0.970117)	0.160232 (1.706946)	-0.109746 (-0.809807)
lnN	-10.71387 (-1.139654)	-11.194 (-0.947369)	-4.463004 (-0.428038)	-11.65292 (-0.989598)
lnPE	0.235045 (2.840081)			
lnME		-0.269055 (-1.543255)		
lnPI			-0.147722 (-1.770721)	
lnMI				-0.169821 (-1.611354)
R^2	0.981024	0.973523	0.974842	0.973913
D.W.	2.090745	1.270209	1.582377	1.129658
F	155.0904	110.3057	116.2446	111.9982

Note: the first row of each cell in the table represents the regression coefficient, and the following row represents the t-test value.

The confidence interval is set at 90%, the following conclusions can be drawn:

From the perspective of export, the regression coefficient of lnPE is 0.235045, and it has passed the T test, indicating that the export of primary products in Jiangsu province has a positive correlation with the primary industry.Primary products are mostly low value-added products such as agricultural products, while the primary industry is mostly agricultural products. Therefore, this result reasonably explains the declining proportion of primary products export and primary industry in jiangsu province in recent years.From the point of import, lnPI regression coefficient is 0.147722, and through the T test, shows that imports of primary products with the first industry in jiangsu province are negatively related with GDP, as a result of the primary products imports would grab

market share of domestic primary products, reduce the primary industry production, so the increase of primary products imports will have a negative impact on the development of the industry.

Table.2. Empirical result on the impact of foreign trade on secondary industry structure

Dependent variable: the logarithm (Y2S) of the proportion of secondary industry production				
	Formula(3.1)	Formula (3.2)	Formula (3.3)	Formula (3.4)
C20	4.3988 (0.219798)	-9.339052 (-0.534559)	6.385244 (0.395464)	-15.03461 (-0.940143)
lnY	3.182195 (6.614368)	1.733876 (2.076128)	2.636302 (5.658427)	1.836638 (3.0243)
$(lnY)^2$	-0.150783 (-8.214967)	-0.089865 (-2.611959)	-0.126623 (-6.819065)	-0.094488 (-3.838096)
lnN	-2.435999 (-0.954601)	-0.008434 (-0.003545)	-2.332943 (-1.131097)	0.580367 (0.271313)
lnPE	0.012324 (0.548595)			
lnME		0.070425 (2.006323)		
lnPI			0.0386 (2.339018)	
lnMI				0.05408 (2.824724)
R^2	0.986152	0.989371	0.99025	0.991474
D.W.	1.710693	1.776074	1.489515	1.914792
F	213.6418	279.2347	304.6956	348.867

Note: the first row of each cell in the table represents the regression coefficient, and the following row represents the t-test value.

The confidence interval is set at 90%, the following conclusions can be drawn:

The t-test value of lnPE is only 0.548595, which cannot pass the t-test, indicating that the export of primary products in Jiangsu province has basically no influence on the proportion of secondary industry.The regression coefficient of lnME is 0.070425, and the t-test shows that the export of manufactured goods in Jiangsu province is positively correlated with the proportion of the secondary industry.Most of the manufactured goods are produced in the secondary sector, so the increase in the export of manufactured goods is bound to promote the development of the secondary industry.According to the current development of Jiangsu, the export of manufactured goods is on the rise, but the proportion of the secondary industry is on the decline. The main reason is that most of the manufactured goods are exported in the form of processing trade, and the added value of the products produced is low, so the driving force for the secondary industry is insufficient.The lnPI regression coefficient was 0.0386 and passed the T test, indicating that the import of primary products in Jiangsu province was positively correlated with the proportion of the secondary industry.The import of primary products will replace the production of some domestic primary products, reduce the market share of primary industry production departments in the province, so that more labor, capital and other production factors flow to secondary industry production departments, and help the development of secondary industry production.Therefore, the import of primary products will promote the development of the secondary industry.The regression coefficient of lnMI is 0.05408, and it has passed the T test, indicating that the import of manufactured goods in Jiangsu province is positively correlated with the proportion of the secondary industry.Most of the foreign trade of manufactured goods in Jiangsu province is completed in the form of processing trade, which has low technical content and low added value, making a low contribution to the development of the secondary industry in Jiangsu province.The import of high-tech manufactured goods is conducive to the introduction of advanced technology and equipment, which can help Jiangsu

province produce high-tech industrial products, increase the added value of products, improve product profit margin, and promote the development of its secondary industry sector.

Table.3. Empirical result on the impact of foreign trade on tertiary industry structure

Dependent variable: the logarithm (Y3S) of the proportion of tertiary industry production				
	Formula (3.1)	Formula (3.2)	Formula (3.3)	Formula (3.4)
C30	-30.70557 (-1.216109)	-17.02878 (-0.730791)	-33.17728 (-1.555116)	-10.63607 (-0.480888)
lnY	-3.489269 (-5.748591)	-2.056333 (-1.846061)	-2.889016 (-4.69292)	-2.094614 (-2.493829)
$(lnY)^2$	0.163463 (7.058933)	0.103197 (2.248845)	0.136881 (5.578918)	0.105111 (3.087061)
lnN	5.403306 (1.678301)	2.991872 (0.942916)	5.322684 (1.953076)	2.285181 (0.772413)
lnPE	-0.012505 (-0.441207)			
lnME		-0.069675 (-1.488217)		
lnPI			-0.042455 (-1.946989)	
lnMI				-0.056055 (-2.116969)
R^2	0.991244	0.992489	0.993238	0.993522
D.W.	1.881863	1.98487	1.694151	2.100809
F	339.6315	396.3907	440.6706	460.0796

Note: the first row of each cell in the table represents the regression coefficient, and the following row represents the t-test value.

The confidence interval is set at 90%, the following conclusions can be drawn:

The t-test value of lnPE is only 0.441207, which cannot pass the t-test, indicating that the export of primary products has basically no impact on the tertiary industry.The t-test value of lnME is 1.488217, which cannot pass the t-test of 90% confidence interval, but can pass the t-test of 80% confidence interval, indicating that the export of manufactured goods is negatively correlated with the development of the tertiary industry.The export of manufactured goods in Jiangsu has little impact on the development of the tertiary industry.The regression coefficient of lnPI is -0.042455, and it has passed the T test, indicating that the import of primary products in Jiangsu province is negatively correlated with the proportion of the tertiary industry.Most of the imported primary products are of high technical content, such as green and organic vegetables, etc., all of which need technical research and have high added value. Therefore, the import of these products will affect the development of the tertiary industry.The regression coefficient of lnMI is -0.056055, and it has passed the T test, indicating that the import of manufactured goods in Jiangsu province is negatively correlated with the proportion of the tertiary industry.The manufactured goods of Jiangsu province are basically exported in the form of processing trade. The imported manufactured goods are all advanced products with high technology content. A considerable part of these manufactured goods are related to the tertiary industry sector, such as the research and development of high and new technology.Therefore, the import of manufactured goods will have a negative impact on the development of the tertiary industry.This is also a good explanation for the current situation that Jiangsu's imports of manufactured goods are decreasing while the tertiary industry is developing.

4. Measures

4.1 Diversify import and export markets

Jiangsu province relies too much on the American market in foreign trade, which contains great risks.Only by expanding the import and export market and reducing the proportion of the United States in its import and export market layout as far as possible, can Jiangsu reduce the loss caused by the trade war. In terms of export, Jiangsu's export products are mainly manufactured goods, so it is necessary to promote the development of its manufactured goods in other countries.

4.2 Improve the ability of independent innovation

Technology is the core element of industrial development. Only by mastering the core technology, can we lead the international division of labor and stand at the top of the global industrial chain.Jiangsu province can master the core technology through independent innovation and technology research and development, improve the technical content of commodities, drive the change of export commodity structure and increase the proportion of manufactured goods exported by general trade, so as to improve and optimize the industrial structure in the province.

4.3 Reduce production costs and increase investment in trade in services

On the one hand, enterprises can improve productivity and reduce labor cost by improving production technology. On the other hand, the government can adopt tax reduction and subsidy policies for these commodities, improve the fair and legal market environment, reduce the information asymmetry, and help enterprises reduce the cost of raw materials and production. Service trade is the pillar of the tertiary industry. The development of service trade can promote the development of the tertiary industry and further optimize the industrial structure in the province.

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