

Analysis of the Impact of Anhui Import and Export Trade on Regional Economic Growth

Li Qin¹, Zheng Yanweng¹, Zhao Jialin², Zhang Yun³, Wang Taotao¹

1. Institute of Finance, Anhui University of Finance and Economics
2. Institute of Accounting, Anhui University of Finance and Economics
3. Institute of Economics, Anhui University

ABSTRACT. *With the acceleration of economic globalization and trade integration, import and export trade between countries or regions is increasing. The degree of China's opening up has been expanding, and the import and export trade in Anhui has also been increasing. This article takes the relationship between Economic aggregate and import and export trade and economic growth in Anhui Province, analyzes the status of import and export trade in Anhui Province, and uses the relevant data of Anhui Province from 1999 to 2018 for parameter estimation, model testing, and quantitative analysis to find out that there is a correlation between the two. Finally, suggestions are made for planning the gathering area of import and export trade in Anhui Province, increasing import intensity, changing the structure of import and export trade, and encouraging the development of foreign trade enterprises and so on.*

KEYWORDS: *Import and export trade; Economic growth; Eviews; Regression analysis*

1. Introduction

With the acceleration of economic globalization and trade integration, various countries or regions are developing import and export trades to strengthen their economic ability and increase labor productivity at this stage. Countries or regions import high-quality products from other countries through import and export trade, and export products with good market prospects in their own countries.

In line with policy development and social development trends, Anhui Province is also vigorously developing import and export trade. Anhui Province is located in China's Yangtze River Delta Economic Belt. It is an inland province with stable economic operations. It is a province with convenient transportation and rich product resources. With the reform and opening up, China's import and export trade with other countries and regions has increased, and the degree of foreign trade has

continued to expand. The import and export trade of various provinces has also been continuously strengthened. The import and export trade volume of Anhui Province has increased year by year, but the strength of foreign trade is weak compared with the country, and the level of development of import and export trade is low. Compared with other provinces in the Yangtze River Delta Economic Belt, the gap is even more obvious.

2. Status of Anhui Economy and Import and Export Trade Growth

2.1. Economic Growth Status of Anhui Province

2.1.1. Characteristics of the total economic growth of Anhui Province

The total economic volume of Anhui Province has more than ten times since the founding of the People's Republic of China. The economic level of the province has continued to increase, from less than 3 billion to 3 trillion now. Anhui Province has completed the leap from low-income to middle-income province. The GDP level of Anhui Province in 2018 has increased by nearly 14 times compared with the GDP level two decades ago. With the sustained and rapid economic growth, since the 18th National Congress of the Communist Party of China, Anhui's GDP ranks seventh in the country, with an average annual growth rate of 8.9%.

Anhui Province is located in the Yangtze River Delta Economic Belt of China. As a large agricultural province, agricultural production is stable and the planting structure is optimized. The annual grain output ranked fourth in the country last year. The Anhui Province's industrial production efficiency has increased and economic operations have stabilized. The economic aggregate has increased year by year, from less than \$50 billion in 1999 to more than \$450 billion in 2018. However, in the Yangtze River Delta economic belt, the provinces ranked the bottom in terms of total GDP, and their level of development was obviously lagging behind. Anhui Province is located in the Yangtze River Delta region, but the level of economic development is average. The gap between urban and rural living standards is large and the lack of high-tech industries.

2.1.2. Industrial Structure Characteristics of Anhui Province

With the development of society and the improvement of the level of science and technology, the characteristics of the industrial structure in the province have changed significantly, from the original large agricultural province to the current emerging industrial province. At the beginning of the founding of the People's Republic of China, Anhui's economy was dominated by agriculture, and the proportion of secondary and tertiary industries was less than a quarter. After years of development, the ratio of the three industries has been adjusted from 27.53: 35.92: 36.55 in 1999 to 8.8: 46.1: 45.1 in 2018. In recent years, the proportion of the

primary industry and the secondary industry has gradually decreased, and the proportion of the third industry has increased. Although the industrial structure has been optimized a lot after many years of development, Anhui's industrial industry is mainly based on the basic raw material industry, and its development is relatively slow. The technology innovation industry is not strong. There are many high-consumption industries in the province, which have a great impact on the environment.

2.2. Status of Anhui Import and Export Trade

The import and export trade of Anhui Province began to develop from the time of reform and opening up. Before that, the foreign trade of Anhui Province was very backward, and the development of foreign trade was very slow. This situation did not gradually change until after the reform and opening up, and Anhui Province went from being closed inland to being fully open, and import and export trade developed rapidly. However, the horizontal competition is fierce. In 2018, the import and export trade of various provinces and cities generally achieved good development. Regional development is not balanced. In addition to the provinces and cities with rapid economic development in the eastern region, the performance of foreign trade in some provinces and cities in the central and western regions is also better than that of Anhui province. From the perspective of cities throughout the province, Hefei occupies nearly half of the province's foreign trade and other cities' import and export trade account for a small proportion. External environmental challenges have intensified. In 2018, Sino-US trade frictions continued to escalate, which had a greater impact on Anhui's foreign trade.

2.2.1. Total Import and Export Trade of Anhui Province

The degree of import and export trade and total trade volume in Anhui is constantly increasing. In 1999, the total import and export volume was only \$2.649 billion. In 2018, the import and export trade volume reached \$62.97 billion, with an average annual growth rate of 17.17%. The import and export trade volume increased from \$20 billion in 2010 to over \$50 billion in 2017. The total increase in import and export trade has been significant, and it is of great significance to Anhui Province, bringing the level of import and export trade in Anhui to a new height. However, compared with other provinces, Anhui's import and export trade strength is not outstanding, and the import and export development rate is slow. The export volume of products in the province has always been greater than the import volume, and there is a trade surplus. The export trade mainly promotes the economic development of the province, which is beneficial to the economic balance of Anhui Province, and the import and export balance has remained at a relatively stable level in recent years.

2.2.2. Commodity Structure of Anhui Import and Export Trade

The structure of Anhui's import and export trade products has improved. At present, the export commodities are mainly based on high-tech products and advanced processing products. Before 1978, agricultural products and simple processed products were the main export commodities in Anhui. After the reform and opening up, with the vigorous development of the industry in the province, industrial manufactured products gradually increased. Anhui Province strongly supports advanced technology and equipment to be invested in traditional industries and combines the adjustment of industrial structure with import and export. In 2018, the proportion of high-tech products in the province continued to increase, accounting for 27.8% of the total export value. It can be seen from the table that in recent years, Anhui Province has been importing and exporting a large number of industrial manufactured products, but the export of industrial products has been decreasing compared to the previous two years, and the number of primary products has been relatively small.

2.2.3. Ways of import and export trade in Anhui Province

After the formation of foreign trade with the “Belt and Road” countries, the “Belt and Road” countries have become the major foreign trade areas in Anhui Province, and the proportion of trade with these countries in the province's import and export trade has also increased year by year. Anhui will gradually expand the scale of trade, change the mode of import and export trade in accordance with the characteristics of foreign trade within the province, and increase the influence of the province's foreign trade. Anhui is focusing on building an import platform, organizing enterprises to actively participate in the China International Import Expo, and expanding import channels. Anhui Province will use the international exhibitions held in the province to launch out export products and select in high-quality imported products.

After Anhui Province joined in the Yangtze River Delta economic circle, it seized the precious opportunity of economic development. With the advantages of the Yangtze River Delta economic belt and the Belt and Road trade zone, it attracted a lot of overseas investment which lays the foundation for continued growth and upgrading. Anhui's import and export trade uses port resources to promote the construction of import and export logistics areas and speed up the efficiency of import and export commodities through customs. For enterprises participating in multinational projects such as overseas mergers and acquisitions and international production capacity, Anhui Province will issue a policy to strongly support its development.

General trade methods and feed processing trade methods are the main import and export trade ways in Anhui Province. With the expansion of the degree of openness, the number of import and export trade methods has increased. In Anhui Province, the proportion of import and export trade in processing trade of imported materials and bonded warehouses has increased year by year.

2.2.4. Distribution of Import and Export Trade Market in Anhui Province

Anhui's circle of friends in international trade has been expanding. From the beginning of the reform and opening up, Anhui's commodities have been exported only to neighboring countries and regions, but now it exports to 220 countries and regions. For these countries and regions, the scope of cooperation has gradually expanded including civil engineering, agriculture, manufacturing, social service and other fields. The form of cooperation has changed from a single overseas labor service to multiple forms of overseas resource development.

Because of its geographical location and economic development, the countries with the most import and export trade in Anhui Province are the United States, Japan, and South Korea. In 2018, the import and export trade with the United States even reached \$7.8 billion. The trade with US in the top ten countries' trade market accounts for 26.72%. In the fierce market competition, a large number of Anhui enterprises insist on using large-quality products to develop larger markets.

Anhui Province is an inland province of China, whose main trade markets are in Asia and the European Union. However, from the data of Anhui Province's import and export market in 2018, the top four import markets are Japan, Chile, the United States, and Australia, and Anhui Province. The top four export markets are the United States, India, Hong Kong, Japan. In recent years, Anhui's trade concentration has been declining, and Anhui's trade has gradually diversified, which makes less influence to Anhui.

2.2.5. Commodity transportation methods for import and export trade in Anhui

Anhui Province is located in the Yangtze River Delta, on the boundary between the North and the South. It has formed sufficient transportation network. The logistics and transportation methods are rich, and import and export trade is becoming more and more convenient. The rapid development of shipping, aviation, and rail transportation in Anhui Province. In terms of shipping transportation, the Yangtze River flows through the province to increase the development of shipping. There have been already ten ports in the province. In terms of aviation, Hefei has opened a number of direct flights to foreign countries. In 2018, the import and export of air transport reached 70.55 billion yuan, an increase of 17.4% compared to the situation in 2017. In terms of land, the highway construction in Anhui Province is extremely convenient, and it has multiple railways that run through the country. In 2018, the import and export of railway transportation was 2.13 billion yuan, an increase of 26.8% compared to the situation in 2017.

3. Empirical Analysis on the Relationship between Import and Export Trade and Economic Growth in Anhui Province

3.1. Selection of samples

In the empirical analysis, the sample data of Anhui Province's GDP and total import and export trade from 1999 to 2018 was selected using the Anhui Statistical Yearbook, with a sample capacity of 20. Use the exchange rate of the year to exchange RMB into ten thousand US dollars

Tab.1 GDP data of Anhui Province from 1999 to 2018

Year	Total import and export trade	GDP	Import and export as a percentage of GDP
1999	264844.0	3276208.192	0.081
2000	334684.0	3505151.277	0.095
2001	361997.0	3922379.008	0.092
2002	418097.0	4252615.808	0.098
2003	594781.0	4739772.865	0.125
2004	721155.5	5750238.622	0.125
2005	911938.8	6464290.461	0.141
2006	1224513.6	7574161.731	0.162
2007	1593228.6	9428253.045	0.169
2008	2018384.8	12126226.090	0.166
2009	1567772.6	14718826.330	0.107
2010	2427337.2	18100686.870	0.134
2011	3130924.6	23107528.510	0.135
2012	3928454.0	27320280.630	0.144
2013	4551896.9	30572745.920	0.149
2014	4917730.0	33940141.300	0.145
2015	4784453.2	35331112.320	0.135
2016	4441286.1	36745735.660	0.121
2017	5402162.6	40015995.730	0.135
2018	6297422.4	45345263.480	0.139

3.2. Model identification and introduction

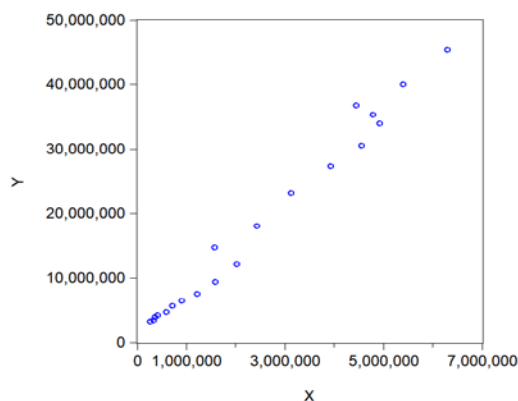


Fig.1. Scatter plot

The relationship between X and Y is determined by the unit root test using Eviews to determine that the regression relationship is not a pseudo-regression. Figure 1 can be seen that each point is roughly a straight line trend, which can be explained there is a linear relationship between them and a positive correlation. Build the following linear relationship model:

$$Y_i = \beta_1 + \beta_2 X_i + \gamma$$

In the model, β_1 is the intercept coefficient that affects GDP, that is other factors except for imports and exports. β_2 is the regression coefficient, and it is determined to understand the relationship between the explanatory variable X_i and the explained variable Y_i . The sum of other factors that have an impact on the explanatory variable Y_i , such as exchange rate and inflation.

3.3. Parameter Estimation

Tab.2 LS Regression results

Variable	Coefficient	Std.Error	t-Statistic	Prob.
c	537689.6	667402.1	0.805646	0.4310
x	7.124915	0.210919	33.78039	0.0000
R-squared	0.984471	Mean dependent var		18311881
Adjusted R-squared	0.983608	S.D. dependent var		14341479
S.E. of regression	1836147	Akaike info criterion		31.77888
Sum squared resid	6.07E+13	Schwarz criterion		31.87845
Log likelihood	-315.7888	Hannan-Quinn criter		31.79831
F-statistic	1141.115	Durbin-Watson stat		1.363099
Prob(F-statistic)	0.000000			

Based on the results in the figure, the model estimates the result as:

$$Y = 537689.6 + 7.124915X$$

$$s = (667402.1) \quad (0.210919)$$

$$t = (0.805646) \quad (33.78039)$$

$$R^2 = 0.984471 \quad F = 1141.115$$

3.4. Model test

3.4.1. Economic significance test

According to the model estimation results, β_1 is 7.124915, which means that for every 10,000 dollars of import and export trade in Anhui Province, the GDP of Anhui Province will increase by 71.24915 thousand dollars, which passes the economic significance test.

3.4.2. Statistical inference test

According to the estimation results of the above model, the determination coefficient $R_2 = 0.984471$, which shows that the model fits the sample well, and the change of the dependent variable can be described to a large extent quantitatively by the change of the explanatory variable. In the whole, the adjoint probability p of the F test value is far less than the significance level of 0.05, indicating that the overall linear relationship of the equation is significant. So the t test is passed.

3.4.3. Econometric Test

● Heteroscedasticity test

The White test will be used to verify whether the model has heteroscedasticity. From Tab.3, it can be seen that the output probability value (p) is 0.1987, which is greater than the significance level $\alpha = 0.05$. Then it is agreed that the model does not exist heteroscedasticity.

Tab.3 White test results

Variable	Coefficient	Std.Error	t-Statistic	Prob.
c	-1.18E+12	2.51E+12	-0.468995	0.6450
X^2	-0.643158	0.389166	-1.652659	0.1167
X	4268747.	2343453.	1.821563	0.0862
R-squared	0.173150	Mean dependent var		3.03E+12
Adjusted R-squared	0.075873	S.D. dependent var		5.04E+12
S.E. of regression	4.84E+12	Akaike info criterion		61.39323
Sum squared resid	3.99E+26	Schwarz criterion		61.54259
Log likelihood	-610.9323	Hannan-Quinn criter		61.42239
F-statistic	1.779977	Durbin-Watson stat		2.201883
Prob(F-statistic)	0.000000	Mean dependent var		

- Autocorrelation test

The DW test will be used to verify whether the model has autocorrelation. According to the Eviews regression results, $DW = 1.363099$. When the significance level $\alpha = 0.05$, check the DW test table to obtain $d_L = 1.20$ and $d_U = 1.41$. The DW value of the model is between d_L and $4-d_U$. According to the DW test regulations, the model passes the autocorrelation test, and there is no autocorrelation.

4. Analysis of results and related policy recommendations

4.1. Result analysis

The level of Anhui's import and export trade is increasing year by year, and the total amount of import and export trade is also increasing. Anhui Province is focusing on building an import platform, and the countries along the Belt and Road have become the major concentrated foreign trade areas in Anhui Province, expanding import channels. The structure of import and export commodities in the province has changed a lot. The export commodities have changed from original agricultural products, but now they are mainly processed, manufactured products and high-tech products. According to the characteristics of the province's foreign trade, the ways of import and export trade should be changed to increase the influence of the province's foreign trade. From the beginning of the reform and opening up, the commodities of Anhui Province were exported to only a few neighboring countries and regions but now it spread to 220 countries and regions. Utilizing its own geographical advantages, it has initially formed a complete transportation pattern of land, water and air.

The article analyzes and calculates the growth rate of imports and exports in Anhui Province, the proportion of imports and exports in GDP, and uses the econometric software to establish a regression model between import and export trade and GDP of Anhui Province. According to the model estimation results, there is a stable and positive linear relationship between the two, which indicates that each increase of 10,000 dollars in import and export trade of Anhui Province can lead to an increase of 71.42115 thousand US dollars in GDP.

4.2. Policy recommendations

4.2.1. Planning of import and export trade gathering areas in the province

The development of the level of import and export trade of cities in the province is seriously unbalanced. Hefei, the provincial capital, accounts for about 70% of the total import and export trade. The import and export trade is concentrated in the Hefei region. Wuhu is the second largest city in the province, which only occupies a little potation in trade market. Therefore, Anhui Province should concentrate on expanding trade clusters, and allocating resources rationally and so on. Set up a city

in southern Anhui and northern Anhui as an import and export trade cluster to promote the common progress of the province.

4.2.2. Increase imports

Both the long-term trade surplus and the trade deficit have an impact on the economy, so while encouraging Anhui Province to vigorously develop the export industry, it should also pay attention to the import industry and balance the proportion of the two in the total import and export. With the current exchange rate of the RMB, Anhui Province should seize the benefits brought by the current market and increase imports. On the one hand, the import of foreign high-tech products has improved the scientific and technological innovation capacity of Anhui Province, on the other hand, it is necessary to increase the import of scarce resources in the province and vigorously develop various industries to make Anhui's development more balanced.

4.2.3. Change the structure of import and export trade

The import and export trade structure of Anhui Province has been optimizing in recent years, but the import and export structure is still unreasonable. Anhui Province is a province with weak scientific and technological innovation capabilities, whose high-tech industry is still insufficient. Imports of products in this area should be increased and encourage the traditional industries to introduce advanced technology, equipment and equipment, and upgrade the traditional industries with scientific and technological innovation capabilities. With the development of social science and technology, Anhui Province should optimize import and export products according to its own trade characteristics and expand trade scale.

4.2.4. Encourage the development of foreign trade enterprises

The strength of Anhui's import and export trade is not strong, and the number of foreign trade enterprises is relatively small compared to other provinces in the Yangtze River Delta economic belt. Anhui Province should vigorously support the development of foreign trade enterprises. The government will gradually open up the right to operate export operations. At the same time, it will introduce relevant preferential policies to support and encourage its development, expand the scale of investment and increase the competitiveness of foreign trade markets. In terms of overseas investment, Anhui Province should increase capital investment to promote the development of import and export trade and increase the influence of import and export trade.

4.2.5. Expanding the opening platform

Anhui Province is focusing on building an import and export platform,

accelerating the construction of Anhui free trade zones, the construction of export processing zones and bonded logistics centers, and increasing the import and export trade modes of Anhui. The countries along the Belt and Road have become the main concentrated import and export trade areas in Anhui Province, expanding import channels. Leverage the resources of the Yangtze River Economic Belt to expand trade openness and build a strong trade province. Anhui Province should increase support for opening to the north, west and south of Anhui according to local conditions.

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