On the Role of International Trade in the Promotion of China's Economic Growth?

——An Empirical Analysis Based on Time Series

Yuqi Huang[1,a,*]

[1]*Department of Agricultural Business, China Agricutural University, Qinghuadonglu Street, Beijing, China*
a. *Yuqi.huang@okstate.edu*
corresponding author

Keywords: international trade, economic growth, empirical analysis

Abstract: The role of international trade in promoting a country's economic growth has always been one of the hot topics among economists, and the resulting theories and policies of international trade also vary from one to another. First of all, the literature on the theories of international trade by economists is reviewed. And then, different theories of trade are analyzed, and empirical analysis of the relationship between international trade and China's economic growth is carried out. Finally, the characteristics of foreign trade in China are concluded, and relevant policy suggestions are made.

1. Introduction

The relationship between international trade and the economic growth of a country has always been one of the hot topics among economists (Frankel & Romer, 1999; Dollar & Kraay, 2003). As a national policy, free trade policy has been widely used in many countries. The new trade theory proposed by John Maynard Keynes refutes the classical theory that free trade advances the economic growth of a country. He believes that net exports help countries stabilize prices and create full employment, so he advocates the theory of trade protection that encourages exports and restricts imports. Does international trade promote China's economic development? What plays a role in China's economic growth, export, foreign direct investment, import, or net export? The above questions will be answered in this paper.

2. Literature Review

The mechanism of international trade's effect on economic growth has always been the focus of economists' research in history. However, due to the complexity of the issue itself, no consensus has been reached among economists. Here, we will give a brief review of the different viewpoints by economists.

2.1. Karl Heinrich Marx's International Trade Theory and Economic Growth

Karl Heinrich Marx first proposed that international trade is the foundation of capitalism and the premise and outcome of capitalist production. As the mode of production of capitalism in its infancy is large factory production, it requires a growing market to meet the mass production of capitalist countries, that is, the world market. Karl Heinrich Marx said: "only when international trade is developed and the domestic market develops into the world market, can currency develop into world currency and abstract labor develop into social labor." Second, foreign trade is an inevitable prerequisite for capital accumulation. In the stage of capital accumulation, in addition to cruel plunder, capitalist countries can accumulate sufficient capital only by obtaining low-cost raw materials and energy from developing countries through foreign trade and obtaining high profits through the sales of their home-made products. Foreign trade is also a prerequisite for the smooth implementation of capitalist reproduction. On the one hand, capitalist countries not only require to obtain all kinds of raw materials and resources from home and abroad to meet their needs. On the other hand, a large number of industrial products produced by these countries must also be sold in domestic and foreign markets, that is, in the world market so that that capitalist reproduction can proceed smoothly. Finally, foreign trade can cause many dynamic effects on economic growth. Foreign trade has advanced the progress of technology and the improvement of labor productivity. At the same time, foreign trade also results in the effect of scale economy and production specialization, which is beneficial to economic growth in another way.

2.2. Adam Smith's Free Trade Theory and Economic Growth

Adam Smith is the founder of the classic trade theory. He believes that foreign trade is of great significance to economic growth. First of all, he proposed that free trade can improve labor productivity because the division of labor in a country is limited by the size of its market. International trade can break the restriction of the domestic market, expand the market scale of a country, and thus expand the division of labor. Through international trade, different countries and regions have realized the division of labor based on specialization and improved labor productivity, thereby boosting economic growth. Secondly, international trade can realize the value of a country's surplus products and promote the increase of national income. Due to the role of international trade in realizing the value of surplus products, people will try everything they can to increase production and national income. Finally, individual merchants may obtain a high excess of profits from foreign trade. For this reason, the capital of other sectors will be transferred to the foreign trade sector, but the supply of the original sector will decrease. In case that the demand remains unchanged, the price of products in the original sector will rise, which will lead to an increase in the profits of these capitalists until the profits of the two sectors are balanced. What is more, foreign trade can not only promote products but also increase the interests of consumers in another country, which is conducive to the healthy development of the national economy.

2.3. David Ricardo's International Trade Theory and Economic Growth

David Ricardo, based on Adam Smith's absolute advance theory, puts forward the comparative advantage theory of international trade. He believes that all countries involved in the trade should apply their capital and labor in the industrial sectors in which these countries have a comparative advantage. In this way, these countries can make the most efficient use of resources, thus increasing labor productivity and total yield. Then, since the countries produce products where they have a

comparative advantage and import those where they have a comparative disadvantage, countries can benefit from international trade.

In his theory of comparative advantage, David Ricardo only expounds that one of the exporting countries can achieve economic growth through free trade. Furthermore, he believed that the importing countries could benefit from the imports of the products in which they had a comparative disadvantage. However, he did not discuss the impact of import on the economic development of importing countries. Does import have the opposite effect on economic growth? Will imports inhibit a country's economic growth? Or will imports also boost a country's economic growth? If import can promote economic development, is the mechanism of import the same? These questions will be further analyzed in the following.

2.4. John Maynard Keynes's Trade Protection Theory and Economic Growth

John Maynard Keynes' theory focuses on the balance of a country's domestic economy. His leading viewpoints on international trade serve his domestic macro theory as a whole. According to his theory, under specific conditions, trade surplus may lead to a decline in the interest rate of a country, which may lead to an increase in domestic investment, thus expanding demand and creating more jobs. Different from the previous economists Adam Smith and David Ricardo, he affirmed the reasonable component of mercantilism and proposed that under the policy measures of trade protection, exports should be encouraged, and imports should be limited so as to stimulate national economic development by expanding net exports. However, John Maynard Keynes has a relatively moderate view of trade. He only advocated the implementation of trade protection policies for infant industries in a specific period but did not encourage excessive trade to be limited to the trade surplus.

According to the identity of the national economy in Macroeconomics: GDP=C+I+G+(X-M), it can be seen that John Maynard Keynes's theory holds that import plays a role in the leakage of the development of the national economy. At the same time, the increase in export is just like an investment, which can also increase domestic output and create more jobs, while export has a multiplier effect on national output just like an investment. Thus, John Maynard Keynes advocated the policy of trade protection by limiting imports and encouraging exports. John Maynard Keynes's theory assumes that an increase in net exports can effectively increase domestic demand. In other words, on the premise that a country's domestic demand is insufficient, the stimulation of exports can effectively stimulate domestic consumption and investment, so that the country can achieve full employment and increased output.

3. Empirical Analysis of the Influence of International Trade on China's Economic Growth

3.1. Selection of Sample Data

In the empirical analysis of this article, the sample data of China's economic growth and foreign trade from 1988 to 2018 was selected, and the time series model was used for regression analysis for an attempt to reveal the relationship between international trade and economic growth. The data comes from the National Bureau of Statistics of the People's Republic of China.

3.2. Model Specifications

In this paper, the growth rate of GDP represents economic growth, which appears in the model as the explained variable. Foreign trade indexes are replaced by imports and exports, exports, imports, and

net exports, which appear in the model as explanatory variables, respectively. The explanatory power of each index to the explained variables is expressed by the total import and export volume, export volume, import volume, and the gap between imports and exports of each year calculated by the National Bureau of Statistics and the customs, respectively. In addition, FDI, the output value of the primary industry, consumption of social consumer goods, labor force, household consumption level, and urbanization level are selected as control variables in the model. Among these variables, FDI is represented by FDI in actual use. The output value of the primary industry is replaced by the total output value of agriculture, forestry, animal husbandry, and fishery. The consumption of social consumer goods is replaced by the total retail sales of social consumer goods. The labor force is represented by the population growth rate.

In this paper, the relations between imports and exports, exports, imports, and net exports and economic growth were studied, so four regression equations were introduced into the model. Each equation includes one of the above four explanatory variables and the rest of the control variables, and the regression equation was introduced after the logarithms of the trade volume indexes, the total value of agriculture production, and total retail sales of social consumer goods were taken. Since the net export value has a negative value, the logarithm cannot be taken. In this paper, the logarithm of the absolute value of net exports is taken. Furthermore, the logarithm is given to a plus or minus sign according to the positive or negative value of net exports. In this paper, it is assumed that the following linear relations are satisfied between variables:

$$Y_t = LnX_t + LnFDI_t + LnA_t + LnC_t + LnP_t + LnCI + LnU_t + \varepsilon_t \qquad (1)$$
$$Y_t = LnEX_t + LnFDI_t + LnA_t + LnC_t + LnP_t + LnCI + LnU_t + \varepsilon_t \qquad (2)$$
$$Y_t = LnIM_t + LnFDI_t + LnA_t + LnC_t + LnP_t + LnCI + LnU_t + \varepsilon_t \qquad (3)$$
$$Y_t = LnNX_t + LnFDI_t + LnA_t + LnC_t + LnP_t + LnCI + LnU_t + \varepsilon_t \qquad (4)$$

In the equations, Y_t is an explained variable, and t represents the observations in each period, and LnX_t, $LnFDI_t$, LnA_t, LnC_t, LnP_t, $LnCI$, LnU_t represent the logarithms of the explained variables. X_t represents the total volume of imports and exports, EX_t represents the export volume in each period, and IM_t represents the import volume in each period. NX_t represents the net export volume in each period. FDI_t represents the foreign direct investment, A_t represents the total output value of agriculture, forestry, animal husbandry, and fishery, and C_t represents the total retail sales of social consumer goods. P_t represents the population growth rate, CI_t represents the household consumption level, and U_t represents the urbanization level, and ε_t is the disturbance term.

3.3. Regression Results

Because the data selected in this paper is time-series data, it is suspected that the data is in a non-stationary time series, leading to pseudo regression in regression analysis. For this reason, the ADF unit root is used to test the stability of the time series. The results show that the p-value of the ADF test (Dickey & Fuller, 1981) was 0.0545, which indicates that the time series can be considered stationary at the level of confidence of 10%.

The regression analysis was carried out on the four regression equations with imports and exports, exports, exports, and net exports as the explained variables, and the results are shown in Table 1.

It can be seen from Table 1 that the regression results of the equations with the total volume of imports and exports and exports as the explained variables were significant. For this reason, it can be concluded that the scale of import and export, namely, the scale of foreign trade, significantly explains the economic growth in China. At the same time, the regression equation with exports as the explained

variable also significantly explains the economic growth in China, while R^2 was at a high value, indicating that the fitting degree of the model is also good. However, the regression results of the regression equations with imports and net exports as explained variables were not significant, so it can not be considered that there is a direct correlation between imports or net exports and China's economic growth.

Table 1: Regression Result.

VARIABLES	(4)	(2)	(1)	(3)
			Y	
	X	EX	IM	NX
Key Explained	5.557**	6.691***	-0.0252	3.488
Variables	(2.478)	(2.284)	(0.0896)	(2.361)
FDI	5.389***	6.276***	5.789***	5.481***
	(1.317)	(1.606)	(1.170)	(1.466)
A	-5.706	-1.885	-10.58**	-2.685
	(4.582)	(7.229)	(4.864)	(4.741)
C	-10.02	-15.05**	-6.468	-12.83*
	(6.103)	(7.087)	(6.068)	(6.213)
P	3.350	4.881	4.357*	3.441
	(2.769)	(3.722)	(2.468)	(3.087)
CI	0.524***	0.534***	0.547***	0.518***
	(0.107)	(0.118)	(0.101)	(0.114)
U	0.402	1.419***	0.229	0.762
	(0.610)	(0.445)	(0.557)	(0.621)
Constant	-265.8	-380.0	-366.5	-259.6
	(274.9)	(371.5)	(248.7)	(305.1)
Observations	30	30	30	30
R-squared	0.807	0.764	0.830	0.785

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

In John Maynard Keynes's macroeconomic theory, net export has always been regarded as an essential driving factor to promote a country's economic growth and full employment. In the regression analysis of this paper, there is an insignificant regression result between net exports and

the economic growth rate. What are the reasons for this result? Previous scholars believed that the traditional trade theory ignored the interaction between imports and exports, and underestimated the impact of total foreign trade on a country's economy only by calculating net exports. At the current stage, China is engaged in exporting labor-intensive products and resource-intensive products and importing capital intensive or technology-intensive products. Net export stimulates domestic consumption, and part of China's consumption will shift to increase the import of capital intensive products or technology-intensive products, which will increase the leakage of national income and offset the impact of net exports on GDP (Copeland &Taylor, 2003). Net exports also have a limited incentive effect on investment because China's current comparative advantage is located in the labor force. According to the H-O theorem, China should concentrate the investments on labor-intensive industries and resource-intensive industries, and increase the export of labor-intensive products, so as to achieve economic growth. However, due to the increase of exports from China's export sector, since China acceded to the WTO, countries have taken anti-dumping measures against China's export products due to the low price of China's export products and a vast export volume. At the same time, due to the increase of domestic product output and oversupply, the price is bound to decline. Under such circumstances, China may fall into a stage of immiserizing growth (Ben & Loewy, 1998; Berg & Krueger, 2003)[①].

However, does import have an indirect or potential impact on China's economic development? The benchmark regression model can not answer the above question. Therefore, a regression analysis was conducted again on the lag periods of net exports. The results are shown in Table 2:

It can be seen from Table 2 that the regression of the imports in lag phase I to GDP growth rate was still not significant, while that at the lag phase II was gradually significant, and the significance level reached 99% when it comes to the lag phase IV, and phase V. It reflects that to a certain extent, import has a lag effect on China's economic growth. Although the impact is not as intuitive or prominent as the impact of exports and total imports and exports, the correlation still exists.

Table 2: Lag term regression results.

VARIABLES	(1)	(2)	(3)	(4)	(5)
			Y		
Lag-period	1	2	3	4	5
IM	1.834	6.148**	2.382	-5.892***	-5.182***
	(3.006)	(2.467)	(2.805)	(1.847)	(1.693)
FDI	6.124***	7.053***	7.302***	6.418***	6.729***
	(1.526)	(1.213)	(1.552)	(1.177)	(1.185)
A	-4.296	-10.48*	-7.101	-3.378	-3.179
	(5.370)	(5.087)	(5.658)	(4.663)	(4.831)
C	-12.44	-8.292	-11.85	-11.06*	-12.53*
	(7.353)	(6.313)	(7.259)	(5.858)	(5.970)

[①] Immiserizing growth refers to that when a country's export is increased due to the growth of production factors that are inclined to export, the export income and welfare level of the country are not increased but decreased.

P	4.164	3.679	6.558*	9.806***	8.138**
	(3.904)	(3.454)	(3.758)	(3.068)	(3.217)
CI	0.562***	0.538***	0.488***	0.558***	0.528***
	(0.132)	(0.107)	(0.154)	(0.114)	(0.115)
U	1.049	0.436	1.153**	2.003***	1.959***
	(0.785)	(0.532)	(0.494)	(0.428)	(0.434)
Constant	-321.5	-290.5	-554.9	-859.4**	-685.4*
	(383.6)	(350.2)	(386.6)	(314.0)	(328.2)
Observations	29	28	27	26	25
R-squared	0.767	0.810	0.744	0.837	0.841

Standard errors in parentheses   *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The regression between the import and the economic growth rate of China shows that the regression of the import to the economic growth was not significant. However, it can be concluded from the regression of the growth rate of China's GDP after the lag phases of imports that there was a significant correlation, which indicates that imports play an indirect and insignificant role in promoting China's economic growth. Different from export trade, import trade can not intuitively or directly promote economic growth in a short time. Import is the leakage item of the national economy, but it plays a part in promoting the growth of the national economy in all aspects. For the regression result of the lag correlation between the import and the economic growth rate of China, my reason is that the impact of import on GDP is an outflow item in the short term, and the transfer of domestic investment and consumption to foreign countries has a negative impact on China's economic growth. However, import trade can be used as an essential factor to explain technological progress. Due to the technology spillover effect of imports, China, as a developing country, still has a large gap from developed countries in terms of science and technology patents and independent R & D capacity. Through the imports of advanced science and technology products from abroad, it is bound to cause technology diffusion and spillover effects in China, so that China can obtain advanced technology from abroad. With the development of technology, China's TFP has been improved, which has successfully promoted China's economic growth.

4. Policy Recommendations

1. At present, it is still the primary task of the Chinese government to continue to unswervingly adhere to the reform and opening up and increase the degree of opening up. The free trade policy can promote China's economic development, so it must be adhered to here. Since imports exert various indirect and potential effects on economic development, it is suggested not to restrain the growth of import, but to take import as a means to make technological progress and improve China's productivity. Foreign investment can also be attracted through imports, so imports should be encouraged.

2. At present, in the information age, the Chinese government must seize the opportunity to carry

out an industrial revolution, optimize and promote industrial upgrading, and optimize the structure of imports and exports, so that it can make better use of foreign trade to develop China's economy and realize China's transformation from a trading nation to a trading power.

3. In the regression analysis of empirical analysis, it was found that the results of FDI in each regression were significant. For this reason, FDI can be considered as an essential factor in promoting China's economic development, while imports also boost economic development by increasing domestic investment through the mechanism of attracting FDI. Therefore, the Chinese government should not hesitate to attract foreign investment, pay more attention to the quality of investment on the basis of the quantity of investment, and focus on the introduction of foreign direct investment that enables China to make technological progress and accumulate more experience in organization management, so as to achieve leapfrog development.

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