AN EMPIRICAL STUDY OF INTERNATIONAL TRADE PROMOTING ECONOMIC GROWTH —A CASE OF CHINESE INDUSTRY PANEL DATA

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Abstract

Title: An empirical study of international trade promoting economic growth - a case of chinese industrypanel data

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With the acceleration of international trade theory and the rapid development of world markets, the world's economic and trade ties have been strengthened constantly, so that the interdependence of all countries and regions of the world is differentAs a result of the deepening, the opportunities for countries and their domestic enterprises to enter the world market are also increasing. In order to gain international competitive advantage and market interest in the world market, countries and regions continue to increase their international trade strength, so countries or regional economies will strengthen their international trade as the inevitable choice, and such a choice has laid a solid foundation for the growth of each participant's economyThe foundation, some countries have also achieved world - wide economic performance. This paper first reviews the development of international trade, elaborates on the development process of international trade and uses descriptive statistical method to carry out the empirical study of 29 in,dustries in China, and makes a detailed analysis on whether trade has promoted the economic development of the economyThe author also hopes that some of the views of the article will play a

of bicycle sharing and proposes a solution. Finally, the paper presents a general description of the future development trend of shared bike. This paper analyzes the current situation and problems of shared bikes in the whole system

Key words: sharing economy, bicycle sharing, Mobike,ofo

摘 要

题目：国际贸易促进经济增长的实证研究—以中国产业面板数据为例

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国际政治多极化、世界经济全球化和区域化迅速发展的今天， 随着国际贸易理论加速发展和世界市场的快速开拓，世界各国经贸联系都在不断的加强，这样使得世界各国和各个区域经济体的相互依赖性不断的加深，世界各国及其国内企业进入世界市场的机会也在不断的增加。各个国家和地区为了取得在世界市场的国际竞争优势和市场利益，不断提高自己的国际贸易实力，所以各国或区域经济体加强相互间国际贸易成为必然选择，而这样的选择为各参与方经济的增长打下了坚实基础，部分国家还取得了举世瞩目的经济成绩。本文首先对国际贸易的发展状况进行了回顾，对国际贸易的发展进程进行了阐述，并用描述性统计方法以中国 29 个产业为例进行了实证研究，针对贸易是否促进了经济这一重大问题做了详细分析，明确得出了全球化的国际贸易能促进各国经济增长的结论，作者也希望文章的一些观点能够对经济的发展发展产生一定指导作用。

关键字：国际贸易　经济增长　实证研究

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CHAPTER 1

INTRODUCTION

1.1 Research Background

With the acceleration of economic globalization, international trade plays an increasing role in regional economic growth, and how to actively and effectively carry out international trade has become an important prerequisite for the sustainable and stable development of all regions and countries. According to the point of view of development economics, international trade can bring the necessary funds and technologies to developing countries, and to find the market for surplus products, which is an important factor for economic development and take - off in developing countries. In the midst of a deepening economic globalization, industrialization in developing countries will inevitably be caught up in the tide of this era, and it is almost impossible to achieve the industrialization of their own countries in order to achieve their own industrialization The effective use of international trade and the emergence of a path to adapt and promote regional economic development have become an issue that must be studied in depth and that it is not desirable to belittle or exaggerate the impact of international trade. Economic globalization has now become the development trend of the world economy. We can only adapt to the development of world market as soon as possible, and actively and effectively carry out international trade to make our economy better and faster.

1.2 Research Purpose

International economic activities that affect the technical level of a country mainly include foreign direct investment, international trade in technology and international merchandise trade. The author's research is conducted under the relevant theoretical framework of international trade, so the main object of the study is how international commodity trade can promote technological progress in a country or region, thus affecting economic growth in the country or region.

1.3 Research Meaning

International trade is an important driving force for human social progress and economic development. First, international trade is a necessary condition for industrial development, providing sufficient capital, abundant labor force and a wide overseas market for industrial development. "World trade is an essential condition for the big machine industry. "Of course, international trade is also an objective consequence of the development of capitalism. Second, international trade has enabled foreign trade to gain comparative advantage in the use of values and values. Because of advanced production technology and higher labor productivity, the international market price of its exports will be higher than the domestic market price of the product, thus achieving its own comparative advantage. Developing countries, while low labour productivity and backward production technologies, are able to achieve their comparative advantage if they import products that are deficient in their own resources and high production costs, produce and export their own products with a certain advantage. Third, international trade can harmonize the various proportions of the social reproduction process. Under the conditions of large socialized production, the trend of internationalization of economic development continues to enter the new stage, and the resources of each country are configured around the world through international economic and trade activities. All countries in the world can adjust the supply and demand of goods and services in their domestic markets through the foreign trade of goods and services, meet the needs of social production and consumption, improve social economic structure and the living standards of urban and rural residents.

Related research in international trade will have a profound impact on trade rules, international division of labor, world market, foreign trade policy and so on. Therefore, it is of great theoretical and realistic significance to study and understand this theoretical system in an all - round way and to promote long - term and steady development of the economy, and to advance the development of regional economic

development and social progress of various countries.

1.4 Theoretical framework

The analysis of the effect of foreign trade on a country's economic growth is an important economic subject that plays an important role in the development of foreign trade policy. In general, empirical research has been divided into three categories: the first kind is the use of cross - border data, the use of correlation coefficient to test the hypothesis of trade promotion economic growth, the second kind is the use of causality test method, the use of multiple or individual countries(region) data to examine the relationship between trade and economic growth: the third category is the use of common least squares based on regression analysis, using cross - border data or panel data to study foreign trade and economic growthThis paper deals with the third class as a theoretical framework.

1.5 The close ties between international trade and economic growth

From the perspective of the history of international trade and world economy, we find that before the industrial revolution, it was still industry After the revolution, international trade played an important role in promoting world economic growth. International trade is of great historic significance for the establishment of capitalist system and the rapid development of capitalism. Through the historical investigation of the relationship between international trade and world economic growth, we draw some basic conclusions and inspirations:

1.5.1 International trade and world economic growth are closely related.

World economic growth is the basis of international trade, while the growth of international trade has further promoted world economic growth, and the two are interdependent. There is a strong positive correlation between international trade and world economic growth. Historically, the rise and fall of many countries have been closely linked to international trade. Changes in trade routes and trade centres are often accompanied by shifts in the centre of the world economy. Countries such as Venice, the Netherlands and the UK have all risen up in tandem with the prosperity of

their commercial trade. Of course, the decline of Portugal and Spain also suggests that trade is only a necessary condition for economic growth, not an absolute one.

1.5.2 The role of international trade in economic growth in different periods of history is different.

International trade as a span The exchange of goods and services in China can only be fully developed in the highly developed period of commodity economy, and its contribution to world economic growth can be fully reflected. When countries are in relative isolation, trade usually has a lower role in a country's economic development. Give priority to with natural economy in primitive society, slave society and feudal society, and the main functions of the international trade is the exchange, export more to "way out of the remaining products", and import more is to meet the slave and feudal aristocracy luxury life, most of the trade goods also surely was a luxury. The real rapid development of international trade is that in the period of capitalism, international trade can provide the conditions for the establishment and rapid development of the capitalist system. After the second world war, with the development of world economy, the importance of international trade is more outstanding, the industrialization of the trade in developing countries is becoming more and more important, for the developed countries through intra industry trade and service trade to adjust the industrial structure in order to continue to play an irreplaceable role to maintain the leading position in the world economy. In the context of globalization, international trade has strengthened the role of the world economy and economy.

1.5.3 World economic and environmental changes affect the role of international trade in economic growth.

After the industrial revolution to the first Before world war ii, especially in the 19th century, as the island of Britain was the world's most developed countries, international trade is very important to the economic growth, at the same time, the international environment lead to the transmission mechanism of international trade

for the world economy is relatively smooth, international trade play an unprecedented role on the world economy development. In the 20th century, with the vast and resource-rich United States becoming a world power and a change in the world economic and political environment, international trade has weakened its role in world economic growth. But entering the 21st century, under the wave of economic globalization, international trade will play a powerful role in promoting the role of national and world economies.

1.5.4 Worldwide, free trade can contribute to world economic growth.

World economic growth and trade at various times Growth data can be seen easily, when free, including free trade and economic order become the era theme, the development of international trade and world economic growth will be mutually reinforcing, bring out the best in each other's effect. When trade protectionism becomes the mainstream of The Times, the world economy will slow down or even decline until it is stagnant. That is why, in the 19th century, when capitalism was rising and free trade was mainstream, trade was the most significant contributor to world economic growth.

1.5.5 From a specific country, a certain degree of trade protection can promote domestic economic growth.

Historically Backward countries have succeeded in achieving their industrialization through trade protection. Back then, the United States and Germany took protective measures against the country's immature industries in order to avoid domestic industries from the impact of the advanced countries of Britain and France. Through the trade protection, the United States and Germany set up his own industrial system, enhance the competitiveness of their products and ultimately realize the rapid development of the economy, even Britain before the industrial revolution and its early by the corn laws and the navigation ACTS to protect domestic market.

In the history of world trade policy, the trend of trade liberalization tends to take place in the great progress of world science and technology The economic tide of

common, such as the middle of the 19th century and 20 century, in the economic depression, such as the world crisis in the 1930 s and 70 s oil crisis, trade protectionism. International trade usually as the world economic cycle and change, all countries not only international trade as a factor to promote the growth of the economy, at the same time it as a kind of strategy adjustment of the domestic economy, therefore, the development of international trade and the world economy and the national economy Growth is inextricably linked.

1.6 China's accession to the world trade organization in foreign trade and trade policies

1.6.1 China joins the world trade group woven

On December 11, 2001, China became the 143rd member of the world trade organization. Since China's accession to the world trade organization, China has entered a new period of all-round opening-up. In view of the world trade organization is to promote the world between the elimination of trade barriers, tariff cuts, and international organizations aimed towards free trade, as a member of the world trade organization, China must also make further adjustment in terms of trade policy in accordance with the basic principles of the organization and China's commitment to the world. According to the WTO'S commitment, China has expanded its opening-up in industries, agriculture, services and other fields to speed up trade liberalization and trade and investment facilitation. In the foreign trade system in China is the main direction of the adjustment, straighten out the government responsibility in the management of foreign trade to weaken the government administrative intervention in the foreign trade, perfecting the legal system of foreign trade in order to strengthen the role of economic means and legal means, in accordance with the international prevailing rules of pass in and out Oral trade is managed to ensure the openness, impartiality and transparency of trade policies. China's foreign trade in this period

1.6.2 The main achievements of institutional reform and open trade policy include

First, speed up the construction of foreign economic and trade legislation. After joining the world trade organization, China has collected more than 2,300 laws and regulations and departmental regulations. Those who do not comply with the wto rules and the commitments made by China to join the world trade organization shall be repealed or amended respectively. The newly revised laws and regulations reduce and standardize administrative licensing procedures, and establish and improve the legal system of trade promotion and trade relief. According to the world trade organization agreement on trade-related intellectual property rights, China's intellectual property rights related laws, regulations and judicial interpretations were modified, basic formed the system integrity, integrate with the international practice, conform to China's national conditions, the laws and regulations on the protection of intellectual property system.

Second, cut tariffs further and cut non-tariff measures. During the transition period of the world trade organization, the total tariff level of China's import tariffs gradually decreased from 15.3% in 2001 to 9.9% in 2005. By January 2005, most of China's tariff cuts had been implemented. According to promise, China were cancelled since January 2005 to 424 of the income tax products such as import quotas, import license and specific bidding non-tariff measures, only retained according to international conventions, and under the rules of the world trade organization in order to ensure the safety of life, protect the environment to implement import license management control products. In 2010, China's overall tariff rate fell to 9.8%, with the average rate of agricultural products falling to 15.2% and the average industrial average rate dropping to 8.9%. The tariff rate has remained at 100% since 2005.

Third, fully liberalize foreign trade. According to a 2004 new revision of the "foreign trade law of the People's Republic of China, since July 2004, the Chinese government to the enterprise of foreign business by the examination and approval system to put on record system, all foreign trade operator can be engaged in foreign trade in accordance with the law. The cancellation of the approval of foreign trade

rights and management has promoted the formation of diversified foreign trade operation pattern of state-owned enterprises, foreign-invested enterprises and private enterprises. In the state-owned enterprises and foreign-funded enterprises import and export continues to grow at the same time, private enterprises of foreign trade development is rapid, import and export market share continues to expand, become the important operators of foreign trade. In 2010, the import and export of state-owned enterprises, foreign-invested enterprises and private enterprises accounted for 20.9%, 53.8% and 25.3% respectively.

Fourth, further expand the service market. Seriously fulfill its promises to join the world trade organization, China offers foreign service providers, including financial, telecommunications, construction, distribution, logistics, tourism, education, etc., broad market access opportunities. Of the 160 sub-sectors of the world trade organization service trade classification, China has opened 100, and the opening range is close to the average level of developed countries. In 2011, the actual utilization of foreign investment in the service industry was $55243 million, up 20.5% year-on-year, accounting for 47.6% of the total in the same period of the country, surpassing the proportion of manufacturing for the first time. Fifth, create a fairer market competition environment. China by establishing and perfecting the system of fair trade law and law enforcement and supervision mechanism, to curb and combat infringement, dumping of foreign trade business, smuggling, disrupted the market order, such as unfair trade practices, for Chinese and foreign enterprises to provide a comfortable environment, fair and stable market. The Chinese government on the basis of domestic law and international trade rules, strengthen early warning surveillance, at the same time the use of trade remedy and antitrust measures, such as for trade partners to correct the unfair trade practices, safeguard the legitimate rights and interests of domestic industries and enterprises. In the process of tackling the international financial crisis, China and the international community together are firmly opposed to any form of trade protectionism, strictly abide by the world trade

organization rules and when to implement economic stimulus plans and equally products, promoting the competition of the domestic or foreign enterprises.

As of 2010, all commitments to China's accession to the world trade organization have been fully fulfilled. China's earnest performance of its commitments has been affirmed by most members of the world trade organization. In 2006, 2008 and 2010, the Chinese government accepted three WTO trade policy reviews. The basic principles of non-discrimination, transparency and fair competition advocated by the world trade organization have been integrated into Chinese laws and regulations and related systems. Market consciousness, open, fair competition and spirit of the rule of law and intellectual property in China is more deeply rooted in the hearts of the people, promote the further opening of China's economy and market economy further improved.

1. 7 Analysis of analytical methods

1.7.1 The correlation between foreign trade and economic growth

An Empirical Study on the Influence of Foreign Trade on Economic Growth from the Use of Rank Correlation Inspection (Rank Number)Validation, RC) method validates export - induced economic growth assumptions (CELG assumptions). This kind of research.The conclusion generally supports ELG assumption that export trade promotes economic growth. Maizels C 1963 use,d rank correlation test method to analyze the relationship between average growth and output growth in manufacturing exports from 1899 to 1959 in seven developed countries .set) a conclusion.

The earliest use of data from developing countries and regions to validate export - induced growth assumptions (CELG's assumption was Michaely C 1977), he picked 41 developing countries and regions from 1950 - 1973 dataThe Rate of Change of the Rate of Exportsin the National ProduCT) Spearman Correlation Coefficient (Spearman) between The Rate of Change of per Capita ProductThere is a positive correlation between them. Michaely, after analyzing the results of the empirical study, found that the positive correlation between the developing countries

and regions with relatively high levels of economic development was more relevant, and that there was little correlation between the least developed countries. Michaeely concludes that exports have a critical developed level for economic growth, and exports have a far different effect on economic growth on both sides of the critical developed level. The effect of exports of the developed countries on economic growth is more obvious, only when a country's economic level is above a certain level that exports can promote economic growth, but he does not raise the specific level of economic development.

Also available in the study were Balassa (1978), Tyler Cl981) and Kavoussi (1984). Balassa (1978) Using Spearman's rank correlation coefficient (Spearman)The 's Rank Approximate' examined the data of l l 'l semi - industrialized countries in 1973 an,d analysed the average growth and reality of real GDP in these countriesThe relationship between export average growth has reached the conclusion that export - induced economic growth assumptions are supported. Tyler (l 981), using the Spearman rank correlation coefficient and Pearson Correlation Coefficient, were determined by the World Bank in 1977The relevance of data for the 1960 - 1977 data of middle - income developing countries and regions was also drawn up, as well as the conclusions that supported the hypothesis of export - to - export growth assumptions. Kavoussi (1984) applied the Spearman rank correlation coefficient to 73 developing countries and regions 1960 's data, divided into low - income countries and middle - income countries, two sets of samples of the relevant line inspection, his pointsThe result is a strong positive correlation between exports and economic growth in low - income developing countries and regions and middle - income developing countries and regions: and the positive correlation between middle - income developing countries and regions is stronger. Also, because of middle - income developing countries and regions, exports of manufactured goods represent a ratio of total exports to low - income countries In developing countries and regions, Kavoussi argues that exports of manufactured goods can enhance positive correlations between

exports and economic growth.

In general, in an empirical analysis of the relationship between trade and growth in the early use of correlation tests, the researchers basically reached the conclusion that there was positive correlation between the two, which they all thought had contributed to economic growth in those countries.

1.7.2 The causal test between foreign trade and economic growth

With the further development of foreign trade on economic growth, some economists argue that the correlation test can't draw the conclusion that export trade can promote economic growth, because the correlation test can only show whether there exists mutual relation between the twoThis interrelationship can be both an export - led relationship and a relationship between exports and growth, but also a causal relationship between exports and growth. As a result, these economic scholars put forward the hypothesis of applying causality test to verify foreign trade promotion economic growth.

Jung and Marshall (1985) conducted a causal test of 37 developing countries and regions using the Granger Causality Test method, which validated the Export Promotion Hypothesis (Export Promotion H)As a result, only four countries passed a causal test. Chow - Si ms Causity Test used Granger - Si ms Causity Test to test the causal relationship between seven countries, and only three countriesThere is a causal relationship between export trade and economic growth. Their findings raise questions about the effectiveness of previous empirical studies on exports that could boost economic growth.

In the case of a causal relationship between China's external trade and economic growth, Ms. Kwan and Cotsom it is (1990) conducted empirical studies that were based on data from China's 1952 - 1985 data and found that exports andThere is a causal relationship between output. Through analyzing the relationship between exports, industrial production, labor, import and capital expenditure, Jordan Shah and Fiona Sim (1998) conclude that there is a two - way causal relationship between

exports and actual industrial output in China. Shen Chengxiang (1999) investigated the causal relationship between export trade and economic growth between export trade and economic growth between 1998 an,d 1998, and his conclusion is that the strong expansion of Chinese exports in the sample interval has been economicThe reasons for high - speed growth and the increase in the average export growth rate will have an impact on the output growth of the following year: (2) Growth in output, in turn, has further promoted the expansion of exports, so there is a causal relationship between exports and output and by comparisonThe impact on output is more acute: (3) the double - intentionality between exports and outputs has been strengthened after factors such as import, investment and government expenditure have been introduced, suggesting that exports and outputs can interact through a variety of channels.

1.7.3 Analysis of the regression between foreign trade and economic growth

This method can be divided into two kinds according to its research and development: one kind of inspection is the influence of trade quantity on economic growth, it analyses the actual volume of trade or the change of actual trade volume as the explanatory variables of the equation to analyze the regression analysis: another kind of study is the trade policy to the economyThe effect of growth is that it selects certain indicators to reflect trade openness (or trade distortion) and regression analysis as an explanatory variable of the equation.

1.7.3.1 A regression analysis of the relationship between trade volume and economic growth.

In the 1970s and 1980s, researchers used this approach to explore the relationship between trade and growth. This method is mainly based on the new classical growth model, taking advantage of cross - sectional data of cross - border (regional) data, and using the ordinary least squares (C OLS) to analyze the relationship between trade volume and output directly, or the total quantity of factors such as labor, capital and investmentIn production function, regression analysis using

OLS estimation is used to measure the effect of trade volume on economic growth. Scholars who use this approach are basically drawn to the same conclusion that trade does play a boost in economic growth. Balassa (1978) took advantage of the cross - sectional data of 11 semi, - industrialized countries, by introducing domestic investment as an average proportion of output, the average ratio of foreign capital to output and average growth of the labour force as an explanation variable, and as an explanation variableA regression analysis was made with the mean growth of GNP: then, adding real export growth as an explanation variable returns to validate ELG's hypothesis. The results of his study found that after joining the actual export growth as an explanation variable, the positive difference of the goodness of goodness of the equation fitting is from 0 .Increase to 0 .At the same time, the regression coefficient of the export variable is 0 .This shows that an average increase of 1 per, cent of actual exports has contributed to the average growth of GNP by 4 per cent, thus proving the ELG assumption that exports do indeed contribute to economic growth.

1.7.3.2 Analysis of the Relationship between Trade Policy and Economic Growth.

Beginning in the 1990s, research on trade and growth has gradually shifted towards empirical research on the relationship between trade policy and growth, particularly in relation to trade openness and economic growth. As Frankel and Romer (1999) mentioned in the paper: "Empirical research on trade policy and growth is an important component of the discussion of trade and growth relations."

This kind of research method is mainly based on the new classical growth model or the new growth model, selects some indicators or a series of related indicators related to trade policy as an explanatory variable, and uses ordinary least squares C OLS as a regression analysis to measure trade policythe role of economic growth. For example, Sachs and Warner (1995) selected five indicators to divide the country into two categories: open or non - open, which included an average tariff rate of one country, import tariff barriers, and whether it was implementedThe planned

economy system, black market transaction cost CBlack Market Premium, BMP, and whether there is a national monopoly enterprise in major foreign trade enterprises. Edwards (1998) combines nine measures of openness to form a measure of measurement, although there is no innovation in the nature of Edwards's approach, but the accuracy of this approach has improved significantly.

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CHPATER 2

LITERATURE REVIEW

2.1 Self - Variables and Establishment of Metrology Models

Based on the research results of others such as Copmann (1995), Rittenberg and Portelberg (1998) and Lee (Lee, 2005), the international research and development of spillover regression models are used to study international trade through technology transfer and technologyThe external spillover effects on China's economic growth. The regression equation is as follows:

$$\ln TFP_{it} = \alpha_i + \beta_1 \ln S_{it}^d + \beta_2 \ln S_{it}^f + \varepsilon_{it}$$

(Formula 1)

In a formula, i represents a different industry, t represents time, is interpreted as the total factor productivity index of the industry i in time t: the explanatory argument indicates that the country's industrial i is studying the development stock at the end of year, explaining the inventory of research and development abroad :For the sake of constant item, the regression coefficient of stock quantity is studied at the end of t t year of domestic industry i. As we measure foreign research and development capital stock, the international trade weights are used, thus measuring the influence of foreign research and development capital through the technological transfer and spillover of international trade to the technological progress of our country: if it is positive, it is explained that foreign research and development capital is adoptedThe international trade channel promotes the technological progress of the domestic industry: if the A is negative, it shows that foreign research and development capital hinders the technological progress of the domestic industry through international trade channels. It is an error term.

For reference to the practice of Section & helpman (1995) and Ke et al

(1997), domestic industry i; Research and development stocks at the end of t year are calculated using the following formula:

$$S_{it}^{d} = I_{it-1} + (1-\delta) \times S_{it-1}^{d}$$

(Formula 2)

In this paper, research and development capital stock for industry i at the end of t t is developed for industry i's research and development expenditure for t - 1 year, At the same time, the development capital stock of industry i in base period is as follows:

$$S_{i0}^{d} = \frac{I_{i0}}{g_i + \delta}$$

(Formula 3)

During the sample period, the average research and development expenditure growth rate was developed. For the capital stock of foreign research and development, we borrowed the following formula from Li (2005):

$$S_{i,t}^{f} = \sum_{j} m_{ij,t} \times \frac{S_{j,t}^{d}}{V_{j,t}}$$

(Formula 4)

In the form of a bilateral weighting, the table is not in the t - year industry i's imports from the country j to measure the different effects of research and development of different countries through the international trade channel from different countries to the specific total factor productivity of the country: the table

It is shown that the country j's domestic research and development stock at the end of the year is an increase in the industrial production sector of the country's j. t year

Values. Among them, the domestic research and development inventory of foreign j 't at the end of the year is calculated in accordance with the above - mentioned interest in the domestic industry i No. t

The last research and development capital stock is the same calculation method. Specifically, remove the following:

$$S_{jt}^{d} = I_{jt-1} + (1-\delta) \times S_{jt-1}^{d}$$

(Formula 5)

In this paper, research and development capital stock for national j at the end of t - year is a research and development expenditure for national j in t - 1 year, Drawing on the results of Kwang and Watanabe (2002), the corruption rate of the OECD countries was assumed to be 13%. At the same time, defining national j's research and development capital stock at the base period is:

$$S_{j0}^{d} = \frac{I_{j0}}{g_j + \delta}$$

(Formula 6)

Taking into account that the G7, including the United States and Japan, is the

world's leading technology leader and one of China's most important trading partners, we should further explore the impact of the US, Japan and other G7 countries, on technological progress and economic growth in China. Therefore, we will use the regression equation to return to the influence of the US and Japan and the influence of the G7, and compare the impact of the US and Japan on China's industrial technological progress and economic growth with other G7 countries,:

$$\ln TFP_{it} = \alpha_i + \beta_1 \ln S_{it}^{d} + \beta_2 \ln S_{it}^{fUfJ} + \beta_3 \ln S_{it}^{f_{0-G7}} + \varepsilon_{it}$$

(Formula 7)

In the form of research and development capital stock representing the United States and Japan, representing the development of capital stock in other G7 countries, except the United States and Japan.

2.2 total factor productivity

First, total factor productivity refers to the growth rate of output resulting from other factors such as education and technological innovation. Secondly, there are two kinds of methods: parameter method (Solow Residual) and Nonparametric Method (DEA - Malmquist). The main idea is to construct a production function .For example C - D function, the production function can be fitted with the sample data. After obtaining the parameters, the specific production function is evaluated. After addition and subtraction operation, the residual value obtained after the contribution of each factor is regarded as the growth of total factor productivity. At the heart of this approach, Solow (1957) first constructed a Hicks neutral production function: K represents capital, L represents labor force, t represents time trend. A (t) represents the technical efficiency accumulated over time. For t differentials and after Q, respectively define capital and labor shares, take the estimates of capital and labor shares, deduct the remainder of their growth from the growth rate of gross output, and

deduct the remainder of their growth from the growth rate of total output, i.e., "Solow Residual Value "Also known as the growth rate of total factor productivity, Solow thinks it comes from technological progress.

As mentioned above, in the review of the measurement method of total factor productivity, the accuracy of Solow residual method is not only dependent on the existence of the total production function in the economy, but also related to the estimation method of elasticity coefficient, but also works with the marginal productivity theory of factor priceSex. Therefore, direct estimation of total production function is an alternative to Solow residual method.

$$\mathrm{Y_i} = AK_i^{\alpha} L_i^{\beta}$$

(Formula 8)

Overwrite (4 .In this paper, the TFP is calculated as follows:

$$\ln A = \ln Y - \alpha \ln K - \beta \ln L$$

(Formula 9)

In formula, Y is the output, and we use the statistical data "industrial output value of large and medium - sized industrial enterprises in China" to indicate that K is capital investment, and we use the statistical data "China's average annual balance of fixed assets of industrial enterprises in large and medium - sized industrial enterprises "" L is a labor," he said. "We have the average number of employees in large and medium - sized industrial enterprises in China in the statistics."

Table 2 - 1 Results of Total Factor Productivity

VARIABLE	Regression Coefficients	t statistic	Standard error
tumor necrosis factor K (TnK)	0.9275*	16.9810	0.08365
TnL	0.2842*	3.3976	0.05462
adjusted R2	0.7707		
Number of Observatio	203		

N

ote: * indicates a significant level of 1%.

2.3 Processing of missing data

In terms of research and development spending, there are gaps in research and development spending data in OECD countries: Australia, 1997, 1999, 2001 data: Dutch data from 1998 an,d 2000, Sweden 19Data in 1998, 2000 and 2002. Because the lack of research and development spending data in these three countries is critical to the calculation of the inventory of research and development coming from abroad, and there is no lack of data on other variables, we choose to fix these data. The specific approach is to figure out the average annual rate of growth in other years, and then extrapolate the data from this growth rate: In addition, research and development spending in Luxembourg alone has only 2,000 an,d 2003 figures, and Switzerland

alone has 2,000The way for this is to look at the annual growth rate of development spending by other OECD countries, giving Luxembourg an average annual growth rate of zero .06, for Switzerland 0 .In turn, the growth rate is calculated to figure out other years of data.

For the 20 member, countries of the Organisation for Economic Cooperation and Development - related statistics - - only in 2004, we passed the plan. In the OECD, the 20 member, countries' research and development stocks met in 2005, in the calculation

$$S_{i,t}^{f} = \sum_{j} m_{ij,t} \times \frac{S_{j,t}^{d}}{V_{j,t}}$$

Based on the average annual growth rate of 1999 - 2004, the ratio was calculated from 2005 to, 2004.

CHAPTER 3

RESEARCH METHODS

3.1 Research Design

In the aspect of research and design, this paper is used to study the relationship between foreign trade and economic growth using data or panel data (Panel Data) based on regression analysis, and use qualitative research method to study the relationship between foreign trade and economic growthBy using international research and development spillover model to study the effects of international trade through technology transfer and technology spillover to China's economic growth. The object of the study is China's 29 representative, industrial industries,

3.2 Data Collection Method

The data collection method uses the computer - aided investigation method, which is specifically used for the computer network, and the data of total factor productivity come from the China Statistical Yearbook published in the public year. Among them, the output is represented by the industrial added value of large and medium - sized industrial enterprises in China, with the average annual balance of fixed assets of industrial enterprises of large and medium - sized industrial enterprises in China as capital investment, and the average number of employees employed in large and medium - sized industrial enterprises in China represents labor input. As a result of discrepancies in China's statistical dimensions of industrial enterprise data around 1999, we are determined to be in the period 1999 - 2005 for the period 1999 - 2005.

The research and development expenditure data of domestic industries are also derived from the annual China Science and Technology Statistical Yearbook. The annual research and development expenditure of each industry consists of two parts: internal spending and other technical activities financed by large and medium - sized

industrial enterprises, among which, the internal expenditures of science and technology activities include labor services, raw materials and fixed assets related to scientific and technological activitiesProvision for asset construction and development of new products is 4: expenditures for other technical activities include technical renovation funds, technical introduction funds, digestibility and purchase of domestic technical funds.

Foreign research and development spending data and industrial value-added data came from OECD Factbook (2006). At present, the OECD has 30 member countries, in view of the lack of relative economic variables in some member countries and less than other member countries to play a more significant role, so we chose the OECD 20 member countries as the object of study, each country and the abbreviation for Australia (AUS), Austria ((AUT), Belgium (BEL), Canada (CAN), Finland (FIN), France (FRA), Germany (GER), Italy (ITA), Japan (JPN)), South Korea (KOR), Luxembourg (LUX)), Netherlands (NEL), New Zealand (NZL), Norway (NOR), Portugal (POR), Spain (ESP), Sweden (SWE), Switzerland (SUI), United Kingdom C (GBR) and the United States (USA). Data on foreign research and Development expenditures for the year 1999-2005 were obtained by multiplying the annual GDP data of countries in Factbook (2006) and the intensity of research and development expenditure (that is, the proportion of research and development spending on GDP) in each year, and the value added data of foreign industries Factbook (2006) The annual GDP data of countries are multiplied by the value of industrial growth in each country as a share of GDP.

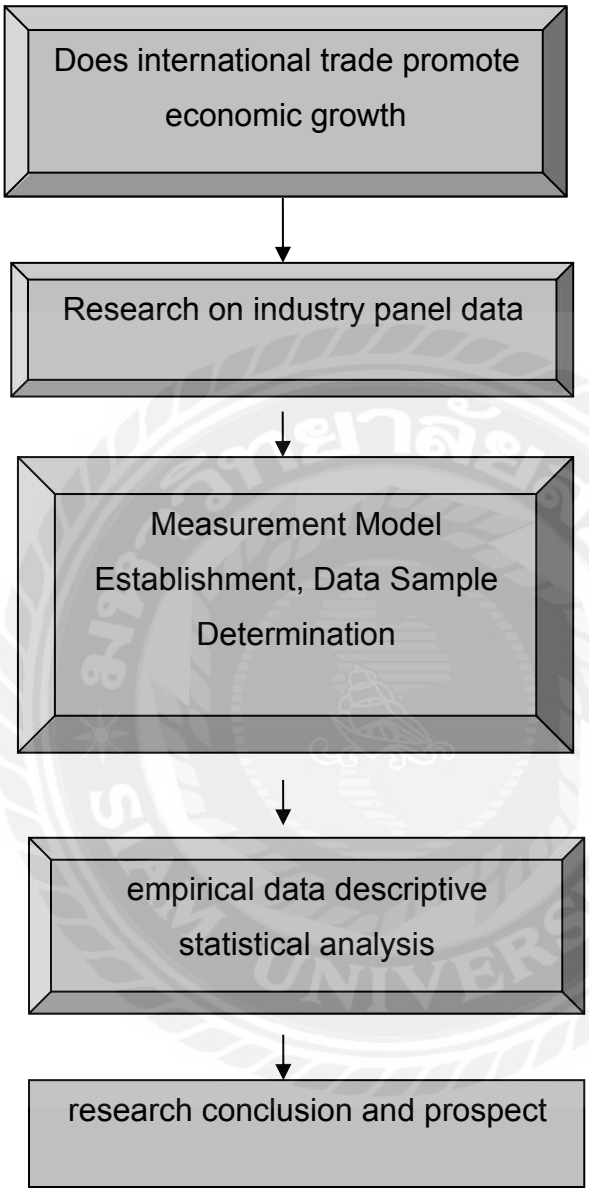
Each industry derives its imports from countries from the COMTRADE database of the United Nations Statistics Office. We selected the third edition of the International Trade Classification Standard (STTC) as a collection of imported data, but as a result of the China Statistical YearbookThe CICC is not consistent with the International Trade Classification Standard (STTC) of the United Nations Statistics Division, and we have to harmonize these two standards. In accordance with the

classification standards of China's industrial industry (CTCC), we have consolidated and consolidated some industries, selected 29 in,dustries and then the COMTRADE database on the COMTRADE database according to this industry standard (STT)C) The third edition of the classification of commodity imports statistics for the corresponding addition to each industry from each country's import data. The original trade data on the database are denominated in U.S. dollars, and we represent the value of this data at the exchange rate of the U.S. dollar on an average annual basis.

3.3 Data Analysis Method

Descriptive statistical method is used in this paper. Descriptive statistics refer to the collation, fact and calculation of a large number of data contained in the survey sample. Descriptive statistics refer to the collation, fact and calculation of a large number of data contained in the survey sample. Descriptive statistics for common descriptive statistics are applied to all areas where quantitative data can be collected. A common descriptive statistical method can be divided into three categories: statistical quantity of data, such as mean, standard deviation, etc.; described using graphic techniques such as histogram, scatter diagram, trend map, arrangement diagram, bar graph and pie chart, etc.; used in language analysis and description, such as: statistical analysisTable, stratification, cause - effect diagram, affinity and chart, and so on.

3.4 Research Process



CHAPTER4

DESCRIPTIVE STATISTICS AND RESULTS AND ANALYSIS

4.1 Descriptive statistical process for development stock

Table 4 - 2, table 4 - 3 an,d table 4 - 4 reported on the development stock of each industry in China, the total factor productivity of China's industry and the descriptive statistics of the research and development stocks of China's various industries from 20 OECD countriesThe statistics include mean, median, maximum, minimum and standard deviation.

Table 4- 2 descriptive statistics of the development stock of China's vario us industries Unit: RMB 10,000

tatistics	AVERAGE	Media n	Max.	Minimum	Standard
H1	1602326	1208093	3820438	589694	1080539
H2	21458649	21130988	23316224	19852035	1266985
H3	720425	717097	847288	648268	55894
H4	231510	205712	361624	167326	65381
H5	1951126	1778170	2968683	1333183	577363
H6	3099485	2998072	4299915	2089658	770342
H7	12404943	11829983	15880525	10141855	2086764
H8	3289845	2833505	6325509	1365830	1752911
H9	568806	462197	1034259	402153	216838
H10	162794	124789	332740	81665	85316
H1 1	114176	84651	273251	36105	78315
H1 2	83516	75943	140921	55127	26812
H13	2040076	1921103	3108426	1296976	664065
H14	492652	726499	857689	-185823	417116

H15	246635	243575	299039	219413	22229
H16	89625151	88711811	112000000	71558099	14343708
H17	2648711	2790603	5666170	-909635	2213778
H18	1562038	1416004	2209481	1352586	296247
H19	1373691	1301014	1731471	1138240	217669
H20	6296194	6113976	7297405	5872360	487553
H21	18129655	16116939	34248321	9365762	8010662
H22	4111252	3500427	7340568	2456926	1652623
H23	1436330	1260600	2118334	1117459	326300
H24	6716640	6303154	9346277	5129212	1346051
H25	3622356	3397933	5949889	2195184	1250617
H26	10709018	8970195	19822173	5670781	4788880
H27	6559377	5655726	12081723	2966478	3216617
H28	10076113	8228812	20367749	4265620	5617108
H29	1002114	916624	1570319	645643	302848

As can be seen from table 4 - 16, the average value of research and development of chemical raw materials and chemical industry in 29 in,dustrial sectors of China is the largest, followed by oil and gas extraction and processing industries, ferrous metals smelting and processing industries, which illustrate these sectorsThe overall research and development expenditure of the research and development is larger: the ranking of the same indicator value is the furniture manufacturing, wood processing and wood - bamboo shoot - making industry, leather, fur and duvets manufacturing industry, which shows that the overall research and development expenditure of these industrial sectors is relatively small, and the research and developmentThe stock is larger.

As can be seen from table 4 - 18, the trade of electrical machinery and equipment manufacturing from abroad is the largest in 29 in,dustrial sectors of China, followed by specialized equipment manufacturing and instrumentation and

office supplies manufacturing .This suggests that, as a whole, 20 OECD countries are moving more to the above industrial sectors through international trade channels. In fact, these industries are also the industry with higher trade opening in 29 in,dustrial sectors: the same index is behind the rankingsIt is the tobacco processing industry, the beverage manufacturing industry and the coal mining industry, which shows that, as a whole, 20 OECD countries have relatively small technical transfer to the above industrial sectors through international trade channels, and those industries are also more open to trade in 29 in,dustrial sectorsLow industry.

4.2 descriptive statistical process for total factor productivity

Table 4- 3 descriptive statistics of total factor productivity in China's various industrie

Statisti	AVERAGE	Media n	Max.	minimum	Standard
Hl	0.2744308	0.2532186	.4883558	0.184139	1.455217
H2	0.7932269	0.782433	1.1540598	0.5191943	1.3004118
H3	0.5614256	0.5464486	1.6388192	0.152926	2.0445853
H4	0.4233542	0.3561401	1.1581605	0.275	1.6566094
H5	1.2799986	1.198136	1.8184309	0.9140902	1.3011819
H6	0.9408063	0.8927694	1.2953838	0.771313	1.2001277
H7	2.2613365	2.3766335	3.1772403	1.6315655	1.3197483
H8	0.7451073	0.7066979	1.0229913	0.5305813	1.2641804
H9	1.7939735	1.7826856	2.0275557	1.5990905	1.0940594
HlO	2.2766043	2.25319	2.646402	1.8536451	1.1608088
H11	1.1280607	0.9741831	1.6611681	0.8799378	1.3076976
H12	1.7872283	1.5579222	2.9432517	1.2349272	1.3688418
H13	0.6705654	0.6137007	0.856506	0.5577698	1.1781966
Hl4	0.9793365	0.932806	1.224416	0.7528991	1.2298055
Hl5	2.1338503	2.1214525	2.2689088	2.0137547	1.0461576

H16	0.5966563	0.5239631	0.9216931	0.409857	1.3711023
H17	1.1456647	1.1547525	1.2977812	1.015356	1.0891777
H18	1.2093488	1.1136635	1.6783715	0.9667039	1.2659629
H19	1.2028936	1.1243173	1.5220437	0.9195683	1.2143525
H20	0.4955827	0.4530241	0.6665487	0.3726338	1.282038
H21	0.6341524	0.5404895	1.1577749	0.3740267	1.590889
H22	0.8174889	0.7061292	1.2130029	0.5748943	1.3279296
H23	1.5082047	1.3576686	2.2961252	0.9924506	1.4150346
H24	0.9902716	0.9157032	1.7374143	0.5765213	1.5675815
H25	1.0415542	1.0666608	1.5660351	0.7341382	1.336346
H26	1.1084726	1.1513176	1.6162942	0.7000434	1.4075238
H27	1.6309571	1.5403136	2.2820816	1.1235598	1.3157897
H28	2.0932837	1.981472	2.696285	1.6955718	1.1726897
H29	1.9253389	1.8079923	2.9238405	1.1234991	1.433705

Table 4-4 China's industry from 20 OECD stock of research and development of descriptive statistics

Unit: $

Statistics	AVERAGE	Media n	Max. value	Minimum	Standard
H1	8783	2466	30300	1302	10800
H2	243000	217000	466000	109000	121000
H3	200000	132000	640000	55800	200000
H4	19400	13900	47700	4922	14100
H5	104000	84300	189000	64400	47900
H6	8450	5819	25800	2642	7425
H7	2526	2408	4839	1256	1231
H8	715000	694000	893000	582000	102000
H9	28100	26600	39100	21900	5788
HIO	113000	116000	149000	79500	22800
H11	32700	36300	47500	10500	12400
H12	12900	8912	30100	2099	11500
H13	176000	152000	290000	108000	61500
H14	14200	13200	21500	11000	3421
H15	50300	46900	92700	19900	25900

H16	694000	516000	1570000	243000	454000
H17	10500	10800	20400	2290	5819
H18	60200	46300	134000	24900	37700
H19	474000	366000	938000	295000	223000
H20	92200	85100	162000	32200	47200
H21	462000	321000	987000	223000	277000
H22	181000	135000	414000	76400	109000
H23	120000	82700	269000	57500	77600
H24	494000	360000	1050000	221000	316000
H25	1090000	839000	2010000	406000	620000
H26	461000	305000	993000	171000	333000
H27	1510000	1110000	3670000	424000	1100000
H28	533000	460000	914000	230000	236000
H29	876000	474000	2360000	221000	789000

4.3 empirical research results

To investigate the effects of international trade on China's 29 in,dustries through international trade, we use the regression equation given earlier to carry out empirical research. It is interpreted as a contribution to the total factor productivity of 29 in,dustries in China (), explaining that the variables are mainly for the domestic research and development stock of 29 in,dustries in China () and the OECD member countries research and development stocks based on international tradeThese countries measure the value of indicators that affect China's exports ().

Table 4 - 5, table 4- 6, table 4 - 7 an,d table 4 - 8 provide empirical research results from panel data measurement analysis. Table 2 - 5 is, based on the

technical transfer effects of international trade on 29 industrial sectors in China through international trade; Table 4 - 20 is for the G7 through international trade in OECD member countriesThe influence of technology transfer from 29 industrial industries in China: Table 4 - 7 focuses on the technological transfer of export trade to China's 29 industrial industries through export trade and the impact of its technological spillover, and it is a separate study of Japan and the United StatesThe two countries are mainly in: On the one hand, the two countries are very close to China's economic and trade relations, and the United States and Japan are China's largest trading partners in the first two years. The trade between China and the United States is US $446.7 billion, a year - on - year rise of 15 .9%, a record high: Sino - Japanese trade volume reached $344.9 billion, a year - on - year rise of 14 .3%, also a record high: Sino - US trade and Sino - Japanese trade accounted for 12 of China's total foreign trade .3% and 9 .1%. On the other hand, according to the OECDAccording to the major scientific indicators (200), research and development expenditure in the United States, Canada and Japan accounted for 38% of research and development expenditures in 2005: Table 4 - 22 reporte,d the use of equation (4) .The result of regression is to study the research and development stocks of the two countries and other G7 countries on the impact of international trade channel on China's technological progress and economic growth.

As a result of the empirical study we have obtained, the empirical study of the actual economic data from 1999 to, 2005 shows that the research and development expenditure of OECD member countries through international trade channel OECD member states is 29The industry's total factor productivity has had a positive impact. Because of the natural logarithm of the economic variables used in the regression of panel data, the regression coefficient is the elasticity of the explanatory variables relative to the explanatory variables.

Table 4-- 5 Effects of International Trade on the Technological Progress of China's 29 in,dustries through international trade

explanation variable	Regression Coefficients	t statistic	Standard error
C	-7.115704*	-24.96141	0.285068
InS_i^d	0.110643*	3.908786	0.028306
InS_i^f	0.404827*	20.49310	0.019754
adjusted R2	0.964246		
Number of Observations	203		

Note: * indicates a significant level of 1%.

As we can see from table 2 - 5, 20 O,ECD countries are involved in the 29 industries of China. The positive effects of trade on total factor productivity of China's industrial industry are positive, and the coefficient of domestic research and development in 29 in,dustries in China is 0 .The regression coefficient of domestic research and development stock of 20 OECD countries through trade weightings is 0 .All of these have had a positive impact on the technological progress of the Chinese industry, and the impact of international trade on China's industrial technological progress through international trade is greater than that of China's domestic research and development stock. From the table 4 - 20, the conclusion that the G7 countries, and 20 OECD countries have brought to China's 29 industrial technological progress is consistent with the positive effects of technological progress in 29 industrial industries in ChinaFrom the point of view, the G7 countries,

research and development stocks every increase1 % will pull 0 for the technological progress of 29 in,dustries in China .25%.

In table 2 - 7, the United States and Japan reported the impact of international trade on the technological progress of 29 in,dustrial industries in China,The elastic coefficient is 0 .According to the effect of the two countries on the technological progress of China's 29 in,dustrial industries through the United States and Japan, their elasticity coefficient is higher than that of the G7 as a whole, indicating that the US and Japan have contributed more to the technological progress of China's industry through international trade channelsIt's even bigger.

Table 4-- 6 Influences of the G7 through, international trade on the progress of China's 29 industries

explanatory variable	Regression Coefficients	t statistic	Standard error
C	-6.968549*	-19.17628	0.363394
InS_i^d	0.256930*	7.942550	0.032349 7.0.2
InS_i^f	0.251150*	11.11422 11.11422	0.022597
adjusted R2	0.943484		
Number of Observations	203		

Note: * indicates a significant level of 1%.

Table 4-- 7

The Impact of International Trade on China's 29 Industrial Technology Progress Through International Trade

explanatory	Regression Coefficients	t statistic	Standard error
C	-7.171286*	-21.08456	0.340120
InS_i^d	0.225086*	6.968055	0.032303
InS_i^f	0..326587* 0.326587*	13.0077 7	0.025107
adjusted R2	0.948377		
Num	203		

Note: * indicates a significant level of 1%.

Trade4—8 The Impact of International Trade on China's 29 Industrial Technology Progress Through International

Note: * indicates a significant level of 1%.

explanation variable A	Regression Coefficients	Statistics M	andard error
C	-7.013718*	-23.15081	0.302958
InS_i^d	0.177343*	6.261344	0.028324
$InS_i^{f_{U\&J}}$	0.246141*	8.229584	,02990
$InS^{f_{0-G7}}$	0.123205*	5.915289	0.020828
the entire R2 unit,	0.954807		
Number of Observation	203		

In order to further compare, we put US - Japan and other G7 countries, into the same regression equation for empirical research. The results of table 4 - 22 sho,w that the regression coefficient of the research and development stocks obtained by the two countries through trade weights is 0 .In other G7 countries, the elasticity of the index is 0 .This shows that the United States and Japan, the two leading countries in the world, have a significantly higher role in the development of China's industrial technology than other developed countries.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Based on the existing research, China's 29 in,dust rial industrial panel data from 1999 to 2005 examined the effects of international trade on technological progress of China's industrial industry, mainly by the following on:

First, the research and development expenditure of OECD countries through international trade channels has a positive impact on total factor productivity of 29 in,dust rial industries in China: the research and development activities of a country are mostly concentrated in the industrial sector, and the technological progress of the industrial sector is for the inspection of a country the overall technical progress has strong representative. Therefore, the regression result shows the technological transfer of international trade and its spillover effect on China's technological progress and economic growth.

Second, research and development stocks from 29 in,dustries in China, and research and development stocks from 20 OECD countries through international trade channels have had a positive impact on technological progress in the Chinese industry, and 20 OECD members the research and development stock of the country has more and more influence on China's industrial and technological progress than the domestic research and development stock of China. This suggests that while independent innovation has a strategic role in improving the technological level and economic growth of a country or region, however, for developing countries such as China, the use of the technology transfer of international trade and the spillover effects of its technological spillover effects in obtaining the first of other countries or regions technology progress and economic growth through "dry secondary school" and imitation innovation are also an indispensable important channel, which is of great significance in promoting the overall technical level of China and the sustained rapid

growth of the economy.

Third, the U. S. and Japan's pulling effect on China's industrial technological progress is significantly higher than that of other developed countries. The United States and Japan are not only China's largest trading partners but also the world's leading exporters, and should further promote the adoption of international trade by developing China and Japan, especially the trade between China and Japan, especially between the two sidesEasy channel to China's technology transfer, to obtain more advanced technical knowledge.

5.2 Inspiration for China's use of international trade to promote economic growth

International trade in the United States, Japan and South Korea has had a positive impact on its economic growth. Both the import of resources and raw materials and the export of commodities play an important role in the economic growth of their respective countries. Because of the differences in economic status, size and resource abundance of countries, there are certain differences in the way trade works in countries. For the larger domestic market, trade is reflected in the continued growth of external demand in the country's economy. For the domestic market is relatively small, the lack of natural resources in Japan, South Korea, in particular, the role of the external market is the guarantee of economic growth, trade in these countries is more important, it fully illustrates the strategy of "trading" of Japan and South Korea "export first" strategy. The United States, Japan and South Korea have adopted certain trade strategies and policies in international trade. These trade strategies and policies play an important role in their economic growth. Both free trade to fair trade in the United States, and Japan's trade policy and industrial policy interaction with and south Korean trade import substitution to export orientation strategy, the policy itself is not only reflect the national economic development level and international competitiveness, but also embodies the right of trade strategy and policy to promote itself into the importance of a country's economic

growth. By studying the successful experiences of three representative countries, the United States, Japan and South Korea, we can draw some inspirations on the economic growth of China's international trade.

Trade has a stimulative effect on economic growth, but trade is likely to differ from the importance of economic growth in countries that do not share market size. For countries like the United States, due to the vast territory, large population and rich resources, large capacity of the domestic market, can be relying more on domestic economic market development, the importance of international trade is relatively low. The large domestic market can realize the scale economy of the domestic enterprises to some extent, and the rich resources can reduce the dependence on foreign sources. For like the Japanese, narrow, limited domestic market, especially in South Korea these territories resource-poor countries, international trade is an essential condition of economic growth, international trade can be a country's economic growth engine Relative to South Korea and, Japan's population is more, the domestic market is bigger, therefore, Japan's trade dependence Much smaller than South Korea. Like other countries in east Asia, South Korea has a very high degree of dependence on trade. This further proves that trade is not fully reflected in the trade openness of a country, and the dependence of small countries on international trade will be higher than that of big countries. Singapore's trade dependence is usually above 300%. It also shows that small countries adopt an export-oriented strategy and export orientation, which is more likely to achieve economic take-off. For a big country, the trade on economic growth is more of a supporting role, while in the United States through the history relies on the British for a long time, but the United States eventually rise more is to rely on the domestic market development. In the early days of the United States, it was basically a kind of endogenous industrial model, although trade played an important role in promoting economic growth But the underlying driving force for its economic growth lies in domestic demand, which is driven by its own market size.

China is a big country, we have a vast domestic market, but, at the same time, with Japan and South Korea as there are poor domestic per capita resources and labor surplus, China should make full use of two markets and two resources On the one hand, China should develop export-oriented economy like Japan, South Korea, active participation in international division of labor and exchange. On the other hand, it is important to cultivate the domestic market and give full play to the overall driving role of the domestic market to the economy. In general, for countries like China, international trade is a necessary condition for China's economic growth, although international trade may not necessarily be an engine for economic growth. In the context of globalization, international trade is an important economic growth factor that cannot be ignored in any country, and China is no exception.

Free trade and trade protection are only two tools for international trade to promote economic growth. The right trade strategies and policies are important conditions for trade to promote economic growth. Although free trade can theoretically promote a country's economic growth, virtually no country in history has been fully traded. Completely free trade and complete trade protection are only two extremes of the policy spectrum, and most national trade policies are located in the middle of this spectrum because of the difference between the internal and external environment. The United States adopted a policy of the infant industry protection in the process of industrialization, and after as a world power, urged that free trade, however, with the decline in its international competitiveness, and began to practice the "fair" trade and strategic trade protection policy. Trade protection policies can benefit a country's economic growth in a particular period of time. With the change of international competitiveness, the adoption of flexible trade policies has enhanced the international market share of American products to some extent. And the ill-timed trade protection policies of the great depression have also hit the us economy. Japan's strategy of "revitalizing export" during the Meiji restoration period, the "trading nation" strategy after world war ii contributed significantly to Japan's economic

growth. Japan has adopted a more pragmatic and successful approach to free trade and protection. On the one hand, Japan has vigorously promoted the export of its products, while on the other hand, it has implemented government support and protection for the key industries of the country to protect it from foreign competition. And in the domestic market, the Japanese government through policy guidance between domestic enterprises competing with each other, once reached the international level, domestic enterprise competitiveness began to promote the industry and trade since the by, participate in the international division of labor. In this way, Japan constantly cultivates the international competitiveness of its own industry and the international market. Japan's semiconductor industry is catching up with America under such a mechanism. The timely conversion and implementation of South Korea's import substitution strategy and export guided strategy provide an important guarantee for the country's economic growth. South Korea in the process of promoting exports also fostering energetically on their own industries, Korea heavy industry and South Korea ten big chaebol (samsung, hyundai, kia, hanjin, daewoo and other companies) are established under the government leading and policy support. China is a major developing country and will gradually open its market to China based on the economic development level and the international competitiveness of the industry. Under the background of economic globalization, China should be based on principles of comparative advantages to actively participate in global trade liberalization, on the basis of WTO rules, some Chinese are not internationally competitive and for China's national economy has a leading role and has a spillover effect on other industries backbone proper protection, improve the level of the overall industry competition force and national productivity. China's trade strategy should also be timely adjusted according to the stage of China's economic development and external environmental changes. Export oriented strategy should still be implemented in China, where there is still labor surplus.

The external environment has a significant impact on the success of trade

strategies and policies. Although trade is a positive sum game, there are still great differences in benefits from trade. The implementation of a country's trade strategy and trade policies affects the trade interests of trading partners to some extent. Trade protection policies often cause retaliation from other trading partners to worsen the international trading environment, which is not conducive to the economic growth of trade protectors themselves. Therefore, successful trade protection requires a better external environment. The United States achieved industrialization through the policy of infantile industrial protection. This was related to the free trade world, which was dominated by the UK at the time, and some European countries, such as the UK, adopted a tolerant attitude towards trade protection and did not retaliate. After the second world war, Japan and South Korea succeeded in implementing the protection of our country industry, and this was dominated by the United States, and after the cold war, Japan and South Korea free trade order as American Allies had closed. The absolute supremacy of the United States makes the United States strategically able to tolerate some of the protectionist practices of Japan and South Korea. Weaken as the international status, the United States began to demand that the imposition of trade liberalization in Japan and South Korea, and Japan and South Korea have many trade friction, the United States through a variety of political, economic and diplomatic means to attempt to open the Japanese and south Korean market. In the world of economic globalization, any country needs more wisdom and skills to protect its trade.

At present, trade liberalization has become the mainstream of The Times. Most of the countries or economies in the world are members of the world trade organization, the world trade organization has a set of relatively perfect dispute settlement mechanism, trade protection measures vulnerable to other countries to prosecute. As a result, trade protection measures are less likely to succeed. But proper trade protection is still possible, but only in a more circumspect manner. As a member of the world trade organization, China is subject to various rules and regulations in

trade protection. But in a multilateral system by the regulation constraint, as a developing country, China can not only make full use of fuzziness and uncertainty of rules to achieve the protection of some industry of China to the special treatment of developing countries to some of China's key industry for proper protection.

Although processing trade can promote a country's economic growth, it is the guarantee of the continuous development of trade through technological progress to promote the upgrading of processing trade and the transformation of trade mode. In the early economic development, Japan and South Korea have surplus Labour, resource-poor, small initial condition, such as domestic market through the imported raw materials, resources and export processing is a realistic choice to them. Processing trade is suitable for the factor endowment, at that time, Japan and South Korea can play to their comparative advantage as a result, the processing trade trading strategy for Japan and South Korea early make a significant contribution to the economic growth. It can solve employment problems, increase foreign exchange, increase capital accumulation, and, by using foreign exchange imported equipment and technology for export, can promote technological progress to a certain extent. However, with the shortage of domestic labor force in Japan and South Korea, the cost of labor has risen, the international competitiveness of products has declined, and the advantage of processing trade has been gradually lost. Both Japan and South Korea have put forward plans for technological progress. Japan has explicitly proposed shifting from a "trade neutral" to a "scientific and technological state", while South Korea has emphasized technology introduction and technological innovation to increase the value-added and technical content of exports. Japan and South Korea, on the one hand, have introduced a large number of technologies, through digestion, absorption and innovation on this basis. On the other hand, they have emphasized the cultivation of independent technological innovation capabilities. They have handled the relationship between technology introduction and technological innovation better. Japan and South Korea do not make the introduction of technology and technological

innovation as the ultimate goal. They emphasize the application of technology, especially the process of technology transition. Japan and South Korea have finally realized the upgrading and transformation of processing trade due to their strong technical products. Japan and South Korea technology commercialization ability so that they not only increases the content of the added value of processing trade products and technology, and realized the export of high-tech products from the processing trade to the general trade. Similar to Japan and South Korea, China has a poor resource and still has a large surplus of labor. The processing trade still conforms to China's resource endowment. We should continue to give full play to China's comparative advantage and develop processing trade. But with economic growth and reduce the labor resources, China should adjust the trade form, through technical improvement and innovation to improve China's processing trade level, at the same time vigorously develop independent property rights of products with independent innovation of general trade, and eventually realize the upgrading of processing trade and trade way transformation. In terms of technology import and technology innovation, because China is a big developing country, China on the one hand, more emphasis on technology innovation, especially the core technology innovation, but also to do well technology | into work. On this basis, we should establish an effective research and research mechanism, enhance the capability of China's technology products, and improve the technological content of Chinese export commodities.

International trade must promote industrial structure upgrading to better promote economic growth. According to the comparative advantage and international division of labor, although can obtain comparative advantage, but, if the government failed to pass the trade policy and industrial policy guidance, appropriate to the principle of comparative advantage of international division of labor for a junior country may produce negative influence. Resources characteristic, as a result of the developing countries, the developing countries are at the low end of the international division of Labour, possible to strengthen the international trade division of labor

pattern, make industry of developing countries DiJiHua, contributing to the so-called "comparative advantage trap". In order to avoid this phenomenon, appropriate trade policy and industrial policy coordination are very important. Japan and South Korea provide some very good experience in terms of trade development and industrial upgrading. Both Japan and South Korea are able to make industrial adjustments based on changes in their resource endowments and external market demand. With less investment in the light industrial sector, quick results, and not only a large number of people's livelihood issues, but also more labor, Japan and South Korea began with light industry in the early stages of industrialization. With the change of resource endowment and external environment, Japan and South Korea began to turn to heavy chemical industry. From domestic factors, light industrial products have accumulated a certain amount of capital for them, providing a basis for the shift to heavy industry. Because light industrial products is not equipment industry at the same time, the development of pure light industry to the detriment of the overall development of countries from the point of changes in the international market, as more and more developing countries trade development, light industry products increasingly fierce international competition, and heavy chemical industry cluster is not only strong power, at the same time, the international demand is big. After the oil crisis in Japan and South Korea in the 1970 s and the industry to ultra-light technical products, achieved from capital-intensive heavy industry to technology knowledge-intensive high-tech technology industry transformation. In the industrial upgrading, Japanese and south Korean government in which play an important role, the government not only choose industry development direction, according to internal and external environmental changes at the same time through the trade policy and industrial policies to support enterprises to carry out industrial upgrading. Japanese and south Korean companies can under government's guidance according to the change trend of the future industry, on the one hand, to undertake the more developed countries transfer of industrial structure, the formation of the so-called "en echelon" mode, on

the other hand, bold to represent the party to the field of industrial development. The trade promotion industry structure upgrade, the optimization of industrial structure and the promotion of the promotion of the trade structure.

At present, China basically carries out the international division of labor according to the principle of comparative advantage, and the Chinese export commodities are mainly labor-intensive products. As more and more developing countries export of labor-intensive products, this kind of product in the international market competition is intense, leads to the deterioration of the Chinese terms of trade, at the same time, some of China's coastal areas of rising Labour costs as a result, production of labor-intensive products in China, especially in the coastal areas of space more and more small. The Chinese government should be through the trade policy and industrial policy to cooperate with each other to promote China's labor-intensive products technical content and eventually from labor-intensive products to capital and technology-intensive products. On industrial development, according to the change trend of international industry, guide and encourage Chinese enterprises to undertake industry transfer of developed countries, the well to encourage enterprise technology innovation, the development of the market potential of the emerging industries.

In international trade, trade frictions are usually present, and it is of great significance to solve trade frictions to promote economic growth. Although classical economists have repeatedly emphasized that international trade can not only improve the overall welfare of the world, but also improve the welfare of the participating countries. Classical economists usually ignore the issue of the distribution of interests among countries. In fact, trade must affect the distribution of trade interests. Trade in the trade conflict and friction is inevitable in Japan and South Korea have led to the trading strategy and its main trade partners -- the United States trade friction When the products of Japan and South Korea are not a threat to the United States, the United States can let the development of Japan and South Korea, however, as the decline in

the international competitiveness, the United States to Japan and South Korea put forward various charges, trying to put pressure on Japan and South Korea provoke trade disputes and open the Japanese and Korean markets, weaken the Japanese and Korean products international competitiveness. Under pressure from the United States, Japan, and eventually accept the automatic export restrictions, orderly market arrangement, and even make the yen exchange rate revaluation against the dollar, however, Japan and South Korea also had taken some effective measures. On the one hand, they increase the technological content and added value of export products and encourage enterprises to step up their efforts. On the other hand, they encourage enterprises to invest abroad. Japan and South Korea in the 1980 s a lot of foreign investment, especially including nissan, Toyota, car companies in the United States investment is set to produce these measures to a certain extent, ease the trade friction between Japan and South Korea and the United States. But a sharp rise in the yen has had an impact on Japan's subsequent slump.

China is a big trading country, and because most of its exports are labor-intensive, China has seen frequent trade frictions with the west in recent years. In particular, trade friction between China and the United States is more serious because of China's increasing trade dependence with the United States in recent years. China should learn from Japan and South Korea. On the one hand, China should master the initiative through negotiation and participation in international rules, on the other hand, it should improve the content of Chinese product technology, strengthen the entrance and encourage enterprises to invest in foreign countries. At the moment, the west accuses China of manipulating its exchange rate to seek trade interests, and China should refrain from repeating Japan's mistakes in exchange rate movements. Exchange rate changes according to China's economic growth level and the interest rate reform process of other aspects, such as orderly, not by force, wanton significantly change China's currency, thus affecting the overall macroeconomic situation in China.

5.3 Research Limitations

In the midst of the gradual deepening of economic globalization, the industrialization of developing countries will inevitably be caught up in the tide of this era, and it is almost impossible to achieve industrialization in their own countryIt is one of the limitations of this paper, which is one of the limitations of this paper, which requires more people to conduct an in - depth study of how to make effective use of international trade without addressing the national conditions of each country. In addition, it is not advisable to belittle or exaggerate the impact of international trade. In this paper, we try to reach an objective conclusion, but the analysis method is single and the selection of data sample still has some defects.

5.4 Research Proposal

It is an indisputable fact that other researchers are suggesting that economic globalization has now become the development trend of the world economy. It is an indisputable fact that we can adapt to the development of world market as soon as possible, and actively and effectively carry out international trade, so that our economy can get moreFast and better development.

Reference

[1] Aghion, P., & Howitt, P.A. (1992). Model of Growth through Creative Destruction. *The Academy of Management Journal.Econometric, 60*(2), 323-352.

[2] Alcala, F., & Ciccone, A. (2004). Trade and Productivity. *Quarterly Journal of Economics, 119*(3), 613-46.

[3] Arrow, K.J. (1962). The Economic Implications of Learning by Doing. *Review of Economic Studies, 29*(2), 78-99.

[4] Baldwin, R.E. (2003). Openness and Growth:What's the Empirical Relationship. *NBER Working Paper,Cambridge,Massachusetts, 9*(5), 78.

[5] Borensztein, E., Gregorio, D.J., & Lee, J.W. (1998). How Does Foreign Direct Investment Affect Economic Growth. *Journal of International Economics Growth. Journal of International Economics, 45*(3), 115- 135.

[6] Bao, Y., Wang, C.C., & Chan, etc. (2015). discussion on network trade and International trade information management. *Governance Digest*, *21*(9), 91-91.

[7] Chin, J., & Grossman, G. (1998). Intellectual Property Rights and North-South Trade. *NBER Working Paper*, *2*(7), 69.

[8] Coe, D.T., & Helpman, E. (1995). International R & D Spillovers. *European Economic Review*, *39*(5), 859-887.

[9] Coe, D.T., Helpman, E., & Hoffmaister, A.W. (1997). North-South R & D Spillovers. *Economic Journal*, *107*(6), 134-149.

[10] Eaton, J., & Kortum, S. (1996). Trade in Ideas:Patenting and Productivity in the OECD. *Journal of International Economics*, *40*(3-4), 251-278.

[11] Eaton, J., & Kortum, S. (1997). Engines of Growth:Domestic and Foreign Sources of Innovation Japan and the World Economy, *9*(11), 235-259.

[12] Eaton, J., & Kortum, S. (1999). International Technology Diffusion:Theory and Measurement. *International Economic Review*, *40*(5), 537-570.

[13] Edwards, S. (1989). Openness,Outward Orientation,Trade Liberalization and Economic Performance in Developing Countries. *NBER Working Paper*, *2*(9), 8.

[14] Feder, G. (1982). On Exports and Economic Growth. *Journal of Development Economics*, *12*(7), 59-73.

[15] Frankel, E.G. (1990). Management of Technological Change:The Great Challenge of Management to the Future. *New York:Kluwer Academic Publishers, 25*(5), 134.

[16] Frankel, J., & Romer, D. (1999). Does Trade Cause Growth? *American Economic Review*, *89*(3), 379-399.

[17] Greenaway, D. (2002). Trade Liberalization and Growth in Developing Countries. *Journal of Development Economics*, *67*(9), 229-244.

[18] Grossman M.G., & Helpman, E. (1991). Endogenous Product Cycles. *Economic Journal*, *101*(10), 1214-1229.

[19] Grossman M.G., & Helpman, E. (1991). Quality Ladders and Product Cycles. *Quarterly Journal of Economics*, *106*(14), 557-586.

[20] Grossman M.G., & Helpman, E. (1991). Quality Ladders in the Theory of Growth. *Review of Economics Studies, 58*(20), 43-61.

[21] Grossman M.G., & Helpman, E. (1991). Innovation and Growth in the Global Economy. *Cambridge,MA:The MIT Press, 101*(6), 55-68.

[22] Krugman, P. (1979). A Model of Innovation,Technology Transfer,and The World Distribution of Income. Journal of Political Economy y, *87*(2), 253-266.

[23] Knugman, P. (1994). A“Technological Gap" Model of International Trade. *Rethinking International Trade y Cambridge,MA:The MIT Press*, *22*(4), 152- 164.

[24] Li, J.H. (2014). Study on Customer Management Strategy of Small and Medium Sized International Freight Forwarding Enterprises. *China High-Tech Enterprise*, *9*(13),157-159.

[25] Liu, S.L. (2016). Single Following Week,Biologist. *Thinking and Practice of Mobile Information Teaching*,*WIT, 9*(8), 158.

[26] Moschos, D. (1987). Export Expansion,Growth and the Level of Economic Development. *Jour72nal of Development Economics*, *30*(6), 93-102.

[27] Qin, Y. (2005). Kingesson.Empirical analysis of Intra-Korean Intra-Industry Trade, *Economics Journal*, *8*(3), 62-65.

[28] Rivera-Batiz, L., & Romer, P. (1991). International Trade with Endogenous Technological Change. *European Economic Review*, *35*(23), 971- 1004.

[29] Romer, P.M. (1986). Increasing Returns and Long-run Growth. *Journal of Political Economy*, *94*(5), 1002-1038.

[30]Romer, P.M. (1987). Growth Based on Increasing Returns Due to Specialization. *American Economic Review*, *77*(2), 321-342.

[31] Romer, P.M. (1990). Endogenous Technological Change. *Journal of Political Economy*, *98*(5), 71-102.

[32] Solow, R.M. (1965). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, *70*(1), 65-94.

[33] Solow, R.M. (1957). Technical Change and Aggregate Production Function. *Review of Economics and Statistics, 93*(9), 312-320.

[34] Spence, A.M. (1976). Product Selection,Fixed Cost,and Monopolistic Competition. *Review of Economics Studies*, *43*(9), 675-696.

[35] Wei, L. (2014). Construction of E-commerce Information Services Platform in International Trade, J. *Advanced Materials Research*, *55*(8), 926-930.

[36] Wang, Y.F. (2005). An Analysis of the Relationship Between China and the Main Trading Partners in Indra-Industry Trade. *World Economic Studies*, *17*(10), 47-55.

[37] Yang, Z.F., & Song, C. (2012). Research on Computer Network Course Teaching of Economics and Management Speciality. *Hebei Enterprises, 9*(11).

[38] Zhang, C. (2006). An Empirical analysis of the Factors Affecting the Development of Intra-Korean Intra-Industry Trade. *Northeast Asia Forum, 15*(2), 43-48.

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