

# An Empirical Study of the Economic Effects of Outsourcing-----Based on China's Economic Development Data

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## Abstract

*In the wave of globalization, as a way of the international transfer of capital, outsourcing is developing very rapidly. There are many researches on the economic effects of outsourcing, this article use the China's economic data during the economic development and build a regression model of the economic effect, and analysis the four effect of outsourcing on our country. The results show that outsourcing has a relationship with productivity, trade, employment and innovation of our country. We should accelerate the development of high-tech industries while maintain its current level of outsourcing.*

**Keyword:** Outsourcing, Economic effect, Regression analysis

## 1. Introduction

Harvard Business Review said outsourcing is the most important business concepts and management tools in the world since the last 75 years. With the pace of the new technological revolution, and the development trend of global economic integration, the global industrial chain detailed division of labor and resources optimization and integration has become increasingly obvious and gradually developed into a product of the deepening of division of international outsourcing. Scholars from home and abroad have also done a lot of research on outsourcing economic effect in recent years. For example, Mary Amiri, Shang Jin Wei (2006) have analyzed the international outsourcing effect on output and employment based on U.S. economic data; Jose c. Farinas\*, Alberto Lopez (2011) studied effect of outsourcing on productivity; scholars like Zhang Yan(2013), analyzed the factors that affecting the manufacturing outsourcing in China. Developed countries outsourcing their labor-intensive intermediate products and manufacturing industry to developing countries to make full use of the cheap labor advantage in developing countries to reduce costs and gain more competitiveness. Under the international background, China urgently needs to find a way to keep the economic development, undoubtedly undertake international outsourcing is an important way. Although many scholars have studied outsourcing in China, but most is limited to a particular industry, there is little literature about research on the effect of outsourcing based on whole China's economy.

This article studies the offshore outsourcing which mainly refers to the developed countries transfer some labor-intensive business to China in order to take advantage of China's cheap labor. In recent years, China's productivity, trade, employment, and innovation have made important progress through participation in various international outsourcing. In this paper, we use data from national bureau of statistics, China Outsourcing Services and outsourcing in each of the various statistical yearbook , with China as the contractor, at the same time by using SPSS, EXCEL and other software to analyze the outsourcing impact in all aspects of the economy in our country. On the basis of predecessors' theory, we make assumptions of the relationship between outsourcing and trade, employment, productivity, innovation. The result shows that outsourcing has correlation with our country enterprise productivity, trade, employment, and enterprise innovation.

## 2. The Literature Review

Since the 1990s, scholars from home and abroad have been used many ways to studied outsourcing and its impact on economy, mainly includes two aspects.

One kind of literature is about the influence factors of outsourcing level. Gene m. Grossman and Elhanan Helpman (2005) argue that international outsourcing depends on the thickness and inputs of suppliers from domestic and international markets. E. Kwan Choia. B\*, Jai - Young Choic (2013) proved that multinational companies taking into account of factors such as financial capital and wages when making outsourcing decisions through the establishment of a model of the North and South.

It concludes that outsourcing for Southern company will be better than product in domestic market which shows that outsourcing can save costs and bring more economic benefits to the North Company from one aspect. Lv Yanfang ,Wang Dong (2012) made an empirical analysis of the influence factors of China undertake outsourcing from the United States and Japan using data from the International Input-Output Tables, chose labor inputs, resources endowment, labor productivity, enterprise scale as explanatory variable, and pointed out that labor input variables has different negative influence on outsourcing ratio depend on different countries and different types of process; the influence of the ratio of resources endowment on outsourcing is mostly positive; labor productivity have different effects on different countries and different processes; enterprise scale has certain negative influence for most outsourcing behavior. Zhang Yan, Yu Lixin, Zheng Xue (2013), and other scholars proved that competitive manufacturing outsourcing level and proportion of foreign investment, Hong Kong, Macao and Taiwan investment proportion, the proportion of state-owned capital, labor costs have positive correlation with the manufacturing level of outsourcing based on data from the input-output table; the proportion of foreign capital and the proportion of Hong Kong, Macao and Taiwan capital, industry scale, trading conditions have positive correlation with the level of productive service; the level of productive service outsourcing is negatively related to the labor cost, science and technology level.

One kind of literature is about the economic effect of outsourcing. Kohler (2004) studied outsourcing has an adjustment effect on economic accorded to the phenomenon which final product price decline when factor price changed in multi-stage enterprise. Eiichi Tomiura (2004) argues that productivity of enterprise which has outsourcing activities is obvious higher than domestic industry enterprise productivity. Gene m. Grossman and Elhanan Helpman (2005) argue that the cost of market relative research, cost, contract environment will produce different degree of influence on the economic effect of outsourcing. Arti Grover (2005) think outsourcing can bring more welfare to the contracting countries through analysis national welfare effect. Johnes (2005) pointed out that developed countries outsourcing may increase the real wage of undertaking outsourcing country, for example, many European and American companies outsourcing labor-intensive products to China. A global service project in IBM (2010) points out that outsourcing has a commercial effect, it is a part of enterprise management decision, it can enhance the core competence of a enterprise and it can be a new economic growth point of multinational company. Mary Amity, Wei Shang Jin (2006) proved that outsourcing has a significant positive effect on output based on the American manufacturing industry data, at the same time they pointed out that outsourcing may have a positive effect on employment, there are likely to be negative effects, this is depending on if the scale effect of alternative exceed the negative effect of output. Jose c. Farinas \*, Alberto Lopez, Ana Martin - Marcos (2011), and other foreign scholars based on the corporate level, with the traditional production function analysis, think that productivity in enterprises which engaged in international outsourcing enterprise better than enterprises at home or integration in the domestic market. James k. Jackson (2013) argued that outsourcing, as a form of the free flow of international capital from foreign trade, production and other aspects of domestic enterprise, has a very important influence on domestic companies, and that the international service outsourcing is the main driving force of new products and service, especially for those enterprises which in a particular transformation phase, this country should accelerate development of the outsourcing industry. Martijn Adriaan Boermans (2013) pointed out that outsourcing increases the likelihood of a company obtain domestic and international patents, the domestic enterprises in contracting countries can obtain strategic knowledge assets which cannot obtain in domestic market which resulting in the increase of patent and enhance enterprise's innovation ability.

Above all, we can know research on outsourcing effect at home and abroad have made a great achievement and it has an important practical significance to outsourcing industry. As a big outsourcing country, outsourcing in China also caused a great economic effect. This article has did a empirical analysis about the outsourcing impact on our country's economic development, it should be pointed out that we studied here is the offshore outsourcing.

### **3. Theoretical Perspectives and Research Framework**

We analysis the economic effect of outsourcing on our country mainly from the following aspects:

(1) The development of productivity. Many studies from domestic and foreign suggest that outsourcing brings technological spillover which can be an important way to develop enterprise productivity. Such as training, forward and backward link between manufacturers, the flow of human capital also can produce technology spillover. Outsourcing in our country is caused by foreign enterprises in China's domestic looking for specific requirements for the production of a product or service partner of a kind of economic activity.

There are two options for foreign enterprises to choose in order to guarantee the quality of their products, the first method is provide the composition of the product, appearance, structure, specification, type, and other specific data relating to the product characteristics to our domestic contractors, the second method is to send their own domestic experts or technical staff to do professional training in our country. These two approaches all can produce technology spillover, make the contractors in our country master certain production methods about this kind of product. This technology spillover provides important advantages for our company to contracting the same product. At the same time, contracting enterprises in our country also can enhance their own core competitiveness, they can stimulate the industry to extent other manufacturers and let distributors to improve their production technology, this also can stimulate the development of an industry from one side. Thus we get hypothesis (H1): the level of outsourcing development and productivity are proportional.

(2) Increase of import and export trade. Outsourcing can promote the development of import and export trade. On the one hand, with the continuous development of outsourcing and the Chinese government has issued a series of preferential policies of outsourcing enterprises, outsourcing service environment has been improved. China's international outsourcing business is growing with the improvement of outsource environment. The elasticity of substitution in production and the size of the relative demand, outsourcing could lead GDP to a higher level of development under specific conditions according to the absorption capacity of host country. At the same time, China's advantage of abundant labor resource and low cost have attracted a lot of international outsourcing which is a huge driving force for our economic development. On the other hand, outsourcing enterprise itself can continue to improve the quality of its outsourcing service and to improve their international competitiveness in order to attract more foreign outsourcing business. Because China has a huge consumer market, the products of the outsourcing can be sold both in domestic market and foreign countries. In this way, outsourcing may cause the number of import and export trade and the proportion of the total in the international trade increased. Thus we get the second hypothesis (H2): outsourcing and trade are proportional.

(3) Employment rates. Outsourcing can increase the demand for labor in two aspects. On the one hand, outsource resulting in the increasing demand for labor through raw materials or services. Outsourcing will drive the contracting countries increase the domestic demand for raw materials, the increase in demand must bring the increase of the demand for labor. On the other hand, outsourcing can have impact on labor through the scale effect. Outsourcing increased employment to provide more jobs in our country to solve the problem of employment pressure of college students in China to same extent. According to a study in the United States, the potential service outsourcing will created 14 million jobs for the United States. By the end of February 2014, there are a total of 25130 service outsourcing enterprises in our country, the number of staff reached 5.436 million, including university (college) graduates above 3.622 million people, covered 66.6% of the total number of employees. Outsourcing not only can contribute to the rise of employment, but also can promote the increase of wage. Outsourcing not just refers to the international outsourcing business like the purchase of raw materials, professional and standardized semi-finished products in our country, the deeper meaning is the foreign company hope to find a partner who can establish bilateral relations, and this partner can ensure meet their specific need for its production of their products and service of the contractor. So outsourcing will inevitably bring more chances of employment for our contracting enterprises. The data show that outsourcing China's industry has gradually shifted from manufacturing to the financial industry and the IT services industry which of belong to high salary industry, so the salary of outsourcing industry will be increased in recent years. Thus we get the third hypothesis (H3): outsourcing and employment.

(4) Innovation. Outsourcing brings technological spillover which will inevitably leads to the outbreak of the enterprise innovation ability. Especially in manufacturing industry, Martijn Adriaan Boermans (2013) pointed out that the outsource increases the likelihood of a company attain domestic and international patent, outsource makes domestic enterprises gain knowledge of strategic asset, especially for enterprises who are in the transformation of economy. Employees working in outsourcing enterprises may find the deficiencies and defects in domestic production process, as a result they can innovate new technology, and applied for related patents at home and abroad. According to statistics, China's manufacturing industry application for a patent for a total of more than 480,000, accounts for about seventy percent of the total number of all invention by the end of 2012. On the one hand outsourcing can improve innovative of Chinese enterprises and enhance the domestic enterprise's core competitiveness, on the other hand outsourcing can improve the international competitiveness of one enterprise and attract more outsourcing business. Thus we get the fourth hypothesis (H4): outsourcing and innovation are proportional.

#### **4. The Construction of the Empirical Model and Data Processing**

This article selects China as the research objects, we want to demonstrate the effect of outsourcing to our country economy through the establishment of economic effect of outsourcing model and carried on the regression analysis with the aid of Excel and SPSS software. In order to guarantee the objectivity of the verification results, we selected the following relevant quantitative indicators for various variables:

(1) The response variables: outsourcing development level

There are many index to measure the level of outsourcing development, in this case, we choose the ratio of outsourcing production in the gross national product (GNP) calendar year:

The level of outsourcing development (DOO) = production outsourcing/gross national product (GNP)

(2) Prediction variables:

①The product contribution rate (PCR), as a result of the development level of productivity, it is difficult to use specific data, we selected the proportion of main business income of outsourcing in total revenue income:

The product contribution rate (PCR) = the main business income of outsourcing/the total revenue income

②The total trade contribution ratio (ITCR) indicates that the rate of offshore outsourcing import and export trade in the total amount of the total import and export:

The total trade contribution ratio (ITCR) = total export total offshore outsourcing/total import and export

③Employment contribution rate (ECR), mainly indicates that outsourcing workers share in the employment:

The employment contribution rate (ECR) = outsourcing workers/total employment

④The innovation contribution rate (ICR), due to outsourcing in China are mainly concentrated in the manufacturing industry, we considering manufacturing patent share in the total number of patent:

The innovation contribution rate (ICR) = the number of manufacturing patent/the total number of patent

Based on the above analysis, we construct the following regression equation:

$$DOO = \beta_0 + \beta_1 PCR + \beta_2 ITCR + \beta_3 ECR + \beta_4 ICR + \varepsilon$$

#### **5. The Empirical Result Analysis**

Through the study of the processing of data from different ways, a total of 13 per group 10, a total of 130 data and carried out a regression analysis. The empirical results show that the model of the correlation coefficient is 0.999, this is consistent with our expectation. Specific results as shown in the figure below:

## The Model Summary

Model	R	R <sup>2</sup>	Adjust R <sup>2</sup>	The standard estimate error	Change the statistics					Durbin-Watson
					R <sup>2</sup> change	F change	df1	df2	Sig.f change	
1	.921 <sup>a</sup>	.848	.834	.0294168013	.848	61.471	1	11	.000	.727
2	.999 <sup>b</sup>	.997	.997	.0041480139	.149	543.227	1	10	.000	

Anova<sup>c</sup>

Model		Quadratic Sum	DF	Mean Square	F	Sig.
1	Regression	.053	1	.053	61.471	.000 <sup>a</sup>
	Residual	.010	11	.001		
	Aggregate	.063	12			
2	Regression	.063	2	.031	1817.403	.000 <sup>b</sup>
	Residual	.000	10	.000		
	Aggregate	.063	12			

(1)The correlation coefficient between the product contribution rate and outsourcing development level is 0.780. There is a strong positive correlation between China's outsourcing development level and product contribution rate. It shows the higher the outsourcing development level, the higher the product contribution rate. The product contribution rate mainly displays in the main business income increase. Outsourcing companies' main business income increases can promote the economic development of China in many respects, for example, fiscal revenue increase, more output etc. Although China has a large domestic market but it will eventually appear saturated, through undertake outsourced, enterprise can gain foreign markets and improve the visibility in the world to some extent.

(2) The correlation coefficient between product contribution rate and outsourcing development level is 0.559. There is a strong positive correlation between China's outsourcing development level and trade volume. Trade volume reflects the level of economic development and it is an important aspect of the outsourcing to the raising of the level of economic development in our country. At the same time, as an important way of international capital flow, the increasing trade volume caused by outsourcing also shows China's participation in international level is higher and higher. In recent years, the data shows a subtle change: outsourcing of our country has a trend to transfer from the manufacture industry to the information industry, financial industry, suggesting that outsourcing of our country also can bring the trade structure change in our country.

(3) The correlation coefficient between employment contribution rate and outsourcing development level is 0.921. This shows that the higher the outsourcing development level in China the higher the employment rate. On the one hand outsourcing can make more people get job, on the other hand it also can improve labor wages of our country. Labor wages rise can let people have more money to spend which can change people's consumption demand and consumption level, thus improve consumption structure and promote the development level of economy in our country.

(4)The correlation coefficient between innovation contribution rate and outsourcing development level is 0.612. There is a strong positive correlation between China's outsourcing development level and innovation contribution rate. In recent years, outsourcing is concentrated in the manufacturing industry in our country, the \ production technology innovation are also improving a lot. Innovation is the soul of the development of a nation, it is the inexhaustible driving force for the prosperity of a country. Innovation here is mainly refers to the increase of manufacturing patent, it not only improve the whole international competitiveness of enterprises in our country, but also can promote our country enterprise internal competition.

## 6. Conclusion

Above all, we think we built a successful model on the whole and explain the outsource role in the economic development in our country. In order to fully give play to the role of outsourcing in the promotion in our country's economy, the outsourcing industry in our country should draw lessons from the international outsourcing useful experience and combination with the practical situation of our country to make full use of favorable conditions to develop the outsourcing. We should increase the level of development of the information industry, financial industry and high-tech industry outsourcing while maintaining the original manufacturing outsourcing.

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