RESEARCH ON THE INFLUENCING FACTORS AND BILATERAL COMMODITY TRADE OF CHINA-ASEAN BASED ON GRAVITY MODEL

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ABSTRACT

Since 2009, China has been ASEAN's largest trading partner for 10 consecutive years, and ASEAN has also been China's top three important trading partners in recent 10 years. With the continuous expansion of bilateral trade scale, the trade competition between the two countries has also intensified. Using qualitative and quantitative methods, this paper analyzes the factors that affect the trade between China and ASEAN, and discusses the development strategies based on current trade development situation and existing problems.

Keywords: Gravity Model, Trade between China and ASEAN, Influencing Factors

INTRODUCTION

The trade dialogue between China and the Association of Southeast Asian Nations (ASEAN) began in 1994. After 16 years of in-depth economic and trade dialogue and cooperation, China ASEAN free trade area was fully launched on January 1, 2010. China ASEAN free trade area is the largest trade area among developing countries, involving 11 countries and 1.9 billion people. In 2013, one belt, one road initiative was adopted in China, and the ASEAN countries responded positively. The bilateral economic and trade cooperation rose to a new height. In 2017, the trade volume within the ASEAN free trade area accounted for 13% of the global trade volume. From 2010 to 2019, China had been the largest trading partner of ASEAN for ten consecutive years, while ASEAN was the third largest trading partner since 2001. The political and economic relations between the two sides have been improving steadily (Chao, 2019).

There are 10 countries in ASEAN region, which are rich in tropical crops, cash crops and mineral resources. Each country has its own characteristics due to different levels of economic development and manufacturing. Among them, Singapore, Thailand, Malaysia, the Philippines and Indonesia have relatively perfect manufacturing industrial systems, with manufacturing as the main export industry and the closest economic and trade cooperation with China. Singapore is the only developed country in ASEAN (Wang, 2009). Its domestic industrial development direction is mainly capital and technology intensive industries. Singapore is the country with the highest level of manufacturing industry in ASEAN and has strong international competitiveness. Vietnam, Laos, Myanmar, Brunei and Cambodia are mainly agricultural countries, the competitiveness of international manufacturing industry is weak. Compared with ASEAN, China has a large population and different levels of manufacturing talents. Especially after the reform and opening up in 1980s, the modern industrial system has been fully established, the manufacturing technology has been continuously improved (Tan, 2015).

This paper analyses the factors that affect the trade between China and ASEAN, and discusses the development strategies based on current trade development situation and existing problems (Xiulian, 2011).

LITERATURE REVIEW

The gravity model was inspired by Newton's gravity law at first. After decades of continuous improvement in theory and practice, it is the most popular model to study and

calculate the influence factors of bilateral trade flow. Tinbergen and Pkyhknen first used gravity model to demonstrate the influence factors related to bilateral trade, and concluded that the scale of bilateral trade is proportional to the total economic volume of the two countries and inversely proportional to distance (Qingyou, 2004). Since then, economists have constantly improved the gravity model from two aspects: Theory and empirical. Anderson extended three factors, namely, differential goods, transportation cost and tariff from the traditional Douglas index system to improve the traditional gravity model. Helpman has improved the original model on the assumption of difference, scale economy and imperfect market of different products, and improved the monopoly competition model by using gravity model (Zhu, 2010). Deardorff points out that there are differences in the endowment of factors between countries, and deduces the gravity model 14 from the H-0 theory whether friction exists. Anderson and Wincoop derive a strong operational gravity model based on the CE expenditure system, and point out that the trade flow of the two countries is affected by multilateral trade relations (Su, 2010; Cheng, 2017). These studies provide strong theoretical support for the trade gravity model.

RESEARCH METHOD

Model Setting

This paper selects the data from 1998 to 2019 to demonstrate the factors influencing the trade between China and ASEAN. The dependent variable is the total trade volume of China and ASEAN countries Y_{it}, where "i" represent the country, "t" represents the year, and the trade volume data is from the United Nations commodity database data network (https://comtrade un.org/data/). According to the gravity model, the scale and distance of trade is the basic factor affecting the total trade volume, China $GDPC_t$ and ASEAN countries GDP_{it} are selected, the data is from the World Bank website, and the distance W_i is selected from Beijing to the capitals of ASEAN countries (Shanshan, 2018). The exchange rate of RMB to the US dollar is from the intermediate price of the foreign exchange rate on the Bank of China. Selecting exchange rate factors R_t,. Since China's investment in ASEAN countries began in 2003, in order to stabilize the data, this paper uses China to analyse FDI_{it} by using ASEAN direct investment. The data is from the China Statistical Yearbook, OP_t which is the economic openness of China's market to ASEAN countries, and the data is from the ratio of total trade volume between China and ASEAN to China's GDP. MS_i representing the market size of China's machinery and transport equipment selects the value of China's import and export machinery and transport equipment to the world in the United Nations commodity database data network. D_t is a virtual variable, representing the free trade area effect between China and ASEAN. It was Zero before 2001 and 1 after (Tinbergen, 1962). The least square regression method is used to evaluate the model by means of Eviews 11 measurement tool.

$$lnY_{it}=\alpha+ \beta_1 lnGDPC_t+\beta_2 lnGDP_{it}+\beta_3 lnFDI_{it}+\beta_4 lnOP_t+\beta_5 lnW_i+\beta_6 lnMS_t+\beta_7 lnR_t+\beta_8 lnD_t+\varepsilon_i$$

Model Analysis

Because panel data is divided into two types of data, cross-section and time series, the model setting is affected by the correctness of parameter estimation, so the validity test of parameters must be carried out for the model setting.

Hypothesis 1: Mixed model, that is, all variables and independent variables, including intercept and slope, are constant on different cross-section model samples and time series.

Hypothesis 2: The fixed effect model, all variables and independent variables except intercept are constant on different cross-section model samples and time series.

Hypothesis 3: Random effect model, that is, all variables and independent variables, including intercept and slope, are variable in different cross-section model samples and time series.

RESULTS AND DISCUSSION

Through the regression results, combined with China's national conditions and the bilateral trade between China and ASEAN, the following conclusions are drawn:

First, the growth of GDP between China and ASEAN countries promotes the scale of bilateral trade. The increase of economic aggregate between China and ASEAN countries has brought more production capacity and purchasing power, and promoted the increase of trade volume between China and ASEAN countries. With other factors unchanged, every 1% increase in China's GDP can promote the total trade volume between China and ASEAN by 1.6%; every 1% increase in ASEAN countries' GDP can promote the trade volume between China and ASEAN by 0.92%. Compared with China, there is still a big gap in the GDP of ASEAN countries. In 2019, the total GDP of the ten ASEAN countries was only 1/4 of that of China. There are great differences in GDP among ASEAN countries. Indonesia, with the highest GDP, is 76 times that of Brunei. The GDP of ASEAN countries has limited influence on the total trade between China and ASEAN (Anderson, 1979).

Second, China's use of ASEAN's direct investment has restricted the trade volume between China and ASEAN. According to the current model analysis data, China's use of ASEAN's direct investment has a restrictive effect on the bilateral trade between China and ASEAN. Every 1% increase in ASEAN's direct investment in China has a restrictive effect on the bilateral trade of 2.73% (Helpman, 1985). This kind of direct investment is mainly aimed at China's market, more is to drive China's domestic consumption; as the investment between China and ASEAN is more and more smooth, this restrictive role will inevitably turn into a promoting role (Deardorff, 1995). In addition, China's foreign direct investment increased from US $2.1 billion in 1996 to US $129.83 billion in 2018, an increase of 61 times. China has become a major foreign investment country in the world. However, before 2014, China's direct investment in ASEAN was limited. As of 2014, ASEAN's cumulative investment in China was 55 billion US dollars, while China's cumulative investment in ASEAN was only 5 billion US dollars. This imbalance caused some negative effects in ASEAN countries. With the further deepening of bilateral economic and trade relations, the speed of mutual investment between China and ASEAN is getting faster and faster. By the end of 2018, the cumulative two-way investment between China and ASEAN has reached US $205.71 billion, and the investment stock has increased 22 times in 15 years (Linneman, 1966).

Third, in the economic field, China's openness to ASEAN has greatly promoted the growth of bilateral trade. In recent years, due to the shrinking of European and American markets, the economies of China and ASEAN have taken on a more liberal and open attitude. The depth and breadth of economic and trade cooperation between China and ASEAN are constantly expanding, reducing trade barriers and facilitating bilateral trade. From the model data analysis, in the economic field, China's opening to ASEAN is conducive to the development of bilateral trade. Every 1% increase in the economic openness between China and ASEAN will lead to a 1.36% increase in the total trade volume, which indicates that China's zero tariff policy on agricultural products, mineral products and industrial manufactured goods to ASEAN in recent years is conducive to promoting the development of bilateral trade (Leamer, 1974).

Fourth, the change of China's exchange rate against US dollar promotes the trade between China and ASEAN. Scientific, reasonable and stable currency is the basis for the development of bilateral trade. In recent years, the number of trade projects with RMB as settlement currency between China and ASEAN countries is increasing (Sun, 2010). The people's Bank of China has signed bilateral currency settlement agreements with most ASEAN countries, realizing the direct transaction between RMB and most ASEAN countries. RMB exchange rate and its fluctuation have more and more influence on the trade between China and

ASEAN. Since 2005, China has carried out four reforms on the exchange rate. The RMB exchange rate has bid farewell to the fixed exchange rate system closely pegged to the US dollar, and entered into a managed floating exchange rate system based on market regulation and referenced by a basket of international currencies (Bergstrand, 1985; Jiangshuzhu, 2003). The exchange rate adjustment under the scientific exchange rate system promotes the development of trade between China and ASEAN.

Fifth, the establishment of China ASEAN Free Trade Area has played a role in promoting trade. From the result of model regression, the establishment of ASEAN free trade area can promote bilateral trade by 0.72% (Rose, 2001).

CONCLUSION

"One belt, one road" initiative has been deep going in China's infrastructure development, cross-border investment, This kind of comprehensive cooperation is also affected by the growth of nationalism within ASEAN countries and the interference of foreign powers, which has uncertain factors. In the future, China and ASEAN should strengthen in-depth cooperation and exchanges at all levels, gradually establish a good trade friction coordination and competition mechanism, instead of blindly changing the trade structure of both sides through non trade barriers, actively build a future oriented and constructive economic and trade cooperation relationship, and jointly build a prosperous and stable environment (Zhang, 2017).

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