INTERNATIONAL TRADE BETWEEN CHINA-TRADING PARTNERS UNDER "THE BELT AND ROAD": A CASE STUDY OF FUJIAN PROVINCE

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Abstract - This research study is to identify the determinant factors influencing the Fujian province trade with trading partners (main 21) during 2005 to 2017 by using gravity model with panel data. Then selecting random effect model based on the result of Hausman test and Breusch-Pagan Lagrangian multiplier test. In conclusion, it can be summarized that GDP of Fujian province and trading partners, Population of trading partners, Trade openness of Fujian province are significant positively impact on trade of Fujian province. However, the Distance of Fujian province and trading partners has significant negative impact on trade. The dummy variable whether close to sea has no significant. Then, calculating trade potential, according to the criteria, it is divided into three different types: huge potential, potential development, and potential remodeling.

Keywords - "The Belt and Road", Fujian province, panel data, trade potential.

I. INTRODUCTION

Fujian province is an important sea outlet of the Chinese mainland. Fujian province is one of the provinces close to Southeast Asia, west Asia, East Africa and Oceania. It has always been an important window and base for China's communicate with the world. The policy of the "Reform and Opening-up" and the establishment of "Special Economic Zones" have obviously promoted international trade volume, foreign investment and GDP of Fujian province. The international trade volume from 0.6083 billion to 171.0348 billion in 1981-2017. The GDP from 10.562 billion RMB to 3229.209 billion RMB in 1981-2017.in 2017 Fujian province's international trade volume and GDP ranked 7th and 10th in China, respectively. After the Reform and Opening-up, Fujian province gradually developed foreign investment through preferential policies. Today, the Southern Fujian Triangle Area, consisting of Xia Zhang Quan, has become the most developed and most active area in the province.

The main export and import market of Fujian province is Asia, with Asia accounting for 45.45% and 52.88% of the total; Followed by North America 21.64% and 12.84%; Europe19.75% and 11.74%; Latin America and Africa11.06% and 12.62%; Oceania2.10% and 9.92%. Asia is the biggest trading-partner for Fujian.

With the development, "Yangtze River Delta" (Involving Shanghai, Jiangsu province, Zhejiang province, and Anhui province) and "Pearl River Delta" (Guangdong province, Hong Kong and Macau) have maintained relatively fast economic growth, which is much higher than the national average growth rate. Fujian province is located in middle of the "Yangtze River Delta" (in the north) and the "Pearl River Delta" (in the south). But Fujian province's economic scale has been difficult to reach the extent of Guangdong, Jiangsu, Shandong, Zhejiang and other coastal provinces.

In September 2013, Chinese President Xi Jinping proposed the cooperation initiative of "The Belt and Road". "The Belt and Road" is the abbreviation of "Silk Road Economic Belt" and "21st Century Maritime Silk Road". In 2015, the government issued the document that "the vision and action on promoting the joint construction of the silk road economic belt and the 21st century maritime silk road" which explicitly supported Fujian province to build the core area of the "21st Century Maritime Silk Road". Fujian province is the main birthplace, important node and starting point of the "Ancient Maritime Silk Road". it has a long history of economic and trade on the Silk Road, rich in overseas Chinese affairs resources, distinctive marine culture, and good policy support.

Accelerating the construction of the "Belt and Road" in Fujian has deep historical origins and a humanistic foundation. It not only has a special status and outstanding advantages, but also has great room for development. Attention should be given to making full use of the characteristics and advantages of Fujian, grasping the major opportunities in the construction of the "Belt and Road" initiative, taking the initiative to accelerate the expansion of space for interoperability, foreign economic and trade cooperation, and cultural exchanges, and constantly improve the level of openness.

II. LITERATURE REVIEW

Tinbergen (1962), Poyhonen (1963) first used the extended gravity model to study the field of international trade. Linneman (1966) extended the model of Tinbergen to include other trade explanatory variables such as population, and more importantly, Bergstrand (1989) went one step further by replacing the population size indicator with per capita income. the application of the trade gravity model is more and more extensive, and it has become the main empirical research tool for international trade flows.

Frankel-(1997) showed the gravity model has also been widely used in the applied literature to evaluate the impact of regional agreements; Dell'Arricia (2000) showed the exchange rate fluctuations has impact on trade flows. Anderson（2003）find that the border has effect on trade flows.

Zhuang Li Juan (2007) shows the GDP of ASEAN, GDP per capita, space distance and regional trade agreement have significant influence on Guangdong's agricultural export to ASEAN. Liao Meng (2016) shows The GDP of Fujian and ASEAN countries and FDI has a significant positive impact on bilateral trade. Distance has a significant negative impact on bilateral trade. Yang Songxiao（2017）shows the influencing factors and their influence of China's export trade with the countries along the coast are GDP, population, distance, and the dummy variable are WTO, CAFTA, APEC, Border, EU. Zhang Zhenqiang (2019) shows that the GDP OF two part, the construction of the CAFTA and the implementation of the "Belt and Road" initiative has a significant economic and trade impact on the bilateral relations between Guangxi and Vietnam. Shi Chao, Zhang Jianhua (2019) shows the influencing factors of China's trade with ASEAN as follow, GDPC, GDPI, Adjacent, and SEA have a positive impact on China trade with ASEAN countries; D have a negative impact for China and ASEAN countries trade.

<the vision and action on promoting the joint construction of the silk road economic belt and the 21st century maritime silk road>(2015) shows explicitly supported Fujian to build the core area of the 21st century maritime silk road; Li Hongjie (2015) show Fujian Province has outstanding advantages such as profound historical origin and cultural heritage on " Belt and Road". Xie Xin (2015) has occupied 3 of the 15 ports in the key areas along the way. Fujian's Fuzhou port, Xiamen port and Quanzhou port will be upgraded along the way to build the core competitive advantage of the maritime Silk Road. Lin Xiang Hong (2015) summarized the current situation and achievements of the construction of the Maritime Silk Road in Fujian Province.

As above description, the study will identify the determinant factors influencing the Fujian Province trade with trading partners, and forecasting trade potential. Then give reasonable suggestions for government and private sector.

III. THEORETICAL MODEL

Tinbergen (1962), Poyhonen (1963) first used the extended gravity model to study the field of international trade. The gravity model explains the volume of trade between two countries. Consistent with the underlying micro-foundations, the product of the countries' GDPs is a positive stimulant to trade while distance, representing the impact of transport costs, has a negative influence. As noted above, the standard gravity model also includes other variables that may affect the volume of trade between two units. In this study, selected GDP of Fujian province, GDP of trading-partners, Distance, population of trading-partners, trade openness of Fujian province, and the dummy variable whether close to sea. So, the gravity model tested in this article as follow:

$$\ln trade_{ijt} + \beta_0 + \beta_1 \ln gdp_{jt} + \beta_2 \ln fgdp_{it} + \beta_3 \ln d_{ij} + \beta_4 \ln pop_{jt} + \beta_5 \ln tp + \beta_6 sea + \mu_{ij} \quad (1)$$

Where, $\ln trade_{ijt}$ represents the natural logarithm of total trade volume from Fujian province to trading-partners; $\ln fgdp_{it}$ represents the natural logarithm of GDPof trading-partners; $\ln gdp_{jt}$ represents the natural logarithm of GDP of Fujian province; $\ln d_{ij}$ represents the natural logarithm of distance from capital city of two units; $\ln pop_{jt}$ represents the natural logarithm ofpopulation of trading-partners; $\ln tp_{it}$ represents the natural logarithm of trade openness of Fujian province; sea represents whether close to sea; μ_{ij} represents error term.

IV. DATA SOURCE AND DESCRIPTION

This study used gravity model with panel data analysis for Fujian province and its 21 trading partners during 2005 to 2017. In addition, the 21trading partners collected from Fujian Statistical Yearbook. The GDP of Fujian province and trade openness of Fujian province collected from Fujian Statistical Yearbook; GDP of trading partners and population of trading partners collected from World Bank Database; Distance collected from Google Earth, which is the capital city of two units; sea collected from google website.

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
country	273	11	6.0664	1	21
year	273	2011	3.7485	2005	2017
lntrade	273	0.5175	1.4702	-4.6596	3.3833
lngdp	273	6.5816	1.4004	2.4926	9.8774
lnfgdp	273	5.4466	0.5818	4.3819	6.1691
lnd	273	8.3664	1.0788	5.5413	9.3881
lnpop	273	3.1382	1.4352	-0.7280	5.7843
lntp	273	3.8973	0.1963	3.5779	4.2198
sea	273	0.9524	0.2134	0	1

Table1. Data Statistics Description

Table 1 shows that data statistic of Fujian province and its 21 trading partners 2005 to 2017, 273 observations of lngdp, lnfgdp, lnd, lnpop, lntp, sea in the study. The mean value of lntrade is 0.517468, and the maximum

and minimum values of lntrade are 3.383288 and-4.65963, respectively. The standard deviation of lntrade is1.470168; The mean value of lngdp is 6.581558, and the maximum and minimum values are 9.87742 and 2.492562, respectively, the standard deviation of lngdp is 1.400424; The mean value of lnd is 8.366354, and the maximum and minimum values are 9.388068 and 5.541264, respectively, the standard deviation of lnd is 1.0788; The mean value of lnpop is 3.138156, and the maximum and minimum values are 5.784278 and -0.72803, respectively. The standard deviation of lnpop is 1.435222; The mean value of lntp is 3.897307, and the maximum and minimum values are 4.21983 and 3.57789, respectively, the standard deviation of lntp is 0.196343; The mean value of sea is 0.952381, and the maximum and minimum values are 1 and 0, respectively. The standard deviation of sea is 0.21335.

V. EMPIRICAL RESULTS

This study is using gravity model with panel data during 2005 to 2017. After the data stationary, selecting random effect model based on the result of Hausman test and Breusch-Pagan Lagrangian multiplier test.

	Hausman test	Breusch-Pagan Lagrangian Multiplier test
Prob>chi2	0.9342	0.0000

Table2. The Result of Hausman Test and B-Pagan LM Test

The result show that the random effect model would be selected.

Variable	Coefficient	Std. Error	Prob.
C	-6.1964***	2.0358	0.0026
lngdp	0.7002***	0.1062	0.0000
lnfgdp	0.7248***	0.0698	0.0000
lnd	-0.7101***	0.1798	0.0001
lnpop	0.3594**	0.1487	0.0164
lntp	0.8703***	0.1840	0.0000
sea	-0.4422	0.8702	0.6118
R-squared	0.7431	F-statistic	128.2299
Adjusted R-squared	0.7373	Prob (F-statistic)	0.0000

Table3. Regression Results

According to the above table results, bring the formula to get the final regression equation:

$$\ln trade_{ijt} = -6.1964 + 0.7002 \ln gdp_{jt} + 0.7248 \ln fgdp_{it} - 0.7101 \ln d_{ij} + 0.3594 \ln pop_{jt} + 0.8703 \ln tp_{it} - 0.4422 sea + \mu_{ij} \quad (2)$$

The variables which have influence on the bilateral trade of Fujian province and partners are: economic size of Fujian province and partners (lngdp, lnfgdp); Distance between Fujian province and partners (lnd); The population of partners (lnpop), and the trade openness of Fujian province(lntp). However, the dummy variable (sea) which means Fujian province and partners close to have no impact on trade of Fujian province and partners because insignificant coefficient.

First, the GDP of Fujian and partners have a significant impact on bilateral trade, with regression coefficients reaching 0.7248 and 0.7002, respectively. That is, under the premise of controlling other variables, for every 1% increase in GDP in Fujian province, bilateral trade volume will increase by 0.7276%; for every 1% increase in the partner 's GDP, bilateral trade volume will increase by 0.7002%;

Second, the distance between Fujian and partners has a significant negative impact on bilateral trade. under the premise of controlling other variables, for every 1% increase in distance, bilateral trade flows decrease by 0.7101%.

Third, the population of partners has a significant impact on bilateral trade, with a regression coefficient of 0.3594. That is, under the premise of controlling other variables, for every 1% increase in the population of partners, the bilateral trade volume will increase by 0.3594%.

Fourth, the trade openness of Fujian province has a significant impact on bilateral trade, with regression coefficients reaching 0.8703. That is, under the premise of controlling other variables, for every 1% increase in trade openness of Fujian province, bilateral trade volume will increase by 0.8703%.

VI. TRADE POTENTIAL

Trade Potential Coefficient is > 1.2		0.8 < Trade Potential Coefficient ≤ 1.2		Trade Potential Coefficient is ≤ 0.8	
HKG	1.7254	TWN	0.9388	JPN	0.7231
MAC	3.0969	THA	1.1157	SPG	-6.2160
PHL	1.2875	DEU	0.8541	ARE	-2.0230
MYS	2.9284	GBR	0.9114	FRA	0.3931
SWE	3.1377	DNK	1.1629	ITA	0.4692
CAN	1.3843	CHE	0.8977	ESP	0.6618
AUS	2.4621	USA	0.9822		
		FIN	1.1309		

Table4. Trade Potential Result

Trade potential, that is, to bring the relevant data into the regression equation of the gravity model, calculate the predicted value of bilateral trade volume, and compare it with the actual value of bilateral trade to evaluate the bilateral trade potential. If the trade potential coefficient is> 1.2, the potential is reshaped,

indicating that bilateral trade is in a saturated state, and new trade growth points need to be found to further expand bilateral trade; 0.8 <trade potential coefficient ⩽ 1.2, a potential expansion type, and the trade relationship between the two countries is relatively Stable, the existing potential has not been fully tapped, and there is still some room. The trade potential coefficient is ⩽ 0.8, which has huge potential. There is huge potential for trade between the two countries, and there is still a lot of trade space worth digging.

According to the trade volume between Fujian and trading partners in 2017, Fujian's trade potential with major trading partners in 2017 is listed in Table4. Among them, those with trade potential coefficients greater than 1.2 are: Hong Kong, Macau, Philippines, Malaysia, Sweden, Canada, and Australia; Trade potential coefficients greater than 0.8 and less than or equal to1.2 include Taiwan, Thailand, Germany, UK, Denmark, Switzerland, USA and Finland. Trade Potential coefficients are less than or equal to 0.8 include Japan, Singapore, France. Italy, United Arab Emirates and Spain.

VII. CONCLUSION

In summary, the three major trading partners of Fujian are the United States, the European Union and ASEAN. From the empirical analysis of the trade gravity model, the factors that affect the bilateral trade flows between Fujian and trading partners are: the size of both parties' GDP, the trading partner's population, distance, trade openness. The distance between Fujian and trading partners is the factor hindering bilateral trade, which indicates that the construction of infrastructure between Fujian and trading partners should be strengthened in the future to mitigate the impact of distance on bilateral trade.

From the perspective of trade potential, Hong Kong, Macau, Philippines, Malaysia, Sweden, Canada, and Australia need look for new points of trade growth and stimulate the vitality of bilateral trade; Taiwan, Thailand, Germany, UK, Denmark, Switzerland, USA and Finland trade with Fujian province is relatively stable, but, the existing potential has not been fully tapped; Japan, Singapore, France. Italy, United Arab Emirates and Spain trade with Fujian province has huge potential. It can more trade.

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