THE INTRA-INDUSTRY TRADE IN VEGETABLE AND FRUIT PRODUCTS BETWEEN CHINA AND VIETNAM

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Abstract - China is linked to Vietnam's territorial borders. The two countries have a close political andeconomic relationship. The two sides are friendly countries. Since 1991, the trade between the twocountries has gradually recovered and developed rapidly, showing a thriving scene. Both China and Vietnam are agricultural countries. In the economic and trade cooperation between the two countries, the fruit and vegetable trade is an important development direction.This research starts from the theory of intra-industry trade, analyzes the factors that affect the intra-trade of China and Vietnam fruit and vegetable industry through China-Vietnam fruit and vegetable trade data from 2007 to 2018, and puts forward corresponding suggestions. The research in this article is conducive to the smooth progress of fruit and vegetable trade between the two countries, and at the same time to improve the capacity of fruit and vegetable production and trade between the two countries.

Keywords - Fruit and Vegetable Products; Intra-Industry Trade; China;Vietnam

I. INTRODUCTION

Intra-industry trade refers to the exchange of similar products belonging to the same industry. The term is usually applied to international trade, where the same types of goods or services are both imported and exported. The intra-industry can reflect a country's abiliity of adapting to the needs of the changing world' s market. To some extent, intra-industry is a practical way for countries to develop economy.

China and Vietnam have similar geographical locations. In recent years, trade between the two countries has been frequent. Although there have been periods of strained relations, the trade between the two countries has gradually deepened since 1991. According to the National Bureau of Statistics of Vietnam, China has become the third largest trading partner between Vietnam and the world since 2003. In 2004, the trade volume gradually increased to the first place and has continued to this day.

The volume of fruit and vegetable trade between China and Vietnam is huge, and has gradually exceeded 1.5 billion dollars since 2008. According to the statistics of the General Administration of Customs of Vietnam, in 2017, China-Vietnam fruit and vegetable trade exceeded2 billion dollars. While the trade between the two countries is developing steadily, there are also some problems. For example, there is an imbalance in the trade structure between the two countries. This is because Vietnam's high-paying technology products are imported from China. Therefore, the deficit is large, and the development of the two countries Fruit and vegetable trade between countries is conducive to Vietnam's economic development and reduces the deficit. At the same time, China's fruit and vegetable trade with Vietnam benefits from the role of trade creation and trade transfer with the ASEAN free trade market. However, the types of economic markets in China and Vietnam are similar, so research on fruit and vegetable trade between the two countries can deepen mutual learning between the two countries' policies. The development of trade between the two countries not only promotes economic development, but also promotes political friendly relations between the two countries and promotes comprehensive cooperation between the two countries.

II. LITERATURE REVIEW

Clark and Stanley (1999) investigate the determinants of intra-industry trade between Developing countries and the United States and finds that distance influences intra-industry trade negatively, and the difference in GDP Per Capita impacts intra-industry tradepositively. The study concludes that intra-industry trade will be greater as countries become more similar both in relative factor endowments and economic size.

Hu and Ma (1999), and Andresen (2003) associate high average level of development with a high degree of intra-industry trade and the inverse to unequal levels of economic development.

Xing (2007) analyze the dynamic changes of bilateral intra-industry trade between China and its twomajor trading partners, Japan and the USA for 1980, 1992 and 2004, using theweightedGL index. The paper also investigates to what extent FDI inflows in China contributedto the development of bilateral intra-industry trade. The study concludes that Sino-Japan intra-industry trade shows signs of rapid growth and rises to approximately one-third of overall trade and Japan FDI into China is a significant variable in determining intra-industry trade in the manufacturing sector while Sino-US intra-industry trade develops slowly and there is no significant evidence that US FDI stimulated intra-industry trade between both countries.

Kuang Qian (2012) used a variety of intra-industry trade indexes to conduct a structural analysis of

China-Vietnam fruit and vegetable trade forms from 2002 to 2010, including Grubel-Lloyd index, Bruelhart index, and Thom. McDowell index. It is pointed out that the horizontal intra-industry trade between the two countries is larger than the vertical intra-industry trade, occupying a dominant position.

Qiuzhen (2013) posits that the influence oftrade imbalance can be negative or positive, that is, the results will vary by country. In 1980, Gray and Martin pointed out that if a country has lower trade barriers, its trade sector tends to have higher levels of trade.

Liang Danhui (2017) researched the characteristics of agricultural trade between China and Vietnam. The Grubel-Lloyd index was used to study the fruit-vegetable trade between China and Vietnam from 2006 to 2015. Improve the level of intra-industry trade between China and Vietnam.

III. METHODOLOGY

Model Specification

This research study tends to employ ARDL framework developed by Pesaran, Shin & Smith (2001) though this approach does not require as important as the stationary variables.

$$gl_{it} = f(agdp_{it}, fdi_{it}, open_{it}, timb_{it}) \quad (1)$$

All the variables need to take natural logarithm. This paper sets lngl as thedependent variable and lnagep, lnfdi, lnopen, and lntimb as the independent variables.Therefore, the model can be written as follows:

$$\ln gl_{it} = \beta_0 + \beta_1 \ln agdp_{it} + \beta_2 \ln fdi_{it} + \beta_3 \ln open_{it} + \beta_4 \ln timb_{it} + \varepsilon_{it} \quad (2)$$

Where:

- lngl is a measure of intra-industry trade in logs;
- lnagdp is the logarithm of average of Gross Domestic Product of the two trading partners;
- lnfdi is the logarithm of foreign direct investment inflows China to Vietnam;
- lnopen is the logarithm of trade openness, mean value of bilateral trade openness;
- lntimb is the logarithm of trade imbalance;
- -εit is error term.

The above equation is a static model. In order to consider the dynamic factor, the general specification of the ARDL model is used in this study. The general ARDL model initially can be displayed as:

$$\Delta \ln gl_{it} = \beta_0 + \sum_{j=1}^{p} \beta_{1i} \Delta \ln gl_{t-i} + \sum_{j=1}^{p} \beta_{2i} \Delta \ln agdp_{t-j} + \sum_{j=1}^{p} \beta_{3i} \Delta \ln fdi_{t-j} + \sum_{j=1}^{p} \beta_{4i} \Delta \ln open_{t-j} + \sum_{j=1}^{p} \beta_{5i} \ln timb_{t-j} + \beta_6 \ln gl_{t-i} + \beta_7 \ln \ln agdp_{t-1} + \beta_8 \ln \ln fdi_{t-1} + \beta_9 \ln open_{t-1} + \beta_{10} \ln timb_{t-1} + \varepsilon_{it} \quad (3)$$

Where Δ denotes the different operators; β_0 : presents drift constant; p is the optimal lag length; j is number of lags; ε_{it} is the random error term. β_1, β_2, β_3, β_4, β_5 shows the short-run dynamic of model, and β_6, β_7, β_8, β_9, β_{10} shows the long-run relationship among all variables.

The above regression model is used in this paper that explain the relationship between dependent variable and independent variables.

IV. EMPIRICAL RESULTS

Panel unit root test

This section mainly describes the test results of the unit root test. The unit root test is determined by the Phil-lips-Perron test. The estimated results are detailed below.

variables	level	LLC	ADF	Result
lngl	I（0）	-2.04566** （0.0204）	14.7085 （0.2578）	stationary
lnagdp	I(1)	-2.95951** (0.0015)	12.2573 (0.4252)	stationary
lnfdi	I（0）	-11.2228*** (0.0000)	61.7590*** (0.0000)	stationary
lnopen	I(0)	-7.02182*** (0.0000)	21.7383** (0.0406)	stationary
lntimb	I(1)	-5.57517*** (0.0000)	30.6036** (0.0023)	stationary

Table 1. Unit Root Test Results
*****, ** and * is significant at 1%, 5% and 10% level, respectively.**

The unit root test results show that Grubel-Lloyd indexand the foreign direct investment inflows China to Vietnam, trade opennessare stationary at their zero order I(0), we don’t need to check the first difference.

Average of Gross Domestic Product and trade imbalance stationary in their first difference order I(1). In conclusion, all variables are stationary under 1% and 5%, therefore, this thesis could apply the panel ARDL model.

Panel ARDL Estimation

The regression model on the method PMG and MG estimate the long run correlation among those variables. Hausman test is the standard test to compare coefficient between the regression models. The regression result of Hausman tests the better method between PMG and MG. In the critical assumption of regression model is that the stochastic is not corrected with independence variables. If the true model is heterogeneity, PMG estimator is inconsistent; in this case, MG is consistent. In addition, if the true model is homogeneity, MG is inconsistent; PMG is consistent either.

Edward et al (2007), suggests a test compares the different probability limits of Pool Mean Group Estimator (PMG) and Mean Group Estimator (MG) as a selection criteria for PMG and MG.

Panel ARDL is an approach that is suitable for small sample and does not restrict on the level of stationary; different from Johasen cointegration by using large sample. This approach allows estimating the long run and short run by using one equation.

D.lngl	Coefficient	Standard error	z	P value
Long Run				
lnagdp	6.708922	6.442933	1.04	0.298
lnfdi	-4.662538	3.138881	-1.49	0.137
lnopen	-5.042232	3.499898	-1.44	0.150
lntimb	2.831038	1.590099	1.78	0.075
Short Run				
ΔLnagdp,D1	-3.568262	3.65708	-0.98	0.329
ΔLnfdi, D1	1.110686	.8551926	1.30	0.194
ΔLnopen,D1	-2.425398	1.780139	-1.36	0.173
ΔLntimb,D1	-.0206424	.3009611	-0.07	0.945
EC	-.4826315	.2675122	-1.80	0.071
Constant	-26.86818	30.20795	-0.89	0.374

Table 2. MG Estimator Results

D.lngl	Coefficient	Standard error	z	P value
Long Run				
lnagdp	-.9678467	.0730615	-13.25	0.000
lnfdi	.6847008	.0396271	17.28	0.000
lnopen	.9405281	.0613449	15.33	0.000
lntimb	-.4021902	.0289941	-13.87	0.000
Short Run				
ΔLnagdp,D1	-1.319512	3.01195	-0.44	0.661
ΔLnfdi, D1	.3417344	.2731763	1.25	0.211
ΔLnopen,D1	-.4696164	.5989468	-0.78	0.433
ΔLntimb,D1	.1017609	.3708729	0.27	0.784
EC	-.6168497	.1885071	-3.27	0.001
Constant	1.503802	.9494802	1.58	0.113

Table 3. PMG Estimator Results

	(b) mg	(B) pmg	(b-B) Difference	Sqrt(dig(V_b-V_B)
lnagdp	6.708922	-.9678467	7.676769	13.48294
lnfdi	-4.662538	.6847008	-5.347239	6.568623
lnopen	-5.042232	.9405281	-5.98276	7.323986
lntimb	2.831038	-.4021902	3.233228	3.327478

Table 4. Results of Hausman Test
b = consistent under Ho and Ha; obtained from xtpmg
B = inconsistent under Ha, efficient under Ho; obtained from xtpmg
Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.83
Prob>chi2 = 0.3053

Panel ARDL model will choose the coefficient estimator between Pool Mean Group Estimator (PMG) and Mean Group Estimator (MG) upon the Hausman test. If the t, Here, the result of Hausman test present in table 4 The Hausman test p value is considered, when p value is 0.3053 larger than 0.05, it indicates that Mean Group Estimator is inconsistent, so Pool Mean Group Estimator (PMG) is the better coefficient estimator.

Table 3 indicated the result of long run relation of those variables by using the method of Pool Mean Group Estimator (PMG). EC is speed of adjustment which indicated the long run relation of those variables. Generally, speed of adjustment reveals negative so it means that those variables have the long run relation. In contrast, if the speed of adjustment is positive, those variables have no long run relation.

According to the PMG Estimator Results, the long run relationships are existed between intra-industry trade and the average of Gross Domestic Product, foreign direct investment inflows China to Vietnam, trade openness and trade imbalance. Average gross domestic product and trade imbalance is significant and has negative relationship with intra-industry trade, if there is increase in average gross domestic product and trade imbalance, the intra-industry trade will be increase. In the other hands, trade opennessand trade imbalance has positive relationship with intra-industry trade, if there is increase in average gross domestic product and trade imbalance, the intra-industry trade will be increase.

V. CONCLUSION AND RECOMMENDATION

Conclusion

This paper explored the determinant factors of intra-industry trade between China and Vietnam by using panel ARDL to estimate the data from 2007 to 2018. Using panel from 2007 to 2018 to estimate the determinant factors ; this paper illustrates the new evidence to use the advance panel econometric by using Pool Mean Group Estimator (PMG) and Mean Group Estimator (MG). By using PMG and MG to estimate the long run correlation between determinant factors and intra-industry trade between China and Vietnam, this paper revealed that intra-industry trade with the average of Gross Domestic Product, foreign direct investment inflows China to Vietnam, trade openness and trade imbalanceexist the long run relationship.

After using the method of Hausman test to select the criteria coefficient between Pool Mean Group Estimator (PMG) and Mean Group Estimator (MG), the result revealed that Pool Mean Group Estimator (PMG) is the better coefficient estimator to estimate the equation. The regression model of using the Pool Mean Group Estimator (PMG) showed there are positive relation among lnfdi and lnopen, negtive relationship with lnagdp and lntimb.

Recommendation

1. Increase investment to promote the development of China-Vietnam fruit and vegetable intra-industry trade.

Since 1990, China and ASEAN countries have gradually established political friendly relations, and various trade activities have gradually recovered and developed rapidly. Among them, the fruit and vegetable trade between China and Vietnam has also gradually developed, and the scale has gradually deepened. From simple import and export to the multinational investment community between the two countries, there is also involvement. And the rapid economic development of Vietnam in recent years has also benefited from China's trade cooperation. The reasons for Chinese consumers buying Vietnamese imports of fruits and vegetables are shown that due to their appearance and price, the differences between Chinese and Vietnamese products are obvious. Therefore, similar products have greater development space, so China and Vietnam should increase The intensity of investment, such as direct investment methods and direct factory construction in Vietnam, can not only promote the development of the industry, but also promote the development of related industries, such as the transportation industry. China should also pay attention to improving the quality of fruits and vegetables, publicizing word of mouth and brands, attracting more investment, and developing trade between the two countries.

2. Increase the openness of fruit and vegetable trade between China and Vietnam.

Strengthen the management of import and export trade between China and Vietnam. In order to promote the development of intra-fruit and vegetable trade between China and Vietnam, the two countries should gradually improve the border trade system, formulate legal and time-effective policies, formulate policies on remittances and taxes, and apply legal binding forces to tax evasion and smuggling, etc.

Reduce tariffs. Tariffs have always been the most concerned aspect of trade between the two countries. In the early stage of cooperation between China and Vietnam, tariffs were higher between the two places, and the low cost of fruits and vegetables led to high prices for imported fruits. With China's accession to the WTO in recent years, in order to adapt to the current mode of trade and the needs of implementing reforms and opening to the outside world, China has adopted a behavior of reducing tariffs. Vietnam's tariffs have not changed significantly. Therefore, in order to promote the development of Vietnam's fruit and vegetable processing industry, Vietnam should take measures to reduce tariffs so that tariffs cannot become an obstacle to the introduction of Chinese investment. Only in this way can Vietnam's fruit and vegetable deep processing enterprises successfully introduce Chinese equipment and technology and promote the two countries. Development of fruit and vegetable trade.

Simplified customs clearance procedures. Customs clearance procedures have always been one of the most important links that plagued trade cooperation between countries. Due to their short shelf life and the need to keep fresh, fruit and vegetable products need to be shortened in the application and processing of customs clearance procedures. The government has worked hard to simplify the customs clearance procedures for both parties.

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