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Empirical Research on Free Trade Area (FTA) Promoting China's Economic Growth

Taking China-ASEAN Area as an Example

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***Abstract*—With China's economy entering the new normal, foreign trade becomes the major impetus for China's economic growth. Free trade area is an effective way to promote foreign trade. This paper starts from foreign trade, takes data concerning China-ASEAN from 2000 to 2015 as the sample, uses unitary linear model to analyze the data and obtains the conclusion that China's import and export trade with ASEAN obviously plays a facilitating role in China's economic growth.**

Keywords—FTA; China's economy; economic growth

I. INTRODUCTION

China-ASEAN free trade area is the first of this kind established in China. Its total volume of trade accounts for about 13% of the world's total trade volume. There are about 1.9 billion people in this area, making it the first in terms of population among regional economic organizations of developing countries in the world. Economic aggregate of this area is about 6 trillion dollars, making it the third largest free trade area in the world. In 1993, total volume of export and import trade between China and ASEAN accounts for 1.7% of China's total volume of foreign trade. In 2014, the number increases to 11.26, increasing by 662.35%. In 2014, China is the country that creates the largest total volume of trade with ASEAN, ASEAN is the third largest economic entity in terms of total trade volume with China, and ASEAN is the second largest economic entity and the fourth largest export market in terms of China's import shares.

II. DATA AND VARIABLE SELECTION

In order to analyze FTA's facilitating effect on China's economic growth, this paper takes China-ASEAN as an example and collection of data concerning two relevant variables is as follows:

A. China's Economic Growth

This paper regards China's economic growth as dependent variable and analyzes the role import and export between China and ASEAN plays in China's economic growth from the perspective of foreign trade. This paper selects China's GDP as indicator of China's economic growth and time span is from 2000 to 2015. Here, Y is used to represent value of GDP with a unit of 0.1 billion dollars. Data source: Website of National Statistics Bureau http://www.stats.gov.cn/.

B. Import and Export Trade.

This papers regards import and export trade as independent variable, selects total import and export trade volume between China and ASEAN as detailed indicator and time span is from 2000 to 2015 "Table I". X is used to represent total import and export trade volume between China and ASEAN with a unit of 0.1 billion dollars. Data source: Website of National Statistics Bureau http://www.stats.gov.cn/.

TABLE I. TOTAL VOLUME OF IMPORT AND EXPORT TRADE BETWEEN CHINA AND ASEAN AND CHINA'S GDP(0.1 BILLION DOLLARS)

Year	Total volume of import and export trade	GDP
2000	395.22	11984.75
2001	416.15	13248.18
2002	547.66	14538.20
2003	782.52	16409.66
2004	1058.80	19316.44
2005	1303.70	22576.19
2006	1608.48	27134.95
2007	2025.08	34956.64
2008	2311.17	45218.27
2009	2130.11	49905.26
2010	2927.80	58790.63
2011	3628.50	73105.29
2012	4001.46	82181.30
2013	4435.98	91813.81
2014	4803.94	103856.6
2015	4721.60	111022.7

a. Data source: Website of National Statistics Bureau http://www.stats.gov.cn/

III. MODEL BUILDING

In order to analyze the effect of foreign trade under FTA on China's economy, this paper builds a basic model as follows:

$$Y = \alpha + \beta X + \delta \qquad \text{(Formula 3-1)}$$

In the above formula, Y represents China's economic growth, X represents that China's import and export trade with ASEAN, namely α, is a constant term, β is the coefficient of

X and δ is a disturbance term. Considering possible heteroscedasticity problems and for the sake of intuitive analysis, we take the logarithm for variables and build a logarithmic model as follows:

$$\text{Ln } Y = \alpha + \beta \text{LnX} + \delta \qquad \text{(Formula 3- 2)}$$

IV. UNIT ROOT TEST

Stationarity of data is the basic requirement to conduct model test analyses. If time series are not stable, "spurious regression" may appear, making it impossible to analyze real relationship of variables. As a result, we can not get planned results. This paper conducts ADF examination on two variables and results are shown in "Table II".

TABLE II. ADF STATIONARITY TEST RESULT

Variable	Test form (C,T,K)	ADF Statistics	1% critical value	5% critical value	10% critical value	Conclusion
LNY	(C,T,1)	-1.478630	-4.440739	-3.632896	-3.254671	Non-stable
LNX	(C,T,1)	-1.797766	-4.440739	-3.632896	-3.254671	Non-stable
△LNY	(C,T,0)	-5.636647	-4.467895	-3.644963	-3.261452	Stable
△LNX	(C,T,0)	-4.647495	-4.467895	-3.644963	-3.261452	Stable

[a.] Note: In the table, △ represents first difference. In test form(C, T, K), C is the constant term, T is the time trend term and K is lag intervals for endogenous.

As shown in "Table II", ADF test results of Ln X and LnY show: In the significance level of 10%, Ln X and LnY can not turn down null hypothesis(namely, no root of unity), indicating that Ln X and LnY are integrated process and I (0) is not stable and belongs to non-stationary series. When the original sequence can not pass ADF examination, we should conduct ADF examination on original sequence's first difference sequence. ADF test results of D (L nX) and D(L nY) show that: In the significance level of 1%, △Ln X and △Ln Y can turn down null hypothesis(no root of unity), indicating that △Ln X and △Ln Y belong to zero-order integration sequence and I (1) is stable.

V. CO-INTEGRATION TEST

After passing unit root test, this paper uses Johansen's maximum likelihood estimation method to conduct co-integration test on the sequence and analyzes the relation between China's economic growth and import and export between China and ASEAN. According to AIC and SIC criterion, we analyze total volume of import and export trade and GDP, two variables in total, with two phases behind.

TABLE III. CO-INTEGRATION TEST RESULT

Null hypothesis	Lag intervals for endogenous	Value of characteristic root	Trace test	Critical value of significance level of 5%	Value of P	Co-integration relationship
None *	2	0.525222	16.71542	15.49471	0.0326	Exist
One at most	2	0.049	1.072355	3.841466	0.3004	None

As shown in "Table III", on the condition that null hypothesis has no co-integration equations and significance level is 5%, 16.71542 is bigger than the critical value of 15.49471. The result shows that null hypothesis is turned down under significance level of 5% and at least one co-integration equation exists. Under the condition that null hypothesis has one co-integration equation at most, 1.072355 is less than the critical value of 3.841466 under significance level of 5%. The result shows that null hypothesis is accepted under significance level of 5% and one co-integration equation exists at most. In conclusion, under significance level of 5%, there is long and stable relationship between LnX and LnY. Through co-integration, we get a standardized co-integration equation as follows:

$$\text{LNY} = 5.63034 + 0.776327\ \text{LNX} \qquad \text{(Equation 5- 1)}$$

The above equation shows: Without influence of other conditions, for every increase of 1% of LNX, LNY increases 0.764327% correspondingly. China's import and export trade with ASEAN contributes to China's GDP growth to some extent.

VI. GRANGER CAUSALITY TEST

Based on ADF examination and co-integration test on variables, there is long and stable relationship between Ln X and LnY, and ∆ Ln X and △Ln Y pass ADF examination. We conduct Granger causality test on ∆ Ln X and △Ln Y to find out whether there is Granger causality between them. Under significance level of 10%, lag intervals for endogenous is set as 2 and test results are as follows in "Table IV".

TABLE IV. GRANGER CAUSALITY TEST RESULT

Null hypothesis	Lag intervals for endogenous	F statistics	Value of P	Test result
△LnX is not the Granger reason of △LnY	2	8.32842	0.0032	Turn down
△LnY is not the Granger reason of △LnX	2	4.11436	0.0362	Turn down

From "Table IV", based on setting of virtual hypothesis, it is clearly that they two turn down null hypothesis under

significance level of 5%, namely ΔLnX and ΔLnY are mutually Granger reasons of each other. China's import and export trade with ASEAN becomes a reason for China's economic growth and it is clearly that China's economic growth can explain import and export trade results between China and ASEAN.

VII. CONCLUSION

There is long and balanced relationship between China's import and export trade with free trade area and China's economic growth. China's trade with partner countries of free trade area promotes China's economic growth and has good effects on China's economic growth. In 2014, China's total volume of trade with FTA partner countries is 1266.039 billion dollars, accounting for 29.69% and 12.22% of China's total volume of foreign trade and China's GDP respectively. The year-on-year growth is 27.81%. Its growth rate is higher than that of China's total volume of foreign trade. With development of China's FTA global strategy and implementation of China's FTZ nationwide layout and driven by FTA strategy and FTZ strategy, opening to the outside world, reform and innovation, and sustainable growth are promoted, thus contributing to China's economic development.

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