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[THE PROMOTION OF FREE TRADE IN ASEAN]

International Trade and Investment

A Table of Contents

Abstract

This paper examines the impact of Free Trade Agreement (FTA) on tariff, trade volume, and Gross Domestic Product (GDP) between the Association of Southeast Asian Nations (ASEAN) and China. We pick up ASEAN-5, the older member states they are Indonesia, Malaysia, Thailand, Singapore and the Philippines, as our target. The study uses Global Trade Analysis Project (GTAP) to simulate tariff concession results as an outcome of a growth in trade volume, and then uses regressions to prove that trade increases could make the GDP of ASEAN rise. After that we will show you some figures that based on reality and explain three effects. They are trade creation effect, trade diversion effect, and total effect. Between ASEAN and China, trade liberalization will stimulate the output of each country according to their comparative advantage and it leads to specialization. FTA between ASEAN and China tends to make these countries a big supply chain. ASEAN seams to get more benefit then China in this agreement.

Introduction

Motivation

In this paper, we will focus on a series of deduction, from the signing of ASEAN-China Free Trade Agreement (ACFTA), to the outcome of accelerating Gross Domestic Product (GDP) growth rate.

There are two reasons why we choose this topic:

1. After the havoc of Financial Crisis since 2008, all the countries are still on their way to recover. However, according to International Monetary Fund (IMF), developing economies especially the Asian ones perform much better on their economic revival. In World Economic Outlook (WEO), the half-year research paper published by IMF, indicating that the reasons of outperformance may be: the opener economic structure and fabulous Gross Domestic Product growth rate, and the closer relation with China, whose domestic purchasing power is strengthening. In order to look back on the source of the former reasons, we pick up ASEAN-China as our research subject.

2. At present, the hottest issues in Taiwan are almost concerning the Economic

Cooperation Framework Agreement (ECFA). Due to different opinions

about the impact from ECFA, there are a lot of debates and arguments produced.

Considering this situation, our group got an inspiration, to take reference of other

similar circumstances. And we chose ASEAN-China as the subject in our research.

Although the two agreements are not totally alike, they have some terms in

parallel, like early harvest program, the close geography, and the same

contracted partner (China).

Research Question

So, the main research question in this paper is :

- What is the impact of trade and GDP of **tariff concession** after the settlement of

    ACFTA (ASEAN-China Free Trade Area)?

Figure I
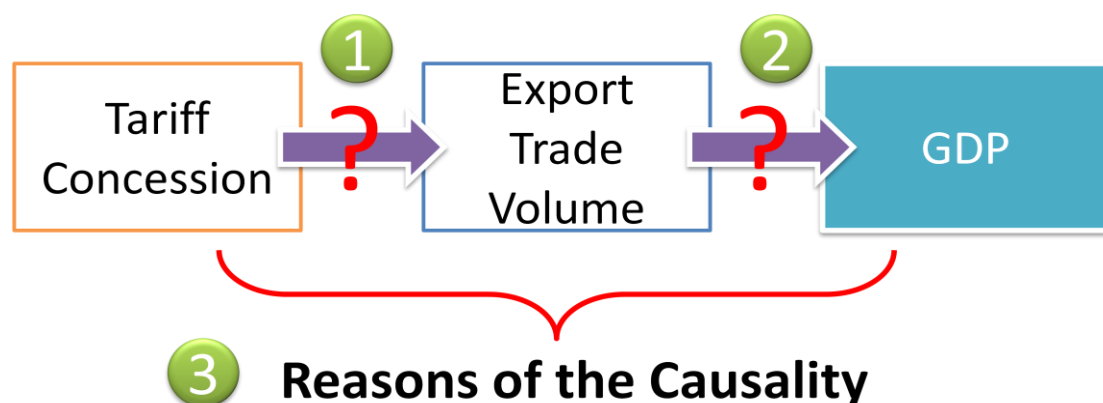
We separate our research direction into three parts in figure I:

(1) Is tariff concession a boon to export trade volume from ASEAN-5 to China?

(2) Could increasing export volume be one of main reasons why GDPs rise in ASEAN-5?

(3) What is the causality in this series of correlation?

In order to get our answers, we have the following steps.

Outlines

Our group will follow a set of analysis steps:

1. **General Introduction:** We have a general review on the history and structure of ACFTA and ASEAN-5. The simple introduction of step-by-step tariff concession will be held.

2. **Viewpoints in other papers:** Before our analysis, we want to show some different opinions about ACFTA in other papers.

3. **Three Analysis:**

   (1) **GTAP simulation:** By the use of Global Trade Analysis Project (GTAP), to simulate the trade condition without tariff concession.

   (2) **Regression Analysis:** By the use of Regression Analysis, to explore the relationship between increasing export to China and GDP in ASEAN-5.

   (3) **Data Analysis:** By analyzing the data of ASEAN-5 and China, we will put up our

perspective to the impact of ACFTA.

4. Conclusion

5. References

General Introduction

The introduction of ASEAN-China FTA

In November 2002, the ASEAN-China Framework Agreement on Comprehensive Economic Co-operation was signed, in order to establish the ASEAN-China Free Trade Area. Subsequently, a five-year (2005-2010) Plan of Action to implement the Joint Declaration was adopted at the 8th ASEAN-China Summit in November 2004. The Plan of Action has served as the master plan to broaden and deepen ASEAN-China dialogue relations in a comprehensive and mutually beneficial manner with the view to strengthen the strategic partnership for regional peace, development and prosperity. The diverse cooperation items are: Political-Security Cooperation, Socio-Cultural Cooperation and, of course, Economic Cooperation.

In Economic Cooperation area, the most main three agreements are:

    (1)   The Agreement on Trade in Goods, in force in July 2005.

    (2)   The Agreement on Trade in Services, in force in July 2007.

    (3)   Investment Agreement, signed in August 2009.

These three agreements mean that ASEAN-China negotiation processes on Free Trade Area (FTA) have been completed as set in the Framework Agreement on Comprehensive Economic Cooperation between ASEAN and China. Both sides have targeted the realization of ACFTA in 2010 for Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand and China, and 2015 for Cambodia, Lao PDR, Myanmar and Viet Nam, to achieve zero-tariff bilateral trade.

In 2009, People Republic of China has become the third biggest trade partner with ASEAN. ASEAN-China FTA has become one of the significant trading arrangements in the globe, given the trade volume between both sides contains almost half of Asian total trade, U.S. $200 billion dollars per year.

※ We will cross out the information of Brunei Darussalam because of its inactive international trade performance. In this paper, our subject is China and ASEAN-5, which contains Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Tariff reduction schedule

The following schedule is part of the tariff reduction schedule in the normal track in the ASENA-China agreement. This table covers ASEAN-6, but due to our research direction, we will only use five of them, Singapore, Philippines, Malaysia, Thailand, and Indonesia.

In 2002, ASEAN and China agreed to sign the free trade agreement to have more economic cooperation. From 2005 to 2010, they followed the agreement to decrease their tariff step by step. Except for the tariff which was originally equal to or below 5%, the two sides both had to lower their most of tariff of the goods.

1.   For those tariff rates levied on goods more than 20%, they were decreased to 20% in the first in 2005; then 12% in 2007 and 5% in 2009.

2.   For those tariff rates levied on goods between 15% and 20%, they were decreased to 15% in the first in 2005; then 8% in 2007 and 5% in 2009.

3.   For those tariff rates levied on goods between 10% and 15%, they were decreased to 10% in the first in 2005; then 8% in 2007 and 5% in 2009.

4.   For those tariff rates levied on goods between 5% and 10%, they were decreased to 5% in the first in 2005 and remained until 2007; then cut down to 0% in 2009.

5.   For those tariff rates levied on goods below 5%, they weren't changed until 2009 and in 2009 they were finally cut down to 0%.

In 2010, all kinds of the tariff rate in the normal track were decreased to 0%.

Chart I

(i)   ASEAN 6 and China

X = Applied MFN Tariff Rate	ACFTA Preferential Tariff Rate (Not later than 1 January)			
	2005*	2007	2009	2010
X ≥ 20%	20	12	5	0
15% ≤ x < 20%	15	8	5	0
10% ≤ x < 15%	10	8	5	0
5% < x < 10%	5	5	0	0
X ≤ 5%	Standstill		0	0

* The first date of implementation shall be 1 July 2005.

Source: The Official Website of the Association of Southeast Asian Nations

http://www.aseansec.org/

Viewpoints in other papers

According to the papers we read, with the tariff concessions, trade between

ASEAN and China will grow dramatically with the establishment of FTA, and real GDP

also increases in all the ASEAN countries and China.

Figure II shows the trends of GDP and export to China from 2000-2010, in

ASEAN-5. From this figure we can clearly see that both of the two variables in

ASEAN-5 continue to increase.

※The exception of increasing trend is the Philippines, which suffered unstable politic

situation.

Figure II
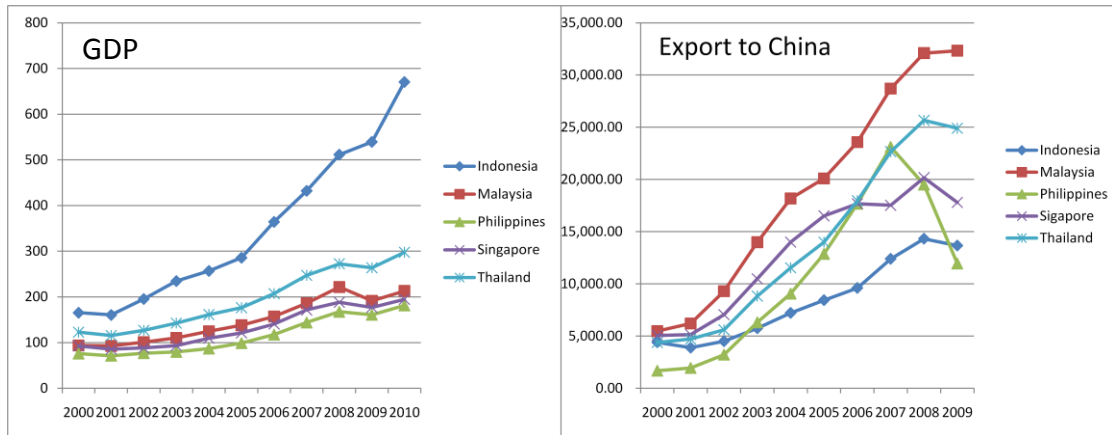
Smitha Francis, and Murali Kallummal(2008)

The paper indicates that export to China increased dramatically after post-2002,

but the increasing rate of total export was equal to the export growth rate of the

world.

For the author's opinion, GDP rises and social welfare is better off because of

the occurrence of regional integration, and on the basis of comparative advantage,

the ACFTA Member States form a specialization system. It not only makes production

more efficient but more profitable.

The East Asian countries are actively carrying out new regionalism as a central

instrument of their industrial policy. And the new regionalism in East Asia is leading

to the further consolidation of the electrical and electronics industry network across

the region. Under free trade, member countries would reallocate their factors of

production to achieve structures of trade, production, and employment consistent with their comparative advantage. And the resulting efficiency gains will give rise to increased welfare. The efficiency gains of market access come from scale economies and the diversification of production, which are the general arguments that are applied to trade integration generally. But the formation of a regional production network that will facilitate increasing production specialization has been especially argued to be mutually beneficial for the economies involved in the resultant trading network.

However, what needs to be emphasized here is that the attainment of welfare gains in both these contexts hinges crucially on the assumption that factor reallocation based on comparative advantage will be made, which will enable economic restructuring.

Further, in sectors and products with increasing returns to scale, China will continue to be the most significant player in this regional production network due to its sheer size. The vast and growing domestic market in China allows companies to take advantage of economies of scale, which therefore offers them adequate margin for price competition.

A Report Submitted by the ASEAN-China Expert Group on Economic Cooperation (2001)

The reduction of tariffs between ASEAN and China results in both regions trading more heavily with one another. Among the ASEAN countries, the biggest gains in exports are Indonesia, Malaysia, Singapore and Thailand. For the global economy as a whole, the FTA has a small negative impact on global GDP. The increases experienced by ASEAN and China are not enough to offset the losses suffered by other trading partners. The impact on real GDP could be predicted from the changes in trade. Real GDP increases for all the ASEAN countries and China.

The removal of trade barriers between ASEAN and China will lower costs, increase intra-regional trade and increase economic efficiency. The FTA will lead to greater specialization in production based on comparative advantage. Trade creation occurs when some domestic production in one FTA member is replaced by lower-cost imports from another member. This will boost real income in both regions as resources flow to sectors where they can be more efficiently and productively utilized.

Protected by trade barriers, domestic enterprises face little competition and pressure. As a result, they operate inefficiently. With the formation of FTA and with trade barriers among members eliminated, enterprises in each member must become more efficient to meet the competition of other enterprises within the FTA. The fierce competition will further promote specialization, and as a result increase

productivity and economic welfare. Not only would competition intensify between ASEAN and Chinese companies, but strategic alliances between them would also be created in many sectors. The surviving enterprises might become globally competitive. There are significant trade diversion effects, which will have a negative impact on other trading partners. It is possible therefore that an FTA between ASEAN and China may not be seen positively by other trading partners.

From the point of view of trade and GDP impacts, an FTA between ASEAN and China is feasible. All sides gain from the linkage. However, a move towards an FTA between ASEAN and China must be sensitive to and attempt to address the concerns of other trading partners.

Anne O. Krueger (2005)

Rapid growth in China has clearly been an important factor in underpinning the current global upturn. China's contribution to global growth particularly for Asia in recent years has been increasingly significant: partially because of the two factors we already mentioned before: the extraordinary strong pace of growth; and the more important role of China in the world economy. So the contribution Chinese growth has made to the global economic recovery thus far is clear and positive.

However, few people think the current pace of growth is sustainable; and the challenge for China's policymakers is to ensure a smooth adjustment to growth rates

that can be sustained over the medium term without fuelling inflationary pressures, attaining a soft landing but avoiding a sharp slowdown. The Fund's calculations suggest that sharp fall in Chinese imports would have a relatively small short-term impact, reducing world GDP. The impact for some Asian economies might be significant. But such a shock should be manageable given the fairly robust outlook for the region as a whole.

The United States and EU are still important export markets for Asian economies. A substantial drop in the growth of exports to China would still leave countries in the region with relatively robust export growth rates provided that growth momentum in industrial markets is sustained in the U.S. and gradually improves in Europe.

Organization of different opinions

Chart II

	Trade volume	Real GDP	Other
Smitha Francis, and Murali Kallummal(2008)			Specialization, comparative advantage
A Report Submitted by the ASEAN-China Expert Group on Economic Cooperation (2001)	Increase	Increase	Specialization, comparative advantage
Anne O. Krueger (2005)			Strong pace of growth, growing importance of China

To sum up the points, we made a table to put them together. In chart II, all of papers mentioned that trade will grow and real GDP will also increase, but they hold different explanations. Two of them said it is because of the specialization and comparative advantage. The other one said it is because of the strong pace of growth and more powerful China.

Three Analysis

(1) GTAP simulation

The Introduction of GTAP and RunGTAP

Global Trade Analysis Project (GTAP)

The standard GTAP model is a multiregional, computable general equilibrium model, with perfect competition and constant returns to scale. Bilateral trade is handled via the Armington assumption. Innovative aspects of this model include: the treatment of private household preferences using the non-homothetic CDE functional form, explicit treatment of international trade and transport margins, and a global banking sector which intermediates between global savings and consumption. The standard model also gives users a wide range of closure options, including a selection of partial equilibrium closures which facilitate comparison of results to studies based on partial equilibrium assumptions. The model is implemented using the GEMPACK software suite.

RunGTAP is simply a visual interface to various GEMPACK programs. GEMPACK

(General Equilibrium Modeling PACKage) is a suite of general-purpose economic

modeling software especially suitable for general equilibrium models. It can handle a

wide range of economic behavior and also contains powerful capabilities for viewing

data and analyzing results. RunGTAP is a program for interactively solving the GTAP

model. We used RunGTAP to simulate the changes between tariff and trade volume.

We will set three tariff rates: 10%, 5% and 0% and see what will happen to the

amount of export from ASEAN-5(Philippines, Singapore, Malaysia, Thailand and

Malaysia) to China. We used RunGTAP to get the answer: "If there is no tariff

between both region then trade volume will increase."

When the tariff is 10% between China and ASEAN:

◎EV=Equivalent Variation (Social Welfare), Tot=terms of trade, qxwcom= volume of

global merchandise exports by commodity, pre= the trade volume before the tariff

rate, post=the trade volume after the tariff rate, Chng=the changes in trade volume

Left: Chart III-A, right: Chart III-B

EV	(Sim)
ASEAN	-2655.83
China	22.0463

tot	(Sim)	Pre	Post	Chng
ASEAN	-0.4461	1	0.9955	-0.0045
China	0.1128	1	1.0011	0.0011

RestofWorld	26.232			

RestofWorld	0.0013	1	1	0

Chart III-C

qxwcom	(Sim)	Pre	Post	Chng
GrainsCrops	0.0005	193052.5	193053.5	0.9688
MeatLstk	0.0071	96549.16	96556	6.8359
Extraction	-0.0842	752098.2	751464.7	-633.5
ProcFood	-0.0272	378911	378808.1	-102.938
TextWapp	0.0444	472207	472416.5	209.4688
LightMnfc	-0.0192	1967436	1967059	-377.5
HeavyMnfc	-0.1153	4477767	4472606	-5161
Util_Cons	-0.0343	80244.57	80217.09	-27.4844
TransComm	-0.0352	1069756	1069379	-376.625
OthServices	-0.0107	1001547	1001441	-106.688

When the tariff rate is 10% between ASEAN and China, from chart III, we can find that most of the products which export from ASEAN to China have decreased dramatically, especially in heavy manufactures. We think that it is because of high tariffs, the costs exporting to China have increased making producers unwilling to export to China, they would rather produce less products and sell it in domestic markets. In China, Chinese manufacturers gain costs by importing foreign goods

instead of using products from ASEAN they will change to domestic products. This causes the terms of trade of ASEAN to become negative which means ASEAN has become worse off after the tariff rate. As for China the terms of trade has become positive causing China to be better off before the trade. We think that the 10% tariff rate has protected domestic product from being threatened by foreign products. We found that when there is a 10% tariff rate then ASEAN will lose 2655.83 million dollars in social welfare. In contrast to ASEAN, China will gain 22.0463 million dollars in social welfare. We concluded that a 10% tariff rate will not only make the trade volume between ASEAN and China decreases dramatically but also make ASEAN to become worse off.

When the tariff rate is 5% between China and ASEAN

Left: Chart IV-A, right: Chart IV-B

EV	(Sim)US million
ASEAN	-112.758
China	-3.4614
RestofWorld	23.3735

tot(terms of trade)	(Sim)Pre	Post	Chng
ASEAN	-0.0222	1 0.9998	-0.0002
China	0.0014	1 1	0
RestofWorld	0.0022	1 1	0

Chart IV-C

qxwcom	(Sim)	Pre	Post	Chng
GrainsCrops	0.0383	193052.5	193126.5	73.9531
MeatLstk	0.0128	96549.16	96561.52	12.3594
Extraction	-0.0419	752098.2	751783.3	-314.875
ProcFood	-0.0163	378911	378849.3	-61.6875
TextWapp	0.0671	472207	472523.8	316.8125
LightMnfc	0.0054	1967436	1967542	105.375
HeavyMnfc	-0.0037	4477767	4477602	-164.5
Util_Cons	-0.0054	80244.57	80240.27	-4.3047
TransComm	-0.004	1069756	1069713	-43.125
OthServices	-0.0055	1001547	1001492	-55.125

Concerning chart IX, when the tariff rate is 5% between ASIAN and China, some products which export from ASEAN to China has increased, but the drop of trade volume is much larger than the increase in trade volume. We notice that the terms of trade of ASEAN is still negative but the terms of trade has improved from -0.4461 to -0.022. We found out that reduce in tariff rate can lead to an increase in trade

volume. As for China, there terms of trade is still positive but it becomes lower than the tariff rate is 10%, falling from 0.1128 to 0.0014. From social welfare we discovered that both regions are worse off because both of them have lost millions of dollars. Even if ASEAN loses money, they are wealthier when the tariff is 5% than 10%. Because they lose 2655.83 million dollars when tariff rate is 10% but if the tariff rate reduce to 5% they will only lose 112.758 million dollars relatively they are better off. When the tariff rate is 5% then China will lose 3.4614 million dollars which causes China to be worse off. Because when the tariff reduces to 5% some products which already have low tariff rates will face a greater assault from foreign products causing China's producer to be worse off.

When the tariff rate is 0%

Chart V-A

EV	(Sim)US Million
ASEAN	3336.406
China	-1272.24
RestofWorld	33.5212

Chart V-B

| tot(terms of trade)	(Sim)	Pre	Post	Chng
ASEAN	0.5532	1	1.0055	0.0055
China	-0.1798	1	0.9982	-0.0018
RestofWorld	0.0049	1	1	0

Chart V-C

qxwcom	(Sim)	Pre	Post	Chng
GrainsCrops	0.0879	193052.5	193222.2	169.6875
MeatLstk	0.025	96549.16	96573.3	24.1406
Extraction	0.0333	752098.2	752348.8	250.5625
ProcFood	-0.0055	378911	378890.3	-20.6875
TextWapp	0.1077	472207	472715.5	508.4688
LightMnfc	0.0399	1967436	1968221	784.25
HeavyMnfc	0.1619	4477767	4485017	7250.5
Util_Cons	0.0339	80244.57	80271.73	27.1641
TransComm	0.0425	1069756	1070210	454.375
OthServices	0.0032	1001547	1001579	31.9375

From the chart X above we found that when the tariff rate is 0% between ASEAN

and China, almost all of the products(except for ProcFood) trade volume has

increased dramatically between ASEAN and China. Because there is no more trade

barrier between both regions, the cost exporting to China is the same with selling in

domestic markets. Producers tend to export to China because China has the biggest

market in the world, that is why trade volume will increase. There is a supply chain between ASEAN and China, ASEAN produces commodity and send it to China's export processing zone and then sell it to other countries. As for Chinese firms they will choose to import goods from ASEAN because the cost may even be lower than using domestic products. When there is no tariff then the terms of trade in ASEAN becomes positive, causing ASEAN to be better off. But the terms of trade of China has worsen because without tariff, the products in China can no longer be protected. The social welfare has increased to 3336.406 million dollars, causing trade creation in ASEAN. Relatively, China has lost 1272.24 million dollars which causes China's social welfare of China to deteriorate. We found that free trade causes export country to be better off but import country to worse off.

Figure III:

ASEAN-5 export to China's real data
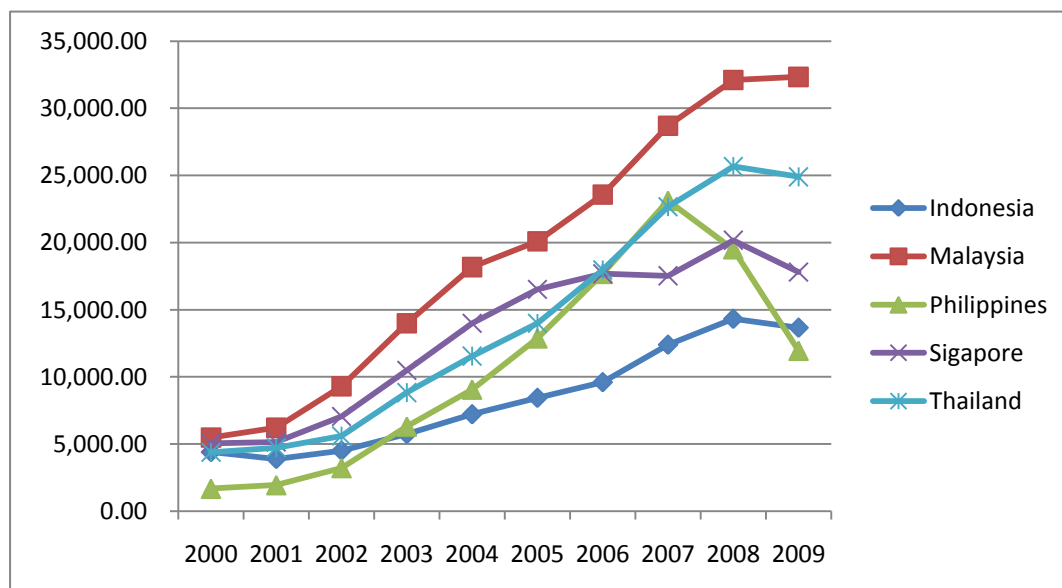
From this figure III we found that after China and ASEAN-5 signed ACFTA in 2002, as we mentioned above China and ASEAN have been negotiating to reduce tariff. Since then the products export from ASEAN-5 to China had increased gradually. In 2005, between ASEAN and China they enforced the Trades in Goods Agreement which causes the export from ASEAN to China to grow rapidly. Because of low tariff rate or no tariff in some products, the trade volume between ASEAN and China has been increasing. The trade volume in 2008 to 2009 had sloped down is due to Financial Crisis, the economy in the whole world was in a recession so the products exported to China had decreased. As the economy recovered gradually, the export from ASEAN-5 to China have been rising and is slowly growing to its normal level. We can infer that reduce in trade tariff will increase trade volume.

Sub-Conclusion

Chart VI

Tariff	Terms of trade	Trade Volume	Change in trade volume	Equivalent Variation
10%	negative	decrease	-6568.4618	-2655.83
5%	negative	decrease	-135.1172	-112.758
0%	positive	increase	9480.3985	3336.406

We organize our test results into chart XI. Our conclusion is when there is tariff rate between ASEAN-5 and China, the terms of trade in ASEAN-5 is negative which means ASEAN-5 is worse off. ASEAN-5's export to China have decreased when there is tariff, the difference between the tariff is set on 10% and 5% is the change in trade volume. When the tariff rate is higher then the more the trade volume will drop. The social welfare is worse off when there is tariff. When there is no tariff then the terms of trade in ASEAN-5 becomes positive which means the terms of trade has improved causing ASEAN-5 to be wealthier. The trade volume will increase dramatically to 9480.3985 which means that without trade barriers the cost will become lower and producers in ASEAN-5 are much willing to have international trade with China. When the tariff is equal to 0 then ASEAN will gain 3336.406 million dollars in social welfare. Free trade between ASEAN-5 and China will cause ASEAN-5 to be better off. We concluded that "if there is no tariff then the trade volume between ASEAN-5 and China will increase."

(2) Regression Analysis

Relationship between Trade Volume & Gross Domestic Product

Review of ACFTA

In 2002, ASEAN-5 countries and China signed an agreement to establish a free

trade. Free trade area promotes members to lower their tariff or reduce obstacles between them as much as possible. Due to the lower trade barrier, countries will be more willing to have more export and import. Therefore, the trade volume obviously goes up. However, does increasing trade volume have anything to do with countries? Or deeper, is there a relationship between trade volume and the benefit of the country? To answer this question, the goal of this part is to find out the relationship between trade volume and the benefit. Therefore, we decide to use one of the **statistic techniques – regression analysis**.

In statistics, regression analysis includes any techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps us understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables — that is, the average value of the dependent variable when the independent variables are held fixed. In regression analysis, it is also of interest to characterize the variation of the dependent variable around the regression function, which can be described by a probability distribution.

Regression analysis is widely used for predicting and forecasting. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. In restricted circumstances, regression analysis can be used to infer causal relationships between the independent and dependent variables.

In this part, first, we will set up our hypothesis to define our analysis. Then, we pick up several variables to represent the quantity data of the condition in the real world. There are two tests in this part. Each of them includes different variables to analyze the relationship between the variables. Because the result may be different from our expectation, we have some explanations to try to interpret the statistic numbers we have. In the last, we make up some conclusions to summarize the test analysis and the interpretation.

Hypothesis Development

ASEAN-China Free Trade Agreement not only lowered the tariff but also diminished the restricted trade condition. As a result, the export from ASEAN-5 countries to China became more and more easy, which means that the export volume from ASEAN-5 to China became much more than before. Once one country exports more to other countries, the export country has a higher income, which is more beneficial to the country. However, in the same time, we still have to take the

export volume to countries other than China into account. We therefore hypothesize that:

H₁: There is a relationship between the export volume and the benefit of the country.

Besides, we also want to know that if the percentage of the export volume to China to the total export volume influences the benefit of the country. Due to FTA effect, the export to China should be increasing gradually, which causes the ratio of export volume to China to the total export volume to rise. We therefore hypothesize that:

H₂: There is a relationship between the ratio of export volume to China to the total export volume and the benefit of the country.

The discussion above is summarized in Figure IV, which also outlines the perceived relationships between the variables in the study.

Figure IV:

Conceptual model and perceived relationships among variables
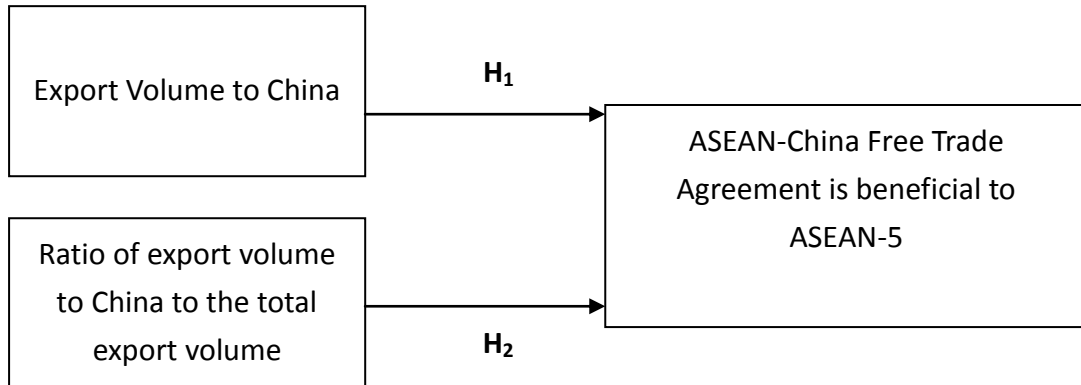
1. Measures

Variables were selected on the basis of our hypotheses. According to each

hypothesis, we pick up the variables which are most able to represent the influence

in the real world.

a. Export Volume to China

The numerical data of the export volume to China is based on two official

institutions and one authorized software: National Bureau of Statistics of China,

General Administration of Customs of the People's Republic of China and Industrial

and Financial Systems, measured in million US dollars from 2000 to 2008.

b.   Export Volume to Countries Other Than China

The numerical data of the export volume to countries other than China is also

based on two official institutions and one authorized software: National Bureau of

Statistics of China, General Administration of Customs of the People's Republic of

China and Industrial and Financial Systems. The data can be gained from the total

export volume minus export volume to China, measured in million US dollars from

2000 to 2008.

c.   Ratio of Export Volume to China to The Total Export Volume

The numerical data of ratio of export volume to China to the total export

volume can be gained from export volume to China divided by the total export

volume from 2000 to 2008. The data of export volume to China and the total export

volume can be found in two official institutions and one authorized software:

National Bureau of Statistics of China, General Administration of Customs of the

People's Republic of China and Industrial and Financial Systems.

d.   Benefit of The Country

To measure one country benefit, one of the most suitable and easiest way to get

the data is the Gross Domestic Product (GDP). Higher GDP can have more good

impact on the country. The numerical data of GDP of each country is from the

authorized software, Industrial and Financial Systems, measured in billion US dollars

from 2000 to 2008.

2. Analysis and Results

a. Test1: $Y = b_0 + b_1X_1 + b_2X_2$ (α =0.05)

Y: Gross domestic product (billion US dollars)

X_1: Export volume to China (million of US dollars)

X_2: Export volume to countries other than China (million of US dollars)

Indonesia

Table I-A:

ANOVA table for Indonesia in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	16.4583	23.4492	0.7019	0.5091
Export to China	0.0275	0.0070	3.9486	0.0075
Export to Others	0.0007	0.0009	0.7996	0.4544

Malaysia

Table I-B:

ANOVA table for Malaysia in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	8.1986	13.9782	0.5865	0.5789
Export to China	0.0017	0.0008	2.1339	0.0768
Export to Others	0.0009	0.0002	3.7714	0.0093

The Philippines

Table I-C:

ANOVA table for Philippines in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	-28.0415	69.1772	-0.4054	0.6993
Export to China	0.0046	0.0008	5.4659	0.0016
Export to Others	0.0026	0.0020	1.2962	0.2425

Singapore

Table I-D:

ANOVA table for Singapore in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	22.9099	5.8936	3.8872	0.0081
Export to China	-0.0021	0.0010	-2.0591	0.0852
Export to Others	0.0006	0.0001	8.1492	0.0002

Thailand

Table I-E:

ANOVA table for Thailand in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	33.9576	18.6484	1.8209	0.1185
Export to China	0.0023	0.0018	1.2611	0.2541
Export to Others	0.0012	0.0005	2.6651	0.0373

In the first test, Indonesia and the Philippines seem to support our ideas. It provides strong evidence between export volume and GDP. However in Singapore, there is no evidence of relationship between these two variables, which means that the export to China doesn't promote much GDP growth.

We suppose two reasons:

I. Due to the export structure, FTA didn't have great impact on Singapore, because its market was open enough originally.

II. The other one is that because Singapore had a really low tariff rate even without FTA, the influence of FTA to cut down the tariff is not obvious.

Among these five countries, the most interesting thing is that Malaysia and Thailand reject the linear relationship. It showed that there is no relationship between export volume to China and GDP. We make several explanations. First, the effect of multicollinearity may lead to the failure of the test. It happens when the independent variables are highly related. Second, if the goods exporting to China are primary products, then it would do little help to GDP growth in Malaysia and Thailand. Or third point, the export volume is relatively high in the very first beginning.

> b. Test2: $Y = b_0 + b_1 X_1$ (α =0.05)

Y: Gross domestic product (billion US dollars)

X₁: Ratio of export volume to China to the total export volume (percentage, %)

Indonesia

Table II-A:

ANOVA table for Indonesia in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	-294.7609	191.8304	-1.5366	0.1683
China %	6634.0276	2153.2369	3.0810	0.0178

Malaysia

Table II-B:

ANOVA table for Malaysia in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	29.4631	37.4955	0.7858	0.4578
China %	859.7705	289.8254	2.9665	0.0209

The Philippines

Table II-C:

ANOVA table for Philippines in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	56.6066	11.0785	5.1096	0.0014
China %	190.7345	39.5206	4.8262	0.0019

Singapore

Table II-D:

ANOVA table for Singapore in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	78.5477	65.7131	1.1953	0.2709
China %	720.3489	1086.2460	0.6632	0.5285

Thailand

Table II-E:

ANOVA table for Thailand in the first test

ANOVA

	Coefficients	Standard Error	t Stat	P-value
Intercept	-3.3090	32.2565	-0.1026	0.9212
China %	1587.9040	277.6860	5.7183	0.0007

In the second test, except for Singapore, other 4 countries all prove that there is evidence of the linear relationship. That is, there is a relationship between the ratio of export volume to China to the total export volume and gross domestic product.

Sub-Conclusion

In this part of analysis, for Indonesia, it's obvious that the relationship between the export volume and the benefit of the country and between the ratio of export volume to China to the total export volume and the benefit of the country. It's clearly that the ACFTA is beneficial to Indonesia. As for Singapore, because of its industrial goods and export structure, ACFTA helped little to the GDP growth. Although for some countries such as Malaysia and Thailand, which don't show much evidence between the export volume to China and GDP, through the second test, we can still

prove the relationship between these two variables exists. It means that enhancing the ratio of export volume to China to the total export volume have a positive effect to the GDP growth. Therefore, we can prove that the free trade agreement between ASEAN and China is beneficial to ASEAN-5 countries.

(3) Data Analysis

The trade creation effect

According to Jacob Viner, 1950, in static analysis, the trade creation effect means that the countries in regional integration would purchase low- cost products from other members, instead of producing their local high- cost products. This way, thus, turns the region from producing high-cost products into producing low-cost products, creates new trades, improves the distribution of original resource, and promotes the welfare. In short, if a country has a positive growth rate after joining the regional integration, we say that it might have a trade creation effect. If not or even worse, we say that it might have a trade diversion effect.

The trade diversion effect

According to Jacob Viner, 1950, in static analysis, the trade diversion effect means that due to the favorable condition under the FTA, the low- cost products

producing by non-regional countries can not be sold in any country of the region. This makes the members in the region cost more to have the products, which cause the waste of the total resource.

Dynamic analysis

In dynamic analysis, first, as the result of the customs union, the domestic market in the region has been expanded, and the expanded market brings about the possibility of economics of scale for the members or the industries of the region, and facilitates broaden the scope of production. Economics of scale strengthen the competition power of the members in the global market. Second, those markets which were protected are forced to be opened due to the regional integration, and the intension of competition is increased. Finally, the regional integration expands the scope of the market, enhances the investment conditions, and increases the rate of return.

Total effect

These tow effect can be combined. If we combine and analyze these tow effects, we can have the total effect. If the trade creation effect is bigger than the trade diversion effect, then we would have a positive result, which means the trade is a plus for the welfare. However, if the trade creation effect is smaller than the trade

diversity effect, then we would have a negative result, which means that the trade is

a deduction for the welfare. But in general, the trade creation effect under FTA is

typically bigger than the other effect.
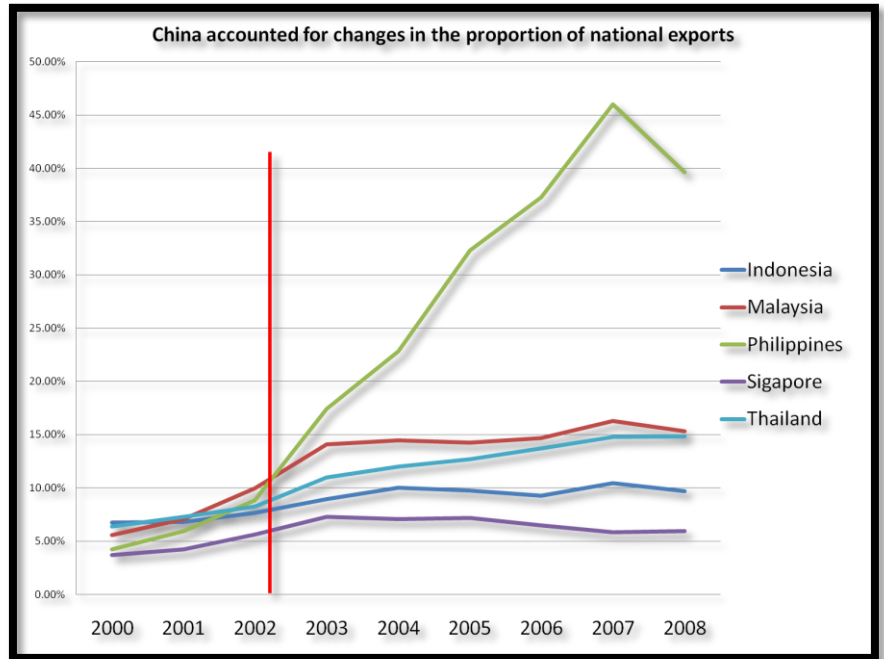
In our work

  The trade creation effect

Chart VII

SI no	Country	1995	2000	2001	2002	2004	2006	CAGR (1995-2001)	CAGR (2002-06)
1	Japan	35.0	25.0	23.3	22.2	19.9	16.1	11.4	21.3
2	Taiwan Province of China	10.3	12.6	13.0	15.9	16.8	16.3	24.0	32.3
3	China	2.2	6.1	6.2	9.1	13.3	18.1	42.2	55.9
4	Korea, South	5.7	10.0	9.7	12.2	13.1	14.6	30.3	37.6
5	Malaysia	1.0	4.1	4.9	6.2	7.0	6.6	54.5	33.5
6	United States	9.8	9.3	10.7	7.7	5.4	5.3	20.9	19.9
7	Philippines	0.1	1.7	2.0	3.0	4.4	5.9	118.9	55.5
8	Singapore	2.6	2.9	2.6	2.8	3.5	3.2	19.5	36.8
9	Hong Kong	10.1	6.3	6.0	6.2	3.1	1.7	9.3	-5.2
10	Germany	5.0	4.4	4.8	3.7	3.1	2.7	18.4	22.2
11	Thailand	0.3	1.6	1.6	1.7	2.1	2.0	60.7	37.1
12	France	2.3	2.1	2.3	1.6	1.3	0.9	19.2	11.5
13	Finland	0.7	3.2	2.7	0.8	0.8	0.7	48.2	26.9
14	Sweden	3.1	3.5	2.1	0.7	0.7	0.3	11.7	7.4
15	Costa Rica	0.0	0.0	0.0	0.2	0.4	0.8	143.3	77.6
16	United Kingdom	1.8	2.2	2.0	0.8	0.6	0.5	20.9	15.8
17	Italy	1.5	0.9	0.9	0.6	0.6	0.5	10.9	29.9
18	Mexico	0.0	0.3	0.3	0.5	0.5	0.4	93.8	29.0
19	Canada	1.9	0.7	1.1	0.6	0.4	0.4	9.2	15.2
20	Indonesia	0.0	0.5	0.5	0.4	0.4	0.4	90.3	31.0
	ASEAN-5	4.0	10.8	11.7	14.1	17.5	18.1	42.8	40.1
	Total (US$ million)	19416	50749	55903	73311	142102	219085	19.3	31.5

Shares and Growth of Top 20 Suppliers in China's Electrical Machinery Imports (In per cent)

Source: World Trade Atlas Online available at http://www.gtis.com, accessed in August 2007.

This chart describing the GDP growth rate, we can see that most ASEAN members

have an increasing GDP growth because the trade creation effect.

Figure V

And from this figure,
China has become an
important export market
to ASEAN-5 countries since
2002. Its proportion in
their export has been
increasing after signing the
ACFTA, especially the
Philippines.

The trade diversion effect

In our work, we estimate the trade this way:

Because of the comparative advantages, Members States move their input into producing low-cost product, to strengthen the trade relation with China. Hence, they would lose their opportunity to export high-cost product to advanced countries. China takes over the role of exporting high-cost product.

<center>Chart VIII</center>

Comparative Export Performance of China and ASEAN in the Major Developed Country Markets
(Market share in per cent)

Electrical Machinery

Market	Exporter	1990	1995	1997	2000	2001	2002	2003	2004	2005	2006
US	China	3.3	6.9	8.6	10.5	12.8	16.1	18.3	21.7	25.6	28.3
US	ASEAN-5	13.6	18.4	18.3	15.8	14.6	14.6	13.8	12.8	14.0	12.7
Japan	China		10.5	14.0	16.6	20.9	24.5	26.8	29.3	32.6	32.5
Japan	ASEAN-5		20.5	21.8	25.7	26.2	25.4	24.5	24.6	22.2	20.0
EU	China			8.0	9.9	11.2	14.2	17.3	19.9	21.8	25.3
EU	ASEAN-5			12.5	11.8	10.7	14.8	13.3	12.3	11.0	9.8

Non-Electrical Machinery

Market	Exporter	1990	1995	1997	2000	2001	2002	2003	2004	2005	2006
US	China	0.7	3.0	4.2	7.4	8.5	12.5	17.5	21.8	23.7	25.5
US	ASEAN-5	8.5	14.7	15.8	13.9	13.3	14.2	13.3	11.9	11.2	11.3
Japan	China		3.5	6.7	9.3	12.4	20.6	28.1	32.1	36.7	37.9
Japan	ASEAN-5		21.6	21.4	21.6	20.3	17.6	16.7	16.0	14.5	14.0
EU	China			3.6	6.3	7.8	9.8	13.6	17.3	18.6	20.2
EU	ASEAN-5			12.4	10.5	9.7	9.2	8.6	8.8	8.4	8.3

Source: World Trade Atlas Online available at http://www.gtis.com, accessed in August 2007.

From the chart above we can see, although ASEAN-5 has increased their export to China, their export to the advanced economics have relatively decreased. But China has increased its export to the advanced economics.

Specialization

We still have another explanation to the changes of trade volumes and the GDPs :Specialization ——we can attain the optimal efficiency for exchange through taking the comparative advantage of each country. Regional integration makes the specialization among the Member States more realizable. Because of the tariff concession, the Member States have more opportunities than other countries to cooperate with each other.

Chart VIIII

Take the

Philippines in ASEAN for

an example. Although

Philippines

Exports share(%)
Agricultural
products   8.1
Fuels and mining products   8.5
Manufactures   82.7

the rapid growth of the Philippine's export to China is surprising, her trade volume

and GDP don't relatively have significant changes. Speculating on these tables, we

evaluate the reason is that the main import products of China are Manufactures

materials, which just happens in line with the Philippines's main export. So after

signing the ACFTA, the Philippines exports their original exports from other country

to China, and become a

specialization partner

with China. Somehow,

due to a low degree of

trade dependence, the

China

Imports share(%)
Agricultural
products   3.0
Fuels and mining products   3.8
Manufactures   93.1

Philippines has specialization with China, it doesn't bring apparent influence on her
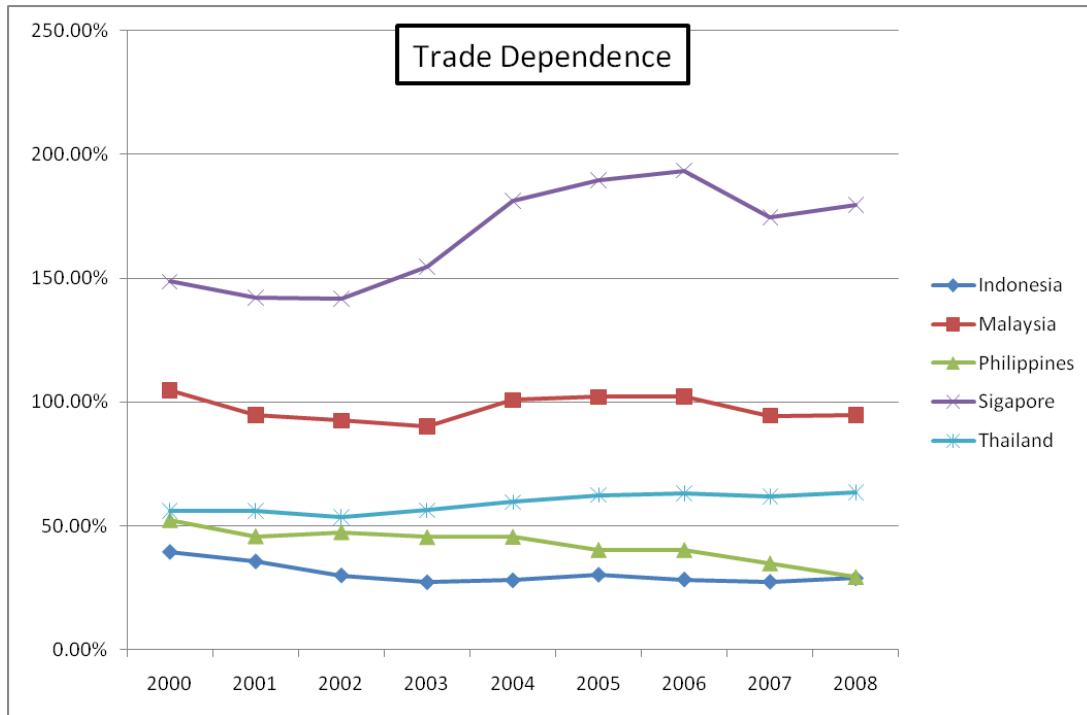
GDP.

Figure VI

And for other countries, their specialization with China would have influenced their exports and GDPs. Therefore ASEAN-5 and China have trade creation effect and there is specialization.

Conclusion

According to this series of deduction: from GTAP simulation, regression analysis, to data analysis. We've got our brief answer:

1. The reduction of tariff from FTA could make the trade between ASEAN and China increase.

2. The trade increase could make the GDP of ASEAN Members rise.

3. The Trade Diversion and Trade Creation occurred at the same time, and Work

Specialization formed.

Figure VII:

The relationship of the three variables

To conclusion, we believe tariff concession will produce two effects: Trade

Diversion effect and Trade Creation effect. Both of the two effects will strengthen

regionalism, because the former will decrease the Member States' trade with

countries in other regions, and the latter will increase the trade among the Member

States. When Trade Creation effect is bigger than Trade Diversion effect, the export

volume will increase between contracted partners. And much opener trade

circumstances will also make Member States specialize on the production they own

comparative advantages, which will form work specialization among these countries.

When the work specialization strengthens, these countries will become closer, which

may create regionalism and leave these economies better off. Figure VIII shows the

causality.

Figure VIII
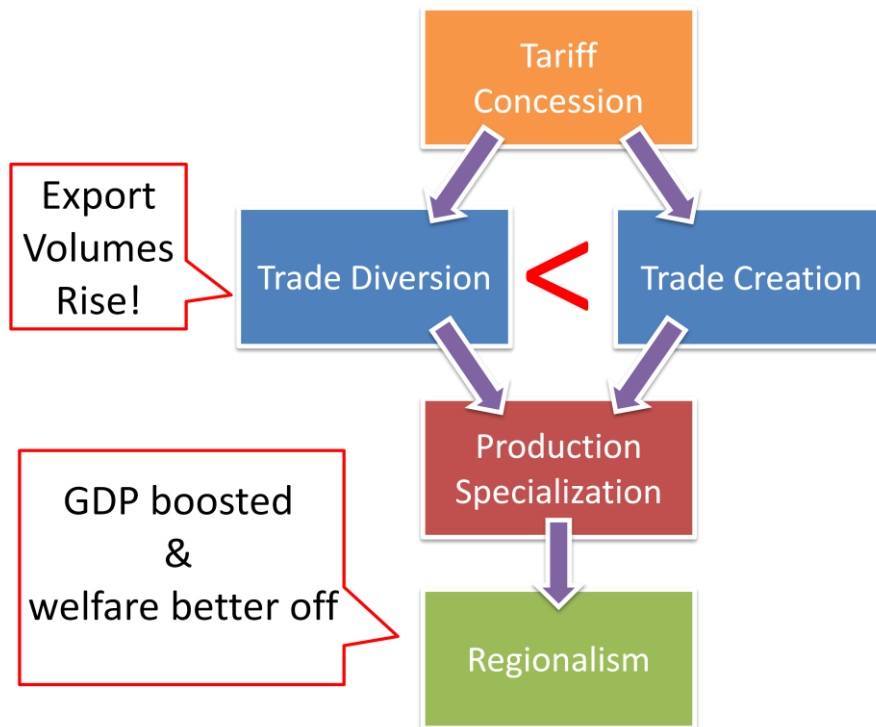
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