東亞經濟整合對東協國家及台灣之經濟影響之假設情境分析

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中文摘要

本文之研究主旨係以量化研究與建構模擬假設的方式來探討在不同情境下的東亞經濟合對東南亞國家及台灣之經濟影響。文中提出東亞經濟整合的四種類型的情境假設。即分別為: (1)情境一: 東協國家與中國建立自由貿易區域(即東協加一模式); (2)情境二: 東協國家、中國與台灣建立自由貿易區域；(3)情境三: 東協國家、中國、日本與韓國形成自由貿易區域(即是東協加三模式)；(4)情境四:東協國家、中國、日本、韓國與台灣成立自由貿易區域(本文稱為東協加四模式)。

文中評估上述的自由貿易協定安排的方式係以全球貿易分析計畫(Global Trade Analysis Project, GTPA)作為FTA的情境量化模擬，分別評估上述不同的情境假設對東協及台灣的可能經濟影響，分別面向則包括GDP效果、貿易條件、福利效果，生產部門、進出口項目之改變等。本文的結論述及以自由貿易協安排的經濟整合係可融合各成員國間的經濟資源，藉以建構經濟安全的體制並因應經濟全球化與國內市場開放的挑戰。

　　研究發現為倘「東協加一模式」與「東協加三模式」的二種情境分別出現，則對台灣的經濟效果呈負面的影響。相對地，如果台灣能參與區域性的經濟整合安排，諸如成立「中國－東協－台灣自由貿易區域」或是出現「東協加四的模式」，則台灣的經濟效果將呈現正向的效果且對東亞區域國家的經濟效果的供獻也最為顯著。此外，本文亦發現東協國家將是東亞經濟整合的最大受益者，它們在本文的任一情境假所計算的經濟面向皆是呈現正向的經濟效益，特別是有台灣參與的情境部份。

Hypothetical Economic Impacts of East Asian Economic Integration on ASEAN and Taiwan

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Key words: ASEAN, Taiwan, Regional Integration, CGE model

Abstract

This paper investigates a quantitative simulation analysis on a hypothetical economic impact of East Asian Integration among regional country, mainly in Taiwan and in ASEAN, using a CGE model of global trade.   Four hypothetical scenarios are elaborated including ASEAN + China, ASEAN+China+Taiwan, ASEAN+3, and, ASEAN+3+Taiwan. Two scenarios have shown that Taiwan might suffer malign economic effects due to be excluded in joining the process of East Asian Integration. In contrast, two other scenarios show that if Taiwan could join the formation of East Asian economic integration, then Taiwan and ASEAN will increase their economic performance in production and in trade. In general, the paper finds that that ASEAN will be a winner under various types of the formation of East Asian Integration. The conclusion of this paper suggests that Taiwan should implement a more aggressive economic policy to balance the challenges from regional integration. The feasible approach on it is to show the complementary attributions between Taiwan and ASEAN. If Taiwan and regional countries may integrate all sources together, then it will strengthen regional competitiveness toward global market.

I. Introduction

Regional economic integration exists with the principles of multilateral trade under the framework of globalization symbolized by worldwide liberalization of trade and investment. Since 1990s, East Asia is in process of promoting regional economic integration in order to increase the economic welfare of regional countries. Currently, signing a bilateral Free Trade Agreement (FTA) between East Asian countries is a natural trend for future economic integration. The goal of this type of economic integration is to accelerate the flow of capital, people and goods between FTA members and to increase economic welfare and industrial strength of individual members. However, recognizing the political challenges of Taiwan in global politics, Taiwan has to deal with any possible malign scenarios as discussed in the next section of this paper on Asian economic integration. In contrast, ASEAN may take great advantage on the formation of regional integration in areas of macroeconomic impact, production, and import and export.

The methodology of this paper adopted is to implement a quantitative simulation analysis on the economic impact of trade liberalization with a hypothetical economic model. The relative significance of bilateral and regional trade liberalization in East Asia will be investigated in comparison with multilateralism employing a Computable General Equilibrium (CGE) model of global trade. Moreover, the purpose of this paper is to discuss a set of hypothetical scenarios covering economics of trade liberalization using model simulations. It will help to clarify the key source of an economic impact which differentiates those

simulation outcomes in East Asia.[1]   It explains and assesses the future economic integration impacts under 4 types of the scenarios, which will be discussed in next section. Based on above, this paper is structured as follows. Section I introduces the key assumptions within the framework of a CGE model used for the simulation experiments. Section II investigates 4 sets of economic impacts of ASEAN plus model, especially toward Taiwan and ASEAN. Section III provides conclusion and outlines the policy implications of possible economic development.

II. The Framework of CGE Model Simulations

To analyze the economy-wide impact of trade liberalization, a CGE model of global trade is employed for model simulations in this paper.   A CGE model numerically simulates the general equilibrium structure of the economy.   It is built on the Walrasian general equilibrium system, in which the central idea is that market demand equals supply for all commodities at a set of relative prices.   Moreover, a CGE model has solid micro-foundations that are theoretically transparent. Functional forms are specified in an explicit manner, and interdependencies and feedback are incorporated.   Therefore, the model provides a framework for assessing the effects of

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[1] There are several simulation studies on the impacts of certain regional FTAs in Asia.   Those include EPA (2000), Hertel, Walmsley and Itakura (2001), IDE (2000), Itakura, Hertel and Reimer (2002), KIEP (2000), Nakajima and Kwon (2001) and Tsutsumi and Kiyota (2002).   However, both the policy scenario of trade liberalization measures, which is the subject of a study, and the structures of the model employed, vary among these studies.   Therefore, it may not be so useful or fruitful to compare the outcomes of those simulations.

policy and structural changes on resource allocation by clarifying "who gains and who loses."

These characteristics differentiate it from the partial equilibrium model, which is not economy-wide, the macroeconomic model, which is not multi-sectoral, and the input-output model, in which economic agents do not respond to changes in prices.   Moreover, the multi-country model is required to analyze international economic affairs such as trade and investment policies, which affect not just one but a number of economies.

Among others, the database and the standard version of a model by the Global Trade Analysis Project (GTAP) [2] are utilized as a basis of simulation experiments in this paper.   The GTAP model is a standard CGE model, which depicts the behavior of households, governments and global sectors across each economy in the world.   It is composed of regional models, which are linked through international trade.   Prices and quantities are simultaneously determined in factor markets and commodity markets by accounting relationships, by the equilibrium conditions specified by the behavior of economic agents, and by the structure of international trade.   The model includes three main factors of production: labor, capital, and

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[2] The GTAP model was applied to the analysis of the economic impact of the Uruguay Round Agreement by the Secretariat of the General Agreement on Tariff and Trade (GATT) for that day, as seen in GATT (1994).   And later, in 1997, it was also utilized in the assessment of the economic impact of the Manila Action Plan by the APEC Economic Committee, as seen in APEC (1997).   At present, this model and database are widely used by international organizations and researchers on international affairs.   See Hertel (1997) for the description of the GTAP database and model.

land. Labor and capital are used by all industries, but land is used only in agricultural sectors. Capital and intermediate inputs are traded, while labor and land are not traded between regions.

The standard version of the GTAP model includes several key assumptions. First, perfect competition, therefore a constant return to scale, is assumed. Second, imperfect substitution in goods and services between the home economy and those abroad and among different origins of economies are assumed by the Armington parameters.[3] Third, the amount of total labor -- one factor endowment -- is fixed. This means that the model assumes full employment and no unemployment. The amount of total capital is also fixed in the standard GTAP model.

A common criticism has often been that a standard CGE model focuses evaluation of static efficiency improvements, therefore the dynamic effects among production, income, and savings and investment are not captured. In fact, concerning the dynamic impact of trade liberalization, the growth effects through productivity gains and capital accumulation have been

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[3] The basic framework of the trade model is guided by the comparative advantage theory by Hecksher-Ohlin. However, the original theory of comparative advantage cannot explain such aspects as the two-way trade seen in actual trading behavior. This is because the theory makes no distinctions between the same goods from different areas of production. Therefore, the general equilibrium model introduces heterogeneity into the same goods according to their production areas, namely, imperfect substitutes of goods between home and abroad, the so-called Armington assumption, and thus describes realistic trade developments. See Armington (1969) for the description of the Armington assumption.

pointed out.   In this paper, certain dynamic aspects are studied in the model simulations.

One deals with the dynamic aspects of capital formation by modifying the standard version of the GTAP model.   Two mechanisms are considered in this paper.   First, the important "dynamic" effects of capital accumulation are introduced[4] into the standard static model.   According to the growth theory, a medium-run growth or accumulation effect induces additional savings[5] and investment.   The induced savings and investment (larger capital stock) in turn link to the production capacities and cause a further increase in income.   Second, trade balance is endogenously determined and international capital movement is allowed.   It is assumed that the expected rate of return on capital would be equalized among the regions.

In addition to these, pro-competitive productivity growth effects[6] are also investigated in the model simulation.   It is assumed that productivity of domestic industries would increase in order to compensate for the lower import prices.   Such a rate of productivity increase is set as equal to the rates of change in import prices weighted by a share of imports over total production including domestic goods.

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[4] See Francois, McDonald and Nordstrom (1996) for the methodology for implementing this mechanism into the GTAP model.

[5] It is assumed that a fixed share of induced income is saved.   The saving ratio is exogenous rather than endogenous in the current model.

[6] See, for examples, Itakura, Hertel and Reimer (2003) regarding incorporating productivity linkages in general into the GTAP model simulations, and Ianchovichina, Binkley and Hertel (2000) for incorporating pro-competitive productivity effects into a CGE model with an assumption of imperfect competition.

The GTAP database provides fairly arranged data of countries and regions including Taiwan, China, Japan, Korea, the Association of Southeast Asian Nations (ASEAN) countries and others. The GTAP database currently consists of fifty-seven disaggregated sectors and eighty-seven economies,[7] which are aggregated into the appropriate version for simulations. In this study, as shown in appendix section, economies are aggregated into nine areas; and, industries/commodities are aggregated into twenty.

It must be noted that the estimated economic impact of a CGE model is not a forecast. As described in Dee, Geisler and Watts (1996), economic policy measures will be implemented over time and adjustments to those changes may take time. During the course of such adjustments, other economic changes will also take place. However, those changes, including economic growth, structural changes in trade and in industry, are not taken into account in the current analysis. The model simulation shows the differences at a certain point in time between when trade liberalization measures were implemented and when they were not[8].

The simulations throughout this paper were carried out to assess the impact of the removal of export and import tariffs on

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[7] This is the version five database, which was released in 2005, although the base year is 2001.

[8] Although the structure of the model is non-linear, simulation outcomes tend to be almost linear to external shocks. The impact of trade liberalization is estimated to be not so much different, based either on the current or future economic structures incorporating growth effects as far as it can be estimated in terms of rates of change, given that the general equilibrium elasticities are unchanged.

goods. Trade liberalization in service sectors is not included. Other measures, such those for investment liberalization and free movement of labor, are not explicitly considered. Trade protection data are derived also from the current GTAP database as they are, without any modification. It must be noted that although the import protection data are mainly derived from tariff schedules in merchandise trade, they may include certain estimated Non-Tariff Measures (NTMs), such as import quotas and subsidies for domestic products in agricultural trade. In fact, as is shown later, the protection levels in agricultural sectors are measured as significantly higher compared with those indicated by actual tariff revenues.

Experimental Design

Experiment 1 (E1)
In the Experiment 1 (E1), it focuses on the effects of formation of ASEAN-China FTA model. Under this hypothesis, it assumes to reduce the export tax equivalents (txs) and import tax equivalents (tms) to zero between ASEAN and China.

Experiment 2 (E2)
In the Experiment 2 (E2), it discusses on the effects of formation of ASEAN-China-Taiwan FTA model. Under this scenario, it assumes to reduce the export tax equivalents (txs) and import tax equivalents (tms) to zero among ASEAN, China and Taiwan.

Experiment 3 (E3)
In the Experiment 3 (E3), it looks at the effects of formation of ASEAN-China-Japan-Korea FTA (ASEAN plus 3) model. Based on this hypothesis, it assumes to reduce the export tax

equivalents (txs) and import tax equivalents (tms) to zero among ASEAN, China, Japan and Korea.

Experiment 4 (E4)
In the Experiment 4 (E4), it explores the effects of formation of ASEAN-China-Japan-Korea-Taiwan FTA (ASEAN plus 4) model. Following this scenaio, it will be assumed to reduce the export tax equivalents (txs) and import tax equivalents (tms) to zero among ASEAN, China, Japan, Korea and Taiwan.

III. Simulation Results

Macroeconomic Impact:

Tables 1 to 3 show a comparative data of the economic impacts based on different hypothetical models under the 4 types of scenarios of framework of East Asian Economic Integration. Scenario 1 indicates that if ASEAN-China FTA is established, then Taiwan's GDP will be decreased 0.02% and the terms of trade will be decreased by 0.28%. Moreover, the total social welfare of Taiwan will decrease $478.69 millions. However, if ASEAN and China eliminate their tariff barriers based on scenario 1, then ASEAN real GDP is expected to increase by 0.18 %. Moreover, terms of trade for ASEAN and China are expected to increase by 0.1 % and 0.59 % respectively. In general, the elimination of tariffs raises the level of welfare of country by efficiently reallocating the factors of production between FTA members. Thus, the predicted increase in the ASEAN and China's welfare level through the FTA arrangement can be seen as being quite exceptional. However, if Taiwan can

join the formation of ASEAN + China FTA, then all members of this economic formation will strengthen their GDP performance as 0.15% for Taiwan, 0.01 for China and 0.21 for ASEAN. For terms of trade effects, Taiwan will increase 2.25 % and 0.85% for ASEAN. Furthermore, the total social welfare of Taiwan will increase $4,089.70 millions and $5350 million for ASEAN in this scenario. Economic data shown above indicate that scenario 2 may expand economic advantage to ASEAN and China; and all FTA members enjoy the economic benefits.

In contrast, scenario 3 says Taiwan's GDP may decrease 0.07% and 1.08% in terms of trade due to being excluded by regional economic integration. Moreover, it is also evident in the result total social welfare of Taiwan will decrease by $1,794.58 millions. This is the worst scenario for Taiwan would due to loss of economic advantages on various aspects including GDP, terms-of-trade effects, and welfare. Scenario 4 explains the participation of Taiwan in ASEAN+3 FTA. Under this scenario, Taiwan's GDP may increase 0.12% and 0.95% in terms of trade. Moreover, the total social welfare of Taiwan will increase by $1,912.70 millions in this scenario.

Table 1: GDP Effects, by Experiment

	GDP Effect (% change)					
	E1	E2	E1-E2	E3	E4	E3-E4
TWN	-0.02	0.15	-0.17	-0.07	0.12	-0.19
CHN	0	0.01	-0.01	0.1	0.14	-0.04
JPN	-0.01	-0.01	0	0.02	0.03	-0.01
KOR	-0.02	-0.03	0.01	1.38	1.38	0
ASEAN	0.18	0.21	-0.03	0.3	0.34	-0.04
ANZ	-0.01	-0.01	0	-0.03	-0.03	0
NAFTA	0	0	0	0	0	0
EU	0	0	0	-0.01	-0.01	0
ROW	-0.01	-0.01	0	-0.03	-0.03	0

Source: Author's simulation

Table 2: Terms-of-Trade Effects, by Experiment

	Terms-of-Trade Effects (% change)					
	E1	E2	E1-E2	E3	E4	E3-E4
TWN	-0.28	2.25	-2.53	-1.08	0.95	-2.03
CHN	0.1	-0.21	0.31	-0.48	-0.7	0.22
JPN	-0.34	-0.43	0.09	1.65	1.7	-0.05
KOR	-0.29	-0.43	0.14	1.45	1.33	0.12
ASEAN	0.95	0.85	0.1	0.66	0.57	0.09
ANZ	-0.13	-0.18	0.05	-0.81	-0.91	0.1
NAFTA	-0.07	-0.1	0.03	-0.28	-0.32	0.04
EU	-0.04	-0.05	0.01	-0.11	-0.12	0.01
ROW	-0.02	-0.05	0.03	-0.23	-0.26	0.03

Source: Author's simulation

Table 3: Welfare Effects, by Experiment

Welfare Effects
($US millions)

	E1	E2	E1-E2	E3	E4	E3-E4
TWN	-478.69	4089.70	-4568.39	-1794.58	1912.7	-3707.28
CHN	1435.70	-363.96	1799.66	-2281.71	-3123.7	841.99
JPN	-2555.03	-3159.41	604.38	15522.06	16314.73	-792.67
KOR	-735.21	-1086.00	350.79	10438.52	10157.02	281.50
ASEAN	5630.38	5350.02	280.36	4404.77	4254.82	149.95
ANZ	-144.71	-209.66	64.95	-1103.44	-1238.42	134.98
NAFTA	-1516.96	-1797.49	280.53	-7052.3	-7758.17	705.87
EU	-1191.37	-1465.83	274.46	-5317.01	-5812.78	495.77
ROW	-702.19	-1083.43	381.24	-5809.47	-6425.98	616.51

Source: Author's simulation

Changes in Production:

Following section discusses the simulation results of percentage changes in production under 4 types of scenarios under the condition of steady-state capital market closure. If the ASEAN-China FTA established as shown table 6, then it carries a negative effects on the production of Taiwan's beverages and tobacco products (-0.11%), petroleum & coal products (-1.37%), electronic equipment (-0.19%) and transport equipment (-0.06%). In contrast, ASEAN creates significant performance on the production of petroleum and coal products with 7.65% increased, and 9.29% increased for machinery and equipment. Moreover, if the ASEAN-China-Taiwan FTA established under the situation of scenario 2, then Taiwan will show a significant production advantage in the items of textiles with 37.81% increased, leather products with 28.38%, and petroleum and chemical products

with 7.63% increased. At the same time, table 5 indicates ASEAN will increase her production in petroleum and chemical products with 7.17%, machinery and equipment with 9.78%, and construction with 3.87%. However, as discussed in previous section, the worst scenario for Taiwan will be the FTA formation on ASEAN plus 3. It carries a negative economic effects on Taiwan, which most Taiwan's industries output is in the trend of decreasing, especially in textile with 13.48% decreased. Under this scenario, ASEAN will enjoy increased production in food with 3.64% growth, machinery and equipment with 9.32% plus, and construction with 5.26 increased. Table 7 shows the changes in production toward members of the formation of ASEAN+4 elaborated in this paper. Taiwan will increase in production in textiles by 19.28 % and leather products with 33.61 plus. Nevertheless, ASEAN will increase her production in most of items shown in table 7. ASEAN may enjoy positive changes in production in the items of food, wearing apparel, petroleum and chemical, and construction.

Table 4: Changes in Production *(E1), by sector*

									(%)
	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	0.14	-0.23	0.17	0.09	0.18	-0.49	0	0.13	0.01
LIVE	0.17	-0.05	0.09	0.03	-0.43	0.17	0.05	0.05	0
FORT	0.66	-0.42	0.25	0.23	-1.39	0.29	0.07	0.08	0.09
FISH	0.04	-0.12	0.08	0.06	-0.11	0.02	0.04	0.02	0.01
FOOD	0.2	-0.45	0.11	0.07	-0.69	-0.07	0.04	0.05	0.03
B_T	-0.11	0.62	-0.07	-0.08	-0.11	-0.18	-0.03	-0.14	-0.03
TEX	-2.7	0.69	-1.13	-1.7	2.48	-0.2	0.02	-0.16	-0.15
WAP	0.05	0.25	0.07	-0.14	-2.45	-0.16	0.14	0.04	0.07
LEA	0.22	-0.32	0.6	0.3	-4.55	0.69	0.6	0.67	0.39

LUP	0.43	-0.85	0.15	0.09	-0.99	0.1	0.06	0.06	0.01
P_C	-1.37	-1.08	-0.19	-1.29	7.65	-0.32	-0.06	-0.11	-0.21
MNM	1.09	0.06	0.45	0.97	-1.83	0.37	0.15	0.16	0.11
FMM	0.97	0.16	0.18	0.68	0.85	0	-0.03	-0.09	-0.12
OME	0.52	-0.18	0.24	0.34	9.29	-0.14	-0.06	-0.24	-0.22
ELE	-0.19	1.51	-0.03	-0.13	1.13	-0.04	-0.11	-0.31	-0.19
MPO	-0.06	5.94	-0.16	0.18	0.14	-0.51	-0.27	-0.27	-0.24
OMF	1.29	-0.56	0.22	0.8	-2.38	0.13	0.36	0.13	0.09
EGW	-0.24	-0.12	0	-0.16	0.68	0	0	-0.01	-0.04
CNS	-0.27	0.54	-0.16	-0.3	3.69	-0.1	-0.05	-0.05	-0.06
SERV	0.06	-0.19	0	0.07	-1.24	0.01	0.01	0.03	0.02

Source: Author's simulation

Table 5: Changes in Production *(E2), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-1.91	-0.29	0.2	0.12	0.25	-0.48	-0.04	0.11	0
LIVE	-0.12	-0.19	0.1	0.02	-0.26	0.17	0.09	0.03	-0.01
FORT	-0.51	-0.42	0.27	0.29	-1.23	0.32	0.06	0.06	0.09
FISH	-0.18	-0.17	0.1	0.09	0.03	0	0.04	0.01	0
FOOD	-0.85	-0.34	0.11	0.09	-0.36	-0.28	0.03	0.03	0.02
B_T	0.25	0.56	-0.06	-0.08	-0.19	-0.16	-0.03	-0.13	-0.03
TEX	37.81	-1.5	-3.98	-5.28	0.31	-0.71	-0.14	-0.54	-0.39
WAP	1.35	1.6	-0.46	-0.47	-0.13	-0.74	-0.07	-0.39	-0.36
LEA	28.38	-0.36	0.34	-1.59	-3.78	-0.29	0.13	0.1	-0.03
LUP	-1.37	-0.71	0.16	0.13	-0.64	0.09	0.05	0.04	0.01
P_C	7.63	-1.49	-0.2	-1.75	7.17	-0.34	-0.08	-0.13	-0.23
MNM	1.47	0.19	0.49	1.3	-1.89	0.43	0.12	0.14	0.12
FMM	-2.64	0.34	0.21	1.04	0.79	0.04	0.02	-0.07	-0.07
OME	0.54	-0.15	0.29	0.75	9.78	-0.02	-0.04	-0.27	-0.15
ELE	-9.64	2.82	0.23	0.39	1.08	0.3	0.13	-0.03	0.1
MPO	0.29	5.92	-0.08	0.65	0.56	-0.48	-0.32	-0.3	-0.25

OMF	-5.53	0.07	0.2	1.06	-2.22	0.12	0.25	0.07	0.06
EGW	2.41	-0.23	0	-0.36	0.6	0	0	-0.02	-0.03
CNS	2.18	0.71	-0.2	-0.45	3.87	-0.16	-0.06	-0.07	-0.09
SERV	-0.45	-0.21	0.01	0.12	-1.3	0.02	0.01	0.04	0.03

Source: Author's simulation

Table 6: Changes in Production *(E3), by sector*

									(%)
	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-0.34	4.07	-5.51	-27.23	0.73	-2.81	-1.21	-0.33	-0.25
LIVE	-0.48	-1.44	-0.71	47.25	1.1	0.25	-0.08	-0.19	-0.14
FORT	1.01	-0.93	-0.74	-1.27	-0.34	1.31	0.1	0.01	0.13
FISH	0.15	0.08	-0.49	8.98	0.94	-0.1	0	0	-0.05
FOOD	-0.82	-0.59	-1.72	51.09	3.64	-1.69	-0.3	-0.22	-0.29
B_T	-0.1	0.04	0.24	5.5	-0.16	0.01	-0.03	-0.19	-0.04
TEX	-13.48	-3.67	17.45	25.17	-2.91	-0.56	-0.49	-1.57	-0.8
WAP	-1.56	8.59	-5.68	0.61	1.12	-0.91	-0.34	-1.32	-0.69
LEA	-0.96	-0.3	-11.37	34.41	1.44	1.65	0.63	-0.92	0.32
LUP	1.46	-1.69	-0.37	1.58	0.78	0.51	0.03	0	0.12
P_C	-2.95	-2.75	0.79	3.74	5.2	-0.08	-0.09	-0.2	-0.16
MNM	1.83	-0.49	2.49	-1.72	-2.34	0.94	0.1	-0.09	0.12
FMM	2.27	-1.52	1.36	-6.19	-1.42	0.75	0.17	-0.16	0.12
OME	1.56	-2.21	1.14	-8.2	9.32	1.38	0.3	-0.19	0.37
ELE	1.43	5.79	-1.58	-5.87	0.7	1.8	0.75	0.18	0.63
MPO	0.63	-1.29	0.57	-6.21	-6.32	0.75	0.08	0.11	0.3
OMF	3.27	-1.04	-0.33	2.73	-1.79	0.65	0.4	0.05	0.24
EGW	-0.77	-1.05	0.31	2.23	0.22	0.13	0	-0.07	-0.01
CNS	-1.21	1.11	0.38	5.02	5.26	-0.72	-0.24	-0.25	-0.41
SERV	0.15	-0.45	-0.04	0.08	-1.36	0.03	0.01	0.09	0.08

Source: Author's simulation

Table 7: Changes in Production *(E4), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-2.19	3.99	-5.56	-27.16	0.68	-2.95	-1.29	-0.37	-0.26
LIVE	0.54	-1.51	-0.72	47.7	1.28	0.31	-0.04	-0.21	-0.15
FORT	0.68	-0.97	-0.77	-1.16	-0.21	1.38	0.1	0	0.13
FISH	0.36	0.05	-0.5	9.12	1.07	-0.13	-0.01	0	-0.06
FOOD	-0.19	-0.53	-1.71	51.66	3.89	-1.9	-0.31	-0.25	-0.3
B_T	-0.85	0.02	0.38	5.51	-0.22	0.04	-0.03	-0.21	-0.04
TEX	19.28	-4.98	12.87	20.03	-4.01	-0.74	-0.57	-1.79	-0.91
WAP	-1.26	9.6	-6.28	0.51	3.24	-1.26	-0.49	-1.64	-0.99
LEA	33.61	-0.62	-11.99	31.69	2.21	0.96	0.27	-1.4	-0.01
LUP	0.07	-1.62	-0.4	1.63	1.09	0.55	0.02	-0.02	0.12
P_C	6.15	-3.18	0.78	3.19	4.75	-0.09	-0.12	-0.24	-0.18
MNM	3.85	-0.46	3.08	-1.23	-2.5	0.96	0.06	-0.16	0.09
FMM	-0.92	-1.45	1.51	-5.56	-1.54	0.73	0.21	-0.16	0.15
OME	2.53	-2.2	1.12	-7.85	9.74	1.63	0.31	-0.21	0.46
ELE	-6.71	7.07	-1.65	-5.39	0.71	2.31	1.09	0.51	0.97
MPO	-1.49	-1.43	0.99	-5.16	-6.17	0.86	-0.03	0.01	0.31
OMF	-1.4	-0.62	-0.42	2.77	-1.68	0.73	0.35	0.02	0.25
EGW	1.71	-1.16	0.32	1.96	0.16	0.12	0	-0.08	-0.01
CNS	2.08	1.27	0.39	4.92	5.43	-0.81	-0.27	-0.28	-0.45
SERV	-0.49	-0.44	-0.04	0.19	-1.4	0.04	0.01	0.1	0.1

Source: Author's simulation

Changes in Export and Import:

If we look at the changes in export and import performance under various types of economic integration, we find that ASEAN is the greatest beneficiary. Table 8 and table 10 indicate that ASEAN's changes in her total export will be

better than those of table 9 and table 11 indicated. It happens due to the participation of Taiwan. Moreover, import performance of ASEAN is similar to exports. Consequently, we may argue that Taiwan may play a crucial role in helping ASEAN in import and export performance within an integrated economic arrangement. In contrast, if Taiwan could not join the regional economic integration, then it suffers in either exports or import performance. As table 8 and table 12 indicate, the formation of ASEAN-China FTA will also affect the trade performance of Taiwan decreasing 0.51% in exports and 0.621% in imports. Moreover, if the ASEAN plus 3 FTA is established, then Taiwan will also be harmed by 1.56% decrease in its total exports and 1.90% in its imports as shown in table 9 and table 11. On the contrary, if Taiwan could join the ASEAN plus 3, it will carry positive affect on trade performance of Taiwan with increasing 4.67% in exports and 6.01% in imports.

In general, ASEAN will increase in export and import in the sectors of agriculture, beverage and tobacco, textile, petroleum and chemical, coil and minerals, machinery and equipment, and motor parts. For Taiwan, if it can join the formation of regional economic integration, then it will strengthen import and export performance in sectors of food, textile, leather product machinery and equipment.

Table 8 : Changes in Export *(E1), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-0.82	2.45	0.63	0.13	17.34	-1.61	-0.34	0.26	-0.15
LIVE	0.79	0.85	0.90	0.97	-1.86	0.76	0.22	0.13	0.17
FORT	2.17	-0.18	2.56	0.00	-3.42	1.02	0.70	0.39	0.70
FISH	0.62	0.19	0.23	0.56	0.36	0.38	0.28	0.16	0.21
FOOD	0.40	2.77	-1.18	-0.01	4.51	-0.39	0.17	0.16	-0.02
B_T	-3.58	33.80	-6.05	-1.30	27.09	-0.73	-0.52	-0.55	-0.34
TEX	-3.53	8.93	-5.08	-2.69	14.72	-1.88	-0.27	-0.32	-0.50
WAP	0.92	3.18	-4.93	-0.83	-1.86	-3.15	0.24	-0.04	0.09
LEA	-0.08	0.07	0.58	0.12	-2.95	0.63	0.66	0.89	0.85
LUP	0.14	0.77	-0.75	-1.31	1.99	-0.14	0.22	0.14	-0.06
P_C	-3.29	5.22	-1.67	-3.79	21.37	-1.45	-0.40	-0.19	-0.68
MNM	2.92	3.15	2.70	2.89	-2.80	0.68	0.71	0.53	0.38
FMM	1.34	1.50	0.84	1.13	5.60	-0.04	0.11	-0.04	-0.15
OME	0.40	2.65	0.18	0.45	13.52	-0.53	-0.16	-0.33	-0.39
ELE	-0.54	4.52	-0.65	-0.46	2.08	-0.86	-0.41	-0.53	-0.47
MPO	-0.61	45.57	-0.51	0.06	19.18	-1.63	-0.81	-0.40	-0.52
OMF	1.46	-0.39	1.17	1.13	-1.62	0.12	0.52	0.32	0.24
EGW	1.20	-0.89	0.74	1.96	-7.54	0.67	0.42	0.16	0.07
CNS	0.84	-0.81	1.14	1.17	-4.11	0.28	0.45	0.43	0.29
SERV	1.29	-0.78	1.03	1.25	-5.49	0.51	0.52	0.42	0.35
TOTAL	-0.51	3.07	-0.27	-0.55	4.37	-0.14	-0.09	-0.06	-0.03

Source: Author's simulation

Table 9: Changes in Export *(E2), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	1.28	4.01	0.61	0.20	18.65	-1.58	-0.55	0.22	-0.17
LIVE	0.00	1.59	2.43	1.75	0.38	1.20	1.03	0.10	0.20
FORT	-4.35	0.27	2.56	2.44	-3.79	1.13	0.67	0.37	0.74
FISH	-1.23	0.58	0.23	0.74	2.19	0.47	0.22	0.15	0.19
FOOD	17.83	4.67	-2.44	-0.02	6.46	-0.92	-0.06	0.08	-0.11
B_T	-4.55	33.85	-4.67	-1.18	27.12	-0.70	-0.53	-0.51	-0.33
TEX	50.94	7.63	-14.70	-7.71	13.08	-4.36	-1.02	-0.93	-1.14
WAP	-2.94	5.16	-10.71	-1.39	1.29	-4.77	-0.57	-0.97	-0.58
LEA	40.65	-0.05	-2.98	-3.03	-0.94	-0.91	-1.11	0.05	-0.21
LUP	6.09	1.65	-1.50	-1.52	2.81	-0.38	0.14	0.09	-0.11
P_C	17.01	6.15	-1.75	-4.86	20.65	-1.70	-0.50	-0.24	-0.80
MNM	24.43	4.65	2.94	3.69	-2.44	0.77	0.61	0.46	0.37
FMM	3.62	3.08	0.53	1.36	6.15	-0.11	0.25	0.00	-0.10
OME	7.93	4.30	0.16	0.74	14.12	-0.51	-0.17	-0.39	-0.32
ELE	-8.54	6.41	-0.34	0.02	2.04	-0.41	-0.15	-0.14	0.09
MPO	8.08	46.57	-0.39	0.65	21.68	-1.63	-0.94	-0.45	-0.57
OMF	-3.06	0.77	0.90	1.33	-0.94	-0.08	0.25	0.18	0.10
EGW	-13.25	-0.78	2.22	2.75	-7.71	0.94	0.45	0.13	0.09
CNS	-7.98	-0.48	1.37	2.02	-4.08	0.97	0.71	0.48	0.47
SERV	-9.56	-0.49	1.56	1.84	-5.57	0.75	0.65	0.51	0.51
TOTAL	4.57	4.08	-0.38	-0.79	4.68	-0.20	-0.10	-0.08	-0.07

Source: Author's simulation

Table 10: Changes in Export *(E3), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-14.01	194.00	0.70	206.40	24.20	-8.86	-6.61	-2.85	-2.79
LIVE	2.66	-5.61	27.94	181.55	-5.96	3.58	0.77	-0.71	-0.16
FORT	6.52	5.11	0.00	-9.76	-4.24	4.16	1.63	0.09	1.11
FISH	4.43	25.52	48.88	-11.78	2.41	1.65	0.31	-0.07	0.07
FOOD	-8.24	23.31	45.05	331.71	21.13	-5.08	-6.07	-4.55	-3.27
B_T	-3.41	37.84	4.51	39.07	29.05	-0.70	-1.24	-1.48	-0.73
TEX	-16.94	19.55	90.67	42.89	12.71	-6.39	-3.19	-2.91	-1.28
WAP	1.18	27.80	49.21	19.11	5.71	-6.24	-2.29	-3.56	-0.64
LEA	-2.54	1.42	27.68	59.28	7.93	0.86	-2.41	-2.09	0.12
LUP	1.66	0.94	15.98	16.22	5.73	2.58	-0.06	-0.32	-0.11
P_C	-6.71	6.52	9.01	15.34	17.31	1.22	-1.03	-0.65	0.90
MNM	3.19	5.33	34.71	27.16	-2.33	1.08	0.13	-0.38	1.48
FMM	0.73	2.85	13.39	0.26	4.64	-0.04	-0.03	-0.58	-0.05
OME	-0.29	5.21	5.42	-1.85	13.29	1.41	0.19	-0.59	0.30
ELE	0.48	12.39	-1.05	-4.52	1.39	6.24	0.49	-0.15	0.92
MPO	-0.72	33.12	3.22	-6.03	14.40	-1.02	-0.68	-0.13	-0.29
OMF	3.13	0.22	3.35	15.63	0.46	4.55	0.10	-0.23	0.30
EGW	4.82	-1.61	-8.15	-19.61	-8.48	2.68	0.45	-0.30	0.01
CNS	3.06	0.07	-4.26	-10.73	-3.07	2.23	1.36	1.45	1.43
SERV	3.93	-0.83	-4.59	-10.80	-5.81	2.06	0.92	0.76	0.97
TOTAL	-1.56	9.92	5.98	7.46	5.16	-0.33	-0.35	-0.52	0.28

Source: Author's simulation

Table 11: Changes in Export *(E4), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-4.23	192.78	0.35	206.00	24.21	-9.30	-7.02	-2.96	-2.95
LIVE	2.24	-5.04	29.40	184.08	-3.53	4.21	1.71	-0.76	-0.15
FORT	4.35	5.57	10.26	-9.76	-4.61	4.35	1.67	0.05	1.15
FISH	10.02	25.45	48.11	-11.41	4.10	1.60	0.19	-0.12	0.00
FOOD	29.71	24.42	52.47	335.32	22.63	-5.69	-6.38	-4.67	-3.42
B_T	0.00	37.48	22.68	39.32	29.02	-0.68	-1.34	-1.57	-0.80
TEX	27.07	18.95	74.96	35.55	12.62	-7.56	-3.56	-3.25	-1.63
WAP	-0.32	29.34	55.90	18.94	8.63	-7.26	-2.87	-4.28	-1.13
LEA	45.88	0.98	25.18	54.69	10.00	-0.36	-3.93	-2.83	-0.78
LUP	9.20	1.59	15.80	16.32	6.49	2.51	-0.12	-0.39	-0.17
P_C	16.04	7.11	9.58	14.21	16.61	0.92	-1.24	-0.75	0.74
MNM	31.85	5.95	41.62	30.60	-2.31	1.01	-0.05	-0.58	1.36
FMM	5.78	3.88	14.41	1.39	4.98	-0.38	0.03	-0.60	-0.10
OME	9.33	6.56	5.47	-1.41	13.82	1.61	0.11	-0.65	0.38
ELE	-6.26	14.23	-1.47	-4.07	1.42	7.03	0.92	0.30	1.57
MPO	12.97	32.95	4.29	-4.37	15.57	-0.93	-1.05	-0.32	-0.35
OMF	2.11	1.02	2.99	15.67	1.01	4.61	-0.10	-0.32	0.26
EGW	-9.64	-1.61	-7.41	-19.22	-8.72	3.08	0.48	-0.35	0.02
CNS	-5.17	0.39	-4.40	-9.99	-3.00	3.06	1.73	1.59	1.70
SERV	-6.67	-0.62	-4.51	-10.44	-5.91	2.41	1.09	0.87	1.15
TOTAL	4.67	10.67	6.10	7.29	5.41	-0.43	-0.40	-0.55	0.22

Source: Author's simulation

Table 12: Changes in Import *(E1), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-0.48	6.95	-0.39	-0.57	19.24	-1.17	-0.24	0.03	-0.14
LIVE	-0.30	1.14	-0.31	-0.73	5.20	-0.22	-0.04	0.05	-0.01
FORT	1.06	0.72	-0.27	0.02	3.88	0.00	0.01	0.06	-0.41
FISH	-0.37	0.67	-0.04	-0.12	4.70	0.00	0.08	0.06	0.02
FOOD	-0.77	6.57	-0.73	-0.51	11.33	-0.64	-0.38	-0.03	-0.08
B_T	-0.34	5.33	-0.23	-0.25	26.69	-0.06	-0.03	0.00	0.01
TEX	-2.40	7.69	-0.93	-1.65	11.45	-0.22	-0.09	-0.04	-0.01
WAP	-0.98	18.19	-0.83	-0.77	13.46	-0.22	-0.19	-0.05	-0.03
LEA	-0.56	0.60	-0.64	-0.39	7.55	-0.07	-0.19	0.10	-0.07
LUP	-0.61	6.29	-1.03	-0.93	6.80	-0.39	-0.22	-0.03	-0.04
P_C	-1.12	7.56	-0.57	-1.04	6.80	-0.10	-0.10	-0.05	-0.03
MNM	-0.82	2.83	-0.18	-0.80	10.94	-0.84	-0.14	-0.07	-0.12
FMM	-0.08	2.38	-0.82	-0.12	5.34	-0.34	-0.17	-0.12	-0.07
OME	-0.48	5.39	-0.85	-0.57	5.67	-0.09	-0.12	-0.10	-0.05
ELE	-0.43	3.78	-1.00	-0.47	2.24	-0.09	-0.18	-0.13	-0.06
MPO	-0.56	2.74	-0.68	-0.56	9.61	-0.17	-0.09	-0.08	-0.03
OMF	-0.69	2.85	-0.88	-0.48	6.73	-0.29	-0.19	-0.11	-0.06
EGW	-0.78	0.80	-0.60	-1.00	7.29	-0.38	-0.09	-0.03	0.00
CNS	-0.92	1.02	-0.62	-0.71	7.25	0.00	-0.12	-0.07	-0.03
SERV	-0.73	0.60	-0.51	-0.59	3.65	-0.19	-0.18	-0.09	-0.06
TOTAL	-0.62	4.36	-0.65	-0.64	5.84	-0.22	-0.15	-0.08	-0.05

Source: Author's simulation

Table 13: Changes in Import *(E2), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	10.80	6.20	-0.53	-0.96	19.60	-1.35	-0.29	0.00	-0.21
LIVE	30.10	0.49	-0.57	-2.78	5.95	-0.43	-0.08	0.01	-0.07
FORT	1.43	0.72	-0.35	-0.05	4.39	0.00	0.00	0.02	-0.48
FISH	15.61	0.46	-0.08	-0.22	5.05	-0.30	0.07	0.03	-0.01
FOOD	21.38	6.33	-0.90	-0.91	12.94	-0.81	-0.41	-0.05	-0.13
B_T	3.70	5.18	-0.29	-0.42	26.66	-0.11	-0.03	-0.01	-0.01
TEX	45.99	18.34	-1.63	-4.13	17.18	-0.55	-0.18	-0.21	-0.27
WAP	31.17	17.90	-0.27	-0.72	16.00	0.02	-0.03	-0.04	0.00
LEA	26.22	0.85	-0.64	-1.26	13.83	-0.22	-0.14	-0.02	-0.14
LUP	9.05	7.22	-1.27	-1.22	7.87	-0.52	-0.25	-0.05	-0.10
P_C	9.51	9.87	-0.76	-1.57	6.92	-0.19	-0.12	-0.08	-0.08
MNM	6.32	3.33	-0.23	-1.13	10.94	-0.97	-0.15	-0.10	-0.17
FMM	5.78	3.47	-1.10	-0.13	6.04	-0.55	-0.28	-0.14	-0.09
OME	6.05	7.76	-1.15	-0.67	6.00	-0.16	-0.17	-0.12	-0.08
ELE	-4.72	4.70	-1.55	-0.43	2.32	-0.12	-0.25	-0.15	-0.09
MPO	7.22	3.84	-0.91	-0.75	10.21	-0.26	-0.10	-0.10	-0.07
OMF	10.65	3.58	-1.12	-0.78	7.80	-0.43	-0.16	-0.12	-0.12
EGW	9.94	0.58	-0.77	-1.45	7.24	-0.38	-0.08	-0.03	-0.03
CNS	9.17	0.95	-0.78	-1.25	7.43	-0.20	-0.43	-0.11	-0.10
SERV	7.11	0.42	-0.67	-0.83	3.70	-0.30	-0.23	-0.11	-0.11
TOTAL	5.42	5.95	-0.86	-0.92	6.29	-0.32	-0.18	-0.10	-0.11

Source: Author's simulation

Table 14: Changes in Import *(E3), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	-3.91	15.44	29.82	158.72	23.45	-4.59	-2.10	-0.50	-1.02
LIVE	-4.06	7.13	-0.66	4.60	10.64	-2.10	-1.52	-0.58	-1.04
FORT	1.59	0.86	1.88	6.33	6.01	0.00	-0.35	-0.40	-1.12
FISH	-1.62	1.40	1.76	80.57	7.55	-1.48	-0.51	-0.41	-0.71
FOOD	-2.35	15.54	20.50	-12.81	18.11	-1.89	-0.69	-0.42	-0.69
B_T	-1.39	6.82	4.19	7.00	27.11	-0.98	-0.40	-0.32	-0.48
TEX	-10.87	40.55	22.65	36.69	19.19	-1.56	-0.56	-0.91	-0.91
WAP	-2.61	21.47	32.54	31.97	17.34	-0.69	-0.23	-0.38	-0.45
LEA	-2.62	2.63	20.41	23.28	12.24	-1.00	-0.70	-0.59	-0.82
LUP	-1.75	9.92	5.53	15.45	9.43	-1.63	-0.72	-0.40	-0.63
P_C	-3.40	14.26	4.73	12.30	7.03	-0.97	-0.58	-0.44	-0.55
MNM	-2.09	6.28	2.06	4.76	9.96	-1.94	-0.52	-0.48	-0.72
FMM	-1.17	7.25	5.81	7.34	7.43	-1.95	-0.60	-0.44	-0.58
OME	-2.20	16.05	5.71	13.45	6.72	-1.04	-0.91	-0.55	-0.64
ELE	0.04	8.16	4.92	3.32	2.15	-0.83	-0.69	-0.49	-0.56
MPO	-1.78	21.74	5.42	12.27	14.88	-1.00	-0.89	-0.39	-0.72
OMF	-2.71	9.90	5.62	16.99	9.33	-1.63	-0.63	-0.55	-0.74
EGW	-3.12	-0.10	4.86	16.02	6.85	-1.88	-0.38	-0.30	-0.45
CNS	-3.68	0.74	3.69	11.92	8.16	-1.18	-0.79	-0.94	-1.06
SERV	-2.66	0.08	3.15	7.47	3.51	-1.43	-0.61	-0.47	-0.64
TOTAL	-1.90	11.59	7.71	11.97	6.96	-1.27	-0.72	-0.48	-0.66

Source: Author's simulation

Table 15: Changes in Import *(E4), by sector*

(%)

	TWN	CHN	JPN	KOR	ASEAN	ANZ	NAFTA	EU	ROW
AGRE	7.37	14.92	29.41	145.37	23.50	-4.86	-2.20	-0.55	-1.10
LIVE	29.87	6.75	-0.75	2.02	11.20	-2.43	-1.60	-0.63	-1.13
FORT	2.49	0.83	1.97	6.28	6.48	0.00	-0.38	-0.45	-1.22
FISH	15.23	1.29	2.11	81.44	7.94	-1.48	-0.54	-0.46	-0.78
FOOD	24.33	15.31	20.95	-12.92	19.46	-2.14	-0.73	-0.46	-0.75
B_T	10.26	6.72	4.32	6.94	26.91	-1.09	-0.42	-0.34	-0.52
TEX	33.40	46.43	21.84	33.48	23.66	-1.85	-0.66	-1.04	-1.14
WAP	32.29	21.32	33.43	32.02	19.60	-0.61	-0.14	-0.40	-0.46
LEA	27.37	2.98	21.08	22.27	18.15	-1.17	-0.69	-0.71	-0.92
LUP	8.58	10.88	5.69	15.29	10.48	-1.83	-0.79	-0.44	-0.70
P_C	8.93	16.29	5.03	11.84	7.19	-1.11	-0.64	-0.49	-0.62
MNM	5.66	6.77	2.16	4.43	9.91	-2.21	-0.57	-0.53	-0.82
FMM	8.22	8.27	6.18	7.80	7.97	-2.26	-0.75	-0.48	-0.63
OME	6.55	17.91	5.89	13.74	7.03	-1.16	-1.02	-0.59	-0.70
ELE	-3.18	9.02	4.73	3.42	2.28	-0.89	-0.79	-0.51	-0.61
MPO	18.03	22.37	5.76	12.47	15.18	-1.13	-0.95	-0.44	-0.77
OMF	10.10	10.62	5.92	17.40	10.35	-1.87	-0.65	-0.59	-0.82
EGW	6.24	-0.24	5.13	15.66	6.87	-2.26	-0.39	-0.32	-0.50
CNS	6.65	0.70	3.85	11.57	8.33	-1.38	-1.12	-1.02	-1.17
SERV	4.51	-0.01	3.26	7.31	3.58	-1.62	-0.69	-0.51	-0.71
TOTAL	6.01	12.77	7.85	11.55	7.35	-1.43	-0.79	-0.52	-0.73

Source: Author's simulation

Conclusion:

The forgoing analysis shows that the development of the formation of regional economic integration embraces a remarkable economic momentum within members. This economic momentum is the result of trade liberalization and the flow of goods, thereby bilateral economic integration between FTA members further strengthened by economic factors. These developments lead to the following argument: the formation of regional integration within FTA arrangement is inclined to stress the importance of economic enmeshment in response to economic globalization and to take the idea of developing economic security mechanism as a result of single market.

However, E1 and E3 of hypothetical FTA assumptions in this paper are excluding the participation of Taiwan reflected "one China policy" in international politics. It evidenced that Taiwan suffers negative economic effects on GDP, terms of trade and welfare. However, E2 and E3 assume that Taiwan joins ASEAN plus model, then we find that both ASEAN and Taiwan enjoy positive economic benefits in production and trade. In the case of ASEAN, if Taiwan may join the formation of East Asian FTA arrangement, then it will increase its performance in the sectors of agriculture, beverage and tobacco, textile, petroleum and chemical, coil and minerals, machinery and equipment, and auto parts. The result may improve economic performance and increase welfare of people in ASEAN.

The conclusion this paper indicates that E1 and E3 scenarios carries negative economic impacts toward Taiwan. Consequently, it raises a question that Taiwan has to find all

possible approaches to balance possible challenges from being excluded by regional arrangement. E2 and E4 scenarios could be the answer for this question. Nevertheless, the best recipe for Taiwan might implement an open and liberal business environment within it for the purpose of fostering the industrial competitiveness toward global market.