

Free Trade in East Asia :

A Computer Simulation Analysis by Using GTAP model

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ABSTRACT

This paper analyzes the economic impact of trade liberalization in East Asia by using GTAP model. The GTAP model is a multi-regional, computable general equilibrium model accompanied with the database of world economy. Using the latest version of GTAP model, we will give computer simulations on the effects of FTAs in East Asia. We first make a basic scenario to find out the effects of the removal of import tariffs and non-tariff barriers on all the commodities within NAFTA and AFTA. Then we proceed to four different scenarios. This paper evaluates the economic effects of trade liberalization not only on East Asian economies as a whole (ASEAN plus 3 FTA) but also on the subsets of these East Asian economies (three patterns of ASEAN plus 1 FTAs). The simulation results show that trade liberalization in East Asia improves the welfare for ASEAN members as well as for China, Japan and Korea. The more favorable results are found for member countries under ASEAN plus 3 FTA than ASEAN plus 1 FTAs. We can conclude that the removal of trade barriers among East Asian countries could encourage trade diversion, especially with countries outside the region. The effects of the FTAs on terms of trade and outputs are different between the member countries. These effects depend on their comparative advantage, initial economic size and the rate of protection on trade.

Key words : Free Trade Agreement, Trade liberalization, East Asia, GTAP model, removing trade barriers among region(s)

Introduction

Regional Trade Agreements (RTAs) has been the important subject of economic analysis. Today, both theoretical and empirical studies on this topic have been stimulated by the current revival of regionalism. The world economy has accelerated

1) I would like to express my gratitude to my supervisor, Professor Akira Takamasu for his guidance, suggestions and support while drafting this paper. I am also very grateful to Professor Minoru Kiryu for his suggestions.

the proliferation of RTAs²⁾ as a global trend. By July 2005, a total of 330 RTAs had been notified to the WTO (and its predecessor, GATT). Of these: 206 were notified after the WTO was created in January 1995; 180 are currently in force; many other RTAs are believed to be operational although not yet notified³⁾.

Economic convergence in East Asia started mainly from East Asian Miracle based on increased inter-dependence through trade and investment between East Asian economies, without much institutional integration. The growth rate of Asian economy throughout the 1990s proved the fastest of all geographical regions. The effect of the 1997-1998 Asian financial crises revealed the high degree of interdependence and interconnectivity among Asian economies, as these Asian nations too lately recognize the overwhelming impact of globalization.

Since the end of 1990s, there has been a new tide of considerations for FTAs in East Asia⁴⁾. East Asian countries have been paying more attention to the concepts of establishing regional trade agreements like “ASEAN plus 3” as well as bilateral trade arrangements. To date, a number of bilateral trade arrangements involving East Asian countries have been concluded and are being negotiated. This paper attempts to study the economic impacts of East Asian Free Trade Area by using GTAP model. All experiments and some data in this paper are based on GTAP 6 database which is constructed by combining the input-output tables and 2001 macroeconomic data. East Asian FTAs are expected to make potential impacts on trade of East Asian economies by removing tariffs and non-tariff barriers on trade.

The structure of this paper consists of 5 sections. Section 2 examines the current pattern of East Asian Trade and section 3 studies the recent development of East Asian FTAs. Section 4 examines the impacts of East Asian FTAs based on the computer simulation analysis with GTAP model and discusses the results of the simulation.

2) A Regional Trade Agreement (RTA) is a trade agreement to remove tariffs and non-tariff barriers on trade between two or more nations within a certain region.

3) See the WTO website, http://www.wto.org/english/thewto_e/whatis_e/tif_e/bey1_e.htm

4) The term “East Asia” here refers to “ASEAN plus 3” comprising China, Japan, Korea and the ten ASEAN economies. ASEAN countries consist of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. China, here, refer to China and Hong Kong.

Finally in section 6, some conclusions are presented.

2. The current pattern of East Asian Trade

2.1 Current status of Intra- regional trade in East Asia

East Asian economies have been one of the world's most dynamic and fastest growing regions. East Asia also saw a rapid growth in its trade in 1990s. From 1990 to 2004, East Asia's overall exports and imports increased 3.3 and 3.4 times respectively. Comparing to world trade, those figures which increased 2.5 times in the same period, are remarkable. Share of East Asia in world exports and imports also increased from 18.4 % and 16.7 % in 1990 to 24.5% and 21.7% in 2004⁵⁾. De facto economic integration through trade and investment has been a major driving force in East Asia's economic growth and economic development over the past three decades. Increased trade integration within East Asia has been closely related to the changes in industrial organization and the increase of its shares in world productions.

Table 2.1 shows the condition of intra-regional trade in East Asia. From 1990 to 2005, Intra-regional trade in the region expanded almost 6 fold. Fast growth of trade has also been associated with intra-regional trade shares. In 2005, intra-regional trade among ASEAN plus 3 was about 39.16 % of total exports, up from just 29.14% in 1990. Intra-regional trade share is the percentage of intra-regional trade to total trade of the region, calculated using exports data. A higher share indicates a higher degree of dependency on regional trade⁶⁾.

Intra-regional trade intensity index is the ratio of intra-regional trade share to the

5) These figures are calculated from data of World Bank, *World Development Indicators 2005*.

6) Intra-regional trade share is the percentage of intra-regional trade to total trade of the region, calculated by using exports data. It is calculated as:

$$\frac{X_{ii}}{\{(X_{iw} + X_{wi})/2\}}$$

where X_{ii} is exports of region i to region i , X_{iw} is exports of region i to the world, and X_{wi} is exports of the rest of the world to region i . A higher share indicates a higher degree of dependency on regional trade. (ADB, Asia Regional Integration Center, <http://aric.adb.org/index.php>)

Table 2.1 Intra Regional Trade condition in East Asia, 1990-2005

Indicator	1990	1995	2000	2003	2005
Intra-regional Trade Intensity Index	1.94	1.96	1.99	2.08	1.97
Intra-regional Trade Share, in percentage	29.41	37.56	37.33	39.39	39.16
Intra-regional Total Trade, in million USD	311703	746324	920915	1163510	1686770

Sources: ADB, Asia Regional Integration Center <http://aric.adb.org/index.php>

share of regional trade to world trade, calculated by using exports data⁷⁾. An index of more than one indicates that trade flow within the region is larger than expected, given the importance of the region in world trade. The table confirms the importance of the East Asian trade in world trade as the index was higher than unity between 1990 and 2005.

Table 2.2 shows the trade status of East Asia, EU and NAFTA in 2005. Although the intra-regional trade share in East Asia increases gradually, it is still lower than the comparable shares in North American Free Trade Agreement (NAFTA), and the European Union (EU).

Table 2.2 Trade status for three of major economic Blocs (2005) (billion dollars)

	Total Exports	Total Imports	Total Trade	Intra-region Trade to Total Trade (%)
ASEAN+3	2586	2330	4916	39.2
EU 25	4001	4135	8136	65.7
NAFTA	1477	2268	3745	44.0

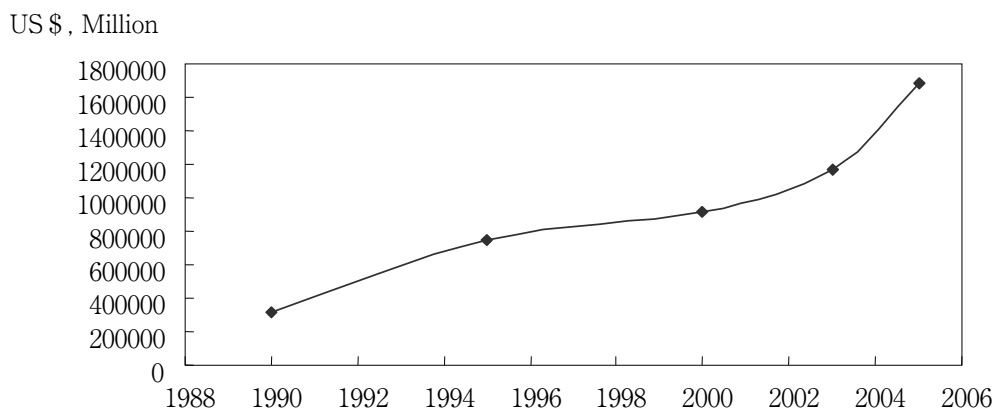
Sources: World Bank, *International Trade Statistics 2006*, ADB, <http://aric.adb.org/index.php>

7) Intra-regional trade intensity index is the ratio of intra-regional trade share to the share of world trade with the region, calculated using exports data. It is computed as:

$$\frac{[X_{ii}/\{(X_{iw} + X_{wi})/2\}]}{[\{(X_{iw} + X_{wi})/2\}/X_{ww}]}$$

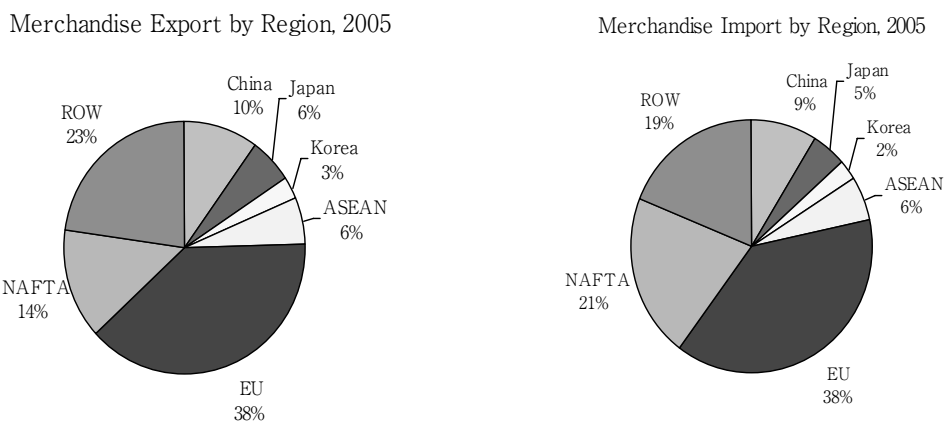
where X_{ii} is exports of region i to region i ; X_{iw} is exports of region i to the world, X_{wi} is exports of the rest of the world to region i , and X_{ww} is total world exports. It determines whether trade within the region is greater or smaller than should be expected on the basis of the region's importance in world trade. An index of more than one indicates that trade flow within the region is larger than expected, given the importance of the region in world trade. (ADB, Asia Regional Integration Center, <http://aric.adb.org/index.php>)

Figure 2.1 Intra -Regional Total Trade in East Asia, million USD



Sources: ADB, <http://aric.adb.org/index.php>

Figure 2.2 Total Merchandise Export and Import Share by Region, 2005



Sources: WTO, *International Trade statistics 2006*.

2.2. Trade pattern on East Asian Economies

Table 2.3 shows export compositions of East Asian economies calculated from GTAP data base. The share of machinery and electronic equipment products in total export is the largest in all East Asian members except some ASEAN countries (the rest of ASEAN)⁸⁾; 27.3% in China, 46.9% in Japan, 39.8% in Korea and 47.1% in ASEAN 5⁹⁾. The rest of ASEAN countries hold the higher share of mineral product and textile, and apparel in total export, ranging from 21% to 21.1%. Indeed, agricultural export share of

8) The rest of ASEAN refers to Brunei, Cambodia, Laos, Myanmar, and Vietnam.

9) ASEAN 5 refers to Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Table 2.3 Export Compositions of East Asian Economies at World price

Sector	China	Japan	Korea	ASEAN5	ROASEAN
Food and Agriculture	3.4	0.8	1.4	7.1	15.5
Forestry and Fishing	0.1	0	0.1	0.4	1.7
Mineral	2.8	1.6	0.9	4.8	21.1
Textile and apparel	14.0	2.1	9.5	5.4	21.4
Chemical	5.2	9.2	10.2	7.3	2.4
Metal	4.1	6.0	6.8	2.8	1.0
Vehicles	1.8	21.6	14.3	1.6	0.8
Machinery and Electronic equipment	27.3	46.9	39.8	47.1	5.5
Other manufacturing	19.9	2.9	6.8	9.4	18.0
Services	20.5	8.8	10.0	14.2	13.1
Total	100	100	100	100	100

Sources: GTAP Data Set

Table 2.4 Import Compositions of East Asian Economies at Market Price

Sector	China	Japan	Korea	ASEAN5	ROASEAN
Food and Agriculture	4.2	0.8	1.6	8.5	16.7
Forestry and Fishing	0.2	0	0.1	0.4	1.8
Mineral	3.1	1.8	1.0	5.1	20.5
Textile and apparel	16.0	2.4	10.6	5.9	21.4
Chemical	5.3	9.5	10.7	7.6	2.7
Metal	4.1	6.3	6.9	2.8	0.9
Vehicles	1.8	22.1	14.6	1.7	0.8
Machinery and Electronic equipment	26.2	46.1	38.4	45.0	5.2
Other manufacturing	20.5	2.9	7.0	9.8	18.5
Services	18.7	8.1	9.1	13.1	11.6
Total	100	100	100	100	100

Sources: GTAP Data Set

those countries is also high; 15.5% in total export. Japan and Korea have larger share in export of vehicles product. Other manufacturing product export shares of China and the rest of ASEAN are 19.9% and 18% respectively. China, ASEAN 5 and the rest of ASEAN record fairly large share in service sector export in their overall exports.

Turning to import composition of East Asian economies, the share of machinery and electronic equipment in total import is highest in China, Japan, Korea and ASEAN 5, similar to the pattern found in export composition. We find that both of the most important export and import items are machinery and electronic equipment products in many East Asian economies. These patterns indicate the importance of intra-industry trade in machinery and electronic equipment products in East Asia. But in the rest of

ASEAN (Brunei and CLMV countries), we can find that the mineral and textile and apparel products are their major export and import items. Trade patterns in East Asian economies have been changed by the increased importance of intra-industry trade and the emergence of production networks¹⁰⁾.

2.3. Tariff Barriers in East Asian economies

In this section, the tariff barrier for East Asian economies is also examined by using the standard GTAP data set. The GTAP database is used as benchmark data for the simulations. Table 2.5 shows the percentage of ad valorem import tariff rates applied by each region. Viewing the data, we can notice that the data emphasize different protectionist policies in a certain sector or region. East Asian countries have high levels of import protection for agricultural products, 132.6% in China, 166.5% in Japan, 409.6% in Korea, 112.1% in ASEAN 5, 188.4 % in the rest of ASEAN (Brunei and CLMV countries). China's tariff rates are relatively high in textile and apparel (132.5%), vehicle (121.1%) and Chemical product (132.5%). The rest of ASEAN also imposed high tariff rate in textile and apparel (205.6%), vehicle (286.3%) and other manufacture product (103.1%).

Table 2.5 Percentage of ad valorem import tariff rates applied by each country

	China	Japan	Korea	ASEAN 5	ROASEAN
Food and Agriculture	132.6	166.5	409.6	112.1	188.4
Forestry and Fishing	24.8	18.4	54.0	20.4	26.7
Mineral	44.6	3.3	33.5	38.7	74.4
Textile and apparel	114.0	58.1	67.4	61.2	205.6
Chemical	132.5	7.3	42.5	39.7	55.0
Metal	43.0	3.6	26.6	42.5	37.4
Vehicles	121.1	0	29.9	95.1	286.3
Machinery and Electrical	69.1	0.3	24.0	19.0	65.1
Other Machinery equipment	51.1	22.5	43.8	35.3	103.1
Services	0	0	0	0	0

Sources: GTAP Data Base

10) Most of various studies explained the evidence of the increased significance of intra-industrial trade in East Asia. For detailed discussions, see Ando and Kimura (2005), Fukao, Ishido and Ito (2003), Urata and Kiyota, (2003).

Table 2.6 Bilateral Tariff Rates by Destination (%)

	China	Japan	Korea	ASEAN 5	RO ASEAN	NAFTA	EU	ROW	Total
China	14.4	39.5	213.6	60.7	156.9	37.5	42.9	107.5	673.0
Japan	112.3	0.0	85.8	78.0	136.7	28.9	38.4	68.8	548.8
Korea	134.5	36.0	0.0	75.1	155.8	39.7	49.3	110.5	601.0
ASEAN 5	76.9	34.6	56.4	45.7	123.7	29.7	38.0	116.6	521.5
ROASEAN	120.9	26.2	52.4	51.0	121.0	51.3	30.6	89.4	542.7
NAFTA	93.3	54.0	130.5	45.9	112.7	5.1	29.5	92.7	563.7
EU	87.3	52.4	86.2	61.8	109.4	34.4	0.0	70.3	501.9
ROW	93.2	37.2	106.5	45.8	125.9	27.3	19.3	66.2	521.6
Total	732.8	279.9	731.4	464.1	1042.0	254.0	248.0	722.0	4474.1

Sources: GTAP Data Base

Table 2.6 represents percentage of Bilateral Tariff Rates by Destination. Each row in these tables refers to particular sources (exporter), while the columns refer to destination (importers).

Table 2.7 shows the bilateral tariffs for major trading sectors in East Asia (GTAP does not have protection data for the service sectors). The top entry in each row of table 2.7 represents the import tariff on agricultural produces. We may notice that the tariff equivalents on food imports are high, especially in Korea, which imposes 155% on food imports from China. In the manufacturing sector, average level of protection rate of China is high on textile and apparel, vehicles and chemical exports from Japan and Korea. China also imposes high rate on chemical exports from the rest of ASEAN (Brunei and CLMV countries). The average import tariff rates of the rest of ASEAN (Brunei and CLMV countries) on textile and apparel and vehicles are also high. But as in the manufacturing sector, Japan and Korea are less protective than China and ASEAN.

Table 2.7 Bilateral Tariff rates for the chief commodities by region

From/To		China	Japan	Korea	ASEAN 5	RO ASEAN
China	Food and Agriculture	0.8	21.7	155.3	12.7	38.4
	Mineral	0.6	0	3.0	6.0	12.4
	Textile and apparel	5.7	9.4	11.0	9.1	16.9
	Vehicles	0	0	6.9	11.3	49.6
	Machinery and Electronic	1.9	0	4.0	2.7	7.7
	Chemical	3.6	0.2	7.1	5.6	3.9
	Metal	1.2	0.3	4.5	4.7	3.9

Japan	Food and Agriculture	11.0	0	23.9	13.6	16.6
	Mineral	9.7	0	7.6	6.1	7.4
	Textile and wearing apparel	20.8	0	8.9	8.8	35.3
	Vehicles	27.5	0	7.4	21.3	46.2
	Machinery and Electronic	9.8	0	4.3	1.8	5.2
	Chemical	10.9	0	6.9	6.8	6.2
	Metal	7.0	0	3.9	9.0	3.4
Korea	Food and Agriculture	13.7	12.4	0	21.9	19.9
	Mineral	12.3	1.4	0	8.2	7.4
	Textile and apparel	18.6	9.5	0	9.8	26.8
	Vehicles	37.6	0	0	15.4	60.4
	Machinery and Electronic	10.1	0.1	0	1.8	11.8
	Chemical	11.4	2.5	0	6.1	5.9
	Metal	8.0	0.9	0	7.1	6.8
ASEAN 5	Food and Agriculture	10.1	23.7	21.9	13.2	37.3
	Mineral	6.1	0	2.9	3.1	12.1
	Textile and apparel	14.0	6.4	8.5	5.3	11.4
	Vehicles	7.8	0	4.3	9.8	31.9
	Machinery and Electronic	7.4	0	1.4	1.2	9.6
	Chemical	19.6	0.3	5.2	4.7	6.1
	Metal	4.7	0.1	3.9	4.0	5.3
ROASEAN	Food and Agriculture	15.5	10.8	16.6	16.2	18.3
	Mineral	0.1	0	3.8	0.2	2.7
	Textile and apparel	13.4	8.5	11.4	1.5	32.8
	Vehicles	12.1	0	0.2	9.1	25.3
	Machinery and Electronic	11.6	0	4.4	7.2	9.1
	Chemical	57.4	0.9	3.2	3.1	19.3
	Metal	4.2	0	2.8	3.6	4.8

Sources: GTAP Data Base

3. The recent development of East Asian FTAs

Economic convergence in East Asia started mainly from East Asian Miracle based on increased inter-dependence through trade and investment between East Asian economies, without much institutional integration. Developing East Asian economies embarked on liberalization of trade regime as a part of more comprehensive structural reform programs. The liberalization of trade led to the expansion of exports because it shifted the incentives from import-substituting production to export oriented production¹¹⁾.

11) Most of East Asian countries have been extremely successful in adopting export-oriented policies to stimulate their economic growth and industrial development. See Urata and Kiyota, (2003), Chow, Kellman and Mitchell (1993).

Institutional integration in Asia started with the creation of the Association of South East Asia Nation (ASEAN) in 1967, and later with Asia-Pacific Economic Cooperation (APEC) in 1989. In 1967, ASEAN was formed with an agreement to promote regional cooperation signed by five countries: Indonesia, Malaysia, the Philippines, Singapore and Thailand, and later joined by Brunei Darussalam in 1984. One of the major achievements of ASEAN is the ASEAN Free Trade Area (AFTA) agreement which was signed by the members of ASEAN countries in 1992. AFTA is laid out as a comprehensive program of regional tariff reduction. The stated objective of AFTA is to increase ASEAN's competitive edge as a production based gear for the rest of the world. ASEAN has expanded coverage of ASEAN Free Trade Area (AFTA), expedited the liberalization process, and has embarked on deeper regional economic cooperation.

ASEAN was with full 10 member countries when Vietnam, Laos, Myanmar, and Cambodia joined the association in 1995, 1997 and 1999 respectively. ASEAN governments aim to push regional trade liberalization as a step towards global free trade. In this sense regional integration through ASEAN appears to be consistent with global free trade, thus making it an interesting regional integration framework among developing counties (Chirathivat (1996), Ariff (2001)).

The Framework Agreement on Enhancing Economic Cooperation and the Agreement on the Common Effective Preferential Tariff (CEPT) focused specifically on the principles and procedures for establishing AFTA. The foundational agreements stipulated that tariffs on intra-ASEAN trade in manufactured goods including capital goods and processed agricultural products would be lowered between 0 and 5 percent within fifteen years starting from January 1993. Raw materials, unprocessed agricultural products and services were not covered in the original agreements. An ASEAN content of at least 40 per cent was required for products to qualify for preferential tariffs.

In 1994 and 1995, economic ministers meeting at both council and ministerial levels substantially modified the AFTA program. The CEPT was re-scheduled to reduce to 0-5% by 2002/2003 instead of 2008. (2006 for Vietnam, 2008 for Laos and Myanmar, and 2010 for Cambodia) AFTA's scope was expanded as unprocessed agricultural products were brought under the CEPT mechanisms. So all manufactured and agricultural products (processed and unprocessed) are included in the CEPT agreement, which is

the key instrument for the implementation of AFTA. The CEPT scheme also includes a provision for elimination of the Quantity Restrictions (QR), Non-Tariff Barriers (NTBs). Some aspects of trade facilitation, notably harmonizing customs nomenclature and valuation systems among the ASEAN countries were also expected to contribute to reducing NTBs. In 1999, ASEAN declared to phase timeframe of elimination intra regional tariff for six ASEAN economies; Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand, by 2010 and the remaining for countries; Cambodia, Laos, Myanmar and Vietnam; by 2015.

Until the mid 1990s, the move towards Free Trade Agreements in East Asian economies had not developed. While Southeast Asia was fully covered by AFTA, Northeast Asia on the other hand was an “empty-box” in the regional map of Preferential Trade Agreements (PTAs), (Scollay (2005)). Japan and Korea were reluctant to engage in Free Trade Agreement in favor of supporting for the non-discrimination principle preserved by GATT Article 1. The initiative of East Asian regional arrangement or the concepts of East Asian Community are proposed by former Malaysian Prime Minister Mahathir in the beginning of 1990s. However, there was a strong objection to the proposal for East Asian Economic Grouping (EAEG)¹²⁾ by the United States.

The financial crisis of 1997-98 has awakened East Asia for a closer economic cooperation to promote sustainable growth by seizing the East Asia's large market potential. ASEAN plus 3 cooperation was launched in December 1997 with convening the informal ASEAN summit among ASEAN member countries and their counterparts from Northeast Asia, namely China, Japan and Republic of Korea (ROK) at the sidelines of the Second ASEAN Summit in Malaysia. The process of the formation of ASEAN plus 3 was institutionalized in 1999 and intended to strengthen and deepen the cooperation in East Asia. An East Asia Vision Group was given the task of developing the concept of “ASEAN plus 3 FTA” with the long-term objective and the main vehicle for the eventual establishment of an East Asian Community. However, more recently, trade agreements between ASEAN and each Northeast Asian countries started in the form of a bilateral FTA and “ASEAN plus one”.

12) EAEG later became known as an East Asian Economic Caucus (EAEC).

China has been actively pursuing FTAs with East Asian countries. In November 2002, ASEAN member countries and China signed the Framework Agreement on Comprehensive Economic Co-operation, which provides for an ASEAN-China Free Trade Area (ACFTA) by the year 2010 for ASEAN 6 and by 2015 for the newer ASEAN Member Countries. The initial ASEAN-China milestone was the Early Harvest Program (EHP), which has been in effect since January 1, 2004. In November 2004, at the 10th ASEAN Summit in Vientiane, Lao PDR, the Economic Ministers of ASEAN and China signed the Agreement on Trade in Goods (TIG) of the Framework Agreement on Comprehensive Economic Cooperation between ASEAN and China. It can be seen as an expansion to cover industrial and consumer products. China also concluded FTAs with Chile, Thailand and Pakistan. It is now negotiating FTAs with New Zealand, Australia, Iceland, Singapore and South Africa.

Until the mid 1990s, Japan ignored the regional trade agreements. However Japan changed its trade policies to include FTAs with its trading partners. Japan has already concluded FTAs with Malaysia, Mexico, Singapore and the Philippines (Sign). Japan and ASEAN countries signed the Joint Declaration at the Japan-ASEAN Summit on Nov. 5, 2002. A framework for the realization of the Comprehensive Economic Partnership was signed at the Japan-ASEAN Summit held in Bali in October, 2003 by the leaders. ASEAN and Japan have agreed to commence the negotiation process in 2005 to include elements of a possible free trade area. ASEAN and Japan commenced negotiations on the ASEAN Japan Comprehensive Economic Partnership (AJCEP) Agreement in April 2005. Japan is currently under official negotiation for FTAs with Korea, Thailand, Indonesia, Brunei, Chile, and Vietnam.

Korea started an FTA negotiation with Chile in 1998, and reached a conclusion in 2002. Korea has also concluded FTAs with European Free Trade Association¹³⁾ and Singapore. Korea has been negotiating FTAs with a number of countries; India, Japan, Mexico, Canada and the US. The leaders of the Association of Southeast Asian Nations (ASEAN) and the Republic of Korea (Korea) expressed a commitment to develop a comprehensive partnership at the ASEAN-Korea Summit on 8 October 2003, with the possibility of establishing a free trade agreement (FTA). In a joint declaration in

13) A group of European countries are Switzerland, Norway, Iceland, and Liechtenstein.

November 2004, the leaders agreed on the recommendations of an expert group to the establishment of the ASEAN-Korea Free Trade Area (AKFTA). In May 16, 2006, ASEAN-Korea (FTA), the Trade in Good (TIG) Agreement, was signed by Korea and nine of ASEAN members¹⁴⁾. But in this FTA agreement, Korea was able to exempt 45 highly sensitive agricultural and marine products (rice, beef, poultry, garlic, onion, red pepper, most fruits, and certain frozen and live fish items etc) from liberalization.

ASEAN region expanded its external relationship with the objective of establishing linkages with other countries and regional groups. In addition to the proposed arrangements with China, Japan and Korea, agreements of ASEAN-India regional trade and investment area and ASEAN-Australia and New Zealand Free Trade Area are also being negotiated. ASEAN continues to develop cooperative relations with its dialogue partners, namely, Canada, the European Union, the Russian Federation, the United States of America, and the United Nations Development Program.

A Northeast Asian Free Trade Area consisting of China, Japan and Korea is also being studied. Among the individual members of ASEAN, Singapore, the most trade-reliant ASEAN member, has already signed FTAs with a number of countries including New Zealand, Japan, Australia, the United States, Jordan, Korea and India. Singapore is currently negotiating for similar bilateral FTAs with China, Canada, Pakistan and Egypt. Thailand is also one of the leading proponents of bilateral FTAs with Lao, China, Australia, and New Zealand. It has also negotiated similar FTA deals with the India, Chile, Japan, USA, Peru and Bahrain. Indonesia, the Philippines and Malaysia are also exploring the possibilities of FTAs with countries outside ASEAN.

Thus, most East Asian countries have been included in one or more bilateral or sub-regional FTAs. The proliferation of bilateral regional trade agreements in Asia reflects countries' strategic and political interests as well as their commercial interests in institutionalizing market-driven integration process. (Asian Development Outlook 2006)

14) Thailand will sign as soon as Thailand and Korea have completed their respective domestic procedures.

Table 3.1 FTA Status by Region/ country, 2006, December

Country	Proposed	Under Negotiation		Concluded		Total
		Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation	
Brunei	3	2	2	1	3	11
Cambodia	2	2	1	1	2	8
China	7	3	3	1	6	20
Indonesia	5	3	2	2	2	14
Japan	6	1	7	1	3	18
Korea	10	0	5	1	4	20
Lao PDR	2	2	1	1	4	10
Malaysia	5	3	5	2	3	18
Myanmar	2	3	1	1	2	9
Philippines	4	2	1	2	2	11
Singapore	5	2	9	1	12	29
Thailand	6	6	4	1	6	23
Viet Nam	2	2	2	1	2	9

Notes:

1. Proposed-Parties are considering a free trade agreement, establishing joint study groups or joint task force, and conducting feasibility studies to determine the desirability of entering into an FTA.
2. (a) Framework Agreements Signed/Under Negotiation-parties initially negotiate the contents of a framework agreement (FA), which serves as a frame work for future negotiations.
2. (b) Under Negotiation- Parties begin negotiations without a framework agreement (FA).
3. (a) Signed- Parties sign the agreement after negotiations have been completed. Some FTAs would require egislative or executive ratification.
3. (b) Under Implementation- when the provisions of an FTA become effective, e.g. when tariff cuts begin.

Sources: ADB

Table 3.2 Regional Trade Agreements Involving East Asian Countries

Proposed	Under Negotiation		Signed	Concluded
	Framework Agreement Signed/Under Negotiation	Under Negotiation		
1. ASEAN-EU Free Trade Area	1. ASEAN-India Regional Trade and Investment Area	1. ASEAN-Australia and New Zealand Free Trade Area	1. ASEAN-Korea Free Trade Area	1. ASEAN Free Trade Area
2. East Asia Free Trade Area	2. ASEAN-Japan Comprehensive Economic Partnership	2. Japan-Brunei Free Trade Area	2. China-Pakistan Free Trade Agreement	2. ASEAN-CHINA Free Trade Area
3. United State-Brunei Free Trade Area	3. New Zealand- China Free Trade Agreement	3. Chin-Gulf Cooperation Council FTA	3. Preferential Tariff Arrangement-Group of Eight Developing Countries	3. Trans-Pacific Strategic Economic Agreement
4. China-India Regional Trading Arrangement	4. China-Australia FTA	4. China-Singapore Free Trade Agreement	4. Japan-Philippines EPA	4. Asia-Pacific Trade Agreement
5. China-Japan-Korea FTA	5. China-Iceland FTA	5. China-South African Customs Union FTA	5. Japan-Indonesia Economic Partnership Agreement (EPA)	5. China-Chile Free Trade Agreement
6. China-Korea Free Trade Agreement	6. Pakistan-Indonesia FTA	6. Japan- Chile EPA	6. China-Macao Closer Economic Partnership Arrangement	6. China-Macao Closer Economic Partnership Arrangement
7. China-Peru Free Trade Agreement	7. Trade Preferential System of the Organization of the Islamic Conference	7. Japan-Gulf Cooperation Council FTA	7. China-Thailand Free Trade Agreement	7. China-Thailand Free Trade Agreement
8. China-South Africa Free Trade Agreement	8. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)	8. Japan-Korea FTA	8. China-Hong Kong Closer Economic Partnership Arrangement	8. China-Hong Kong Closer Economic Partnership Arrangement
9. Shanghai Cooperation Organization Free Trade Agreement	9. India-Thailand Free Trade Area	9. Japan-Thailand EPA	9. Japan-Malaysia EPA	9. Japan-Malaysia EPA
10. India-Indonesia Comprehensive Economic Cooperation Arrangement	10. Thailand-Bahrain FTA	10. Japan-Vietnam FTA	10. Japan-Mexico EPA	10. Japan-Mexico EPA
11. Indonesia-European Free Trade Association FTA	11. Thailand-Peru FTA	11. India-Korea Comprehensive EPA	11. Japan-Singapore Economic Agreement for a New-Age Partnership	11. Japan-Singapore Economic Agreement for a New-Age Partnership
12. US-Indonesia FTA		12. Korea-Canada FTA	12. Korea-Chile FTA	12. Korea-Chile FTA
13. Australia-Japan FTA		13. Korea-Mexico Strategic Economic Complementation Agreement	13. Korea-European Free Trade Association FTA	13. Korea-European Free Trade Association FTA
14. Japan-Canada FTA		14. Korea-US FTA	14. Korea-Singapore FTA	14. Korea-Singapore FTA
15. Japan-India EPA		15. Malaysia-Australia FTA	15. Laos-Thailand Preferential Trading Arrangement	15. Laos-Thailand Preferential Trading Arrangement
16. Japan-Switzerland FTA		16. Malaysia-New Zealand FTA	16. US-Singapore FTA	16. US-Singapore FTA
17. Australia-Korea FTA		17. Malaysia-Pakistan FTA	17. Singapore-Panama FTA	17. Singapore-Panama FTA
18. Korea-European Union FTA		18. US-Malaysia FTA	18. Singapore-Jordan FTA	18. Singapore-Jordan FTA
19. Korea-MERCOSUR Preferential Trading Agreement (PTA)		19. Canada-Singapore FTA	19. Singapore-Australia Free Trade Agreement	19. Singapore-Australia Free Trade Agreement
20. Korea-South Africa FTA		20. Singapore FTA	20. New Zealand-Singapore Closer Economic Partnership	20. New Zealand-Singapore Closer Economic Partnership
21. Malaysia-Korea FTA		21. Singapore-Egypt FTA	21. India-Singapore Comprehensive Economic Cooperation Agreement	21. India-Singapore Comprehensive Economic Cooperation Agreement
22. New Zealand-Korea Closer Economic Partnership		22. Singapore-Mexico FTA	22. European Free Trade Association-Singapore FTA	22. European Free Trade Association-Singapore FTA
23. Korea-Thailand FTA		23. Singapore-Qatar FTA	23. Thailand-Australia FTA	23. Thailand-Australia FTA
24. Malaysia-Chile FTA		24. Thailand-European Free Trade Association FTA	24. Thailand-New Zealand Closer Economic Partnership Agreement	24. Thailand-New Zealand Closer Economic Partnership Agreement
25. Malaysia-India Comprehensive Economic cooperation Agreement		25. US-Thailand FTA		
26. Pakistan-Philippines FTA				
27. US- Philippines FTA				
28. Comprehensive Economic Partnership Agreement Between Singapore and Sri Lanka				
29. Singapore-Bahrain FTA				
30. Singapore-United Arab Emirates FTA				
31. Pakistan-Thailand FTA				
32. Thailand-Chile FTA				
33. Thailand- MERCOSUR FTA				

Sources: ADB, Asia Regional Integration Center, <http://aric.adb.org/FTAbyCountry.All.php>

4. The Impact of East Asia FTA and Changes in World Market: A Simulation Analysis.

4.1. The GTAP Model

This section investigates the economic impacts of East Asian FTAs on foreign trade by using the standard Global Trade Analysis Project (GTAP) model. The GTAP project is coordinated by the Center for Global Trade Analysis in the Department of Agricultural Economics, Purdue University. The Center for Global Trade Analysis undertakes international Computable General Equilibrium (CGE) modeling, and provides the model with data base and software.

The standard GTAP model is a multi-regional, computable general equilibrium model, with perfect competition and constant return to scale. In production side, the individual inputs demanded by the firm, both the primary factors of production and intermediate inputs, are represented by a nested constant elasticity of substitution (CES) function. Bilateral trade is handled via the Armington assumption¹⁵⁾.

The regional households in the model dispose of total regional income according to a Cobb–Douglas per capita utility function specified over the three forms of final demand: government, private, and saving expenditure. The consumer behavior in GTAP is based on the constant difference elasticity (CDE) function, which is calibrated to different income and the price elasticity of demand.

The standard GTAP model explicitly assumes international trade and transport margins, and introduces the global banking sector which intermediates between global savings and consumption. Capital accumulation is endogenously determined so that investments are allocated across regions through the global bank by equating the changes in the expected rates of return across regions. Global transportation services are another global activity in which transport margins are derived from supply and demand. Labor is assumed to move across industries but not across countries. Technical progress is exogenously determined.

15) Armington (1969) suggested that products are differentiated by the country of origin so that imperfect substitutes can have different price in different countries.

4.2. Design of Experiment

The simulations conducted in this paper utilize the GTAP 6 database whose base year is set in 2001. The data base accompanying the GTAP model is used for examining the consequences of a free trade area in East Asia. We group countries into 8 regions and industries into 10 sectors as follows.

Regions

1. ASEAN 5 (Malaysia, Indonesia, the Philippine, Singapore, Thailand)	ASEAN5
2. Rest of ASEAN (Brunei, Vietnam, Laos, Myanmar, Cambodia)	ROASEAN
3. China and Hong Kong	CHN-HKG
4. Japan	JPN
5. South Korea	KOR
6. North American Free Trade Area	NAFTA
7. European Union	EU
8. Rest of the World	ROW

Sectors

1. Food and Agricultural product
2. Forestry and Fishing
3. Mineral Product
4. Textile and wearing apparel
5. Chemical
6. Base Metal and metal article
7. Motor vehicles and Other Transport Equipment
8. Machinery and Electrical Appliances
9. Other Manufactures
10. Services

We divide the world economy into four regions; East Asia, EU, NAFTA and the rest of the world in order to explore the effects of trade policy changes. For the East Asian economies, we further divide it into five economies; China, Japan and Korea, ASEAN 5 (Malaysia, Indonesia, Philippine, Singapore, Thailand) and The Rest of ASEAN

(ROASEAN) (Brunei, Vietnam, Lao, Myanmar, Cambodia). This grouping reflects the considerations of economic structure and the volume of GDP. We combine the economies of China and Hong Kong.

All experiments were conducted with a multi-country, general equilibrium closure. The experiments involve the complete removal of ad valorem import tariffs and non-tariff barriers among East Asian economies, while each member retains its individual tariffs with non-members. Export subsidies and taxes are not altered.

4.3. The simulation Scenarios

We first conduct the Basic scenario (Scenario B) which simulates “post-NAFTA” and “post-AFTA” data set¹⁶⁾. These data constitute an update of the standard GTAP data set that results from the removal of trade barriers on the all commodities within the North America region and ASEAN region.

In addition to the basic scenario (Scenario B), we conduct four different simulations using post-AFTA and post-NAFTA data set.

Scenario 1 (ASEAN-China FTA) Import protection (both tariffs and non-tariffs barriers (NTBs)) within ASEAN and China is removed perfectly.

Scenario 2 (ASEAN-Japan FTA and ASEAN-China FTA), In this scenario, we remove tariffs and non-tariff barriers between ASEAN and Japan, and between ASEAN and China.

Scenario 3 (ASEAN-Korea FTA and ASEAN-China FTA), In this scenario, we remove tariffs and non-tariff barriers between ASEAN and Korea, and between ASEAN and China.

Scenario 4 (ASEAN plus 3 FTA) We will simulate the effects of the FTA in which China, Japan, Korea and ASEAN members remove their tariffs and non-tariff barriers between them.

4. 4. Simulation Results

When some groups of countries negotiate preferential trade agreements, their efforts represent an attempt to obtain some of the benefits of a more open economy. The

16) NAFTA-North American Free Trade Area consists of US, Canada, and Mexico and AFTA-ASEAN Free Trade Area consist of all of ASEAN member counties.

elimination of trade barriers between trading blocs lead to changes in the prices of goods and services traded in the region and corresponding changes in trade volumes. The larger market results in a lowering of costs of inputs. It is also possible to simulate investments from both domestic and foreign sources.

The consequences of the elimination of tariff barriers within East Asian region are examined in this section. The implications for East Asian's gross domestic products, sectoral productions, and household utility under the various trade liberalization scenarios are investigated.

4.4.1. Effect of GDP growth rate and welfare in equivalent variation (EV)

The GTAP simulation results in comparisons of growth of value change for GDP and the potential relative welfare effects of different FTA configuration. GDP growth rates indicate the difference of average growth rates in each scenario from that of the basic scenario. The change in economic welfare in equivalent variation (EV) measures the changes in income at constant price that occur as a result of the proposed change in trade policy. The EV measure is further decomposed into allocative efficiency, terms of trade effects, following investment and savings.

Under the East Asian trade liberalization scenarios, welfare effects on its members are positive and welfare gains are very substantial for Japan, Korea and ASEAN 5. At the same time, the results indicate negative effects on the economies of EU, NAFTA and the rest of the world of which trade was intensive with the potential members of the East Asian economies.

ASEAN economies obtain positive effects on all scenarios. However, the result indicate that the welfare gains, both growth rate of GDP and EV, are lower from ASEAN plus 3 FTA than from a China-ASEAN FTA or a Japan-ASEAN FTA or a Korea-ASEAN FTA. It is of no surprise that Northeast Asian economies, Japan and Korea, might suffer the negative effects under the ASEAN plus 1 FTA from which they are excluded. Japan and Korea may enjoy more favorable results from East Asian Trade liberalization than ASEAN plus 1 FTA.

On the other hand the result indicates that significant positive impacts on GDP growth rate and EV change are observed for Japan compared to other FTA member countries because of the large initial economic size of Japan.

Table 4.1. Estimated Effects of East Asian FTA on Growth in Real GDP and Changes in Equivalent Variation, by Country/Region

	Change in Value of GDP %				Change in EV (US\$ million)			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
China	0.15	0.00	0.07	0.14	180.88	-443.34	-180.10	816.31
Japan	-0.17	0.25	-0.20	1.46	-908.51	677.09	-1080.41	7277.34
Korea	-0.35	-0.55	0.41	1.02	-480.51	-764.42	295.97	6016.73
ASEAN5	1.39	1.75	1.49	0.79	2824.89	4404.74	3076.44	2528.16
ROASEAN	0.59	1.06	0.64	0.19	382.40	575.41	534.85	528.26
NAFTA	-0.05	-0.14	-0.06	-0.45	-578.68	-1626.61	-738.86	-3863.55
EU	-0.04	-0.12	-0.05	-0.40	-689.90	-1327.96	-797.33	-2562.58
ROW	-0.07	-0.18	-0.10	-0.63	-918.01	-2115.52	-1445.70	-5713.83

Sources: Simulation

4.4.2. Effect of Trade Reform on Volume of Total Exports

A free trade area occurs when a group of countries agree to eliminate tariffs between themselves, but maintain their own external tariffs on imports from the rest of the world. When countries establish a free trade area, they may experience the effects of trade creation and trade diversion. The removal of tariffs' barriers within the region allows the country to allocate its production resources more efficiently. A country can enjoy a positive effect on welfare by leading to a shift in production from a domestic producer whose resource cost are higher to a member producer whose resource costs are lower. On the other hand, trade diversion means that a free trade area diverts trade away from a more efficient non-member producer, towards less efficient member producers.

Table 4.2 shows the effect of trade reform on volume of total trade for each scenario. The volume change refers to the change in the quantity component, which is valued at the initial exporter market prices. The each row represents the change in the volume of total exports (valued at the exporter's market prices), relative to the base data, under the free trade agreement.

These results indicate that trade liberalization experiments have the great impact in ASEAN member countries as the volume of intra-ASEAN trade falls considerably. The volume of ASEAN countries' imports from China, Japan and Korea will increase under all scenarios. This table shows that under each scenario, the volume of exports for all member countries will increase as a result of the establishment of FTA.

The removal of restrictions on trade of the member countries can lead to the

diversion of trade from non-member countries. We can see the large trade diversion effects under trade liberalization experiment of ASEAN plus 3 (scenario 4). The EU, NAFTA and ROW regions lose export volume, relative to the basic scenario, in all ASEAN plus 3 member regions except Japan. The volume of import of these 3 regions will also lose in most of East Asian countries. And then simulation results describe that these 3 regions might decrease their total volume of export and import too, relative to the basic scenario, while total export and import among all of ASEAN plus 3 members will increase when the experiment of ASEAN plus 3 FTA is conducted.

4.4.3. Impact on Outputs, Exports and Imports

Table 4.3 gives the impacts of free trade agreement on changes in real output, exports and imports under the East Asian FTA (Scenario 4). When East Asian economies remove the tariff barriers within the regions, the effects vary between sectors. The agricultural sector will expand in ASEAN and China while Japan and Korea's agricultural sector will shrink. China, Korea and ASEAN will produce less in vehicles sector. Some production sectors seem to be sensitive to the trade liberalization scenarios. The simulation indicates that both these agriculture-expanding economies and these agriculture-shrinking economies among East Asia will increase their exports and imports of agricultural products. Positive impacts on real export for all sectors except the service sectors are observed in China and Japan. On the other hand, for Korea, ASEAN 5 and the rest of ASEAN, most sectors are expected to have positive growth in real exports. We can observe that real imports for all sectors will increase under East Asian trade linearization scenarios.

4.4.4. Effect of Preferential Trade Reform on Terms of Trade, Real GDP and Household Utility (% change)

Changes in terms of trade, real gross domestic output (GDP), and household utility for each region are presented in table 4.4. Term of trade measure the number of units of import an economy can obtain from each unit of export. Term of trade tend to worsen if the price of exports declines relative to the price of imports in a country. McDougall (1993) described that the change in the terms of trade can be divided into the contribution of world price indexes of all commodities, the contribution of regional

export price, and the contribution of regional import prices.

When the trade reform are conducted in East Asian economies, the negative changes in terms of trade arise mainly due to the deterioration of regional export price index in China, the Rest of ASEAN, EU, NAFTA and the rest of the world.

We can find that the trade liberalization for East Asian economies could promote household utility for all FTA members. China, Japan and Korea will enjoy more favorable outcomes on term of trade, GDP and household utility under the scenario of ASEAN plus 3 FTA than under the scenarios of ASEAN plus 1 FTAs. But these results suggest that East Asian Free Trade Area may not be beneficial for NAFTA, EU and the rest of the world.

The overall results point out the fact that there would be gains from trade for East Asian regional partners from FTA. China and the rest of ASEAN seem to gain less than other FTA partners of East Asian region in terms of its percentage change in GDP and term-of-trade. Japan could enjoy the effects of GDP and welfare in equivalent variation more than other members. The result indicates that East Asia economies' trade to third market could be decreased by FTA.

Table 4.2 Effect of Trade Reform on Volume of Total Export (\$ million)(evaluated at exporter market prices)

From/To		China	Japan	Korea	ASEAN 5	RO ASEAN	NAFTA	EU	ROW
China	Scenario 1	4750.3	-363.6	-177.4	7952.9	4322.8	-735.0	-694.2	-464.0
	Scenario 2	4978.9	-557.1	-100.6	6969.8	3731.4	-371.4	-445.3	-284.3
	Scenario 3	4886.4	-248.6	-280.9	7612.1	3395.8	-418.2	-493.2	-303.8
	Scenario 4	-3477.9	16189.9	20770.8	6675.6	2975.9	-4.1	-750.5	-496.4
Japan	Scenario 1	-3835.7	0	153.8	1071.9	-123.4	1086.8	613.1	614.5
	Scenario 2	-5596.2	0	-667.6	17395.9	2081.5	-3509.6	-1981.3	-2167.8
	Scenario 3	-3708.7	0	95.4	442.3	-264.0	1370.0	750.7	809.0
	Scenario 4	34530.2	0	6139.5	10930.9	1286.2	-14916.9	-8705.0	-9176.1
Korea	Scenario 1	-2228.7	206.0	0	313.1	-139.1	583.8	344.5	484.4
	Scenario 2	-2068.5	279.3	0	-489.3	-253.4	772.5	449.0	652.9
	Scenario 3	-3174.2	-321.6	0	5218.1	2749.4	-1022.3	-658.5	-953.7
	Scenario 4	20546.3	3102.2	0	2732.2	2162.4	-4240.3	-2950.6	-3694.9
ASEAN 5	Scenario 1	24369.0	-2334.6	-706.7	-2982.2	-1671.1	-4018.1	-3613.2	-3266.2
	Scenario 2	24153.2	5884.2	-729.5	-6255.3	-2147.4	-4471.9	-4254.9	-3875.2
	Scenario 3	24271.5	-2558.0	2974.3	-3921.2	-2306.4	-4140.9	-3855.0	-3519.7
	Scenario 4	16706.6	6717.8	1133.3	-5214.4	-2500.7	-2935.2	-3139.0	-2927.4
RoASEAN	Scenario 1	2440.6	-109.2	-24.3	-161.7	-0.7	-83.4	-113.9	-114.1
	Scenario 2	2362.2	888.9	-35.5	-309.0	-1.1	-42.0	-103.8	-179.0
	Scenario 3	2439.9	-76.0	457.5	-204.4	-1.0	69.0	60.4	-115.1
	Scenario 4	2095.5	681.3	185.1	-240.3	-1.2	188.5	202.1	-98.1
NAFTA	Scenario 1	-2255.6	104.2	-51.8	809.8	4.2	600.6	299.5	129.2
	Scenario 2	-2093.5	-244.0	102.3	-1877.0	15.3	2044.6	805.9	575.4
	Scenario 3	-2239.4	140.4	-192.1	334.5	-16.7	864.7	406.6	237.6
	Scenario 4	-6625.4	1052.0	-3258.4	-1693.5	-18.5	6649.3	1762.0	1404.9
EU	Scenario 1	-2823.1	-12.9	-78.1	1003.1	-25.1	265.6	483.3	60.9
	Scenario 2	-2707.9	367.7	-21.0	-836.9	-41.1	543.8	1112.5	447.8
	Scenario 3	-2820.7	-23.3	-18.9	620.6	-108.1	317.8	523.9	187.9
	Scenario 4	-9442.3	1858.0	-769	-890.7	-138.2	2307.5	3369.5	1917.4
ROW	Scenario 1	-3839.1	413.3	57.8	583.0	-172.6	639.7	766.4	624.7
	Scenario 2	-3582.9	349.1	179.8	-1620.6	-316.7	1053.6	1499.0	1261.9
	Scenario 3	-3307.5	552.1	-484.9	98.8	-419.4	688.9	947.6	883.6
	Scenario 4	-3751.2	583.5	-478	92.0	-416.9	813.0	1048.2	938.3

Sources. Simulation,

Table 4.3 Growth of Real Output, Real Export (%) and Real Import(%)

Sector	China	Japan	Korea	ASEAN 5	RO ASEAN	NAFTA	EU	ROW
Growth of Real Output (%)								
Food and Agriculture	4.80	-2.22	-13.92	2.11	0.99	-0.55	-0.23	-0.24
Forestry and Fishing	-0.10	-0.96	-4.13	0.12	0.31	-0.07	-0.05	-0.07
Mineral	-1.43	1.29	-1.95	-2.03	-1.24	0.12	-0.04	0.29
Textile and apparel	-0.99	3.60	29.34	-5.19	0.95	-0.53	-1.58	-1.49
Chemical	-4.83	0.76	5.10	6.63	35.18	-0.04	-0.18	-0.27
Metal	-2.45	0.92	-2.94	-4.59	-5.36	0.26	-0.08	0.35
Vehicles	-3.29	1.10	-2.26	-10.61	-23.56	0.17	0.14	0.41
Machinery and Electronic	-2.09	-0.41	-3.37	1.65	-5.38	0.55	0.12	0.64
Other manufacturing	-1.27	-0.60	7.72	0.15	-0.81	0.04	-0.07	0.07
services	-0.20	0.02	0.43	-0.35	0.47	-0.02	0.04	0.02
Growth of Real Exports(%)								
Food and Agriculture	126.06	11.50	189.95	10.95	4.48	-5.22	-0.97	-1.87
Forestry and Fishing	9.94	25.75	28.25	-3.19	-1.82	-0.65	-0.14	-0.13
Mineral	3.56	31.67	37.64	-1.37	-2.60	0.24	-0.25	0.35
Textile and apparel	15.03	89.67	48.43	-2.86	19.83	-2.81	-3.03	-3.26
Chemical	5.32	7.21	17.37	14.28	265.35	-0.64	-0.36	-1.52
Metal	1.56	11.01	3.80	-2.63	-9.17	0.28	-0.27	0.08
Vehicles	20.18	2.79	-2.59	-12.89	3.86	-0.13	0.16	-0.23
Machinery and Electronic	6.48	0.86	-0.97	2.00	3.26	0.78	0.06	0.48
Other manufacturing	0.73	6.04	30.06	1.53	5.78	-0.07	-0.25	0.05
services	-1.55	-3.78	-6.00	-3.65	-2.30	1.16	1.08	1.72
Growth of Real Import (%)								
Food and Agriculture	13.60	15.81	92.37	7.07	7.11	-0.54	-0.18	-0.85
Forestry and Fishing	1.70	1.23	4.42	2.08	2.39	-0.44	-0.13	-1.13
Mineral	7.10	2.30	7.50	2.72	4.64	-0.14	-0.09	-0.43
Textile and apparel	35.62	29.53	38.67	9.49	34.08	0.16	-0.23	-0.72
Chemical	17.34	5.61	13.64	5.02	7.65	-0.48	-0.21	-0.66
Metal	6.72	6.12	7.42	2.56	1.28	-0.38	-0.06	-0.49
Vehicles	21.51	6.00	10.87	7.91	69.06	-1.02	-0.26	-1.07
Machinery and Electronic	10.03	5.80	7.02	1.93	5.15	-0.87	-0.33	-0.68
Other manufacturing	6.56	7.72	10.74	3.49	11.45	-0.53	-0.17	-0.52
services	0.54	3.54	5.53	2.20	1.74	-0.46	-0.34	-0.69

Note: The growths of real outputs and exports indicate the deviation of annual average growth rates in scenario 4 from that of Basic scenario.

Table 4.4. Effect of Trade Reform on Terms of Trade, Real GDP and Household Utility (%) change)

Region	Terms of Trade				GDP Quantity Index*				Household Utility			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
China	0.06	-0.06	-0.01	-0.23	-0.01	-0.02	-0.01	0.10	0.02	-0.04	-0.02	0.07
Japan	-0.21	0.24	-0.25	1.68	0	-0.01	0	0	-0.03	0.02	-0.03	0.20
Korea	-0.25	-0.38	0.30	0.87	-0.02	-0.04	-0.05	1.09	-0.13	-0.20	0.08	1.60
ASEAN5	0.64	0.75	0.67	0.28	0.08	0.18	0.08	0.16	0.62	0.97	0.68	0.56
ROASEAN	0.23	0.29	0.01	-0.43	0.30	0.45	0.50	0.63	0.39	0.59	0.55	0.54
NAFTA	-0.04	-0.09	-0.05	-0.24	0	0	0	0	-0.01	-0.02	-0.01	-0.04
EU	-0.03	-0.04	-0.03	-0.09	0	0	0	-0.01	-0.01	-0.02	-0.01	-0.04
ROW	-0.04	-0.10	-0.07	-0.30	-0.01	-0.01	-0.01	-0.03	-0.02	-0.04	-0.03	-0.12

* The percentage in the GDP quantity index equals the equals the quantity change component of percentage change in the value of GDP.

Source.; simulation

5. Conclusion

The possible economic impacts of East Asian FTAs are investigated in this article. The results and the implications are contrary to the current trends in East Asian FTAs. We assume the extreme case of 0 tariff rates for all commodities. The results show that the formation of East Asian FTAs could have positive effects on winners and losers in the region, as well as in the rest of the world. The trade liberalization is likely to have the economic welfare benefit for each member in each scenario. East Asian economies will promote their intra-regional trade under FTAs between them that could encourage trade diversion, especially with those countries outside the East Asian region. We observe the negative effects on welfare for non-members; NAFTA, EU and the rest of the World when trade liberalization in East Asia is conducted.

It would be expected that production of protected sectors, though not much, will decline as a result of the Free Trade Agreement. We found that under East Asian's trade liberalization scenarios, exports and imports in most sectors would increase because of the shift in incentive from domestic supply to exports.

The simulation results suggest that trade liberalization in East Asia yields welfare outcomes not only for ASEAN members, but also for Northeast Asian countries. However, more favorable results are seen for East Asian economies under the liberalization scenario involving East Asian countries as a whole than under the trade

liberalization scenarios involving the subsets of these East Asian countries.

This paper examines the consequences of the elimination of trade barriers in East Asia. However, as there is some other factors which are not studied in this paper, the results may not reflect the full economic impacts of free trade agreements. For example, potential economies of scale, more competitive environments, foreign direct investment, technology transfer, regional labor mobility should be considered as the effects of trade liberalization.

Trade theories suggest that free trade is the most efficient policy, but it is also the most difficult way to achieve for the political reasons. Historical tensions and lack of mutual understandings among East Asian countries are the obstacles of East Asian FTAs. Another obstacle to East Asian FTAs is agricultural issue which is extremely important in Japan and Korea. For the ASEAN-China FTA, agricultural products are included in the "early harvest" program. But agriculture is the sensitive sector particularly for Japan and Korea. East Asian economies need to find the ways for co-existence in the area of agriculture.

The movement towards the East Asian Free Trade Agreement is still in an early stage of development. East Asian economies need to develop the steps of more comprehensive trade integration that are based on feasible frameworks designed to maximize the benefits of East Asian economies. East Asian countries need higher level of liberalization and economic cooperation in various fields. Accumulation of human capital, improved financial markets, refined competition policies, and increased capacity building of developing member countries are crucial for East Asian region to establish free trade areas.

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