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大阪産業大学大学院経済学研究科長

大阪産業大学大学院経済学研究科は、2009年3月、厳格な審査の結果、Tha Pye Nyo 氏に博士（経済学）学位の授与を決定した。博士学位の授与と『経済学研究科博士論文集』の刊行は大変嬉しいことである。

Tha Pye Nyo 氏の研究（論文題目：Economic Integration among ASEAN plus 3）は、近年、貿易政策の効果を分析するために世界的に使われるようになった「計算可能な一般均衡モデル」の一つであるGTAPモデルを使って、東アジアにおけるFTAが各国経済に与える影響を分析したものである。

Tha Pye Nyo 氏の論文構成は、次のとおりである。まず、第2章でFTAの理論的、政策的な意味を検討し、第3章で経済統合とFTA締結の現状を分析した後に、例のGTAPモデルを使って、東アジアのFTAが各国・各地域に与える影響を計量的に分析している。そして第4章では、東アジアについて予想されるFTAのパターンのうち、ASEANを中心とする4つのシナリオについて、コンピュータ・シミュレーションを行い、実質GDPの変化を推定している。次の第5章では、FTA締結にあたってもっともセンシティブな問題である農産物について、FTAによる輸出入の変化をより詳細に分析している。5つの農産物、すなわち米、野菜、果物、水産物、砂糖、油料種子について、東アジアで関税をゼロにしたとき、どのような影響があるのかについてシミュレーションされている。このようなシミュレーションは、これまで行われたことがなく、特に農産物に強いGTAPモデルの特性を生かしたものである。最後に、論文の内容がまとめられ、あらためてFTAの意義が強調されている。

この論文が、この分野の研究に大きく貢献した点として、前述のように最新のGTAPモデルを使って、もっとも可能性の高いFTAのパターンについてコンピュータ・シミュレーションを行いFTAの経済効果を推計したことである。また、第5章で行われた個別の農産物に関するシミュレーションはほとんど行われておらず、東アジアのFTAの効果を個別の農産物についてシミュレーションした分析としては、おそらく初めてのものと思われる。

GTAPによる推計は、自分ひとりで計量経済モデルを開発し、それによって推計することと比較すれば、はるかに容易であるとはいえ、その取扱いに習熟することは、それほど簡単なことではない。Tha Pye Nyo 氏が、マニュアルや関連する論文を読みこなし、GTAPモデルを使いこなせるようになったことは高く評価できる。

ところで、GTAPモデルには、多くの問題が存在する。それは、①モデルが静学的であること、②金融市場が存在しないため、為替相場や金利、インフレーションを取り扱えな

いこと。③財政政策や資本の国際間移動が存在しないこと、④データの統一性を重視するため、全体としてはデータが多少古く、関税率などのデータが不十分であること、⑤コブ＝ダグラス型効用関数を仮定していること、などである。

しかし、それでも、経済学的分析としては、FTA による数量、金額の変化の推計がもっとも重要であり、そのような意味においてこの研究は非常に優れたものの一つであると考えられる。さらに、既存の貿易の効率性と FTA との様々な議論や経済統合についての解説も立派である。

残念なことに、Tha Pye Nyo 氏は博士課程３年の途中に一時帰国した際、ミャンマー政府から再出国を認められなかったため、指導教員から十分な指導をうけることができなかったと聞いている。それだけではなく、ミャンマーという文献や情報を入手することも困難な国情のなかで、このような優れた論文が生まれたことは高く評価されてしかるべきである。

今後、ミャンマーの政治体制や経済体制において、良い意味での変化を期待するとともに、Tha Pye Nyo 氏がミャンマーを代表する経済学者に成長してくれることをも期待したい。

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Tha Pye Nyo

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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, it will be given computer simulations on the effects of FTAs in East Asia. First it is made 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 it proceeds 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. The analysis 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.

Since the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), agricultural trade liberalization has been one of the most sensitive issues in all trade negotiations. East Asian FTA might make economic sense, giving trade and investment linkages in East Asia through the involvement in global manufacturing supply chains. However, the most protected sector in the region, agricultural sector seems to be a burden of East Asian FTA. In this study, the effect of trade liberalization on agricultural sector in East Asian region is also analyzed, using GTAP model. Therefore, this second part of paper evaluates the impact of trade liberalization policy on East Asian region for selected commodity groups—rice, fruits and vegetables, fish and fish product, oilseed and sugar. Implementation of trade liberalization in East Asia is expected to lead to a structural change in regional food markets whereby food production would shift from highly protected regions to low-protected regions or non-protected regions. The results of the simulation experiments indicate that the impact on agriculture sector in East Asian countries is so high. As agricultural products remain sensitive, specific treatments on agricultural trade like prolong timetable for liberalization are required for the establishment of East Asian FTA.. Greater degree of flexibility should be allowed for a low cost transition process.

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

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Abbreviations

ADB	Asian Development Bank
ACFTA	ASEAN-China Free Trade Area
AJCEP	ASEAN Japan Comprehensive Economic Partnership
AOA	Agreement on Agriculture
APEC	Asia and Pacific Economic Corporation
ASEAN	the Association of South East Asia Nation
ASEAN plus 3	ASEAN member countries plus China, Japan and Korea
CES	constant elasticity of substitution
CGE	computable general equilibrium model
EU	European Union
FTA	Free Trade Agreement
GATT	the General Agreement on Tariffs and Trade
GDP	Gross Domestic product
GEL	General Exception List
GTAP	Global Trade Analysis Project
HS	Harmonized System
IL	Inclusion List
IMF	International Monetary Fund
KITA	Korea International Trade Association
MFN	Most Favored Nation
NAFTA	North America Free Trade Area
OECD	Organization for the Economic Cooperation and Development
PTA	Preferential Trade Agreement
RTA	Regional Trade Agreements
SITC	Standard International Trade Classification
TEL	Temporary Exclusion List
TIG	the Trade in Goods
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

Chapter 1

Introduction

International trade generally improves social welfare and stimulates economic growth. Therefore, countries together are trying to create favorable environments for thriving international trade by lowering trade barriers. In recent years, regional trade agreement has been a major feature of multilateral trading system, and the world has witnessed the increasing establishment of regional economic integration pursued not only by developed countries but also by developing countries. The increased regional integration has accelerated the pace of economic changes, and has brought with it economic adjustments. On the other hand, economic integration increases economic interdependence of member countries in a region, which attracts their attention and stimulates their interest in taking common action to prevent and alleviate economic shocks. Besides, regional trade arrangements in turn stimulate intra-regional FDI. Regional Trade Agreements (RTAs) have been the important subject of economic analysis. Today, both theoretical and empirical studies on this topic have been stimulated by current regionalism.

Since 1980s, developing East Asian economies have embarked on liberalization of trade regimes as a part of more comprehensive structural reform programs. Among the factors that contribute to the increased interest in the East Asian region include the rapid growth rate among some countries, the increased openness of trade policy, growing intra-regional trade volume and the establishing of a variety of regional trade arrangements in the region. Trade policy in East Asia has changed since the late 1990s. Institutional integration in Asia started with the creation of the Association of South East Asia Nation (ASEAN) in 1967. ASEAN was originally formed with an agreement to promote regional cooperation signed by five countries: Indonesia, Malaysia, the Philippines, Singapore and Thailand. ASEAN added Brunei in 1984, Viet Nam in 1995, Laos and Myanmar in 1997, and Cambodia in 1999.In 1992, ASEAN initiated the implementation of ASEAN Free Trade Area (AFTA). 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. Other key developments that instigated to establish East Asian Free Trade Area are the rapid development of FTAs in other part of the world, rapid trade and investment expansion among East Asian countries and uncertainty about the future of a multilateral framework.

ASEAN plus 3 cooperation was launched in December 1997 with the convening of the informal ASEAN summit among ASEAN member countries and their counterparts from East 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 with the aim of strengthening and deepening the cooperation in East Asia. The East Asia Vision Group was given the task of developing the concept of "ASEAN plus 3 FTA" with the long-term objective of the eventual establishment of an East Asian Community. 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.

More recently, trade agreements between ASEAN and each Northeast Asian countries started in the form of a bilateral FTA and "ASEAN plus one FTA". China, Japan and Korea have opted for the route of bilaterally negotiating with ASEAN. China's accession to the WTO also accelerated the pace of further regional agreements. The most significant development in this regard is the Framework Agreement on Comprehensive Economic Co-operation, which provides for an ASEAN-China Free Trade Area (ACFTA) signed by China and the ten-member Association of South-East Asian Nations (ASEAN) in 2001. In April 2005, ASEAN and Japan commenced negotiations on the ASEAN Japan Comprehensive Economic Partnership (AJCEP) Agreement as a foundation for Japan-ASEAN FTA. In May 16, 2006, with the completion of the negotiations under ASEAN-Korea Framework Agreement, ASEAN-Korea FTA was signed by Korea and ASEAN. Although it was fourth FTA for Korea, the framework agreement is only a trade in goods (TIG) agreement. Another significant proposal involves formation of a Northeast Asia Free Trade Area involving China, Japan and Korea.

East Asian countries[1] need to find an appropriate framework to establish East Asian Free Trade Area. What opportunities and challenges will such East Asian regional trading arrangements bring to economies in East Asia and other countries around the world? Who will gain? Who will lose? What are the geographical and sectoral distributions of those gains and losses? To answer those questions and better understand the possible future patterns of East Asia, this paper attempts to study the economic impact of East Asian Free Trade Area by using the Global

[1] 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 plus Hong Kong.

Trade Analysis Project (GTAP) modeling framework. All experiments and some data in this paper are based on GTAP Version 6 database, and are constructed by combining the input-output tables and 2001 macroeconomic data. The standard GTAP model is a multi-regional, computable general equilibrium model, with perfect competition and constant returns to scale. All experiments in this paper are conducted with a multi-country, general equilibrium closure. The simulation result reflects what the economy would like if the all tariff barriers in the East Asian regions were removed.

Since the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), agricultural trade liberalization has become one of the most sensitive issues. Although trade in agricultural products comprises only 8.1 % of world merchandise trade in 2005, tariffs on agricultural products remain substantially higher than those on manufactured products almost everywhere around the world. Openness of agricultural market is always sensitive issue in all trade negotiations even though agriculture took a relatively small share of Gross Domestic Product compared to manufacturing and services. Many governments typically adopt agricultural protection policies to benefit domestic agricultural producers. East Asian FTA may make economic sense, giving trade and investment linkages in East Asia, through the involvement in global manufacturing supply chains. However, the most protected sector in the region, the agricultural sector seems a burden of East Asian FTA. An open food and agricultural system would complement the restructuring of the Asian economies by removing the possibility of future distortions.

Therefore, the effect of trade liberalization in the East Asian region on the agricultural sector is also emphasized in this study. Using a static multi-region general equilibrium model, this study includes disaggregated agricultural products. The choice of commodities or sectors in this study reflects both the importance of these sectors in East Asian economies and the manageable size of the model.

To address these issues, the paper is organized into four major sections.
Chapter 2 discusses the overview of Economic Integration and Free Trade Agreements. The difference between Free Trade and Protectionism is also discussed in this chapter. It is analyzed FTA and regional integration, the role of WTO, the effects of regional integration. And then, it is reviewed the empirical studies on Trade Liberalization and Free Trade Agreements.

Chapter 3 provides a brief review of the recent trade situation in East Asian countries. Furthermore, this chapter explains a brief review of the growing enthusiasm for a regional

grouping in East Asia. A remarkable trade among East Asian region was due to their outward policies while considerably liberalizing trade in the region.

Chapter 4 presents the overview of the structure of GTAP model. This Chapter investigated the economic effects of trade liberalization in East Asian region using the GTAP data set. Specifically, the purpose of this study is to evaluate the specific economic impact of the trade liberalization among East Asian region on GDP, welfare, trade, and production of industry and agriculture. To provide the quantitative measurements, it is constructed various scenarios according to possible developments in the trade negotiation options in this chapter. The simulations throughout this study were carried out to assess the impact of the removal of tariff barriers on goods without considering the impact of trade liberalization in service sectors. Other measures, like those for investment liberalization and free movement of labor, are not explicitly taken into account. Trade protection data are derived also from the current GTAP database.

Chapter 5 explored the impact of trade liberalization in East Asian on Agricultural sector. In this Chapter, free trade agreements (FTAs) and agricultural protection in East Asia is studied. The Role of agricultural trade in East Asia is also discussed. And then, it turns to modeling analysis on agricultural sector due to trade liberalization in East Asian region. The experiments in this Chapter are primarily concerned with 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. Domestic support and export subsidies are assumed to be at the same level as the base year of the model. This chapter analyzes the impact on trade liberalization policy on East Asian region for selected commodity groups; rice, fruits and vegetables, fish and fish product, oilseed and sugar.

The study concludes with appraising the prospect for enhanced trade and economic integration when all tariff barriers have been removed.

Chapter 2
Economic integration and Free Trade Agreements

The unrestricted cross-border flow of goods, services and capital has been one of the characteristics of globalization. Although globalization has been defined in a variety of ways, a common theme is that it generates increasingly intense interactions between nation-states and societies through the flow of goods, money, people, ideas, images and information, in the process making territorial boundaries less salient(Hurrell 1995: 54). While globalization tends to de-emphasize boundaries, regionalism appears to be an attempt by state actors at re-imposing them at a different level, consequently creating a new, larger space out of smaller territorial spaces bounded in nation-states although the larger space is rarely, if ever, a new political unit or super-state (Nesadurai; 2003)

There has been a dramatic growth in the number of regional trading arrangements (RTA) around the globe. Through an RTA, a group of countries agrees to enjoy freer international economic relations among themselves. This allows the free movement of goods and services, capital, and labor within the integrated area. When countries form economic coalitions, the volumes of the international trade between these countries increase. In this situation, countries give differential treatment to their trade partners. This differentiation is usually created by the process of economic integration, where countries join together to create a larger economic union with special relationships among the members.

2.1. Free Trade and Protectionism

2.1.1. Free Trade

Ever since Adam Smith and David Ricardo pointed out the gains from trade in a systematic way, economists have described that nation may gain higher income from the improved resource allocation as the main advantage of trade. The traditional case for free trade is based on the gains from specialization and exchange. Adam Smith advocated the "obvious and simple system of natural liberty", in which individuals would be free to pursue their own interests, while the government provided the legal framework, within which commerce would take place. The theory of comparative advantage discovered by Ricardo implied that a country would gain from trade by producing and exporting the goods which have comparative advantage and importing the goods which have comparative disadvantage. Thus, a country can take advantage of importing goods even if it could produce the same goods more efficiently than other

countries. Conversely, a country would benefit from the export of some goods even if other countries could produce them more efficiently.

International trade allows creation of an integrated market that is larger than any one country's market. John Stuart Mill said that trade improves economic performance not only by allocating a country's resources to their most efficient use, but by making those resources more productive in what they are doing. The benefits of free trade appear to be substantial, although precise quantification of those benefits is sometime difficult. Free trade leads to the most efficient utilization of world resources and thus maximizes world output and welfare.

2.1.2. Protectionism

Although most economists continue to hold up free trade as a desirable policy, there is an intellectually acceptable case for deviating from free trade. The first one is concerned with national welfare gained from optimal tariffs and export taxes. The second reason is concerned with the domestic market failures. For these reasons, most governments used trade policies to pursue a sophisticated program of intervention in trade, which would probably be captured and converted into a device for redistributing income to politically influential sectors by interest groups. Trade policy in developing countries is concerned with two factors: promoting industrialization and coping with the uneven development of the domestic economy (Krugman, 2003). Governments generally use the tariff, export subsidies, import quotas, and voluntary export restraints as the instruments of trade policy

However, developing countries gain substantial benefits from adopting more open trade policies, but such policies alone do not guarantee development, when corruption, civil conflicts, and other institutional failings prevent local entrepreneurs from taking advantage of the world market(Irwin;2002). While trade restrictions and barriers in developed countries often hinder the ability of developing countries to improve their conditions, developing countries cannot blame all of their problems on foreign barriers. Such trade policies are much more extensive in the developing world than elsewhere (Irwin; 2002).

The cost and benefits of a protection may be measured using the concepts of government revenue, consumer surplus and producer surplus. Net effects of protectionism can be ambiguous as producer surplus and government revenue increase at the expense of consumer surplus.

2.2. The World Trade Organization (WTO)

The World Trade Organization, (WTO), is the primary international body to help promote free trade, by drawing up the rules of international trade. Based on the original General Agreement on Tariffs and Trade (GATT), WTO was formed in 1995 by the historic Uruguay Round of trade negotiations, replacing the makeshift GATT secretariat, although the original GATT agreement still applies. The GATT-WTO approach to trade is to use a mechanical analogy; the process of "binding". When a tariff rate is 'bound', the country imposing the tariff agrees not to raise the rate in the future. In addition to binding tariffs, the GATT-WTO system tries to prevent non-tariff interventions in trade.

The principle of WTO is concerned with non-discrimination (Article I) and the national treatment (Article III). The most favored nation (MFN) principle plays an important role in multilateral trade liberalization. Under most favored nation principle, WTO member countries have to treat products imported form different trading partners on the same basis. MFN treatment generally obliges the parties to grant each other existing and future concessions given by either party to any third party (Akiko Yanai, 2003). However, in recent years, there has been a dramatic growth of forming RTAs2 and FTAs in a global trend. The formation of free trade agreements (FTAs) and Regional trade agreements (RTAs) are allowed in Article XXIV of the GATT agreement. Regional trade agreements (RTA) are fundamentally at odds with the MFN principle underlying the GATT. Therefore, FTAs and RTAs with discriminatory trade policy are the exceptions within MFN obligation. Those FTAs, wherein members agree to move beyond their WTO commitments, could provide a demonstration effect that motivates future rounds of broader multilateral negotiations under the auspices of the WTO (Rahul Sen, 2004).

2.3. Regional Trading Arrangements and FTAs

The World Trade Organization (WTO) defines Regionalism as "actions by governments to liberalize or facilitate trade on a regional basis through detailed negotiations". Regional trading agreements (RTAs) become an instrument to foster regionalism. The growth of regional trade integration has been one of the major developments in the global economy in recent years. Since the latter half of the 1990's, it is evident that, there has been an exponential increase in the number of RTAs and FTAs in every part of the world. Up to July 2005, a total of 330 RTAs had been notified to the WTO (and its predecessor, GATT). Of these, 206 were notified after the

[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.

WTO was created in January 1995; 180 are currently in force; many other RTAs are believed to be operational although not yet notified.3

Regional trade blocs, such as the European Union or the North American Free Trade Area, are agreements to reduce trade barriers on a discriminatory basis for participant member countries in the region only. The creation of a regional trading bloc would appear to be movement toward free trade and therefore toward greater economic efficiency. Turning to the typology of RTA in force, the most common category is the free trade agreement (FTA) which accounts for 84 % of all RTA in force (Jo-Ann Crawford and Roberto V.Fiorentino, 2005).

There are several different types of economic integration. The most common integration scheme is referred to as free trade area (FTA), in which all members of the group remove tariffs on each other's products. To the extent that each country retains its own antidumping procedures, national restrictions can still influence trade among members. Also, at the same time each member retains its independence in establishing trading policies with nonmembers. Another form of economic integration is customs union, in which all member countries maintain the same restrictions on imports from nonmembers. Then, a common market, the next type, allows the free mobility of capital and labor among the member countries. A last kind step is economic union; countries agreed to common tax and expenditure policies and a jointly managed monetary policy.

Free Trade Agreements (FTA) are once again being viewed as a realistic solution to international economic problems owing to the slow progress and stagnation of the multilateral negotiations at the World Trade Organization (WTO)(Gen Yamamoto 2003).The present-day FTAs have tended to go far beyond tariff reductions by aiming at negotiations on regulations governing trade facilitation, customs co-operation, labor standards, safeguards provisions, etc., as well as market access for trade in services. However, it is not required to have all or most of these elements in order to qualify for an FTA that would be acceptable to the WTO.

A discussion paper4 states four main trends of recent RTAs. First, Countries all over the world, including those traditionally reliant on multilateral trade liberalization, are increasingly making RTAs the centerpiece of their commercial policy. Second, RTAs are becoming increasingly

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

[4] See in Jo-Ann Crawford and Roberto V.Fiorentino, 2005, "The Changing Landscape of Regional Trade Agreement", Discussion Paper No.8, World Trade Organization, Geneva, Switzerland

complex, in many cases establishing regulatory trade regimes which go beyond multilaterally agreed trade regulations. Third, Growth of reciprocal preferential agreements between developed and developing countries lead to the decrease in reliance by some developing countries on non-reciprocal systems of preferences. The emergence of preferential agreements among developing countries is also a significant South-South trading system. Fourth, RTA dynamics indicates a general pattern of expansion and consolidation, including cross-regional RTAs and regional trading blocs on a continent-wide scale.

2.4. Effects of Economic Integration

Economic integration begins with the elimination of trade barriers among member countries. Trade integration increases economic interdependence of member countries in the region, which will attract their attention and stimulate their interest in taking common action to prevent and alleviate economic shocks. Regional trade arrangements will in turn stimulate intra-regional FDI. Openness of trade is closely related to the degree of financial integration.

2.4.1. Static Effects of Economic Integration

Economic integration implies differential treatment for member countries as opposed to nonmember countries. The pattern of trade between members and nonmembers may be shifted as a result of such economic integration. Jacob Viner (1950) pointed out two static effects of economic integration such as trade creation and trade diversion. Trade creation takes place when domestic production in member countries with higher resource costs is replaced with imports from other member countries with lower resource cost. Liberalization at the regional level tends to fully employ all economic resources in the region and thus this shift of movement is presumably beneficial to welfare because it leads to greater specialization in production based on comparative advantage. Trade diversions takes place when a member country replaces imports from nonmember countries with import from members despite lower resource costs of the former. Trade diversion may reduce welfare because it shifts production from more efficient producers outside the region to less efficient producers inside the union. The welfare effect of a regional trade agreement on member countries depends on the balance between trade creation and diversion. Real resources are saved if inefficient production is cut through trade creation but are lost if imports are switched from low-cost to high-cost partner sources through trade diversion (Maurice Schiff and L. Alan Winters, 2003).

There are some conditions under which economic integration is more likely to lead to increased welfare. The higher the level of pre union tariffs and the lower the common external tariff, the

greater the probability of positive net effects will be. When the transaction cost5 among member countries are low, the formation of FTAs or RTAs will create trade among union members rather than divert trade from nonmembers to members. Thus, transaction costs including transportation costs and other costs of exchange, coupled with the existing economies of scale, are important to resource allocations and geographic location of industry across space (Krugman, 1991, Suthiphand Chirathivat, 2004). If the number of countries forming FTAs or RTAs is greater, the net positive economic effect will probably be larger.

There are also other static welfare effects resulting from the formation of FTAs or RTAs. The first one is the reduction of administrative cost resulted from elimination of government officials, border patrols and so on, for trade among member nations. The second is that the member countries will have greater bargaining power in trade negotiations after the integration.

2.4.2. Dynamic Effects of economic integration

Economic structure and performance of participating countries may bring dynamic effects of economic integration such as; more competitive environment, possible reduction of the degree of monopoly power, economic of scale to certain export goods, stimulation of greater investment in the member countries from internal and foreign sources.

When FTAs or RTAs are formed and trade barriers among member nations are eliminated, producers in each member must become more efficient to meet the competition of other producers within the integrated region. The increase in competition is likely to stimulate the development of new technology. Cost of production will decrease and consumer will benefit. Access to larger markets as a result of FTAs may allow economies of scale to be realized in certain export goods. Trade may increasingly become intra-industry trade rather than inter-industry trade.

Economic integration may stimulate investment to increase within the region by attracting the domestic sources and foreign sources trying to enlarge their markets and to meet the increased competition. The dynamic benefit of economic integration at the common market level is likely to be free movement of capital and labor within the region. The better utilization of the economic resources of the entire community may result in the increase in economic efficiency and correspondingly higher factor incomes in the integrated region.

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[5] Transaction costs involved in process of exchange—transportation, communication, bureaucratic red tape, trans-shipping because of customs and border regulation.

2.4.3. Cost of trade integration

Advocates of multilateral trade liberalization fear the losses from trade diversion which occurred from FTAs and point to the benefit of a trade system open to all countries. Economic integration is more likely to have overall beneficial effects. However, it seems logical to inquire why economic integration often has weaknesses. There seems to be two important issues in this problem. The first one is related to the distributions of benefits between member countries, and the second is the issue of national sovereignty. In addition to these, developing countries encounter other problems. The potential gains for developing countries are not always obvious because they do not depend on among themselves considerably and their trade is not very large economically. Their economies mostly produce different goods destined for the markets of industrialized countries. Their domestic demand and supply curves appear to be less elastic than those in similar markets in industrialized countries.6 But as economic integration represents only a partial movement to free trade, some economists often say that it is only of the second option.

2.4.4. Rules of Origin and Timetable for the tariff reduction

Rules of Origin are basic feature of Free Trade agreement where each participating country in an FTA agreement maintains its own tariff structure vis-à-vis nonmembers. The products imported have to be eligible for preferential treatment to prevent "trade deflection" which means transshipment of products from non-members through a member country with the lowest tariff. This indicates a need for rule of origin to be established.

Regional Trade Agreements and FTAs contain a timetable for the progressive tariff reduction. In RTAs and FTAs, member countries are allowed different tariff reduction schedule i.e. different transition periods to implement tariff reduction. Most countries negotiate longer implementation periods or exclusions for their most sensitive products (Jo-Ann Crawford and Roberto V.Fiorentino, 2005). Bilateral FTA conclusions, the increasing number of FTAs in recent years, have their own tariff reduction schedules and distinct rules of origin region.

2.5. Empirical studies on Trade Liberalization and Free Trade Agreement

Traditional trade theory pointed out the gains from trade in a systematic ways; economists have believed the higher income that results from improved resource allocation as the main advantage of trade. The traditional case for free trade is based on the gains from specialization and exchange. International trade allows creation of an integrated market that is larger than any individual country's market. Trade improves economic performance by

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[6] See in Appleyard, Dennis R and Field, Jr. Alfred J (1998)

allocating a country's resources more efficiently to industries with comparative advantages. And then, trade makes those resources more productive.

Bhagwati (1978) and Krueger (1978) attempted to examine the relationship between degree of trade liberalization and economic growth. They classified trade regimes into five phases according to their degrees of liberalization, starting with the least liberalized in the phase I in the increasing order of trade liberalization. They examined whether countries with more liberal trade regimes had higher rates of export growth. It was found that all the countries with high rate of export growth had high degrees of trade liberalization. They could also indirectly prove that a more liberal trade regime was always associated with higher real GDP growth. Therefore, they concluded that the countries with more liberal trade regimes were positively correlated with export growth, which in turn, led to be positively correlated with real GDP growth.

An important function of the WTO is to facilitate reductions of trade barriers among its members. WTO negotiated the reduction of tariff barriers during the 'rounds' of multilateral trade liberalization. Baldwin (1995) points out that further negotiations are needed to achieve greater liberalization and better international rules in such areas as trade in services, direct investment, agriculture, dumping and subsidization, safeguards and government procurement policies. He also sees a need for new international trading rules in some trade-related areas, including competition policy.

Krugman criticized bloc formations in terms of the number and the size of blocs by analyzing the effect of terms of trade. Krugman concluded that the welfare of each province7 and of the world will be maximized under the assumption of worldwide free trade. If the world is divided into 2 blocs, trade diversion is more obvious and world welfare inevitably declines. On the assumption that the world is divided into three blocs, trade diversion becomes prominent and world welfare declines to its lowest point. However, the number of blocs grows; trade creation effect increases again, and comes to dominate the trade diversion effect.

Balassa (1961) views that economic integration can contribute to the rate of growth through economies of scale, increased competition, the increase of investment and the increase of technical change. Corden (1972) also argued that the cost-reduction effect was likely to

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[7] Krugman's approach is to assume that all counties are identical and then to consider their division into two more identical blocs, consisting of a large member of small, identical units, called "provinces."

outweigh "the trade- suppression effect", thanks to the net benefits from Customs Union formation.

Taiji Furusawa and Hideo Konishi (2007) examined the formation of free trade agreements (FTAs) as a network formation game. They found that the complete FTA network is pairwise stable if all countries are symmetric, or industrial commodities are not highly substitutable form one another or predetermined external tariff rates that countries would choose are low. They also compared FTA and customs union (CU) as to which of these two regimes facilitates global trade liberalization, realizing that unlike CU, each signatory of an FTA can have another FTA without consent of other member countries.

2.6. Concluding Remarks

Economist believed that trade between countries could be mutually beneficial, just like the exchange of goods within a country, even though goods happen to cross national boundaries. Although free trade may bring beneficial effects to countries, but their gain from trade may differ depending on their capacities and the structural and social impact.

In recent years, increased global integration has accelerated the pace of economic change and has brought with it economic adjustments. How much is a country willing to enjoy free trade among integrated countries? Each member country needs to ask themselves this question and evaluate the benefits they expect to reap from integration.

Chapter 3
East Asian economies and Free Trade Agreements

Regional Trade Agreements (RTAs) have 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 the proliferation of RTAs as a global trend.

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, though 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 Asia. 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.

Income level and population in a specific region are important values representing the scale of market and the potential for production bases. As for East Asia, it has a robust population of about 2 billion and abundant natural resources. Market size is considered one of the factors in explaining FTA. It reflects not only production capacity from export perspective but also purchasing capacity from importing. A larger market with large production capacity is more likely to achieve economies of scale and to increase their exports. Therefore, the larger a trading partner's market size becomes, the greater the potentials for trade expansion from an FTA are.

Japan and Korea made remarkable success in their industrial developments. There has been not only rapid industrial growth, but also significant productivity enhancement and technological upgrading in these two countries. China is also one of the populous countries with huge market and rapid economic development. The rapid growth of the Chinese economy occurred after the reformation of the economy for past two decades. Most ASEAN countries have recorded a significant rate of economic growth since 1980s.

3.1. 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 export and import increased by 3.3 and 3.4 times respectively. Compared to world trade, which increased by 2.5 times in the same period, those figures 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 2004.8 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 3.1 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 trade.9

Table 3-1 Intra Regional Trade conditions 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

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[8]These figures are calculated from data of World Bank, *World Development Indicators 2005*.

[9] 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)

Intra-regional trade intensity index is the ratio of intra-regional trade share to the share of regional trade to world trade, calculated by using exports data.[10] An index of more than one indicates that trade flow within the region is larger than expected, revealing the importance of the region in world trade. The table highlights the importance of the East Asian trade in world trade as the index was higher than unity between 1990 and 2005.

Table 3.2 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 3-2 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	2586.3	2330.3	4916.6	39.16
EU 25	4001	4135	8136	65.7
NAFTA	1477	2268	3745	44

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

Table 3.3 below illustrates trade share of each East Asian countries within the region in 2005. It can be seen from the table that a large and growing proportion of this growing trade from the East Asian countries came from intra-regional trade. For most East Asian countries, intra-regional trade share was substantial with above 50 % of their totals. Brunei, Myanmar and Laos had the highest shares with 78.18 %, 75.30 % and 74. 58% of intra-regional trade shares respectively, followed by China with 65.8 %, Indonesia with 56.01 %, Singapore with 53.60 %

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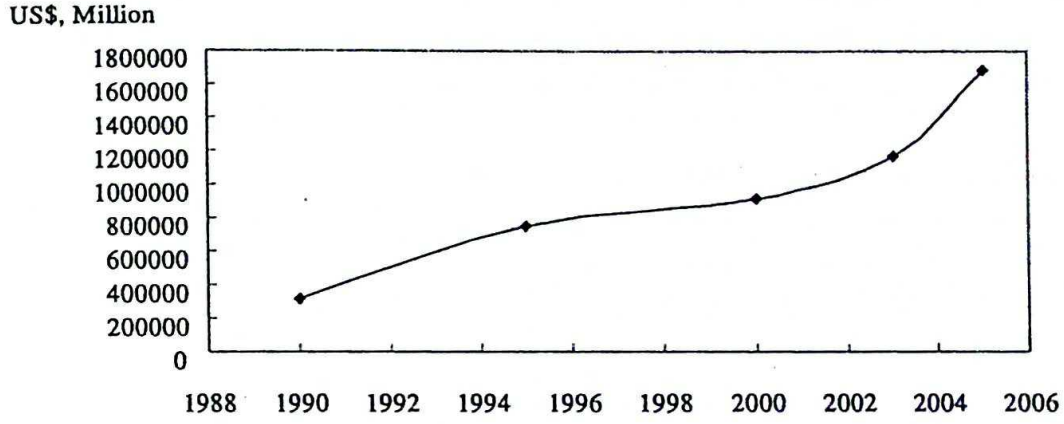
[10] Intra-regional trade intensity index is the ratio of intra-regional trade share to the share of world trade with the region, calculated using exports data. It is computed as:

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

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)

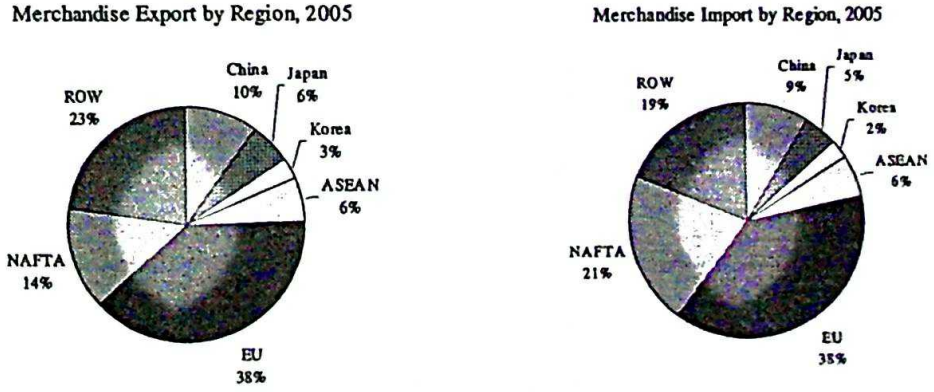
and Vietnam with 51.68 %. A more important trend is that the intra-regional trade share of all East Asian countries except Cambodia increased gradually during the period studied. This trend can be seen even in the case of Japan, which had second lowest intra-regional trade share with 36.77 % of total in 2005. However, the Cambodia's trade share with East Asian region's trade declined in the studied period. Therefore, Intra-region trade was, relatively important for most countries in the region. Intra- East Asian trade increased as a proportion to total trade for most East Asian economies between 1990 and 2005.

Figure 3-1 Intra -Regional Total Trade in East Asia, million USD



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

Figure 3-2 Total Merchandise Export and Import Share by Region, 2005



Sources: WTO, *International Trade statistics 2006.*

Table 3.4 and table 3.5 show that individual countries' export and import share by destination in 2005. Japan is an important market access for East Asian countries. East Asian export market with China is also relatively large in terms of their total export. China emerged as an important destination for East Asian regional export during 1990s. This is largely on account of China's maintenance of a stable exchange rate as against the large devaluations in many East Asian countries (Ng and Yeats, 2003,Saikat Sinha Roy, 2004). These tables show that the trade links among China, Japan and Korea are strong in terms of the share of their total trade. Brunei's export are dominated by crude material, most of which are exported to Japan. The main import of Brunei is manufactured goods and machinery, much of which is imported through Singapore. In 2005, about 95 % of Cambodia's export is miscellaneous manufacture which was exported to Hong Kong and outside the region. Most imported products of Cambodia and Myanmar were from China and Thailand while Myanmar's major export market was Thailand in 2005. Most of Malaysia's product exports were shipped through Singapore.

Most East Asian countries except Brunei, Laos and Myanmar had more than 40 % of export share with countries outside the region. United Stated and some Asian countries are major direction of East Asian external trade. On the import side, according to Table 3.5, some East Asian countries including Hong Kong, Brunei, Cambodia, Lao, Malaysia, Myanmar, and Vietnam had large share of import form intra- regional trade although China, Japan, Korea, Indonesia, the Philippines, Singapore and Thailand had more than 40% of import share from the rest of the world.

Table 3-3 Trade share* of each member country in total East Asian Trade

Percentage of Total trade

	1990	1995	2000	2005
China	52.63	57.41	59.44	65.86
Japan	21.18	29.87	30.86	36.77
South Korea	29.11	35.40	36.62	41.52
Brunei	81.65	79.50	74.19	78.18
Indonesia	51.66	49.53	50.58	56.01
Malaysia	49.61	48.23	49.39	50.18
Philippines	32.84	37.52	39.67	47.42
Singapore	39.51	47.20	46.53	53.60
Thailand	42.57	43.66	44.89	49.54
Cambodia	68.58	81.52	35.85	30.09
Laos	85.68	65.33	72.79	74.58
Myanmar	58.67	72.49	62.19	75.30
Vietnam	27.76	57.56	56.40	51.68

* Trade share is the percentage of trade with East Asian region to total trade of a member country. A higher share indicates a higher degree of integration between partner countries/regions

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

3.2. Trade patterns in East Asian Economies

Table 3.6 shows the structure of East Asian's Export in 2006. The share of machinery and transport equipment products in total export was the largest in China, Japan, Korea and some ASEAN countries (Singapore, Malaysia, Thailand and the Philippines)[11]; 48.63% in China, 63.64 %in Japan, 60.96% in Korea, 53.48 % in Malaysia, 74.37 % in the Philippine, 58.21 % in Singapore and 45.08 % in Thailand. Lall (2000), Mayer et al (2002), and Yeats (2003) provide the evidence that high technology and skill-intensive export items were the dynamic products in the world trade in 1990s, especially in East and Southeast Asia. Brunei's major export (86.95%) is mineral fuels (mainly crude and refined oil products). China, Japan, Korea and most of ASEAN countries also held higher share of basic manufactures, and miscellaneous manufactured good in total export. Agricultural export share of Thailand and Vietnam was high, compared with other countries in the region; 10.73% in total export by Thailand and 19.97 % by Vietnam.

Turning to import composition of East Asian economies, the share of machinery and transport equipment products in total import is the highest in East Asian economies except Japan. Table 3.6 shows that most of import of Japan, Korea, Indonesia, Philippine, Singapore, Thailand and Vietnam were dominated by mineral fuels. The imports of basic manufactures are also important items for China, Korea, Brunei, Indonesia, Malaysia, Thailand, Vietnam and Cambodia. Japan, Brunei, Indonesia and the Philippines were found to have fairly large import share in food and live animals sector.

On account of China's rapid industrialization, production networks in East Asia are also being reconfigured in recent years. China is fast becoming a major market for exports of specialized components and other intermediate inputs from Southeast Asia and elsewhere (Denis Hew, 2006). So pronounced was the trend that exports of parts and components to China and Hong Kong in 2002 from eight Asian economies[12] grew by 40% while their other exports grew by only 6% (World Bank, 2003, Denis Hew, 2006).

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[11] These ASEAN countries are important producers of manufacture goods. Singapore is one of the four newly industrializing countries (NICs) of Asia. The other ASEAN 3 (Malaysia, Thailand and the Philippines) were generally regarded as near-NICs.

[12] These eight economies were South Korea, Singapore, Taiwan, Malaysia, Indonesia, Philippines, Thailand and Vietnam.

Table3-4 Individual country's Export Share in East Asian region in 2005; FOB

Percentage

	China	Hong Kong	Japan	sourth Korea	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Row	Toatal Export
China		16.02	10.82	4.52	0.01	0.07	1.08	0.01	1.37	0.12	0.60	2.15	1.01	0.73	61.50	100
Hong Kong	45.08		5.28	2.15	0.01	0.17	0.44	0.00	0.83	0.01	0.90	2.07	0.98	0.45	41.62	100
Japan	14.10	6.35		8.23	0.02	0.01	1.64	0.00	2.23	0.02	1.61	3.27	3.98	0.63	57.91	100
South Korea	21.49	5.39	8.34		0.02	0.05	1.75	0.00	1.60	0.04	1.12	2.57	1.17	1.19	55.25	100
Brunei*	3.35	0.01	36.82	12.70		0.00	19.32	0.00	0.21	0.00	0.01	2.40	3.27	0.00	21.90	100
Cambodia*	0.55	24.39	3.48	0.06	0.00		0.06	0.00	0.28	0.00	0.06	0.49	0.56	1.32	68.74	100
Indonesia	7.89	1.77	21.37	8.39	0.05	0.11		0.00	4.06	0.09	1.68	9.28	2.66	0.80	41.85	100
Laos*	4.45	0.01	1.40	0.37	0.00	0.01	0.01		2.26	0.00	0.00	0.25	39.21	16.64	35.39	100
Malaysia	6.66	5.90	9.44	3.39	0.25	0.08	2.38	0.00		0.18	1.41	15.76	5.43	0.83	48.28	100
Myanmar*	7.37	1.30	5.46	1.51	0.01	0.01	0.38	0.00	3.59		0.03	2.91	47.95	1.23	28.25	100
Philippines	10.19	8.35	18.00	3.48	0.02	0.02	1.19	0.00	6.14	0.02		6.76	2.92	0.78	42.12	100
Singapore	8.84	9.65	5.61	3.60	0.22	0.14	9.90	0.02	13.61	0.27	1.87		4.22	1.98	40.07	100
Thailand	8.39	5.64	13.80	2.07	0.06	0.84	3.64	0.71	5.32	0.65	1.89	7.04		2.16	47.79	100
Vietnam*	9.85	1.19	14.90	2.13	0.00	1.81	1.58	0.23	3.21	0.04	2.80	6.11	2.63		53.52	100

Sources: International Monetary Fund (IMF), Direction of Trade Statistics

***Euromonitor from trade sources/national statistics; Brunei, Cambodia, Laos, Myanmar, Vietnam**

Table 3-5 Individual country's Import Share in East Asin region in 2005;CIF

Percentage

	China	Hong Kong	Japan	sourth Korea	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Row	Toatal Import
China		2.28	18.72	14.32	0.04	0.01	1.57	0.00	3.75	0.05	2.40	3.08	2.61	0.47	50.71	100
Hong Kong	48.33		11.82	4.75	0.00	0.00	0.69	0.00	2.63	0.02	1.76	6.23	2.14	0.18	21.45	100
Japan	21.60	0.31		4.86	0.45	0.02	4.14	0.00	2.93	0.04	1.54	1.33	3.10	0.90	58.77	100
South Korea	15.15	0.80	18.98		0.31	0.00	3.21	0.00	2.36	0.02	0.91	2.09	1.05	0.27	54.84	100
Brunei*	3.54	2.13	6.97	4.09		0.00	2.62	0.00	23.51	0.01	0.63	33.00	4.52	0.00	18.99	100
Cambodia*	15.17	17.98	4.63	8.38	0.00		3.58	0.00	3.69	0.03	0.23	5.50	12.46	7.93	20.42	100
Indonesia	10.37	0.52	12.25	5.09	2.12	0.00		0.00	3.81	0.03	0.57	16.80	6.12	0.78	41.54	100
Laos*	9.34	0.67	1.72	1.23	0.00	0.00	0.16		0.56	0.00	0.06	3.55	68.18	5.92	8.62	100
Malaysia	12.21	2.64	15.41	5.29	0.01	0.01	4.05	0.01		0.12	2.98	12.44	5.60	0.95	38.28	100
Myanmar*	29.55	1.13	2.90	3.79	0.00	0.00	2.46	0.00	7.76		0.29	18.85	22.33	0.38	10.55	100
Philippines	6.73	4.37	18.28	5.20	0.00	0.00	2.27	0.00	4.03	0.00		8.44	3.58	1.76	45.33	100
Singapore	10.81	2.22	10.14	4.53	0.08	0.05	5.51	0.00	14.41	0.06	2.45		3.96	0.96	44.83	100
Thailand	9.94	1.34	23.19	3.46	0.18	0.03	2.79	0.20	7.21	1.59	1.68	4.79		0.79	42.81	100
Vietnam*	18.00	3.85	12.75	11.21	0.00	0.49	2.19	0.30	3.92	0.14	0.65	14.32	7.45		24.73	100

Sources: International Monetary Fund (IMF), Direction of Trade Statistics

*Euromonitor from trade sources/national statistics; Brunei, Cambodia, Laos, Myanmar, Vietnam

Table3-6 East Asia--Structure of Export, 2006

	CHINA		JAPAN		KOREA		BRUNEI		INDONESIA		MALAYSIA	
	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%
Food and Live animals	25742.06	2.20	2608.76	0.41	2546.71	0.82	1.84	0.04	4789.96	5.21	3028.77	2
Beverages and tobacco	2142.85	0.18	422.14	0.07	551.06	0.18	0.25	0.01	360.06	0.39	475.28	0.31
Crude Materials	10531.98	0.90	7511.6	1.18	3107.22	1	3.46	0.07	10015.55	10.9	4173.57	2.76
Mineral fuels	20591.23	1.76	5132.21	0.81	17744.49	5.7	4164.91	86.95	25896.15	28.2	21134.72	13.96
Oils and fats	352.89	0.03	79.79	0.01	18.53	0.01	0.31	0.01	5552.64	6.04	6893.92	4.55
Chemicals	55425.05	4.73	56953.97	8.98	30852.58	9.9	3.2	0.07	4831.67	5.25	8345.1	5.51
Basic manufactrues	183196.41	15.64	71750.36	11.31	44141.04	14.17	48.12	1	15173.83	16.5	11206.95	7.4
Machinery and transport equipment	569533.78	48.63	403799.27	63.64	189912.41	60.96	285.93	5.97	14449.81	15.7	80964.27	53.48
miscellaneous manufactured goods	298436.88	25.48	56530	8.91	22475.59	7.21	273.55	5.71	10734.43	11.7	12568.1	8.3
Other goods	5129.74	0.44	29758.48	4.69	169.02	0.05	8.25	0.17	189.46	0.21	2595.51	1.71
Total	1171082.9	100.00	634546.58	100.00	311518.65	100	4789.82	100	91993.56	100	151386.19	100

	PHILIPPINE		SINGAPORE		THAILAND		VIETNAM		CAMBODIA	
	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%
Food and Live animals	1670.36	3.92	2474.71	0.98	12897.8	10.73	4829.08	19.97	26.13	0.78
Beverages and tobacco	217.77	0.51	1261.18	0.5	272.48	0.23	224.37	0.93	4.54	0.14
Crude Materials	737.61	1.73	1462.22	0.58	6382.24	5.31	794.55	3.29	60.35	1.8
Mineral fuels	854.03	2.01	32063.6	12.68	5350.01	4.45	4586.06	18.96	0.03	0
Oils and fats	764.99	1.8	260.29	0.1	172.48	0.14	10	0.04	1.34	0.04
Chemicals	593.32	1.39	29354.99	11.61	10163.4	8.46	453.77	1.88	4.68	0.14
Basic manufactrues	1839.89	4.32	11684.45	4.62	14851.28	12.36	1678.49	6.94	27.91	0.83
Machinery and transport equipment	31648.82	74.37	147192.9	58.21	54167.56	45.08	2182.91	9.03	10.13	0.3
miscellaneous manufactured goods	4177.6	9.82	16678.68	6.6	14111	11.74	9412.12	38.91	3214.48	95.9
Other goods	53.12	0.12	10436.07	4.13	1802.3	1.5	15.02	0.06	2.81	0.08
Total	42557.51	100	252869.09	100	120170.55	100	24186.4	100	3352.4	100

Sources: United Nations, UN Trade Statistics

Table 3-7 East Asia--Structure of Import, 2006

	CHINA		JAPAN		KOREA		BRUNEI		INDONESIA		MALAYSIA	
	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%
Food and Live animals	17667.73	1.66	46321.17	8.34	10474.88	3.67	198.04	16.2	4269.34	6.72	5039.96	4.11
Beverages and tobacco	2216.19	0.2	5754.56	1.04	506.15	0.18	20.78	1.7	206.82	0.33	406.49	0.33
Crude Materials	83540.56	7.87	35443.04	6.38	16726.04	5.86	11.6	0.95	3559.38	5.6	2981.33	2.43
Mineral fuels	82689.28	7.79	148054.32	26.65	75291.76	26.37	16.31	1.33	19946.03	31.38	10439.24	8.52
Oils and fats	3911.26	0.36	1051.44	0.19	681.01	0.24	9.86	0.81	77.19	0.12	603.65	0.49
Chemicals	106318.87	10.01	40588.14	7.3	26801.26	9.39	100.81	8.25	8697.54	13.68	9768.53	7.97
Basic manufactrues	135126.44	12.72	50993.95	9.18	39539.57	13.85	288.99	23.65	8606.47	13.54	13796.82	11.25
Machinery and transport equipment	494549.08	46.58	140859.67	25.35	89026.55	31.18	423.63	34.67	16741.69	26.34	69550.54	56.75
miscellaneous manufactured goods	132637.26	12.49	76641.74	13.79	25673.33	8.99	144.59	11.83	1461.88	2.3	6355.36	5.19
Other goods	3006.34	0.28	9771.19	1.75	761.99	0.26	7.18	0.58	3.87	0.01	3621.7	2.95
Total	1061663	100	555479.22	100	285482.54	100	1221.79	100	63570.21	100	122563.62	100

	PHILIPPINE		SINGAPORE		THAILAND		VIETNAM		CAMBODIA	
	$ million	%	$ million	%	$ million	%	$ million	%	$ million	%
Food and Live animals	3088.79	6.24	4242.65	1.94	4056.11	3.1	1657.2	5.16	67.76	2.94
Beverages and tobacco	267.51	0.54	1391.82	0.63	313.21	0.24	180.89	0.56	91.8	3.99
Crude Materials	1201.9	2.43	1428.61	0.65	4346.18	3.32	1254.98	3.9	57.31	2.49
Mineral fuels	7254.28	14.65	40003.22	18.29	23941.68	18.33	3238.09	10.08	205.96	8.99
Oils and fats	175.65	0.35	299.76	0.13	135.18	0.1	197.02	0.61	7.81	0.34
Chemicals	3780.94	7.64	13605.18	6.22	13293.29	10.18	4466.9	13.9	137.71	5.98
Basic manufactrues	4530.55	9.15	16395.99	7.5	24512.58	18.76	8794.91	27.37	1209.4	52.54
Machinery and transport equipment	27322.82	55.18	121199.63	55.43	48637.05	37.23	10415.8	32.41	323.11	14.04
miscellaneous manufactured goods	1775.67	3.59	17166.55	7.85	7592.11	5.81	1791.7	5.58	179.72	7.81
Other goods	117.3	0.24	2895.55	1.32	3807.1	2.91	130.23	0.41	21.13	0.92
Total	49515.41	100	218628.96	100	130634.49	100	32127.72	100	2301.71	100

Sources: United Nations, UN Trade Statistics

Table 3-8 East Asia; simple average MFN applied tariff rates by products in 2006

	all goods	Animal products	Dairy products	Fruit, vegetables, plants	Coffee, tea	Cereals & preparations	Oilseeds, fats & oils	Sugars and confectionery	Beverages & tobacco	Cotton	Other agricultural produc	Fish & fish products	Minerals & metals	Petroleum	Chemicals	Wood, paper, etc.	Textiles	Clothing	Leather, footwear, etc.	Non-electrical machinery	Electrical machinery	Transport equipment	Manufactures, n e.s.
China	9.9	14.8	12.2	14.9	14.6	24.4	11	27.4	22.7	22	12	11	7.7	4.5	6.7	4.9	9.7	16.1	13	8.3	8.7	11.6	11.7
Hong Kong	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	5.6	15.5	178.1	12.9	16.7	76.6	10.8	27.3	15.5	0	6.3	5.7	1	0.7	2.5	0.9	5.5	9.2	15	0	0.2	0	1.1
Korea	12.1	22.1	67.5	57.2	53.9	134.3	37.6	19	31.7	1	15.9	16.1	4.8	5.1	5.8	2.4	9.2	12.6	7.9	6	6	5.4	6.4
Brunei Darussalam	3.3	0	0	0	1.5	0.1	0	0	89.8	0	0	0	0.2	0.5	0.4	4.4	0.9	0	3.4	7	14.4	10	5
Cambodia	14.3	27.8	25.8	14	26.7	19.8	9.1	7	33.1	7	15.5	18.9	11.2	14.8	9.6	11.8	9.7	28.5	18	14.6	24.3	16.1	14.9
Indonesia	6.9	4.2	5	5.1	4.8	5.6	4.2	8.3	56	4	4.3	4.9	6.8	2.2	5.4	5.3	9.2	14.1	7.7	2.3	6.1	12.3	7.2
Lao	9.7	24.9	8.5	30.3	24.2	9.2	12	12.5	31.3	8	9.8	12.7	5.8	14.9	6.8	14.1	8.9	10	11	6	6.8	13.5	10.3
Malaysia	8.5	0.5	3.4	3.8	9	5.1	1.7	2.8	148.1	0	0.6	2.2	10.9	1.1	3.3	10.7	10.5	16	13.9	3.6	6.5	11.5	4.9
Myanmar	5.6	10.7	3.4	11.5	14	8.7	1.7	5.4	23.2	0.8	3.1	8.2	3.4	1.8	2.3	6.5	8.4	17.2	5.3	1.7	4.3	4.2	6.5
Philippines	6.3	21.3	3.9	9.4	15.8	10.9	5.6	16	8.2	2.6	3.4	8	4.7	4.9	3.8	7.1	9.3	14.9	6.7	2.3	3.7	8.6	4.8
Singapore	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	10	28.1	15.8	27.6	23.1	19.4	19.1	32.3	34.2	0	10.3	14.5	5.9	9.4	3.8	6.8	8.1	24.5	12.7	4.7	8.3	20.7	11
Vietnam	16.8	20.1	21.9	30.6	37.9	27.4	13.4	17.7	66.6	6	7.8	31.3	10.2	17.5	5.2	17.2	30.4	49.3	19	5.4	12.8	22.2	15.2

Sources: World Tariff Profiles 2006

3.3. Tariff Barriers in East Asian economies

Since the latter half of 1990s, the tariffs on manufacture products and semiconductor-related parts and components by East Asian countries have declined under the APEC initiative. However, the trade barriers in East Asian economies are still substantial.

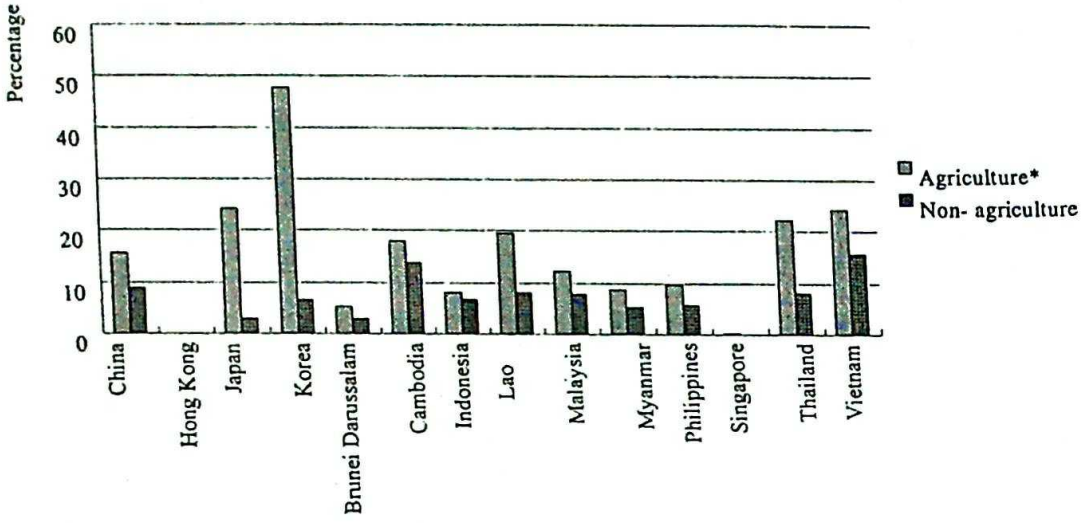
Table 3.8 shows simple average MFN applied tariff rates imposed by East Asian countries in 2006. Simple average applied tariff rate for all goods are 16.8 % for Vietnam, 14.3 % for Cambodia, 12.1 % for Korea, 10 % for Thailand, 9.9 % for China and 5.6 % for Japan. Significant level of tariffs in most of East Asian countries can be found on agricultural products, clothing and food and beverages. Most of imported goods into Singapore and Hong Kong are virtually duty free. Singapore, the country with the lowest trade barrier in the region, only imposed tariff on beverages and tobacco (3%).

Brunei's tariff barriers were the highest on beverages and tobacco (89.8%), followed by electrical machinery (14.4%). China protected some sectors by imposing over 20% tariff on products such as Cereals and Preparations, sugar, beverage and tobacco, cotton. Japan and Korea imposed high tariff on most agricultural and food products, but the trade barriers on manufacture products were considerably low. Japan's the most highly protected sector was diary product (178.1%), followed by cereals and preparation (76.6%). The most protected sector in Korea was cereals and preparation (134.3%). Average tariff for transport equipment was over 20 % in Thailand and Vietnam. However, Japan, Hong Kong and Singapore imposed 0 % tariff on products in that sector (free access to their market). Thailand imposed high tariff on beverages and tobacco (66.6%) and Clothing (49.3%).

Michael Freudenberg and Thierry Paulmier (2006) analyzed the major motivations underlying the tariff structure in East Asia. They distinguished four typical trade policy profiles in East Asia. The first profile consisted of countries playing by free trade rules; Hong Kong and Singapore. Both countries have a trade policy that is not sector-specific, as they grant duty free access to their domestic market for all sectors. Japan, Korea, Brunei, Cambodia and the Philippines were second group of countries with mainly defensive protectionism. These countries applied the highest tariffs in the sectors in which they suffered from comparative disadvantages. The third was countries with mainly offensive protectionism: Thailand, China and Vietnam. These countries imposed the highest tariffs for the sectors in which they enjoyed comparative advantage. They tended to protect their domestic export-oriented industries from international competition in order to strengthen their competitiveness in international markets, possibly through economic scale. The last group of countries playing wide-ranging protectionism

included Myanmar, Laos, Taiwan and Indonesia. These countries applied high tariffs in sectors with both comparative advantage and with disadvantages.

Figure 3-3 Simple Average MFN applied tariff rates by Agricultural and non-agricultural Products in East Asia



*Agricultural goods according to the AOA (WTO Agreement on Agriculture) definition refer to HS chapters 1 to 24 (excluding fish and fish products) and a number of manufactured agricultural products.

Sources: World Tariff Profiles 2006

3.4. The recent developments 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. Trade and investment integration has proceeded in East Asia since the 1980s. Developing East Asian economies embarked on liberalization of trade regimes 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 production.[13] Accumulation of Foreign Direct Investment (FDI) inflows has been a driving force to intensify intra-regional trade in East Asia. The regional Asian growth rate throughout the 1990s proved the fastest of all geographical regions; its total trade

[13] 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).

grew at an average rate of 12 percent between 1990 and 1997. During this period, Asia emerged as the largest single market for its own exports, and that status remained largely unchanged after the crisis (Linda low, 2001).

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. ASEAN was with full 10 member countries when Vietnam, Laos, Myanmar, and Cambodia joined the association in 1995, 1997 and 1999 respectively. In 1992, ASEAN leaders initiated the implementation of ASEAN Free Trade Area (AFTA) within 15 years.

3.4.1. ASEAN plus 3

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 were 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)[14] 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. Since the East Asian Vision Group (EAVG) was created in 1998, the concept of regional integration of East Asia has been discussed by the East Asian Study Group (EASG).The process of the formation of ASEAN plus 3 was institutionalized in 1999 and intended to strengthen and deepen the cooperation in East Asia. The East Asia Vision Group was given the task of developing the concept of "ASEAN plus 3 FTA" with the long-term objective of the eventual establishment of an East Asian Community. However, more recently, trade agreements between

[14] EAEG later became known as an East Asian Economic Caucus (EAEC).

ASEAN and each Northeast Asian countries started in the form of a bilateral FTA and "ASEAN plus one". Besides, a Northeast Asian Free Trade Area consisting of China, Japan and Korea is also being studied.

By the turn of the century, however, bilateralism, defined as an FTA involving two economies/regions, emerged as a policy option to advance free trade in East Asia (Lloyd (2002, Sen (2004)). 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) Although politics alone can not bring about a successfully negotiated outcome for FTAs, political relationship among the participants played a part in the East Asian trade negotiations process.

3.4.2. ASEAN

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 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 countries (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. AFTA follows the excluding products list approach for liberalizing tariff using the CEPT. According to the CEPT approach, products are classified into 4 groups—the inclusion list (IL), temporary exclusion list (TEL), sensitive list (SL), and general exception list (GEL).[15] An ASEAN content of at least 40 per cent was required for products to qualify for preferential tariffs.

[15] See in appendix

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 tariffs 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),and Non-Tariff Barriers (NTBs). Some aspects of trade facilitation, notably harmonizing customs nomenclature and valuation systems among the ASEAN countries, are also expected to contribute to reducing NTBs. In 1999, ASEAN declared to phase timeframe for the elimination of intra regional tariffs for six ASEAN economies; Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand, by 2010 and the remaining four countries; Cambodia, Laos, Myanmar and Vietnam; by 2015.

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.

Among the individual members of ASEAN, Singapore, the most trade-reliant ASEAN member, has been pursuing with advancing bilateral FTAs with the major trading partner. Singapore 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 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 India, Chile, Japan, USA, Peru and Bahrain. Indonesia, the Philippines and Malaysia are also exploring the possibilities of FTAs with countries outside ASEAN.

3.4.3. China

China has been actively pursuing FTAs since its accession to the WTO in December 2001. China's attitudes on issues such as regional agreements, free trade and globalization have been

changed.[16] Since the introduction of reform policies in 1979, China's economy has become increasingly involved in the global economy (Yang Zerui, 2004). Economic development of China allowed it to open its economy to foreign competition, resulting in further integration into global economy. China's regional strategy is circumscribed by a cluster of overlapping issue areas: (1) momentum in East Asia economic cooperation; (2) the regional security environment, especially on the Korean peninsula; (3) arms control regimes and regional reaction to China's growing military capabilities against a larger background of the existing and possible institutionalization of security arrangements in the region; (4) the Taiwan issue; (5) its relationship with Japan and the United States.[17] China is considering or negotiating FTAs with left, right, and center – in East and South Asia, the Middle East, Latin America, Africa, and with Australia and New Zealand (Antkiewicz& Whalley, 2005). Politically, China would like to use FTAs to establish leadership credentials in East Asia. Economically, it wants extra export market access as well as secure access to energy and other commodity imports (Sally†, 2006).

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 has the willingness to open up its potentially vast market to ASEAN with China-ASEAN FTA. ASEAN is looking for additional engine for growth, including import demand and investment opportunities from China.

After signing ACFTA, China signed a "Closer Economic Partnership Arrangement (CEPA)" with Hong Kong on 29th, June, 2003 and with Macao with almost same contents on 20th, December, 2003. If CEPA can be classified as FTA, these two CEPAs are of course top priorities of China's FTA strategy (Yang Zerui, 2004). China also concluded FTAs with Chile, Thailand and Pakistan. It is now negotiating FTAs with New Zealand, Australia, Iceland, Singapore and South Africa.

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[16] China's earlier skepticism is that globalization equals Americanization. Globalization may result in the dominance of transnational corporations and the economic policies of the multilateral agencies.

[17] See detail in Wang, Jisi, 2004

3.4.4. Japan

Until the mid 1990s, Japan has given the highest priorities in its trade policy to multilateral trading system based on the GATT/WTO, and the principle of unconditional most-favored nation (MFN) treatment. Therefore, Japan ignored the regional trade agreements or Free trade agreements. However, Japan obviously changed its trade policies to establish FTAs with its trading partners, mostly in Asia, with the aim of achieving two specific advantages, economic advantages and political and diplomatic advantages of promoting free trade agreements. Japan expanded to explore the establishment of bilateral and regional trade agreements with any countries that would supplement multilateral trade system under WTO agreement, keeping the impact on domestic industries in mind. Japan also put the matters for consideration in realizing the comprehensive economic partnership with countries that can reinforce its position in the international arena.

Japan signed its first free trade agreement (FTA) with Singapore in November 2002. Japan-Mexico FTA was enacted in April 1 2005. Then, Japan has also concluded FTAs with Malaysia, and the Philippines (Sign). Japan is currently under official negotiation for FTAs with Korea, Thailand, Indonesia, Brunei, Chile, and Vietnam. 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. In 2005, ASEAN and Japan have agreed to commence the negotiation process to explore elements of a possible free trade area. ASEAN and Japan commenced negotiations on the ASEAN Japan Comprehensive Economic Partnership (AJCEP) Agreement in April 2005.

Japanese multinationals have invested extensively in ASEAN countries. Over time, their investment have been integrated into cross-border production networks linking ASEAN countries more closely with one another and (occasionally) with Japan. Japanese companies recently have developed offshore procurement bases in coastal China as well; as production sharing expands and reverses import into Japan increases, firms have incentives to push to abolish the remaining barriers to entering the Chinese market and exporting back to Japan. Thus, growing trade linked to FDI and foreign production is integrating the Japanese economy more closely with labor-rich Asia. This trend has created interests in further liberalization, guarantees for investment, and semiformal agreements and institutions to manage these "economic partnerships," as the Japanese government calls them (Kerry A Chase,2005).

3.4.5. Korea

In view of increasing number of RTAs and FTAs throughout the world, Korea began to realize that the participation in FTAs is inevitable policy tools for foreign market access and

sustainable growth. Therefore, Korea has started pursuing FTAs on a multi-track basis as a pillar of its trade policy, in parallel with multilateral liberalization. Korea carefully selected possible FTAs partners by considering the factors such as economic benefits, political and diplomatic relations, and domestic constraints, including the vulnerability of the agricultural sector.

Adopting a multi-track approach, Korea intends to catch up with other players in the global arena. Domestically, it can undermine political opposition from various interest groups, as several simultaneous deals will help offset and complement effects of each FTA. Korea also seeks to conclude FTAs that are consistent with the WTO rules and are also comprehensive in their coverage, encompassing a wide range of areas such as services, investment, government procurement and intellectual property rights, in addition to trade in goods. And then, in order to obtain wider public endorsement, the government of Korea is making a wide range of outreach efforts in every step of the FTA process.[18]

Korea started an FTA negotiation with Chile in 1998, and reached a conclusion in 2002. Korea has also concluded FTAs with European Free Trade Association[19] 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, paving the way for establishing a free trade agreement (FTA). In a joint declaration in 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 members.[20] 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.

3.5. Concluding Remarks

East Asian countries need to find an appropriate framework for the emergence of the East Asian FTA. The intra- regional trade is substantial and is steadily growing. In addition, there are

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[18] Kim Han-soo, Director-General of FTA Bureau 'Korea's FTA Policy: Present Situation and future Prospects', '2005 Korea-Us Policy Forum', December 12,2005, Seoul, 'Korea Institute for International Economic Policy' http://www.kiep.go.kr/eng/e_sub03/sub01_1.asp?sort=02,

[19] A group of European countries are Switzerland, Norway, Iceland, and Liechtenstein.

[20] Thailand will sign as soon as Thailand and Korea have completed their respective domestic procedures.

trade complementarities among the East Asian economies. However, East Asian economies are still at different stages of economic development, including differences in political regime, institutions, and social group. Japan and Korea is known for its own non-tariff measures against agricultural imports. They might be faced with some protests from social groups at home if they are determined to move to full scale of FTA. Historical tensions and lack of mutual understandings among East Asian countries are the obstacles of East Asian FTAs as well.

Looking at the East Asian countries' income level, the most striking is the enormous disparities between the wealthiest countries, Japan, Korea, and Singapore and the poorest, Cambodia, Laos and Myanmar. The new ASEAN countries are still at the much lower level of economic development than other members. Such countries are many years behind the countries like Japan, Korea, Thailand and Singapore, in term of average incomes, infrastructure, educational attainment and degree of industrializations. Many East Asian countries have only just begun to make the transition from centrally-planned to market- oriented economies. Myanmar remained virtually closed to the outside world. (Gerald Tan, 2003).

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. These steps can be achieved through 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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Adopting a multi-track approach, Korea intends to catch up with other players in the global arena. Domestically, it can undermine political opposition from various interest groups, as several simultaneous deals will help offset and complement effects of each FTA. Korea also seeks to conclude FTAs that are consistent with the WTO rules and are also comprehensive in their coverage, encompassing a wide range of areas such as services, investment, government procurement and intellectual property rights, in addition to trade in goods. And then, in order to obtain wider public endorsement, the government of Korea is making a wide range of outreach efforts in every step of the FTA process.[18]

Korea started an FTA negotiation with Chile in 1998, and reached a conclusion in 2002. Korea has also concluded FTAs with European Free Trade Association[19] 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, paving the way for establishing a free trade agreement (FTA). In a joint declaration in 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 members.[20] 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.

3.5. Concluding Remarks

East Asian countries need to find an appropriate framework for the emergence of the East Asian FTA. The intra- regional trade is substantial and is steadily growing. In addition, there are

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[18] Kim Han-soo, Director-General of FTA Bureau 'Korea's FTA Policy: Present Situation and future Prospects', '2005 Korea-Us Policy Forum', December 12,2005, Seoul, 'Korea Institute for International Economic Policy' http://www.kiep.go.kr/eng/e_sub03/sub01_1.asp?sort=02,

[19] A group of European countries are Switzerland, Norway, Iceland, and Liechtenstein.

[20] Thailand will sign as soon as Thailand and Korea have completed their respective domestic procedures.

trade complementarities among the East Asian economies. However, East Asian economies are still at different stages of economic development, including differences in political regime, institutions, and social group. Japan and Korea is known for its own non-tariff measures against agricultural imports. They might be faced with some protests from social groups at home if they are determined to move to full scale of FTA. Historical tensions and lack of mutual understandings among East Asian countries are the obstacles of East Asian FTAs as well.

Looking at the East Asian countries' income level, the most striking is the enormous disparities between the wealthiest countries, Japan, Korea, and Singapore and the poorest, Cambodia, Laos and Myanmar. The new ASEAN countries are still at the much lower level of economic development than other members. Such countries are many years behind the countries like Japan, Korea, Thailand and Singapore, in term of average incomes, infrastructure, educational attainment and degree of industrializations. Many East Asian countries have only just begun to make the transition from centrally-planned to market- oriented economies. Myanmar remained virtually closed to the outside world. (Gerald Tan, 2003).

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. These steps can be achieved through 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.

Chapter 4

Free Trade in East Asia; A Computer Simulation Analysis by Using GTAP model

Since the end of 1990s, there has been a new tide of considerations for FTAs in East Asia. 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 impact of East Asian Free Trade Area by using the GTAP modeling framework.

4.1. The structure of GTAP Model

In recent years, the number of quantitative analysis of the effects of policy changes on economies has grown sharply. This section investigates the economic impacts of East Asia FTA on foreign trade using the standard Global Trade Analysis Project (GTAP) model, a global computable general equilibrium model. To assess GTAP model simulation results, it is very important to understand how the structure of the model influences the simulation results. These are the most commonly encountered quantitative analytical techniques in the area of trade. The modelers may estimate the trade and income effect of different liberalization scenarios. They may also show how these effects are distributed among countries or regions. The CGE model is ex-ante analyses approach to find out the effect of a change in trade policy.[21]

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 modeling (CGE)[22] which depicts the behavior of households, firms, government and global sectors across each economy in the world and provides the model with data and software. It is composed of regional models, which are linked through international trade. Prices and quantities are simultaneously determined in factor markets

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[21] There are at least two ways to analyze the effects of trade policy change; ex-ante and ex-post analysis. ex-ante analysis involves projecting the future effects on the interested economic variable. The ex-ante analysis is "what if " type of questions. On the other hand, the ex-post analyses use historical data to analyze the effects of a past trade policy.

[22] CGE models specify all their economic relationships in mathematical terms and put them together in a form that allows the model to predict the change in variables such as prices, output and economic welfare resulting from a change in economic policies, given information about technology (the inputs required to produce a unit of output), policies and consumer preferences.

and commodity markets by accounting relationships, by the equilibrium conditions specified by the behavior of economic agents, and by the structure of international trade (Kawasaki, 2003).

The standard GTAP model is a multi-regional, computable general equilibrium model, with perfect competition and constant returns to scale. Standard GTAP is also a comparative-static CGE model of the world economy and therefore dynamic effects[23] of international capital mobility, capital accumulation, and an adaptive expectations theory of investment are not captured. CGE models are developed to represent economic interaction among actors and sectors in the whole economy. In general, it aims to provide a straightforward presentation of widely used CGE modeling techniques. It does, however, include some special features, notably an extensive decomposition of welfare results. The model assumes full employment. The amount of total capital and labor is also fixed in the standard GTAP model. Labor and capital are used by all industries; however, land, used only in agricultural sector is also important to include in model.

The behavioral parameters in GTAP model and the composition of the benchmark data will determine simulation results. Most behavioral parameters in GTAP are based on elasticity of substitution in both consumption and production. The parameter of the determination of the degree of mobility of primary factors across sectors in the model is transformation elasticities. Another set of parameters are the flexibilities of regional investment allocation, and consumer demand elasticities.

The production side of the model is represented by a set of outputs, the inputs which are required to produce them and the technology of production. The model in this study assumes that firms employ production technology under constant return to scale. Firms have chosen production levels that maximize their profit and minimize the cost using the primary input factors and intermediate input. The production function in the model uses four different types of primary input factors; skilled labor, unskilled labor, capital and land. The technology tree of production structure in Figure 4.1 provides a visual display that the final level involves using both the fix proportion of value added input factor and the composite intermediate good to produce the output. The value added are composed from the primary factors of production; land, labor and capital. The firm also purchases composite intermediate inputs, some of which are produced domestically and some of which are imported. The individual inputs demanded by the

[23] The result form Dynamic compared to comparative static models tend to estimate larger gain due to trade liberalization. Because modelers take into account the increases in the rate of investment and the flow of technological knowledge in dynamic analysis.

firm, both the primary factors of production and intermediate inputs, are represented by a nested constant elasticity of substitution (CES) function. Imperfect substitution in goods and services between the home economy and abroad are assumed. Bilateral trade is handled via the Armington assumption[24]. The differentiation by country of origin has implications for both consumer and firm choices. The choice between domestic and imported intermediate inputs depends on prices of the goods and the Armington elasticity, which is a measure of the substitutability between domestic and imported products.

Therefore, the important feature of the model is its differentiated product specification of the demand and supply for tradable commodities. Domestic demand comprises goods that are differentiated by origin (domestic goods, Imports form East Asian Trading Partners, and import from the rest of the world) and domestic production is supplied to differentiated destinations (domestic market, exports to East Asian trading Partners, and exports to the rest of the world).

Households are the consumers as well as the owner of factors of production. Households generate their income as owner of land, labor, and capital. Then this income is spent on good and services they consume. Household behavior is governed by an aggregate utility function. The utility maximization problem is often posed in terms of a representative household whose problem is to determine the quantity of consumption and capital goods demanded at given market prices subject to the budget constraint. The regional household behavior in the model disposes of total regional income according to a Cobb-Douglas per capita utility function specified over the three forms of final demand: government expenditure, private household expenditure, and saving expenditure. The consumer behavior in GTAP is based on the constant difference elasticity (CDE) function. CDE is calibrated to different income and the price elasticity of demand. The government is a virtual existence.

The standard GTAP model is explicit treatment of international trade and transport margins and a global banking sector which intermediates between global savings and consumption. Capital accumulation is endogenously determined in that investments are allocated across regions through the global bank, equating the change 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 be mobile across industries but not across countries. Technological progress is exogenously determined.

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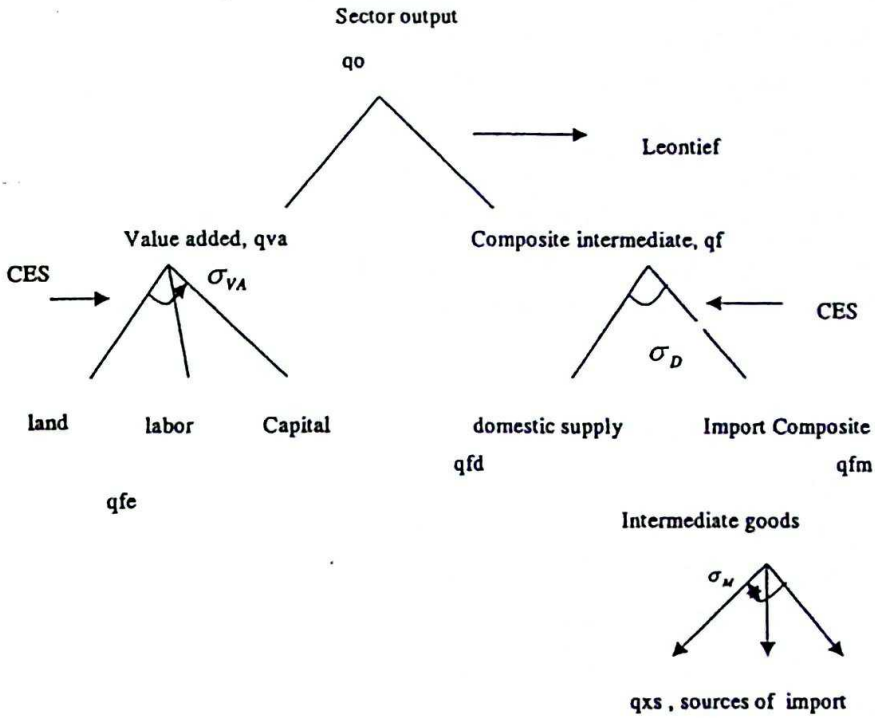
[24] Armington (1969) suggested that products are differentiated by the country of origin so that imperfect substitutes can have different price in different countries.

Figure 4-1 Nested (two-level) production function



Source: Adapted from Hertel and Tsigas (1997)

In equilibrium condition, the demand for commodity or factor of production equals their supply. Therefore by solving a model, the prices of commodity are set in equilibrium. The model will move to a new economic equilibrium by introducing a change in policy instrument, for example, reduced import tariff rates in the model. The model simulation shows the differences at a certain point in time between when trade liberalization measures were implemented and when their benchmark year to calibrate the model is set. The purpose of the GTAP simulations used in this study is to determine the effects of trade liberalization in East Asian region on the endogenous variables of the model—price, production, exports, imports and welfare. The difference in the values of the variables between the base line and the simulation result represents the effect of policy change.

4.2. GTAP Data base

This study uses the GTAP Data Base underlying the GTAP-6 database, which covers 87 regions and 57 sectors. This database consists of detailed bilateral trade, transport and protection data characterizing economic linkages among regions. The regional data bases are derived from

individual country input-output tables. In the GTAP model, only the most important relationships have been econometrically estimated.

Trade data in GTAP are based on United Nations D-series trade statistic, which is one of the most complete and exhaustive data base in terms of commodity and country coverage. Protection data from GTAP are expressed in the form of ad valorem equivalent, tariff, and non tariff barriers. All import protection data are derived from average MFN tariff rates at the tariff line level, they may include certain estimated Non-Tariff Measures (NTMs), such as import quotas and subsidies for domestic products in agricultural trade. Tariff rate is systematically aggregated up to the GTAP concordance using bilateral import weight.

4.3. Solution method

GTAP offers a variety of different solution methods. Johansen method is the single-step solution and simply evaluates the linearized representation of the model around the initial solution. However, Johansen results are not quite accurate for a non-linear system. Multi-Step solution procedures are used to reduce linearization errors which arise from the default one-step or Johansen solution method. The Euler multi-step procedure calculates the number of steps, and obtains an increasingly accurate solution of the nonlinear model. The Gragg and Midpoint methods are variations on the Euler method -- they can sometimes produce more accurate results for a given number of steps. The trade liberalization experiments for the East Asian countries in this study are used Gragg's method, with extrapolation by running a 4-8-12 step Gragg extrapolation.

4.4. Design of Experiment

The simulations reported in this paper utilize the GTAP 6 database, with a base year of 2001. The data base accompanying the GTAP model examines the consequences of a free trade area in the East Asian region. We group countries into 8 regions and industries into 10 sectors.

Table 4-1 Regional Aggregation

China	China, Hong Kong
Japan	Japan
Korea	Korea
ASEAN 5	Indonesia, Malaysia, Philippines, Singapore, Thailand,
ROASEAN (Rest of ASEAN)	Viet Nam, Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Myanmar, (East)Timor Leste
EU	Austria, Belgium, Denmark, Finland, Germany, United Kingdom, Greece, Ireland. Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden

NAFTA	Canada, United States, Mexico
ROW	All Other Regions

Table 4-2 Sectoral Aggregation

Aggregated Sector	Aggregated commodities
Food and Agricultural Product	Paddy rice, Wheat, Cereal grains nec, Vegetables, fruit, nuts, Oil seeds, Sugar cane, sugar beet, Plant-based fibers, Crops nec, Cattle, sheep, goats, horses, Animal products nec, Raw milk, Wool, silk-worm cocoons, , Meat: cattle, sheep, goats, horse, Meat products nec, Vegetable oils and fats, Dairy products, Processed rice, Sugar, Food products nec, Beverages and tobacco products
Forestry and Fishing	Forestry, Fishing
Mineral Product	Coal; Oil; Gas; Minerals nec; Mineral products nec
Textile and wearing apparel	Textiles; Wearing apparel.
Chemical	Chemical, rubber, plastic prods.
Base Metal and metal article	Ferrous metals; Metals nec; Metal products
Motor vehicles and Other Transport Equipment	Motor vehicles and parts; Transport equipment nec.
Machinery and Electrical Appliances	Electronic equipment; Machinery and equipment nec.
Other Manufactures	Leather products; Wood products; Paper products, publishing
Service	Electricity, Gas manufacture, distribution, Water, Construction, Trade, Transport nec, Sea transport, Air transport, Communication, Financial services nec, Insurance, Business services nec, Recreation and other services, PubAdmin/ Defence /Health /Educat, Dwellings

It is divided the world economy into four regions; East Asia, EU, NAFTA and the rest of the world in order to explore the effect of trade policy change. For the East Asian economies, it is further divided it into five economies; China, Japan and Korea, and ASEAN 5 and the rest of ASEAN. Depending on economic structure considerations and/or the GTAP database, ASEAN region is further divided into 2 groups; ASEAN 5 (Malaysia, Indonesia, the Philippines, Singapore, Thailand) and The Rest of ASEAN (ROASEAN) (Brunei, Vietnam, Lao, Myanmar, Cambodia). This grouping reflects the consideration 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 assumed to be the same level as the base year. Trade liberalization in service sectors is not included too.

4.5. Trade patterns on East Asian Economies

Table 4-3 Export composition of East Asian economies at World price, 2001

Sector	China	Japan	Korea	ASEAN5	ROASEAN
Food and Agricultural product	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	2.1	9.5	5.4	21.4
Chemical	5.2	9.2	10.2	7.3	2.4
Metal	4.1	6	6.8	2.8	1
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
services	20.5	8.8	10	14.2	13.1
Total	100	100	100	100	100

Sources: GTAP Data Set

Table 4.3 Shows export composition of East Asian economies taken from GTAP data base. The share of machinery and electronic equipment products in total export is the largest in all East Asia members except some countries (Brunei and CLMV countries) [25]in ASEAN; 27.3% in China, 46.9%in Japan, 39.8% in Korea and 47.1% in ASEAN 5[26]. The rest of ASEAN countries hold the higher share of mineral product and textile and apparel in total export, ranging from 21.1% to 21.4%. Indeed, agricultural export share of those countries is also high; 15.5% in total export. Japan and Korea have larger share in vehicles product export, on the other hand 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.

[25] The rest of ASEAN refers to Brunei, Cambodia, , Laos, Myanmar, and Vietnam i.e Brunei plus CLMV.

[26] ASEAN 5 refers to Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Table 4-4 Import composition of East Asian economies at Market Price, 2001

Sector	China	Japan	Korea	ASEAN5	ROASEAN
Food and Agricultural product	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	5.1	20.5
Textile and apparel	16	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	5.2
Other manufacturing	20.5	2.9	7	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

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 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 networks.[27]

4.6. Tariff Barriers in East Asian economies

In this section, the tariff barrier for East Asian economies is also based on standard GTAP data set as they are, without any modification. The GTAP database is used as benchmark data for the simulations. Therefore, we summarize the estimates of East Asian protection levels used to calibrate GTAP model.

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

Table 4.5 shows the Percentage of ad valoream 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 region has high levels of import protection for Food and 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 considerably 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 4.6 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). The average rate reveals a few noteworthy general features. The table indicates that China tariff protection for Japan and Korea is relatively high. Japan imposed higher average import barriers against EU and NAFTA rather than East Asian countries. Korea tends discriminate against China more than it does against the rest of East Asian countries.

Table 4-5 Percentage of ad valorem import tariff rates applied by each country, 2001

	China	Japan	Korea	ASEAN 5	ROASEAN
Food and Agricultural product	132.6	166.5	409.6	112.1	188.4
Forestry and Fishing	24.8	18.4	54	20.4	26.7
Mineral	44.6	3.3	33.5	38.7	74.4
Textile and apparel	114	58.1	67.4	61.2	205.6
Chemical	132.5	7.3	42.5	39.7	55
Metal	43	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	19	65.1
Other Machniery equipment	51.1	22.5	43.8	35.3	103.1
Services	0	0	0	0	0
Total	732.8	279.9	731.4	464.1	1042

Sources; GTAP data base

Table 4.7 shows the bilateral tariff for major trading sectors in East Asian region (GTAP does not have protection data for the service sector). The top entry in each row of table4.7 represents the import tariff on agricultural produces. We can notice that the tariff equivalents on food imports are high, especially in Korea, which imposes 155% on food exports 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. And then 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 4-6 Bilateral Tariff Rates by Destination (%), 2001

	China	Japan	Korea	ASEAN 5	ROASEAN	NAFTA	EU	ROW	Total
China	14.4	39.5	213.6	60.7	156.9	37.5	42.9	107.5	673
Japan	112.3	0	85.8	78	136.7	28.9	38.4	68.8	548.8
Korea	134.5	36	0	75.1	155.8	39.7	49.3	110.5	601
ASEAN 5	76.9	34.6	56.4	45.7	123.7	29.7	38	116.6	521.5
ROASEAN	120.9	26.2	52.4	51	121	51.3	30.6	89.4	542.7
NAFTA	93.3	54	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	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	254	248	722	4474.1

Sources: GTAP Data Base

Table 4-7 Bilateral Tariff rate for main commodity by region, 2001

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From/To		China	Japan	Korea	ASEAN 5	ROASEAN
China	Food and Agricultural product	0.8	21.7	155.3	12.7	38.4
	Mineral	0.6	0	3	6	12.4
	Textile and apparel	5.7	9.4	11	9.1	16.9
	Vehicles	0	0	6.9	11.3	49.6
	Machinery and Electronic	1.9	0	4	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 Agricultural product	11	0	23.9	13.6	16.6
	Mineral	9.7	0	7.6	6.1	7.4
	Textile and 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	3.9	9	3.4
Korea	Food and Agricultural product	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	0.9	0	7.1	6.8
ASEAN 5	Food and Agricultural product	10.1	23.7	21.9	13.2	37.3
	Mineral	6.1	0	2.9	3.1	12.1
	Textile and apparel	14	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	5.3
ROASEAN	Food and Agricultural product	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

4.7. The simulation Scenarios

This study first construct the Basic scenario (Scenario B) which simulates "post-NAFTA" and "post-AFTA" data set[28]. These data constitute an update of the standard GTAP data set resulted 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. 8. 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 elimination of trade barriers among trading blocs lead to changes in the prices of goods and services traded in the region and corresponding change in volume. The larger market will result in a lowering of costs of inputs. It is also possible to simulate investment from both domestic and foreign sources.

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

4.8.1. Effects of GDP growth rate and welfare in equivalent variation (EV)

The GTAP simulations result in a range of growth of value changes for GDP and the potential relative welfare effects of different FTA configurations. GDP growth rates indicate the difference of average growth rates in each scenario from that of basic scenario. Various

[28] 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

indicators of welfare have been used in the context of models of trade. One of the most important and commonly used indicators is equivalent variation. The change in economic welfare in equivalent variation (EV) measures the changes in income at constant price that occurs 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 scenario, welfare effects on its members are positive and welfare gains are very substantial for Japan, Korea and ASEAN 5, depending upon the degree of trade liberalization and the extent of scale economies realized in the adjustment process. At the same time, the results indicate negative effects on the economies of EU, NAFTA and the rest of the world of that are intensively engaged in trade with the potential members of the East Asian economies.

ASEAN economies obtain positive effects on all scenarios. However, the result indicates that the welfare gains, both growth rates of GDP and EV, from ASEAN plus 3 FTA are lower than those 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, Japan may have, as a result of its large initial economic size, more significant positive impact on GDP growth rate and EV change than other FTA member countries.

4.8.2. Effect of Trade Reform on Volume of Total Export

A free trade area occurs when a group of countries agree to eliminate tariffs between themselves, while maintaining 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 with higher resources cost to a member producer with lower resources cost in a member country. On the other hand, trade diversion means that a free trade area diverts trade away from a more efficient non-member producer to less efficient member producers.

Table 4.9 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.

Table 4-8 Estimated Effects of East Asia 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	0.07	0.14	180.88	-443.34	-180.1	816.31
Japan	-0.17	0.25	-0.2	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	382.4	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	-0.4	-689.9	-1327.96	-797.33	-2562.58
ROW	-0.07	-0.18	-0.1	-0.63	-918.01	-2115.52	-1445.7	-5713.83

Sources: Simulation

This result indicates that trade liberalization experiments have a great impact on ASEAN member countries as the volume of intra-ASEAN trade falls considerably. The volume of ASEAN countries' import from China, Japan and Korea would increase under all scenarios. This table shows that under each scenario, the volume of export for all member countries would 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.

4.8.3. Impact on Output, Export and Import

Table 4.10 presents the impacts of free trade agreements on change in real output, export and import under East Asia FTA (Scenario 4) on basic Scenario. When East Asian economies remove the tariff barriers among the regions, the effect of changes in output is mixed in that some sectors grow while others do not. The agricultural sector will expand in ASEAN and China while Japan and Korea's agricultural sector is reduced. China, Korea and ASEAN's output of

vehicles sector would drop. Some production sectors seem to be sensitive to trade liberalization scenario. The simulation indicates that both these agriculture-expanding economies and these agriculture-contracting economies among East Asia will increase their export and import of agricultural product. 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. It can be seen that real imports for all sectors will increase under East Asian trade linearization scenario.

4.8.4. Effects 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 4.11. Term of trade measure the number of units of import an economy can obtain from each unit of export. Term of trade tends to worsen if the price of exports declines relative to the price of imports in a country. McDougall (1993) describs 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. One consequence of product differentiation by country of origin is the omni-presence of terms of trade changes (Roberta Piermartini and Robert Teh, 2005). Change in trade policy tends to produce significant terms of trade changes in the model because of the Armington assumption.

When the trade reform conducted in East Asian economies, the negative changes in the 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.

It is noticed that the trade liberalization for East Asian economies could promote household Utility for all of FTA's members. China, Japan and Korea will enjoy more favorable outcomes on term of trade, GDP and Household Utility under ASEAN plus 3 FTA than under their respective ASEAN plus 1 FTAs. But these results suggest that East Asia Free Trade Area may not be beneficial for NAFTA, EU and the rest of the world.

The overall result points to the fact that there would be gains from trade for East Asia regional partners from FTA. China and the rest of ASEAN seem to gain less than other FTA partners of East Asia 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 4-9 Effects of Trade Reform on Volume of Total Export ($ million)(evaluated at exporter market prices)

From/To		China	Japan	Korea	ASEAN 5	RoASEAN	NAFTA	EU	ROW	Total
China	Scenario 1	4750.3	-363.6	-177.4	7952.9	4322.8	-735	-694.2	-464	14591.8
	Scenario 2	4978.9	-557.1	-100.6	6969.8	3731.4	-371.4	-445.3	-284.3	13921.4
	Scenario 3	4886.4	-248.6	-280.9	7612.1	3395.8	-418.2	-493.2	-303.8	14149.6
	Scenario 4	-3477.9	16189.9	20770.8	6675.6	2975.9	-4.1	-750.5	-496.4	41883.2
Japan	Scenario 1	-3835.7	0	153.8	1071.9	-123.4	1086.8	613.1	614.5	-419.1
	Scenario 2	-5596.2	0	-667.6	17395.9	2081.5	-3509.6	-1981.3	-2167.8	5554.8
	Scenario 3	-3708.7	0	95.4	442.3	-264	1370	750.7	809	-505.3
	Scenario 4	34530.2	0	6139.5	10930.9	1286.2	-14916.9	-8705	-9176.1	20088.7
Korea	Scenario 1	-2228.7	206	0	313.1	-139.1	583.8	344.5	484.4	-435.9
	Scenario 2	-2068.5	279.3	0	-489.3	-253.4	772.5	449	652.9	-657.5
	Scenario 3	-3174.2	-321.6	0	5218.1	2749.4	-1022.3	-658.5	-953.7	1837.3
	Scenario 4	20546.3	3102.2	0	2732.2	2162.4	-4240.3	-2950.6	-3694.9	17657.4
ASEAN 5	Scenario 1	24369	-2334.6	-706.7	-2982.2	-1671.1	-4018.1	-3613.2	-3266.2	5776.9
	Scenario 2	24153.2	5884.2	-729.5	-6255.3	-2147.4	-4471.9	-4254.9	-3875.2	8303.3
	Scenario 3	24271.5	-2558	2974.3	-3921.2	-2306.4	-4140.9	-3855	-3519.7	6944.6
	Scenario 4	16706.6	6717.8	1133.3	-5214.4	-2500.7	-2935.2	-3139	-2927.4	7841
RoASEAN	Scenario 1	2440.6	-109.2	-24.3	-161.7	-0.7	-83.4	-113.9	-114.1	1833.5
	Scenario 2	2362.2	888.9	-35.5	-309	-1.1	-42	-103.8	-179	2580.7
	Scenario 3	2439.9	-76	457.5	-204.4	-1	69	60.4	-115.1	2630.2
	Scenario 4	2095.5	681.3	185.1	-240.3	-1.2	188.5	202.1	-98.1	3013
NAFTA	Scenario 1	-2255.6	104.2	-51.8	809.8	4.2	600.6	299.5	129.2	-359.9
	Scenario 2	-2093.5	-244	102.3	-1877	15.3	2044.6	805.9	575.4	-671.2
	Scenario 3	-2239.4	140.4	-192.1	334.5	-16.7	864.7	406.6	237.6	-464.4
	Scenario 4	-6625.4	1052	-3258.4	-1693.5	-18.5	6649.3	1762	1404.9	-727.6
EU	Scenario 1	-2823.1	-12.9	-78.1	1003.1	-25.1	265.6	483.3	60.9	-1126.3
	Scenario 2	-2707.9	367.7	-21	-836.9	-41.1	543.8	1112.5	447.8	-1135.2
	Scenario 3	-2820.7	-23.3	-18.9	620.6	-108.1	317.8	523.9	187.9	-1320.7
	Scenario 4	-9442.3	1858	-769	-890.7	-138.2	2307.5	3369.5	1917.4	-1787.8
ROW	Scenario 1	-3839.1	413.3	57.8	583	-172.6	639.7	766.4	624.7	-926.8
	Scenario 2	-3582.9	349.1	179.8	-1620.6	-316.7	1053.6	1499	1261.9	-1176.8
	Scenario 3	-3307.5	552.1	-484.9	98.8	-419.4	688.9	947.6	883.6	-1040.8
	Scenario 4	-3751.2	583.5	-478	92	-416.9	813	1048.2	938.3	-1171.1

Sources. Simulation,

Table 4-10 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	4.8	-2.22	-13.9	2.11	0.99	-0.55	-0.23	-0.24
Foresty and Fishing	-0.1	-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	3.6	29.34	-5.19	0.95	-0.53	-1.58	-1.49
Chemical	-4.83	0.76	5.1	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	1.1	-2.26	-10.61	-23.56	0.17	0.14	0.41
Machniery and Electronic	-2.09	-0.41	-3.37	1.65	-5.38	0.55	0.12	0.64
Other manufacturing	-1.27	-0.6	7.72	0.15	-0.81	0.04	-0.07	0.07
services	-0.2	0.02	0.43	-0.35	0.47	-0.02	0.04	0.02
Growth of Real exports (%)								
Food and Agriculture	126.1	11.5	190	10.95	4.48	-5.22	-0.97	-1.87
Foresty 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	-2.6	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	3.8	-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
Machniery and Electronic	6.48	0.86	-0.97	2	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	-3.65	-2.3	1.16	1.08	1.72
Growth of Real Import (%)								
Food and Agriculture	13.6	15.81	92.37	7.07	7.11	-0.54	-0.18	-0.85
Foresty and Fishing	1.7	1.23	4.42	2.08	2.39	-0.44	-0.13	-1.13
Mineral	7.1	2.3	7.5	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	10.87	7.91	69.06	-1.02	-0.26	-1.07
Machniery and Electronic	10.03	5.8	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	2.2	1.74	-0.46	-0.34	-0.69

Sources: simulation

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

Table 4-11 Effects of Trade Reform on Terms of Trade, Real GDP and Household Utility (%) change)

Region	Terms of Trade				GDP Quantity Index*				Household Utility			
	Scenario1	Scenario2	Scenario3	Scenario4	Scenario1	Scenario2	Scenario3	Scenario4	Scenario1	Scenario2	Scenario3	Scenario4
China	0.06	-0.06	-0.01	-0.23	-0.01	-0.02	-0.01	0.1	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	0.2
Korea	-0.25	-0.38	0.3	0.87	-0.02	-0.04	-0.05	1.09	-0.13	-0.2	0.08	1.6
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	0.3	0.45	0.5	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	-0.1	-0.07	-0.3	-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

4.9. Concluding Remarks

This chapter has provided some quantitative estimates of the impact on East Asian trade liberalization initiatives. The analysis is based on a static GTAP model. The simulation results show that removal of tariff barriers in East Asian region lead to an increase in GDP for the East Asian economies. East Asian FTA would have little impact on China and rest of ASEAN's GDP. Participation in the East Asian regional FTA is expected to provide the East Asian countries with trade creation effects in addition to the additional market access opportunities. The more favorable results are found for member countries under ASEAN plus 3 FTA than those under ASEAN plus 1 FTA. It is concluded that the removal of trade barriers among East Asian regions could encourage trade diversion, especially with those countries outside the region. As a result of trade liberalization, exports, imports, terms of trade, and the growth rate of GDP are different among the member countries depending on their comparative advantage, initial economic size, and rate of protection on trade.

Chapter 5
Impact of East Asian Trade Liberalization on Agricultural sector

Since the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), agricultural trade liberalization has become one of the most sensitive issues. Although trade in agricultural products comprised only 8.1 % of world merchandise trade in 2005, tariffs on agricultural products remain substantially higher than those on manufactured products almost everywhere around the world. The relationship between trade liberalization and agricultural growth is complex, multi-directional and not always easy to predict. They depend upon external factors emanating from international markets as well as on domestic supply capacities and the effects upon livelihood and income distribution within the sector. These variables in turn are affected by land relations and other government policies towards agriculture and rural development, which determine the degree to which cultivators can take advantage of international markets and the extent to which they are threatened by them (Ghosh.J, 2005).

The Uruguay Round agreement involved commitment for reducing agricultural trade barriers, improving market access, and establishing the disciplines and rules on various aspects of global agricultural trade. Uruguay Round disciplines were introduced in the areas of market access, export subsidies and domestic support. The main achievement of the market access discipline is "tariffication" – a process whereby import bans, quotas and other restrictive import measures are converted into tariffs. Uruguay Round Agreement also introduced tariff rate quotas (TRQs)[29] to create much additional market access where tariffs replaced non-tariff barriers. Removing the trade barriers to such trade presents a greater opportunity for future gains. Member countries of the World Trade Organization (WTO) initiated the Doha Round of multilateral trade negotiations to catch up those opportunities. The Doha negotiations show that developing countries' interests have been placed at the center of a multilateral round of trade negotiations. Those interests include agriculture, implementation of textile agreements, the use of antidumping, and the nature of special and differential treatment for developing countries. Although Doha Round negotiations have been suspended due in large part to difficulties in reducing agricultural trade barriers in developed economies, liberalizing trade in agricultural products is likely to be a priority in the future.

The multilateral trade negotiations have already led many countries to enter into free trade agreements (FTAs), both at the bilateral and regional levels before the collapse of the Doha round. In recent years East Asia has seen the emergence of a number of economic partnership

[29] Tariff rate quotas (TRQs) is a quota for a volume of imports at a particular tariff rate.

agreements including free trade agreements (FTAs), which remove tariff and non-tariff barriers in international trade among the member countries. 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.

This paper is designed to evaluate the progress made in agricultural trade under East Asian FTA using the GTAP model and to assess how the trade liberalization policies affect income, trade and output pattern at the regional level. Therefore, emphasis is placed on the impact on 5 agricultural commodities that are of considerable economic importance to many countries of the East Asian region. The commodities selected are rice, sugar, fish, vegetables and fruits and oilseed.

5.1. Agricultural trade and East Asia

Agriculture is the most contentious issues in trade negotiations among East Asian countries. While manufacturing protection has declined in most countries in the region due to reforms of trade policies, most of East Asian countries still protect agriculture at high level.

5.1.1. Free Trade Agreements (FTAs) and Agricultural Protection in East Asia

Agricultural protection continues to be the most contentious issue in global trade negotiations. Until the 1990s industrial countries generally protected agriculture while developing countries generally taxed it (Krueger, Schiff, and Valdes 1992; World Bank 1986, Ataman Aksoy, M. 2005). Industrial countries supported their agricultural sectors through subsidies to producers, high tariffs, and other non-tariff measures such as import restrictions and quotas. While this protection was acknowledged in the economic literature and in global discussions, its implication for developing countries received much less attention (Ataman Aksoy, M. 2005). Many governments in developing countries protected their agricultural products by exporting limited amounts of agricultural products, levying export taxes, using price controls, adopting exchange rate policies, and other restrictions to keep agricultural prices low for urban consumption.

Many governments typically adopt agricultural protection policies to benefit domestic agricultural producers. However, these trade-distorting policies impose costs on their consumers, who have to pay more for agricultural products protected by tariffs. Foreign agricultural producers who compete with domestic producers also lose their sales as a result of those policies. One of the objectives of agricultural policy is food security of their population. Subsidies for research and development, income redistribution, import barriers, export subsidies,

price floor, price ceilings and infrastructural development are explained as part of national food security policy.

East Asian FTA may make economic sense, giving trade and investment linkages in East Asia through the involvement in global manufacturing supply chains. However, the most protected sector in the region, agricultural sector seems to be a burden of East Asian FTA. An open food and agricultural system would complement the restructuring of the Asian economies by removing the possibility of future distortions. The process of trade liberalization will increase the competitiveness of agricultural sectors in the importing countries.

Japan was reluctant to engage in Free Trade Agreements until 2002. Japan signed its first free trade agreement (FTA) with Singapore in November 2002. Japan-Mexico FTA was enacted in April 1 2005. However, Japan did not open much on agricultural trade liberalization in both Japan-Singapore FTA and Japan-Mexico FTA.[30] Japan and Korea started a negotiation of free trade agreement between them in 2003. But the negotiations have not been concluded until now because of some specific concerns and problems facing Japan and Korea. One of the problems is that both Japan and Korea oppose to liberalization of trade in agricultural products. Japan and ASEAN started FTA negotiations in 2005. On the other hand, some members of ASEAN and Japan also started negotiations on bilateral FTAs. Although Japan recognizes FTAs as one of its trade policy options, it is unwilling to liberalize agricultural products due to its food security.

Agriculture is Japan's biggest constraint on moving towards FTAs. Agriculture accounts for only small share of Japan's GDP and its total employment, but remains heavily supported and protected from import competition. According to the OECD reports, support to producers as a percent of gross receipts was 58% in 2002-04, down from 61% in 1986-1988, but still almost twice the OECD average. Rice, wheat, other grains, meat, sugars, and dairy are the most heavily supported commodities. Agricultural support policies in Japan are designed so that Japanese consumers pay for almost all of the domestic support. In 1999, over 80 per cent of the producer support was provided through market based price support and heavy restrictions on imports, leading to transfers from consumers to producers in Japan (OECD 2000).

Although Korea's trade and investment policies have allowed greater liberalization, including the further opening of its economy to international trade and foreign investment, some protectionist measures continue in agricultural commodities to shield domestic producers.

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[30] See detail in Urata (2005)

Agriculture is the most distorted sector in Korea with high level of protection and low market orientation. Korea's net agricultural support exceeded the sector's GDP contribution (3.6% in 2003), and was among the highest in the OECD. Its average Producer Support Estimate (PSE)[31] for agriculture was 60% in 2003, and was the highest for rice (74%) and oilseeds (89%) (World Trade Organization, WT/TPR/S/137, 18 August 2004).

Korea-Chile FTA was enacted in 2004 after several attempts to overcome opposition from the agricultural sector. It excluded many key agricultural products from liberalization. In May 16, 2006, ASEAN-Korea (FTA) was signed by Korea and nine of ASEAN members.[32] 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.

In recent years, China has been actively pushing for free trade agreements (FTAs) in Asia and the world. Since 2001, it has been engaging in FTA negotiations with a number of countries. In November 2002, ASEAN and China signed the FTA Framework Agreement (ACFTA) to be in force 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. The "early-harvest" program, in force since July 2005, has cut or eliminated about 10% of tariff lines, mainly in agricultural products. Therefore, China-ASEAN free trade agreement, thanks to an Early Harvest Program which covers a significant portion of agriculture products, is different from other FTAs which try to avoid discussing about agriculture. ASEAN countries, except for the Philippines and China, are eager to engage in more open agriculture trade.

The ASEAN Free Trade Area (AFTA) was signed in 1992. In ASEAN, because more than a third of most ASEAN countries' employment is in agriculture, protection of agriculture employment becomes an elemental concern. AFTA initially excluded unprocessed agricultural products from trade liberalization. ASEAN countries have been implementing to achieve AFTA through step-by-step tariff reductions, phased transitions and other flexible arrangements,

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[31] Producer support estimate (PSE) is a measure of domestic support. It is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income.

[32] Thailand was excluded from the accord owing to disagreements over agricultural goods.

eventually aiming to agricultural liberalization. Although agricultural sector in ASEAN raised major difficulties for liberalization of some agricultural products a decade ago, e.g., rice for Indonesia and the Philippines, majority of agriculture sector is now included in ASEAN regional liberalization.

Agricultural commodities play an important role in the trade of ASEAN countries. Thailand and Vietnam has recently become important exporters of rice and other tropical products. Malaysia has long been a major exporter of rubber and palm oil, and Indonesia is also an exporter of a variety of tropical agricultural commodities. For Indonesia, agricultural support is provided for four import commodities (rice, sugar, maize, and soybean) and two export commodities (crude palm oil and natural rubber). Cambodia, Laos and Myanmar, less developing countries in the ASEAN, largely depend on agricultural sector to their GDP; in 2006, shares of Agriculture in GDP in Cambodia, Lao and Myanmar are 30.1 %, 44.8 % and 48.4 % respectively.

5.1.2. The Role of agricultural trade in East Asia

Table (5.1) and table (5.2) illustrate the role of agricultural trade in the East Asian economy in terms of its contribution to total trade in 1990-2004. Japan and Korea had the lowest shares of agricultural and foods export while Vietnam and Thailand showed the highest shares; 20.57% and 12.24% respectively. The share of agricultural and food export in total export in most of East Asian countries, especially China, the Philippines, and Thailand declined during the past two decades. This indicates structural changes in these countries during the period. Although the manufacturing had substituted for agricultures in those countries, the agricultural sector still had considerable impact on East Asian economies.

On the import side, Japan and Brunei were the only countries with more than 8 percent of agricultural import shares in the region in 2005. Singapore, China and Thailand's agricultural import share were not significant in that year. The shares of agricultural and food import in total import in most East Asian countries declined during the studied period.

Table 5-1 Total Merchandise and Food Export 1990-2005

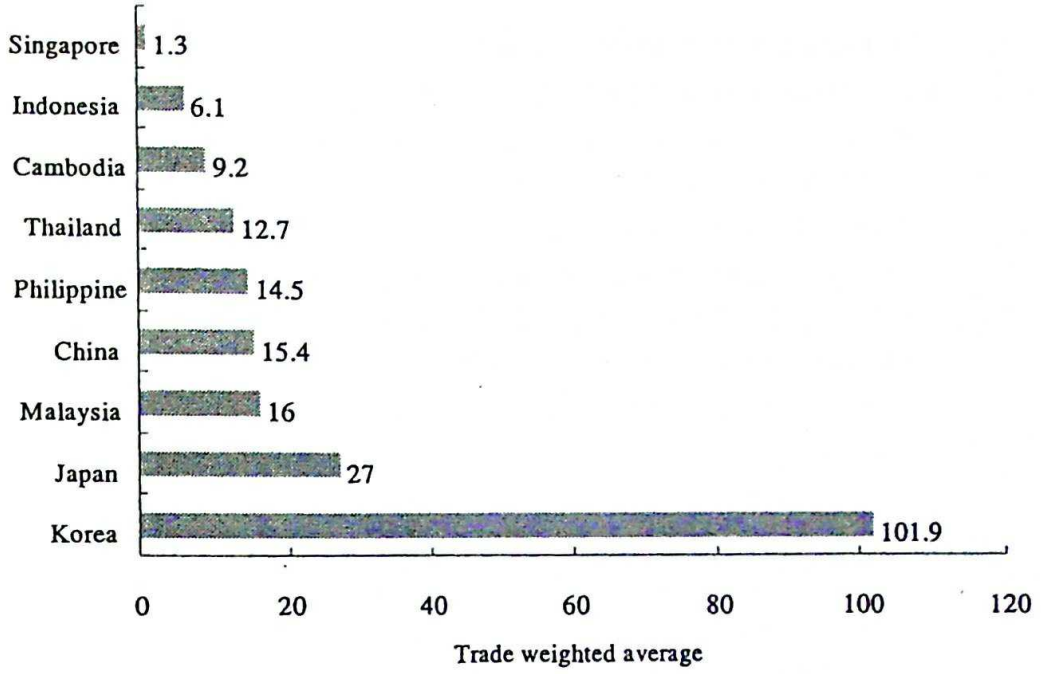
	1990			1995			2000			2005		
	Export of food and live animals	total export	Food share in total Export	Export of food and live animals	total export	Food share in total Export	Export of food and live animals	total export	Food share in total Export	Export of food and live animals	total export	Food share in total Export
Brunei	14	2213.2	0.63	0.33	2344.7	0.01	1.17	3107.7	0.04	1.73	4567.3	0.04
Cambodia	-	-		-	-		10.11	1389.4	0.73	23.4	3092.5	0.76
China	6735.2	62092	10.85	9924	148780	6.67	12282	249202	4.93	22480	761953	2.95
Hong Kong	1767.3	82390	2.15	2741.1	173871	1.58	2597.2	202683	1.28	1629.4	292119	0.56
Indonesia	2290.8	25675	8.92	3579.9	45418	7.88	3503	62124	5.64	4574.8	85660	5.34
Japan	1442.8	286947	0.50	1611.7	442937	0.36	1764.2	479248	0.37	2455.4	594941	0.41
Malaysia	1275.9	29453	4.33	1799.3	73778	2.44	1702.7	98230	1.73	2835.8	140963	2.01
Philippines	1075.1	8186	13.13	1337.1	17447	7.66	1286.4	38078	3.38	1619.5	41221	3.93
Singapore	1511.3	52716	2.87	2506.5	118263	2.12	1755.4	137806	1.27	2320.1	229652	1.01
South Korea	2014.9	65016	3.10	2645.4	125057	2.12	2402.4	172268	1.39	2468.1	284418	0.87
Thailand	6495	23069	28.15	10689	56439	18.94	9687.1	68787	14.08	12375	110110	11.24
Vietnam	-	-		-	-		3536.1	14483	24.42	4695.5	22826	20.57

Table 5-2 Total Merchandise and Food Import 1990-2005

	1990			1995			2000			2005		
	Import of food and live animals	total Import	Food share in total Import	Import of food and live animals	total Import	Food share in total Import	Import of food and live animals	total Import	Food share in total Import	Import of food and live animals	total Import	Food share in total Import
Brunei	152.9	1000.8	15.28	225.93	1952.63	11.57	181.27	1255.45	14.44	193.29	1272.18	15.19
Cambodia	-	-		-	-		50.21	1438.66	3.49	67.13	2186.33	3.07
China	3457.8	53345.1	6.48	6122.7	132083	4.64	4758.3	225094	2.11	9387.99	659953	1.42
Hong Kong	4569.2	84724.8	5.39	7497.1	196072	3.82	7371.2	214042	3.44	7271.09	300160	2.42
Indonesia	851.2	21837	3.90	3020	40628.6	7.43	2782.2	33514.8	8.30	4011.72	57700.9	6.95
Japan	28266.2	234799	12.04	45748.1	336094	13.61	41097.1	379663	10.82	44751.9	515866	8.68
Malaysia	1693.3	29245.6	5.79	3128.9	77045.4	4.06	2995.5	81289.7	3.68	4714.82	114584	4.11
Philippines	1213	13041.6	9.30	2107.3	28487.2	7.40	2253.3	33807.5	6.67	2941.3	46953.8	6.26
Singapore	2384.9	60790.3	3.92	3635.7	124504	2.92	2968.9	134546	2.21	4010.63	200050	2.00
South Korea	3239.9	69839.6	4.64	5912.4	135113	4.38	6496.7	160479	4.05	9955.97	261236	3.81
Thailand	1414.4	33371.4	4.24	2243.4	70780.8	3.17	2073.5	61450.6	3.37	3792.95	118164	3.21
Vietnam	-	-		-	-		624	15636.6	3.99	1525.04	29876.4	5.10

Sources: United Nations, UN Trade Statistics, Export (FOB) & Import (CIF) of food and live animals, SITC classification 0

Figure 5-1 Trade Weighted average for Agricultural and Processed Foods, 2005



Source: WTO, http://stat.wto.org/Home/WSDBHome.aspx?Language=

Notes: Trade weighted averages means HS six-digit MFN tariff averages weighted with HS six-digit import flows, average tariff rate for Malaysia and Cambodia refer to 2004

5.2. Modeling Analysis on Trade liberalization reform in the East Asian region

Agricultural policies play an important role in both domestic and international agricultural markets, directly affecting the levels of production and consumption of agricultural commodities and food products. Trade flows are increasingly influenced by policies that have been negotiated as part of regional trade agreements such as the North American Free Trade Agreement (NAFTA), and the European Union (EU).

In recent years, Economic integration through Free Trade has progressed throughout the world. Most of the developed and developing countries have become members of some regional trade agreements. ASEAN established ASEAN Free Trade Area (AFTA) in 1992. Since the end of 1990s, China, Japan and Korea have been engaged with ASEAN to establish Free Trade Area among them. In 2001, The East Asian Vision Group (EAVG) submitted a report which

described its vision of an "East Asian Community," and they recommended the formation o East Asia Free Trade Area.

5.2.1. Modeling Framework and Data

In this paper, GTAP model is used to assess how the trade liberalization in East A affects income, trade, and output patterns in agricultural commodities at the regional level.

The GTAP model is based on a standard computable general equilibrium model with fi maximizing profit in competitive markets and consumers maximizing well-being under buc constraint. This is detailed inter-industry linkages for each of the represented economies. production system in GTAP model distinguishes five sectors by their intensities: l. (agricultural sectors only), natural resources (Extractive sector only), Capital, skill labor unskilled labor. Data in this paper are from the Version 6 GTAP database, which benchmarked to 2001.

The model is composed of 10 regions and economic activities aggregated into 8 sectors. The regions are China, Japan, Korea, Indonesia, Malaysia, Philippines, Thailand, Vietnam, the of ASEAN and the Rest of the World. The sectoral decomposition is concentrated on rice rice product, vegetables, fishery product, oilseed, sugar, other agricultural and food produ manufacture products and services. As the model used in this paper is a static model, exogen variable growth rate such as labor and land growth rates, savings-driven investment and cap accumulation and exogenous productivity growth are not taken into consideration.

5.2.2. Design of policy experiments

Agricultural trade liberalization in the WTO involves three elements—market acc domestic support, and export subsidies. However various Free Trade Agreements give prio to market access issues. Export subsidies are rarely treated in FTAs and domestic support is is almost neglected. However, the experiment in this paper is entirely concerned with complete removal of ad valorem import tariffs and non-tariff barriers among East As economies, while each member retains its individual tariffs with non-members. Dome support and export subsidies are assumed to be the same as base year. The simulation conduc in this paper utilizes the GTAP 6 database whose base year is set in 2001. The simulat reflects changes from their 2001 levels, base year of in this model.

5.2.3. Sectoral output and protection in the region in Base year, 2001

Agriculture and food sector is important in all countries in the region. Table (5 shows the base year production data from the aggregation of countries and commodities. T

protection levels in agricultural sectors from GTAP data base are measured as significantly higher than those indicated by actual tariff revenues.

Rice is an important commodity to the most countries in the region. Vegetable and fish products mostly stand out in China and Japan rather than the other regions. China is the biggest producer of oilseed in the region.

Table 5-3 Value of sectoral output (2001 $ US Million)

	China	Japan	Korea	Indonesia	Malaysia	Philip pines	Vietnam	Thailand	Ro ASEAN	ROW
Rice	44440.6	42146.9	14086.3	11358.8	384.15	6803.29	4717.03	7063.03	4000.7	93183.3
Vegetables	123231	23306.1	8847.35	5209.6	595.94	4343.22	988.43	3120.48	2195.53	263877
Fish	27852	17974.2	2424.88	3040.45	847.67	3101.16	863.51	2622.99	1661.6	83692.4
Oilseed	7889.2	316.36	177.72	1126.23	107.95	16.78	39.92	186.1	108.64	61448.7
Sugar	1530.29	12187.4	756.36	2972.3	321.22	1687.2	228.68	1739.23	897.56	142686
OthFood	283838	311901	46594.2	34939.1	11806.8	25261.1	5489.11	24321.3	15679.1	3142588
Manufacture	1744669	2164644	420655	124403	137085	52932.3	20824.8	115056	148174	1.3E+07
services	1312484	4759208	475945	106748	69026.1	58036.8	33079.5	100682	193762	2.8E+07

Sources: GTAP data base

Table 5-4 Ad valorem rate, import taxes, by source

	China	Japan	Korea	Indonesia	Malaysia	Philip pines	Vietnam	Thailand	Ro ASEAN	ROW	Total
Rice	3.7	5675.7	5486.9	166.8	0	342.4	58.9	43.1	4.6	151.2	11933.6
Vegetables	94.8	249.9	618.1	41.5	53.2	87.8	309	315.3	3.4	139.7	1912.7
Fish	37.3	31.5	144.6	29.9	3.5	31.4	95.7	311.4	0.3	35.4	721.1
Oilseed	266.7	2.4	2260.8	19.9	12.5	37.7	33.5	256.6	2.2	64.3	2956.6
Sugar	94.3	1696.3	95.4	158.3	0.4	308.3	227.4	224.8	1.5	391.8	3198.5
Oth Food	105.8	99.6	309.8	51.2	208.2	74.2	341.8	323.4	49.4	121.3	1684.5
Manufacture	89.5	12.6	37	38.5	40.5	22.9	122.8	85.1	8.1	49.4	506.3
Services	0	0	0	0	0	0	0	0	0	0	0
Total	692.2	7767.9	8952.7	506.1	318.4	904.8	1189.1	1559.7	69.5	953	22913.3

Sources: GTAP data base

The degree of protection determines the impact of trade liberalization. Therefore, the higher the initial import tariff rate, the greater the impacts of trade liberalization in that commodities are. The percentages of Ad valorem tariff rate used in the GTAP data base for the East Asian region are shown in table (5.4) .The most heavily distorted commodity is rice and rice products for Japan and Korea. Japan also imposes high import tax on sugar (1635.9%) and Korea's import tariff on oilseed is also high. Vegetable and fruit are heavily protected in Japan, Korea, Vietnam

and Thailand, where their import tariff rates are more than 200 %. Korea and Thailand impose high tariff on fish and fish products.

5.3. Modeling results on East Asian FTA

Integration and economy-wide trade liberalization promote economic growth, reduces poverty, and increase growth rate of income and output. Open trade allows resource allocation to be consistent with comparative advantage, thereby increasing productivity. Reducing barriers like high tariff on import of agricultural and food products may give consumers the benefit of low food prices. Integrated countries from multilateral trade negotiations including agricultural trade liberalization will have to increase their agricultural competitiveness and productivity through appropriate changes in cropping patterns, improvements in production techniques, the improving of market access, and other complementary measures to realize any true benefits of trade liberalization. To realize the benefits of trade liberalization, the integrated countries are required to consider the adverse effects of adjustment on some groups.

5.3.1. The effects of trade liberalization on East Asian economies

Removing tariff on all commodities in East Asia, the region would be able to increase their GDP; Thailand by 3.74%, Japan by1.32 %, Korea by 1.39%, Indonesia by 1.08%, and China by 0.39%.In terms of national welfare, all of the East Asian region would gain from East Asian FTA. Japan would have the largest gain in the region with $ 27050.02 million of economic welfare.[33]

The percentage change of the value of regional export and import by commodity are shown in table (5.5) and table (5.6). With the trade distorting instrument of East Asian countries removed, the percentage changes in the value of regional agricultural export and import would be much larger than that of manufacture and services sector. Implementation of trade liberalization in East Asia is expected to lead to a structural change in the regional food markets whereby food production would shift from highly protected regions to low-protected regions or non-protected regions.

[33] GTAP simulation results and Equivalent variation is used as the indicator of Welfare.

Table 5-5 **Percentage changes of value of regional Export, FOB by commodities**

	China	Japan	Korea	Indonesia	Malaysia	Philip pines	Vietnam	Thailand	Ro ASEAN	ROW
Rice	1051.68	244.25	10873.4	-20.16	40.08	-13.17	91.25	73.03	-0.67	-17.25
Vegetables	36.37	16.12	47.68	8.81	10.88	16.42	31.92	-0.48	16.28	-1.24
Fish	6.56	13.61	13.8	4.6	5.37	1.2	5.67	4.83	7.48	-0.28
Oilseed	135.08	27.42	583.57	-4.13	-5.37	-0.52	87.05	-20.34	-4.04	-0.64
Sugar	128.05	279.13	93.44	-2.05	18.75	-4.4	12.05	258.28	80.15	-4.26
Oth Food	94.03	25.26	176.59	12.38	16.53	10.9	5.95	8.96	70.24	-3.24
Manufacture	6.73	8	8.61	4.25	3.54	3.32	21.53	7.34	0.5	-0.64
Services	-1.09	-1.76	-3.71	-3.48	-3.73	-1.83	-8.06	-12.43	-3.07	1.05

Sources: GTAP simulation results

Table 5-6 **Percentage changes of value of regional Import, CIF by commodities**

	China	Japan	Korea	Indonesia	Malaysia	Philip pines	Vietnam	Thailand	Ro ASEAN	ROW
Rice	-6.64	3523.32	6914.79	68.88	-1.35	180.02	54.88	161.92	8.22	15.02
Vegetables	14.21	10.66	155.88	7.32	5.19	9.09	38.51	65.27	11.98	-0.85
Fish	5.91	4.05	16.24	6.37	5.67	4.43	-5.04	42.24	8.19	-0.78
Oilseed	8.39	-0.18	106.93	2.81	3.13	0.94	19.62	5.45	10.92	-1.08
Sugar	14.73	236.6	2.45	29.16	2.67	42.91	28.21	62.16	13.1	-1.02
Oth Food	15.41	7.11	58.62	6.97	23.6	5.45	58.47	37.41	14.86	-0.79
Manufacture	14.27	7.64	10.25	8.52	6.31	2.92	17.46	12.06	0.83	-0.75
Services	0.62	3.22	6.59	2.44	2.32	2.24	4.96	9.74	2.39	-0.75

Sources: GTAP simulation result

5.3.2. Commodities Studies

This paper analyzes the impact of trade liberalization policy on East Asian region for selected commodity groups. The commodity groups are selected to provide the range of trade reform and to study the diversity of gainers and losers.

5.3.2.1. Rice

Although Rice is the staple food of more than half the world's population, more than 90 % of production and consumption occur in Asia. Rice's trade is characterized by high protectionism in both developed and developing countries. It is manipulated to achieve national policy objectives of domestic food security and support for producer prices and incomes in major rice-producing and rice-consuming countries. Domestic price stabilization policies have also been pursued by restricting imports. Despite the importance of rice as a basic staple, global trade accounts for only 6.5 percent of consumption. That means that most countries are self sufficient in rice and face increased price volatility in times of production shortfalls (Wailes, 2005). Thus, the combination of high levels of domestic protection, geographic concentration,

erratic weather, inelastic price responses in production and end-use markets, and relatively thinly traded volumes results in volatile prices and trade (Wailes 2002,2005).

Table 5-7 Leading Rice-Producing, Consuming, Exporting and Importing Countries

Rank	Producing[1]	Consuming[2]
1	China	China
2	India	India
3	Indonesia	Indonesia
4	Bangladesh	Bangladesh
5	Vietnam	Vietnam
6	Thailand	Thailand
7	Myanmar	Myanmar
8	Philippines	Philippines
9	Japan	Japan
10	Brazil	Brazil
11	United States	Korea, Rep. of
12	Pakistan	United States
13	Korea, Rep. of	Egypt
14	Egypt	Iran
15	Cambodia	Korea, North

1. Figures for 2005
2. Figures for 2003/2004

Source: USDA PS&D, United States Department of Agriculture

Rice is staple food in the East Asian region. China is the world's biggest producer and consumer of rice. Most of East Asian countries, Japan, Korea, Thailand, Vietnam, Myanmar and Philippines are also important in production and consumption of Rice. Thus, trade policies that affect rice price, production and trade have a large impact on these countries.

Thailand has been the largest rice exporter not only in the East Asian region but also in the world for the past several decades. In 2005, Thailand rice's export share was 25.064 % of world rice export. Thailand's rice policy is the paddy mortgage scheme, a loan program operated under the Bank of Agriculture and Agricultural Cooperative (BAAC)[34]. Vietnam is the fifth-largest rice producer and consumer countries. Vietnam's rice economy recovered after the Doi Moi reform program in the late 1986. Vietnam has been the world's second-largest rice exporter since the mid-1990s. Rice export and price are under the control of the Ministry of Trade and Vietnam's Food Association (Vinafood) (Young, Wailes, Cramer, and TriKhiem 2002).

[34] See detail in Eric J. Wailes, 2005

Table 5-8 Rice Export and Import in Region (2005)

US$ thousands

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)
Thailand	2,321,682	919	2,320,763	2.109	0.0008	25.064	0.01
Viet Nam	981,735	10,477	971,258	2.893	0.0314	10.598	0.1138
China	224,648	196,079	28,569	0.029	0.0297	2.425	2.1304
Singapore	28,811	114,145	-85,334	0.013	0.0571	0.311	1.2402
Myanmar	16,545	496	16,049	0.45	0.0157	0.179	0.0054
Indonesia	8,658	51,499	-42,841	0.01	0.0893	0.093	0.5595
Japan	5,768	320,909	-315,141	0.001	0.0622	0.062	3.4867
Hong Kong (China)	4,521	150,794	-146,273	0.002	0.0502	0.049	1.6384
Cambodia	2,301	5,660	-3,359	0.074	0.1702	0.025	0.0615
Malaysia	1,184	182,633	-181,449	0.001	0.1594	0.013	1.9843
Lao	351	3,132	-2,781	0.068	0.2949	0.004	0.034
Korea	89	51,369	-51,280	0	0.0197	0.001	0.5581
Philippines	29	549,954	-549,925	0	1.1713	0	5.9754
Brunei	0	17,027	-17,027	0	1.1294	0	0.185

For Brunei, Cambodia, Laos, Myanmar, and Vietnam, all indicators are derived from mirror data (partner countries trade data)

Sources: International Trade Center, UNCTAD/WTO

China's shares of rice export and import are 2.4 % and 2.1 % respectively. With the objective of food grain security, rice has been managed through procurement supports prices to ensure stable supplies in China. Now, in accord with the government's policy to emphasize the quality of rice, its producers are adopting improved quality varieties.

Major Rice importing countries in the East Asian region are Philippines, Indonesia, Japan, Malaysia and Korea. The pricing and marketing of rice in Japan are subject to government intervention. As the traditional staple food, rice dominates the government's agricultural policy (Fukuka, Dyck, and Stout 2003). In Korea, agriculture and agricultural policies are centered on rice, and the grain is often considered a political commodity, since it is a staple food and about 80 percent of all farms are put under paddy. The maintenance of high self-sufficiency ratio of rice has always been an important policy objective in modern Korean history. In Indonesia, rice has always been the main focus of policy on agriculture and food security. Price stability has been pursued by intervening in the market by BULOG, the government-controlled Food

Logistics Agency, to defend a nationwide ceiling price for consumers and floor price for producers.

Table (5.9) shows the bilateral tariff for rice in the base year, 2001. According to GTAP data base, Japan and Korea protected rice by imposing high tariff rates. Japan and Korea imposed 999.9% and 1000 % tariff rates respectively on rice import from China. Korea also taxed 1000 % tariff rate on rice imported from Japan and Thailand, 880.5 % imported from the rest of ASEAN countries and 858.5% imported from Vietnam. Japan imposed high imports tariff rate on rice from Thailand by 999.9%, Korea by 872.9%, and the rest of ASEAN by 788.7%, Vietnam by 788.5 % and Malaysia by 788.6 %. Indonesia and Philippines also imposed high rate on rice import, although their protection rate is not as high as those of Japan and Korea.

Table 5-9 Bilateral tariff rate for Rice in Base Year

Percentage

	China	Japan	Korea	Indonesia	Malay sia	Phili ppines	Vietnam	Thailand	Ro ASEAN	ROW
China	0	999.9	1000	25.7	0	47.5	13.9	0	1.1	31
Japan	0	0	1000	13.2	0	50	0	18	1.7	0.4
Korea	0.7	872.9	0	15.8	0	0	0	0	0	23.7
Indonesia	0.7	0	0	0	0	50	0	0	0	24.2
Malaysia	0	477.6	0	24.3	0	0	0	0	0	1.9
Philippines	0	0	0	1.2	0	0	0	0	0	1.3
Vietnam	0	788.5	858.5	16.7	0	50	0	0	0	12.4
Thailand	0.5	999.9	1000	28.1	0	50	30	0	0.4	34.2
RoASEAN	1.8	788.7	880.5	26.1	0	45.6	0	15	0	10.5
ROW	0.1	748	748	15.7	0	49.3	15	10.1	1.5	11.7
Total	3.7	5675.7	5486.9	166.8	0	342.4	58.9	43.1	4.6	151.2

source; GTAP data base

Sources: GTAP data base

Table 5.10 presents the bilateral rice trade among the East Asian regions. The basic period information suggests that the rice market among East Asian region was small in terms of intra-regional rice trade. Thailand, a major rice supplier, exports about 70 % of its total rice export to the rest of the world. Thailand's rice export share to China, Indonesia and Malaysia accounted for 12.1%, 4.4% and 4.6% respectively of its total rice export. Vietnam, on the other hand, was the major rice supplier for Philippines that imports 22% of Vietnam's total rice export. Japan and Korea were important destination of China's rice export in the region.[35]

[35] From GTAP Data base

Table 5-10 Bilateral trade for Rice at world price in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietna	Thailand	Ro ASEAN	ROW	Total
China	9	44.9	21.8	5.9	8.6	0.7	13.5	1.4	3.8	536.2	645.9
Japan	0.4	0	0.1	0.1	0	0	0	0.1	0.4	947.8	948.9
Korea	0.7	1.2	0	0.1	0.1	0.1	0.1	0.1	0.2	17.3	20.1
Indonesia	0.9	1.5	0.4	0	0.7	0.2	0.1	0.2	0.3	20.3	24.6
Malaysia	0.7	1.2	0.3	9.2	0	0.1	0.1	0.1	0.3	16.1	28.2
Philippines	0.8	1.4	0.4	0.1	0.1	0	0.1	0.2	0.3	18.8	22.2
Vietnam	1.2	3.9	0.4	23.6	26.3	84.5	0	0.2	22.1	212.2	374.4
Thailand	208.1	27.8	4.4	75.6	78.7	31.4	0.4	0	92	1207.2	1725.7
RoASEAN	0.5	0.2	0	5.2	3.6	0.1	0	0.1	7	45.8	62.5
ROW	24.4	146.4	6.8	32.1	25.5	38.6	1	1.1	23.9	3533.5	3833.3
Total	246.8	228.5	34.8	152	143.6	155.6	15.4	3.5	150.4	6555.3	7685.9

Sources: GTAP data base

Table 5-11 Bilateral trade for Rice at world price after trade liberalization

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	11.2	4874.5	2124.4	16.1	10.4	2.7	20	1.5	5.3	373.2	7439.2
Japan	2.3	0	59	0.4	0.3	0.4	0.1	0.9	2.7	3200.6	3266.6
Korea	27.7	1801.5	0	5.8	3.7	0.5	2.1	4.4	9.3	345.6	2200.7
Indonesia	1.3	0	0	0	1	1	0.1	0.2	0.5	15.7	19.6
Malaysia	0.9	2.2	0	24.4	0	0	0.1	0.1	0.4	11.4	39.4
Philippines	1.3	0	0	0.1	0.2	0	0.1	0.2	0.4	16.9	19.3
Vietnam	1.4	106.9	17.4	39.8	31.3	344.3	0	0.2	28.7	146.1	716.1
Thailand	155.2	1763.7	236.7	136	55.5	75.6	0.8	0	72.5	490.1	2986.1
RoASEAN	0.7	4.5	1.5	13.5	4	0.2	0	0.2	8.5	29.2	62.1
ROW	37.1	0	0	25	37.6	14.7	0.8	1.5	38.5	3016.9	3172
Total	239	8553.3	2439	261	143.9	439.5	24	9.1	166.8	7645.5	19921

Sources: GTAP simulation

Estimates of the impact of the elimination of import tariffs for all commodities in the East Asian region using GTAP ,model, show a significant expansion of rice trade and large price adjustments. With trade liberalization scenario among East Asian region, aggregate rice output of Japan and Korea would decline significantly—85.38% in Japan and 42.45% in South Korea. Philippines and Indonesia's rice output would also be on the decrease due to the trade reform in the East Asia. However, China's rice output would increase by 20.83%. However, it should also be taken into consideration that depending on type, quality, degree of processing and degree of milling, the international rice trade is differentiated.

Table 5-12 Changes in Commodities Output, value of Export and Import, Market Prices, Producer surplus and Trade Balance for Rice after Trade liberalization

	Changes in Market Price(%)	Changes in Output(%)	Changes in value of Export (%)	Changes in value of Import (%)	Trade Balance US $ million	Changes in Producers surplus ,US $ million
China	3.69	20.83	1051.68	-6.64	6812.48	1346.9
Japan	-25.4	-85.38	244.25	3523.32	-6892.77	-1984.9
Korea	-45.08	-42.45	10873.44	6914.79	-378.9	-2050.1
Indonesia	1.26	-1.8	-20.16	68.88	-129.29	-38.4
Malaysia	2.96	8.29	40.08	-1.35	13.57	21.7
Philippines	-1.58	-8.86	-13.17	180.02	-334.49	-138.1
Vietnam	4.16	7.2	91.25	54.88	332.59	158.7
Thailand	17.21	19.61	73.03	161.92	1254.66	706.9
Rest of ASEAN	5.96	2.2	-0.67	8.22	-14.93	91
Rest of the World	-0.78	-2.62	-17.25	15.02	-1780.46	-361.7

* The change in producer surplus is approximated as the change in the value of the sector specific asset, land deflated by the price index.

Sources: GTAP simulation

Among the East Asian importers, Japan and Korea, the most protectionist countries in rice trade, would have large impact on their rice trade. Rice market prices in Japan and Korea would fall by 25.4 % and 45.8 % respectively. The value of Japan's rice import would increase from US$ 228.5 million to $ 8553.3 million. Japan would purchase 58 % of its rice import from China, 21% from Korea and 21 % from Thailand. The value of Korea's rice import would increase from $ 34.8 million to $ 2439 million and 87 % of rice import would be from China and 9% of rice import from Thailand. The Rest of the world would lose their rice market in Japan and Korea due to the impact of trade liberalization in East Asia.

The Philippines, one of the largest rice importers, would purchase 78 % of its total rice import from Vietnam. The market price for rice in the Philippines would decrease by 1.58 %. Thailand, Vietnam and the rest of the world would gain access to 50%, 15% and 11% of Indonesia rice import respectively. For Malaysia, rice import would come from Thailand, Vietnam and the rest of the world—38 %, 22 % and 26 % respectively. However the market prices would increase by 1.26 % in Indonesia and by 2.96 % in Malaysia.

On the export side, not only major exporting countries like Thailand, Vietnam and China, but also Japan and Korea would increase their rice export. Global merchandise export price of rice would decrease by 2.4 % due to East Asian FTA. Thailand, the world's dominant rice-

exporting country, would increase its rice export from $ 1725.7million to $ 2986 million. However, rice's market price of Thailand, according to the simulation result, would increase by 17.21 %. China would expand its rice export dramatically about 1051%. While China's rice producers would gain $ 1346.9 million, those from Japan and Korea would lose $ 1984.9 million and $ 2050 million as a result of trade liberalization reform in East Asian region. Thailand, a major rice exporter country, would also gain the producer surplus about $ 706.9 million.

5.3.2.2. Vegetables and Fruits

International trade in Fruits and vegetables has been among the most dynamic areas of international agricultural trade. Most countries in East Asian region often have a comparative advantage in the production of labor-intensive agricultural commodities such as fruits and vegetables due to a substantial supply of low-cost labor. In these vegetable and fruits markets, there are important factors such as the attributes of freshness, quality and visual perfection, taste, price.

In Asia, the geographical distribution of trade is likely to change as China becomes a larger importer and exporter and enhances the quality of its produce (Wu Huang, 2004). China is currently the world's largest producer of fruits and vegetables, with a share of 34% of world production. (Diop and Jaffee, 2005).Table (3.9) also shows that China is the largest exporter of fruit and vegetable in the East Asian region. At the same time, growing internal demand in China may result in rising fruit and vegetable imports.

Japan plays an important role in the imports of fruits and vegetable in international market, because its cost of domestic production is relatively high. Therefore, it becomes the largest importer of fruit and vegetable in the East Asian region while Philippines, Vietnam and Thailand are important exporter in the region.

Table 5-13 Export and import of edible fruit, nuts, peel of citrus fruit, melons, 2005

USD thousands

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)	Net Trade (X-M) / (X+M) * 100
China	1,067,337	658,727	408,610	0.14	0.1	2.1773	1.1984	23.7
Philippines	576,855	33,975	542,880	1.399	0.072	1.1767	0.0618	88.9
Viet Nam	495,897	160,259	335,638	1.461	0.479	1.0116	0.2915	51.2
Thailand	313,079	132,893	180,186	0.284	0.112	0.6387	0.2418	40.4
Hong Kong	285,766	958,098	-672,332	0.098	0.319	0.5829	1.743	-54.1
Indonesia	206,132	217,485	-11,353	0.241	0.377	0.4205	0.3956	-2.7
South Korea	120,706	483,613	-362,907	0.042	0.185	0.2462	0.8798	-60.1
Malaysia	82,758	134,408	-51,650	0.059	0.117	0.1688	0.2445	-23.8
Singapore	80,214	303,959	-223,745	0.035	0.152	0.1636	0.553	-58.2
Japan	70,383	2,297,949	-2,227,566	0.012	0.445	0.1436	4.1804	-94.1
Myanmar	7,795	23,476	-15,681	0.212	0.739	0.0159	0.0427	-50.1
Cambodia	1,014	5,501	-4,487	0.033	0.165	0.0021	0.01	-68.9
Lao	455	8,459	-8,004	0.088	0.795	0.0009	0.0154	-89.8
Brunei	0	9,431	-9,431	0	0.624	0	0.0172	-100

For Brunei, Cambodia, Lao, Myanmar, and Vietnam, all indicators are derived from mirror data (Partner countries trade data).

Sources: International Trade Center, UNCTAD/WTO

Table 5-14 Export and import of edible vegetables and certain roots and tubers,2005

USD thousands

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)	Net Trade (X-M) / (X+M) * 100
China	3,052,133	523,581	2,528,552	0.401	0.079	9.1421	1.4992	70.7
Thailand	517,597	73,019	444,578	0.47	0.062	1.5504	0.2091	75.3
Myanmar	350,374	2,046	348,328	9.531	0.064	1.0495	0.0059	98.8
Viet Nam	122,141	47,251	74,890	0.36	0.141	0.3658	0.1353	44.2
Malaysia	104,232	402,672	-298,440	0.074	0.351	0.3122	1.153	-58.9
South Korea	101,022	270,539	-169,517	0.036	0.104	0.3026	0.7747	-45.6
Indonesia	66,589	127,411	-60,822	0.078	0.221	0.1995	0.3648	-31.4
Philippines	29,427	35,964	-6,537	0.071	0.077	0.0881	0.103	-10

Singapore	25,918	234,135	-208,217	0.011	0.117	0.0776	0.6704	-80.1
Japan	25,043	1,915,430	-1,890,387	0.004	0.371	0.075	5.4846	-97.4
Hong Kong	21,100	214,946	-193,846	0.007	0.072	0.0632	0.6155	-82.1
Lao	2,501	207	2,294	0.486	0.019	0.0075	0.0006	84.7
Cambodia	130	810	-680	0.004	0.024	0.0004	0.0023	-72.3
Brunei	12	6,816	-6,804	0	0.451	0	0.0195	-99.6

For Brunei, Cambodia, Lao, Myanmar, and Vietnam, all indicators are derived from mirror data (Partner countries trade data).

Sources: International Trade Center, UNCTAD/WTO

Table 5-15 Bilateral ad valorem rate, import taxes, for Vegetable and Fruit

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW
China	0	22.9	214.5	5	1.8	13.6	28.9	19.1	1.4	20.9
Japan	2.3	0	44.3	5	2.5	10.4	37.1	35.2	0	9.7
Korea	19.1	7.1	0	5	16.2	7.3	30.8	54.9	0.1	7.9
Indonesia	3	9	68.1	0	2.4	5.3	30	58.7	0	20.3
Malaysia	4.1	8.9	31	4.2	0	22	40	45.8	0	10.6
Philippines	15.7	9.4	30	3.8	13.9	0	30	20	0.1	5.2
Vietnam	21.2	1.7	47	4.1	6.2	4.4	0	0	0	6
Thailand	5.6	28.7	92.5	4.8	6.8	11.2	40	0	0.8	19.6
RoASEAN	14.8	150.7	38.8	4.6	0.9	6.7	37.5	46.2	0.9	32.5
ROW	9	11.4	51.9	4.9	2.6	6.9	34.6	35.5	0.1	7

Sources: GTAP data base

Korea imposed high import tariff rate on vegetable and fruit from China (214.5 %), from Japan (44.3%), from Indonesia (68.1%) and from Thailand (92.5 %). Japan taxed heavily on fruit and vegetable form the rest of ASEAN, about 150%. Thailand also applied high tariff rate of vegetable and fruit imported from Japan (35.2%), from Korea (54.9%), from Indonesia (58.7%), from Malaysia (45.8%) and from the rest of ASEAN (46.2%). The rest of ASEAN countries practiced little protection for the vegetable and fruit sector. Comparing their protection levels for vegetable and fruit products imported from East Asian countries, most of East Asian countries except Korea, Vietnam and Thailand imposed low import tariff rate to the rest of the world.

Table 5-16 Bilateral trade for Vegetable and fruit at world price in Base Year, 2001

US$ million

	China	Japan	Korea	Indo nesia	Malaysia	Philippine	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	165.8	518.8	66.9	84.3	78.5	41.4	35	15.4	76.7	1021.6	2104.4
Japan	10.6	0	0.5	0.4	0.2	0.3	0.1	1.4	1.8	19.3	34.6
Korea	10.6	182.5	0	4.9	1.4	0.2	0.2	1.1	3	49.4	253.3
Indonesia	4.1	2.7	0.4	0	8.3	1	8.2	2.1	46.1	96.2	169.1
Malaysia	21.1	1.2	0.4	5	0	0.9	0.2	6.4	108	35.6	178.8
Philippines	123.6	230.4	31	1.1	0.3	0	0.1	0.2	5.5	149.6	541.9
Vietnam	113.9	4.9	0.5	1.6	0.8	0.9	0	0.1	2.7	131.4	256.7
Thailand	182.3	32.6	1.9	17.7	23.9	1	1.3	0	22.8	152.9	436.4
RoASEAN	27.9	5.3	2.2	8.6	32.5	4.9	0.2	3.8	22.2	323.9	431.4
ROW	823.1	1349.2	129.1	92.7	228.1	65.7	21.5	36	185	39587	42518
Total	1483.2	2327.6	232.8	216.3	374.2	116.3	66.8	66.4	473.8	41567	46924

Sources: GTAP data base

Table 5-17 Bilateral trade for Vegetable and fruit at world price after trade liberalization

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	157.9	825	561	94.6	81.6	56.3	58.4	23.3	87.5	924.1	2869.
Japan	12.4	0	0.3	0.5	0.3	0.4	0.2	3.8	2.3	20.1	40.
Korea	29.5	250.5	0	8.3	3.4	0.4	0.5	6.9	4.8	69.8	374.
Indonesia	4.4	2.8	0.3	0	9.2	1.1	14.7	9.5	51.6	90.4	18
Malaysia	22.6	1.2	0.1	5.4	0	1.6	0.3	20.2	115.2	31.5	198.
Philippines	212.8	252.8	10.6	1.3	0.6	0	0.2	0.3	6.3	145.9	630.
Vietnam	211.7	3.7	0.2	1.7	1	0.8	0	0	2.9	116.5	338.
Thailand	182.1	55.7	2.1	17.7	26.7	1.1	2.5	0	22.5	123.8	434.
RoASEAN	40.4	107.6	0.8	9	30.6	4.9	0.3	11.7	23	273.3	501.
ROW	842.4	1082.1	17	94.7	241.1	60.6	15.5	31.6	217.5	39388.7	4199
Total	1716.2	2581.5	592.5	233.3	394.6	127.1	92.7	107.2	533.7	41184.1	4756

Sources: GTAP simulation

Table (5.16) and table (5.17) show changes of bilateral trade flow in the region as a result of the impact of the elimination of import tariffs using GTAP model. Trade-weighted average global merchandise export prices would fall by 0.26 % and trade-weighted import prices would also drop by 0.21%. China, the largest exporter in the region, would largely expand its export to Korea, which imposed high tariff rate against China. China's export to Korea would grow from US $ 66.9 million to US $ 561 million. China may also expand its vegetable and fruit export to other East Asian countries, but its import from the rest of the

World may decline from $ 1021.6 million to $ 924.1 million. While China's vegetable and fruit export grows, its import of vegetable and fruit may rise due to the growing domestic demand. Vegetable and fruit producers in China may gain significantly (US$ 2646.6 million) as a result of trade liberalization in the region. In China, producers would gain from higher market prices of vegetable and fruit (3.45 %) and expand output (1.23 %). Japan, the largest importer in the region, may increase its import from China, Korea, Philippines and the rest of ASEAN countries. Although Japan's vegetables and fruits import from the rest of the world would slightly decrease. Japanese vegetables and fruits producers would lose about $ 739 million and market price would decrease by about 2.84 % and the value of total vegetable and fruit output would also fall by about .71%.

Table 5-18 Changes in Commodities Output, Value of Export and Import, Market Prices, Trade Balance and producer surplus for vegetable after Trade liberalization

	Changes in Market Price(%)	Changes in Value of Output(%)	Changes in value of Export (%)	Changes in value of Import (%)	Trade Balance US $ million	Changes in Producers surplus*, US $ million
China	3.45	1.23	36.37	14.21	516.04	2646.6
Japan	-2.84	-0.71	16.12	10.66	-304.69	-739.5
Korea	-15	-2.3	47.68	155.88	-304.22	-1097.6
Indonesia	1.87	0.14	8.81	7.32	-4.24	28.8
Malaysia	4.85	-0.27	10.88	5.19	-4.88	23.5
Philippines	0.3	2.08	16.42	9.09	76.26	25.1
Vietnam	4.27	2.33	31.92	38.51	54.53	41.8
Thailand	10.96	-4.15	-0.48	65.27	-51.64	127.9
Rest of ASEAN	6.99	0.57	16.28	11.98	-0.75	108.7

* The change in producer surplus is approximated as the change in the value of the sector specific asset, land deflated by the price index.

Sources: GTAP simulation

Removing tariff barriers among East Asian countries, Korea's import from the rest of the world would decline from $ 129.1 million to $ 17 million. Korea's vegetables and fruit market price would drop by about 15 % and producer would lose welfare about $ 1097 .6 million. The trade liberalization in East Asian countries would lead to increased market prices in the region except Japan and Korea. The market price of Thailand, one of the major vegetable and fruit exporter countries, would increase by about 10. 96 %, compared with base year. The vegetable and fruit production and export of Thailand would decrease due to trade liberalization scenario. The rest of ASEAN countries may increase their vegetable and fruit export to Japan from $ 5.3 million to $ 107.6 million. The vegetables and fruit producers from ASEAN countries would gain from East Asian FTA.

5.3.2.3. Fish and Fisheries product

Fish and fish products provide important trade opportunities in many coastal countries. Trade in fish product of the region is nearly 40% of total fish trade in the international market.

Table 5.19 shows East Asian fish Export and Import situations in 2005. China, Vietnam, Indonesia and Thailand were leading fish exporters in the region. China was the second largest exporter of fish in the world in 2005[36] and its export share to the world is 7.5 %. Vietnam's share of fish and fish product export was 5.8 % of total Vietnam Export. Japan, the largest importer in the East Asian region, had 18% share of world fish import. South Korea, Hong Kong and Thailand were also important importers in the East Asian region. However, Indonesia and Myanmar rarely imported fish and their net trade on fish was over 90 %.

Table 5-19 Export and import of fish (2005)

US $ thousand

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)	Net Trade (X-M) / (X+M) * 100
China	4,349,658	2,879,068	1,470,590	0.571	0.436	7.522	4.5427	20.
Viet Nam	2,000,237	159,560	1,840,677	5.893	0.477	3.4591	0.2518	85.
Thailand	1,938,159	1,367,486	570,673	1.76	1.157	3.3517	2.1577	17.
Indonesia	1,522,519	28,933	1,493,586	1.777	0.05	2.6329	0.0457	96.
Japan	876,550	11,537,940	-10,661,390	0.147	2.237	1.5158	18.2051	-85.
Korea	837,839	2,030,067	-1,192,228	0.295	0.777	1.4489	3.2031	-41.
Malaysia	522,987	468,594	54,393	0.371	0.409	0.9044	0.7394	5.
Singapore	327,539	573,024	-245,485	0.143	0.286	0.5664	0.9041	-27
Hong Kong	314,017	1,709,455	-1,395,438	0.107	0.57	0.543	2.6973	-(
Philippines	240,440	68,464	171,976	0.583	0.146	0.4158	0.108	55
Myanmar	231,760	851	230,909	6.305	0.027	0.4008	0.0013	99
Cambodia	15,371	4,547	10,824	0.497	0.137	0.0266	0.0072	54
Brunei	1,854	7,421	-5,567	0.03	0.491	0.0032	0.0117	-(
Lao	21	438	-417	0.004	0.041	0	0.0007	-9(

For Brunei, Cambodia, Laos, Myanmar, and Vietnam, all indicators are derived from mirror data (Partner countries trade data).

Sources: International Trade Center, UNCTAD/WTO

[36] The largest exporter of fish product in the world in 2005 is Norway whose share of fish export to world is 8.1%.

Table 3.20 stages bilateral tariff rate, import tax in base year, 2001. Thailand imposed high import tariff rate against Indonesia (59.7%), the rest of ASEAN (57.3%) and Viet Nam (36.1%). Korea applied over 10 % tariff rate on fish imported from each East Asian country except Vietnams. Bilateral tariff rates between Japan and each member of East Asian countries were not too high. Viet Nam taxed on fish products from Indonesia (16.2%), Malaysia (16.8%) and Thailand (20.3%).

Table 5-20 Bilateral ad valorem rate, import taxes, for fishery products

Percentage

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW
China	0	4.7	15.4	5.4	0.3	7.2	13	19.6	0	1.7
Japan	5.1	0	16.9	5	0.1	4.5	0	22.4	0	1
Korea	13.4	5.4	0	4.2	0.1	5.3	0	0	0	5.1
Indonesia	0.9	2.9	19.2	0	0.7	3.1	16.2	59.7	0	6.6
Malaysia	3.6	3.2	26.5	4.9	0	3	16.8	60	0	3.3
Philippines	0.3	2.4	22.3	0	0	0	15	18.2	0	1.1
Vietnam	2	2.9	0	0	1.2	0	0	36.1	0	1.4
Thailand	0.6	3.4	16.3	4.7	0.2	3	20.3	0	0.1	10.2
RoASEAN	7.5	3.4	14.1	3.8	0.6	3	4.2	57.3	0.2	3.6
ROW	3.8	3.4	13.9	1.8	0.3	2.2	10.2	38.1	0	1.4

Sources: GTAP Data base

Table 5-21 Bilateral trade for Fishery Products at world price in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippine	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	61.5	180.5	130.3	1	0.9	0.5	0.8	1.1	4.7	138	519.1
Japan	6.5	0	66.6	0.3	0.9	0.1	0	0.5	2.2	52.3	129.5
Korea	4	94	0	0	0	0.2	0	0	1.8	7.7	107.8
Indonesia	20.5	110.4	1	0	8.5	3	0.1	0.8	44	46.2	234.6
Malaysia	8.3	20.1	0.7	0.6	0	0.3	0.3	3.3	25.7	43	102.2
Philippines	14	8.5	0.5	0.1	0.1	0	0.1	0.3	0.3	36.7	60.5
Vietnam	2.8	10.9	0.1	0	0.2	0	0	0	1.7	33.3	49.2
Thailand	15.5	14.8	0.5	0.1	50.8	0.1	0.1	0	12.1	34.6	128.5
RoASEAN	5.6	50	1.3	0	1.8	0.1	0	8.1	1.6	39.4	108
ROW	131.9	716.6	34.8	4.3	12.9	2.4	4.3	8.4	18	5354.2	6287.8
Total	270.6	1205.9	235.9	6.5	76.2	6.8	5.6	22.5	111.9	5785.4	7727.3

Sources: GTAP Data base

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Table 5-22 Bilateral trade for Fishing at world price after trade liberalization

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philip pines	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	62.8	196.4	156.4	1.1	0.9	0.6	0.9	1	4.9	128.2	553.2
Japan	7.7	0	84.1	0.4	0.9	0.1	0	0.5	2.4	50.9	147.1
Korea	5.7	107.2	0	0	0	0.2	0	0	1.9	7.5	122.7
Indonesia	21.7	116.4	1.3	0	9	3.2	0.1	1.7	47.6	44.5	245.4
Malaysia	9.3	21.2	1	0.7	0	0.3	0.3	6.8	27.6	40.6	107.7
Philippines	14.8	9	0.8	0.1	0.1	0	0.1	0.3	0.3	35.8	61.2
Vietnam	3.2	12.2	0.1	0	0.3	0	0	0.1	1.9	34.1	52
Thailand	16.5	16.2	0.6	0.1	53.8	0.1	0.1	0	13.4	34	134.7
RoASEAN	6.6	51.6	1.5	0	1.9	0.1	0	15.5	1.7	37.1	116.1
ROW	139.8	726.7	30.3	4.5	13.8	2.5	3.8	5.6	20.1	5323.4	6270.5
Total	288.1	1256.9	276.2	6.9	80.7	7.1	5.3	31.6	121.8	5736.1	7810.6

Sources: GTAP simulation

Table (5.22) shows bilateral trade flow in the region due to impact of the elimination of import tariffs using GTAP model. East Asian member countries may slightly expand their export and import with their trading partner. Compared with other commodities in this study, there would be less impact of East Asian FTA on fish and fishery products market in the rest of the world.

Table 5-23 Changes in Commodities Output, Value of Export and Import, Market Prices, producer surplus and Trade Balance for Fishery products after Trade liberalization

	Changes in Market Price(%)	Changes in Output(%)	Changes in value of Export (%)	Changes in value of Import (%)	Trade Balance US $ million	Changes in Producers surplus ,US $ million
China	4.55	1.43	6.56	5.91	12.14	875.1
Japan	1.68	0.25	13.61	4.05	-47.29	126.8
Korea	1.32	-0.65	13.8	16.24	-37.37	7.3
Indonesia	2.94	0.63	4.6	6.37	10.34	44.7
Malaysia	3.81	0.71	5.37	5.67	0.1	22.4
Philippines	1.13	0.03	1.2	4.43	0.35	13.1
Vietnam	-3.51	-3.71	5.67	-5.04	3.09	-34.8
Thailand	0.63	-2.37	4.83	42.24	-5.17	-85.1
Rest of ASEAN	6.84	2.24	7.48	8.19	-3.81	81.6
Rest of the World	-0.56	-0.04	-0.28	-0.78	36.34	-78.1

* The change in producer surplus is approximated as the change in the value of the sector specific asset, land deflated by the price index.

Sources: GTAP simulation

Removing tariffs in the East Asian region, world fish export and import would increase by 14 % and 13% respectively, and market prices of the East Asian countries except Vietnam might increase, especially in China (4.55%). However, the market price of Vietnam would decrease by 3.51%. Vietnam and Thailand may face a decline of 3.71 % and 2.37% in fish output respectively, and their fisheries producer would lose. The rest of East Asian countries would gain producer surplus due to East Asian FTA. China's producers would gain most in the region, about $ 875.1 million.

5.3.2.4. Sugar

Sugar is also important an commodity in the world agricultural market. Like other agricultural commodities, sugar trade is characterized by heavy government intervention, large price fluctuation, widespread production in many parts of the world, and a growing market for sugar substitutes.

Trade and market situation of sugar in the region in 2005 can be seen in table 3. 20. Thailand was the largest exporter in the East Asian region with 3.6 % of World sugar export, followed by China and South Korea in the region. Japan was an important country in the world sugar market because of its traditionally high demand for imported sugar. Japan, Indonesia and South Korea were major importers of Sugar in the East Asian region with about 2% of World Sugar Import. It can be seen from table (3.20) that East Asian countries except Thailand faced the trade deficit on sugar commodity in the international market. However, Thailand gained about 91.2 % from sugar trade in 2005.

Sugar policies, for instance, government intervention in developed countries, induced significant loss on low-income sugar exporting countries as their exporters experienced lower world prices and possible lower production and reduction in employment opportunities (Devadoss and Kropf, 1996). About 80 percent of world production and 60 percent of world trade relies on production subsidies, export subsidies, or preferential access to protected markets. The European Union, Japan, and the United States account for 20 percent of world production; their average producer prices are more than double the world market (Mitchell, Donal O. 2005).

Table 5.25 shows that Japan had a heavy sugar import protection especially against China (238.8 %), Korea (263.1 %) and Thailand (308.6%). Philippine, Vietnam and Thailand also imposed high import tariff on sugar.

Table 5-24 Sugar and Sugar confectionery Export and Import (2005)

US $ thousand

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)	Net Trade (X-M) / (X+M) * 100
Thailand	863,842	39,876	823,966	0.785	0.034	3.6387	0.1561	91.2
China	417,512	451,396	-33,884	0.055	0.068	1.7587	1.7675	-3.9
South Korea	200,450	561,952	-361,502	0.07	0.215	0.8443	2.2004	-47.4
Malaysia	123,349	348,196	-224,847	0.088	0.304	0.5196	1.3634	-47.7
Philippines	110,642	66,997	43,645	0.268	0.143	0.466	0.2623	24.6
Hong Kong	110,145	219,090	-108,945	0.038	0.073	0.464	0.8579	-33.1
Indonesia	84,664	654,685	-570,021	0.099	1.135	0.3566	2.5636	-77.1
Japan	76,559	597,241	-520,682	0.013	0.116	0.3225	2.3386	-77.3
Singapore	59,410	172,573	-113,163	0.026	0.086	0.2502	0.6757	-48.8
Viet Nam	9,545	91,635	-82,090	0.028	0.274	0.0402	0.3588	-81.1
Myanmar	1,237	8,087	-6,850	0.034	0.255	0.0052	0.0317	-73.5
Lao	16	18,905	-18,889	0.003	1.777	0.0001	0.074	-99.8
Cambodia	14	72,622	-72,608	0	2.182	0.0001	0.2844	-100
Brunei	0	4,518	-4,518	0	0.299	0	0.0177	-100

Sources: International Trade Center, UNCTAD/WTO

Table 5-25 Bilateral tariff for Sugar in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	0.3	238.8	34.2	21	0.3	57.3	22.5	39	0.2	20.5	434.1
Japan	18	0	18.8	16.9	0	7	13.6	20	0	55	149.3
Korea	7.8	263.1	0	21.2	0	57.4	34.4	30.9	0.1	12	426.9
Indonesia	7.7	131.8	4.2	0	0.1	5.1	10	45.4	0	30.8	235.3
Malaysia	3.5	146.1	1.6	20.6	0	49.8	29.9	22.9	0	7.5	281.9
Philippines	0	126.9	2.8	0.7	0	0	29.8	0	0	45.4	205.7
Vietnam	9	118	2.8	20.3	0	0	0	0	0	85.7	235.8
Thailand	18.8	308.6	3.8	20.4	0	50.3	22.9	0	0.7	42.2	467.7
RoASEAN	10.6	149.7	21.8	20.6	0	31.9	39.5	35.9	0.5	57.6	368.
ROW	18.5	213.2	5.3	16.6	0	49.5	24.7	30.8	0	35.1	393.
Total	94.3	1696.3	95.4	158.3	0.4	308.3	227.4	224.8	1.5	391.8	3198.

Sources: GTAP data base

Table 5-26 Bilateral trade for Sugar at world price in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	6.5	3.5	2.2	4.7	0.4	2.1	0.1	0.4	1.1	12.5	33.5
Japan	1.2	0	4.5	0.8	0.9	0.1	0	0.4	0.3	4.4	12.6
Korea	0.8	1	0	1	0.3	0.2	0.1	0	0.6	7.1	11.2
Indonesia	1.4	3	2	0	0.2	0.7	0.1	0.1	0.5	9.3	17.2
Malaysia	1.3	0.9	0.3	1.8	0	0.2	0.2	0.2	3.6	12.9	21.3
Philippines	0.2	2.6	2.5	1.7	0.1	0	0	0	0.5	29.8	37.3
Vietnam	2.8	0.6	0.4	1.3	0	0	0	0	0	8.3	13.5
Thailand	90.1	148.8	57.1	80	52.7	2.2	19.1	0	8.2	94.8	552.9
RoASEAN	5.1	1.4	0	0.7	5	10.8	0.1	0	0.4	3.2	26.9
ROW	199.1	299.8	283.9	59.4	261.8	48.5	10.3	9.4	39.4	6564.7	7776.3
Total	308.4	461.5	352.8	151.3	321.5	64.7	30.1	10.6	54.8	6747	8502.6

source; GTAP simulation

Table 5-27 bilateral trade for Sugar at world price after trade liberalization

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippine	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	5.8	19.5	9.8	10.4	0.4	15.6	0.1	2.4	1.2	11.2	76.4
Japan	5.8	0	23.2	3.4	1.9	0.1	0.1	2.9	0.8	9.4	47.7
Korea	1.1	8.2	0	2.3	0.3	1.9	0.5	0.1	0.7	6.6	21.7
Indonesia	1.9	2.2	2.3	0	0.2	0.6	0.1	0.5	0.5	8.5	16.8
Malaysia	1.4	0.9	0.3	4.2	0	1	0.5	0.6	4.1	12.2	25.2
Philippines	0.2	1.7	2.7	1.5	0.1	0	0.1	0	0.6	28.7	35.6
Vietnam	3.9	0.3	0.4	2.9	0	0	0	0	0	7.5	15.1
Thailand	135.6	1545	43.4	118.7	35.5	9.1	29	0	6.2	58.4	1980.9
RoASEAN	7.2	1.4	0.1	1.6	4.8	29.4	0.6	0.2	0.5	2.7	48.5
ROW	192.1	2.5	280.5	52.5	287	34.6	8	10.6	47.2	6530.4	7445.3

Sources: GTAP simulation

Japan's trade flow may have the greater effect due to trade liberalization in East Asia. Japan's total sugar import would increase from US $ 461.5 million to US $ 1581.9 million. Thailand sugar export to Japan may expand considerably from US $148.8 million to US$1545 million. East Asian FTA would make a diversion effect on Japan's sugar import from the rest of the world, which would decline from US $ 299.8 million to US$ 2.5 million.

As a major sugar exporting country, Thailand would stand to gain from East Asian trade liberalization, since its product can compete in the world market. The value of Thailand's sugar export may expand from $ 552.9 million to $1980.9 million. China would also expand it sugar export to Japan, Korea, Indonesia and Philippines.

Table 5-28 Changes in the Output, the value of export and import, Market Prices, producer surplus and Trade Balance for Sugar after Trade liberalization

	Changes in Market Price(%)	Changes in Output(%)	Changes in value of Export (%)	Changes in value of Import (%)	Trade Balance US $ million	Changes in Producers surplus ,US $ million
China	2.14	0.93	128.05	14.73	-7.24	9
Japan	-17.48	-17.44	279.13	236.6	-1180.31	-35.7
Korea	1.24	1.74	93.44	2.45	0.82	0
Indonesia	1.53	-1.19	-2.05	29.16	-49.57	-1.7
Malaysia	0.62	3.75	18.75	2.67	-5.45	8.9
Philippines	0.29	-2.21	-4.4	42.91	-32.46	-3.1
Vietnam	1.93	-8.62	12.05	28.21	-8.53	-1.1
Thailand	12.64	92.64	258.28	62.16	1420.88	226
Rest of ASEAN	3.34	6.8	80.15	13.1	13.72	11.2
Rest of the World	-0.51	-0.38	-4.26	-1.02	-254.96	-36

* The change in producer surplus is approximated as the change in the value of the sector specific asset, land deflated by the price index.

Sources: GTAP simulation

East Asian FTA would lead to 17. 48 % decrease in the market price of Japan. Japanese sugar producer would lose about US $ 35.7 million. On the other hand, Thailand, the largest sugar exporter in the region, would increase its market price by 12.64 % and would gain US$ 226 million of producer surplus. Thailand would also gain trade surplus (US $1427.88) on sugar trade. The market price of East Asian countries except Japan would rise as a result of trade liberalization in East Asia.

5.3.2.5 Oilseeds

In agriculture, the oilseeds and oilseed products sector is one of the commodity sectors which is influenced by government intervention. A number of oilseed producing countries have government policies that encourage the processing of the oilseed and the export to the world market. The volume of foreign import depends on seasonal availability and relative prices, credit and delivery terms, local preferences, and quality. Government policies, such as tariffs and domestic subsidies, also can affect prices and the availability of competing products.

Table 5-29 Export and import of oilseeds, oleagic fruits, grain, seed, fruit, etc, nes (2005)

US $ thousand

Countries	Exports in Value	Imports in Value	Net trade in Value	Export Share of Total Exports (%)	Import Share of Total Imports (%)	Export Share of world Rice Exports (%)	Import Share of World Rice Imports (%)	Net Trade (X-M) / (X+M) * 100
China	1,383,327	8,158,744	-6,775,417	0.182	1.236	4.5848	24.1598	-71
Korea	153,912	799,343	-645,431	0.054	0.306	0.5101	2.367	-67.7
Japan	120,339	3,614,501	-3,494,162	0.02	0.701	0.3988	10.7033	-93.6
Hong Kong	111,578	188,833	-77,255	0.038	0.063	0.3698	0.5592	-25.7
Indonesia	89,647	371,964	-282,317	0.105	0.645	0.2971	1.1015	-61.2
Thailand	55,742	521,336	-465,594	0.051	0.441	0.1847	1.5438	-80.7
Singapore	50,496	88,227	-37,731	0.022	0.044	0.1674	0.2613	-27.2
Viet Nam	34,886	64,530	-29,644	0.103	0.193	0.1156	0.1911	-29.8
Philippine	31,435	85,916	-54,481	0.076	0.183	0.1042	0.2544	-46.4
Myanmar	26,170	2,818	23,352	0.712	0.089	0.0867	0.0083	80.6
Malaysia	24,687	279,447	-254,760	0.018	0.244	0.0818	0.8275	-83.8
Cambodia	9,414	216	9,198	0.304	0.006	0.0312	0.0006	95.5
Lao	4,423	432	3,991	0.859	0.041	0.0147	0.0013	82.2
Brunei	0	1,223	-1,223	0	0.081	0	0.0036	-100

For Brunei, Cambodia, Lao, Myanmar, and Vietnam, all indicators are derived from mirror data (Partner countries trade data).

Sources: International Trade Center, UNCTAD/WTO

China was both the largest exporter and importer in the East Asian region in 2005 with 24.1% import share and 4.5% export share of the world oilseed market. In addition, it was the world's fourth-largest producer of soybeans. Yet, rapid growth of China's economy has spurred food consumption, turning the country into the world's leading soybean importer. Therefore, Changes in China's agricultural and trade policies have greatly influenced world oilseed markets. China's WTO accession will further reduce import tariffs and quantitative restrictions to its oilseed market.[37]

[37] see in http://www.ers.usda.gov/Briefing/SoybeansOilcrops/trade.htm

Japan was also a major oilseed importer with 10.7% share of World import. Japan was in 93.6 % trade deficit on oilseed trade while Cambodia was in 95.5 % trade surplus on the commodity. Brunei was the only country that imported oilseed without exporting the commodity.

Table (5.30) shows the bilateral tariff of East Asian region. Korea imposed high tariff on oilseed's import from China (531.4%), from Japan (111.9%), from Malaysia (148.1%) and from the rest of ASEAN (914%). China and Thailand's import tariffs on oilseed were much higher than other East Asian countries. According to GTAP data base, Japan, one of highly protected countries on agricultural commodities, only imposed 2.3 % tariff on oilseed from China and .1 % from the rest of the World.

Table 5-30 Bilateral tariff for Oilseeds in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippines	Vietnam	Thailand	RoASEAN	ROW
China	12.4	2.3	531.4	4.8	2.5	9.6	6.7	42.1	1.1	3.6
Japan	21.6	0	111.9	4.8	0	6.8	0	29.6	0	1.1
Korea	20.1	0	0	4.1	0.7	0	0	0	0	1.2
Indonesia	7.5	0	27	0	1.6	4.5	5	47.5	0	13.8
Malaysia	51	0	148.1	0.3	0	4.6	0	30.4	0	2.4
Philippines	15	0	3	0	0	0	0	0	0	15.2
Vietnam	8.3	0	3.5	4.9	4.9	4.8	0	47.5	0	11
Thailand	24.5	0	3	0.1	1.7	3.3	10	0	1.1	10.8
RoASEAN	5.7	0	914	0.2	0.6	2.6	6.6	39	0	2.8
ROW	100.7	0.1	518.9	0.7	0.5	1.5	5.1	20.6	0	2.3

Sources: GTAP Data base

Table 5-31 Bilateral trade for Oilseeds at world price in Base Year

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippine	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	3.2	102.4	53.2	5	7.2	18.3	4.3	1.1	7.1	275.1	476.
Japan	0.4	0	0.1	0	0	0	0	0.1	0.1	3.6	4.
Korea	0	0	0	0	0	0	0	0	0	0.7	0.
Indonesia	0.2	0.3	0.6	0	5.9	0.1	0.3	0	0.7	6.9	1
Malaysia	0	0.1	0	19.4	0	0.2	0	0.2	2.9	5.3	28.
Philippines	0	4	0.1	0	0	0	0	0	0.1	0.3	4.
Vietnam	1.3	1.7	1.3	5.1	3.3	2.4	0	13.5	2.6	0.5	31.
Thailand	0.2	1.7	0.4	0	2	0.1	0	0	0.2	7.3	11.
RoASEAN	0.8	5.1	0	3.8	1.2	1.2	0	0.7	5.5	7.9	26.
ROW	3199.3	1596.4	300.3	296.8	91.3	83.2	4.9	256.8	11.7	9146.7	1498
Total	3205.5	1711.8	356	330.2	110.9	105.5	9.5	272.4	30.9	9454.4	1558

Sources: GTAP Data base

Table 5-32 Bilateral trade for Oilseeds at world price after trade liberalization

US$ million

	China	Japan	Korea	Indonesia	Malaysia	Philippine	Vietnam	Thailand	Ro ASEAN	ROW	Total
China	5.1	96	736.6	5.5	7.2	23.3	5.5	4.5	7.9	229.7	1121.1
Japan	1.3	0	0	0	0	0	0	0.2	0.1	3.9	5.5
Korea	0.5	0.3	0	0	0.1	0	0	0	0.1	4.6	5.7
Indonesia	0.3	0.2	0	0	6.1	0.1	0.4	0.1	0.8	6.3	14.3
Malaysia	0.3	0.1	0	17.7	0	0.2	0	0.6	3.1	4.6	26.6
Philippines	0.1	4	0	0	0	0	0	0	0.1	0.3	4.6
Vietnam	1.2	1	0	3.9	2.5	1.7	0	47.1	1.9	0.3	59.5
Thailand	0.5	1.3	0	0	1.7	0.1	0.1	0	0.2	5.6	9.5
RoASEAN	0.9	4.1	0.5	3.2	1.1	1	0	2.5	5.6	6.3	25.2
ROW	3463.1	1601.4	0.6	309.1	95.7	80	5.4	231.2	14.6	9089.6	14891
Total	3473.4	1708.4	737.7	339.5	114.5	106.4	11.4	286.2	34.4	9351.1	16163

Sources: GTAP simulation

Trade reform in the East Asian region may have a significant impact on Korean oilseed import. Korea's import would increase from $ 356 million to $ 737.7 million and almost all of oilseed import of Korea would come from China. The rest of the world would lose its oilseed export market in Korea. However, Japan's oilseed import from China would decline from $ 102.4 million to $ 96 million and its import from the rest of the world would increase from $1596.4 million to 1601.4 million. The simulation results suggest that Vietnam would expand its oilseed export to Thailand from $ 13.5 million to $ 47 .1 million. China's total oilseed export would increase from $476.9 million to $1121.1million.

Table 5-33 Changes in Commodities Output, Market Pirces and Trade Balance for Oilseed after Trade liberalization

	Changes in Market Price(%)	Changes in Output(%)	Changes in value of Export (%)	Changes in value of Import (%)	Trade Balance US $ million	Changes in Producers surplus ,US $ million
China	4.36	6.85	135.08	8.39	360.48	320.2
Japan	-2.44	2.93	27.42	-0.18	4.42	-11.5
Korea	-39.37	-76.79	583.57	106.93	-396.15	-71.6
Indonesia	1.65	-0.28	-4.13	2.81	-10.43	2.1
Malaysia	3.3	-2.53	-5.37	3.13	-5.18	1.9
Philippines	-0.44	-0.04	-0.52	0.94	-1.08	0
Vietnam	16.43	42.83	87.05	19.62	25.75	13.1
Thailand	6.69	-13.36	-20.34	5.45	-18.09	-4.7
Rest of ASEAN	5.49	-2.41	-4.04	10.92	-4.64	2.2
Rest of the World	-0.63	-0.13	-0.64	-1.08	10.92	-105.7

* The change in producer surplus is approximated as the change in the value of the sector specific asset, land deflated by the price index.

Sources: GTAP simulation

As a result of East Asian trade liberalization reform, the world oilseed export price and import price would drop by about .3 %. The market prices of Japan, Korea and the Philippines, major importing countries, would also decrease by 2.44%, 39.37% and .44% respectively, and those of Vietnam, China, Indonesia, Malaysia, Thailand and the rest of the ASEAN would increase. The oilseed output of Korea would drop by about 76.79 % but that of Vietnam would grow by about 42.83 %. China's producers would gain about $ 320.2 million and the producers of Japan, Korea, Thailand and the rest of the world would lose from East Asian FTA.

5.5. Concluding remarks

Free trade can be achieved through improvements in productivity, combined with technological progress, and improvements of marketing and institutions. The prices and volumes of agricultural commodities trade might be unstable due to a combination of factors such as a high degree of protection, geographic concentration, market segmentation, inelastic supply response to price and inelastic demand response to price and income.

Implementation of trade liberalization in East Asia is expected to lead to a change in regional food markets whereby food production would shift from highly protected regions to low-protected regions or non-protected regions. However, the effect of trade liberalization on highly differentiated agricultural products (like rice in Japan) may be different from the simulation results based on static GTAP model.

This paper tries to analyze the impact of removing tariff on agricultural commodities in the East Asian region. Domestic support and export subsidies, which also distorted agricultural commodities trade, are not considered in this study. This study emphasizes the five agricultural and food commodities that are of considerable economic importance to many countries of the East Asian region—rice, vegetable and fruit, fishery product, sugar and oilseed.

Rice, a staple food in the region, is highly protected by the governments. State trading enterprises are dominant in the rice trade in China, Indonesia, Japan, Korea and Vietnam. But in Thailand, rice trade is managed by an extremely competitive group of export companies. Trade liberalization reform in the East Asian region largely affects rice export and import in the region. Simulation results suggest that the producers from major rice exporting countries, China, Thailand and Vietnam, would gain from the rice trade due to removing tariff on all commodities in the region, and those from major importing countries, Japan, Korea and Philippines would

lose. The rice market price would decline by 45.08% in Korea and 25.4 % in Japan while the rice market price of Thailand will increase by 17.21 %.

Fruits and vegetables are important commodities in most of the East Asian region. The simulation results show that the trade flow of Korea would change considerably due to removing tariffs in the region. About 94 % of Korea's import may come from China, and Korea's import from the rest of the world would decline from 55% to about 3 % of total import. The market price of fruit and vegetable would decline in Korea and Japan while other East Asian countries would have higher market price, especially in Thailand with 10.9% of price increase. East Asian countries except Japan and Korea would gain producer surplus by removing tariffs in the region.

Fish and fish products are one of the most traded food commodities in the world. When tariff is removed in the region, although the trade of East Asian countries expands, the trade flow from rest of the world does not change considerably. Trade liberalization may lead to higher prices for East Asian countries except Vietnam.

Sugar market is also one of the most distorted markets in the world. Trade reform in the East Asian region would result in contraction of output in sugar importing countries. Market price for Japan, which imposed the highest tariff on the commodity in the region, would decline while market price for other member countries would rise. Japan's sugar trade inflow from Thailand would expand considerably by about 97 % of total import. As a major sugar exporting country, Thailand stands to gain from East Asian trade liberalization.

The import policy changes under East Asian FTA would appear to have contributed to the overall growth of oilseed and oilseed product trade between its regional trade partners. China is the largest exporter and importer of oilseed in the East Asian region. According to the trade liberalization experiment for East Asian countries, there is also a great impact on Korea by diverting its oilseed import direction from rest of the world to China. China would have 99% share of Korea's oilseed import. The market prices of oilseed in major importing countries like Japan, Korea and Philippines would decrease due to East Asia FTA.

The results of the simulation experiments indicate that the impact on agriculture sector in East Asian countries is so large. As agricultural products remain sensitive, specific treatments on agricultural trade like prolong timetable for liberalization are required for the establishment of East Asian FTA. Greater degree of flexibility should be allowed for a low cost transition process.

It should also be noted that the developing countries in the East Asia may need investment that encourages commodity-link transfer.

Chapter 6
Summary and Conclusion

East Asian countries have made considerable progress in expanding market-based trade. From 1990 to 2004, East Asia's overall exports and imports increased by 3.3 and 3.4 times respectively. 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. In 2005, intra-regional trade among East Asian region was about 39.16 % of total exports, up from just 29.14% in 1990. Although the intra-regional trade share in East Asia increases gradually, it is still lower than the comparable shares in two major economic blocs in the world; North American Free Trade Agreement (NAFTA), and the European Union (EU).

Most of East Asian countries depend on Japanese market for their export products. On the other hand, China emerged as an important destination for East Asian regional export during 1990s. We can see that the trade links among China, Japan and Korea are strong in term of the share of total trade. Although the tariffs of manufacture products and semiconductor-related parts and components by East Asian countries declined under the APEC initiative, significant level of tariffs in most of East Asian countries can still be found on agricultural products, clothing and food and beverages. It can be concluded that trade barriers in East Asian economies are still substantial.

The evolution of an East Asia FTA will have significant impact on the global trading system. The possible economic impacts of East Asian FTA are investigated in this study. The results and the implications are contrary to the current trends in East Asian FTAs. Assuming the extreme case of 0 tariff rate for all commodities, we proceed with four different scenarios based on the data set of the basic scenario. This paper also evaluates the economic effects of trade liberalization not only in East Asian economies as a whole (ASEAN plus 3 FTA) but also in the subset of these East Asian countries (ASEAN plus 1 FTA).

According to the basic scenario, China, Japan and Korea will have negative effect if they do not participate in Free Trade Agreements while EU, NAFTA and ASEAN will fully be establishing their FTAs. To evaluate the trade liberalization in East Asian economies, we study the effect of a change in trade policy on the endogenous variables of the model—prices, production, consumptions, export, import and welfare. The difference in the values of the endogenous

variable between the basic scenario and East Asian FTA scenarios represents the effect of policy change—effect of participation of China, Japan and Korea in the FTA.

Simulation results of the East Asian trade liberalization shows that the East Asian FTA scenario may create trade in the region and could expand trade among the East Asian countries. The removal of import tariffs sharply reduces the domestic price of intermediate inputs and production factors, causing a significant decline in domestic costs. This improves the competitiveness and export expansion. The simulation result suggests that the export volume of Japan, Korea and ASEAN countries to China's market would increase considerably. When intra-ASEAN export volume declines due to trade liberalization scenarios, ASEAN countries' export to China, Japan and Korea would rise. This is due to the relatively low initial import tariffs of ASEAN countries among themselves in the basic scenario where the other members would have more markets accesses to the ASEAN countries.

The results show that the formation of East Asia FTA could result in both winners and losers among the regions as well as in the rest of the world. The regional trade liberalization leads to an expansion of trade within the region. According to the configuration of trade liberalization is the FTA likely to generate the economic welfare benefit for each component members of each scenario. Under the East Asian trade liberalization scenario, welfare effects on its members are positive and welfare gains are substantial for Japan, Korea and ASEAN 5, due to the extent of scale economies realized in the adjustment process. East Asian economies will promote their intra-regional trade under trade liberalization agreements among them, encouraging trade diversion, especially with those countries outside the East Asian region. The negative effects on welfare are found for non-members; NAFTA, EU and the rest of the World when trade liberalization in East Asia is introduced. Simulation result suggests that North America Free Trade association and European Union could be hurt by the creation of East Asian FTA.

According to a static GTAP model, trade liberalization in East Asian FTA would improve their economy as a whole, increasing the GDP in all East Asian member countries. Japan would experience higher GDP growth than the other member countries. On the other hand, as a result of tariff removal in East Asian region, GDP in China and rest of ASEAN countries would not increase so much as that of other countries. With respect to the food and agricultural sector, the East Asian FTA would lead to a decrease in the sectoral output in Japan and Korea while their export and import in the sector would be on the increase. East Asian tariff reduction would cause an increase in export in most economic sectors. The results of trade liberalization in East Asian show that tariff removal would cause a relatively large increase in the export of food and

agricultural products, particularly in China and Korea. It is obvious that real imports for all sectors will increase under East Asian trade liberalization scenario because domestic consumers would increase their demand on those commodities due to decreased domestic prices. The sectors with higher initial tariff rates will get the higher gains from trade creation effect resulting from the reduction of intra-regional tariffs. Therefore, imports of these sectors would significantly increase.

It is also expected that production in protected sectors would decline slightly as a result of the Free Trade Agreement. We found that under East Asian's trade liberalization scenario, changes of export and import in most sectors would be positive because of the shift in incentive from domestic supply to export. Economic theories suggest that the larger the number of countries in a trade liberalization, the greater the economic benefit or welfare is. Accordingly, the simulation results suggest that trade liberalization in East Asian region yields welfare outcomes not only for ASEAN members, but also for Northeast Asian countries. However, more favorable results are found for East Asian economies under the liberalization scenario involving East Asian countries as a whole than under the trade liberalization scenarios involving the subset of these East Asian countries. Changes in trade policy by opening markets and building regional relationships proved stimulants to economic growth. Thus trade liberalization policy can be a part of a general economic environment to encourage secure incentives for investment.

Agricultural sector is the most sensitive sector in East Asian countries. The agricultural sector should be singled out for special treatments like prolong timetable because some countries in the East Asian region would have greater difficulty to open up certain agricultural products. Agriculture is Japan's biggest constraint on moving forward on FTAs. Korean government started FTA negotiations with the partner countries that pose the least threat on agricultural market opening. Protection of agriculture employment in ASEAN countries also becomes an elemental concern. AFTA initially excluded unprocessed agricultural products from tariff liberalization. ASEAN countries have been implementing the AFTA with step-by-step tariff reductions, phased transitions and other flexible arrangements, to eventually achieve agricultural liberalization. To sum up, the greater flexibility should be allowed for member countries to establish East Asian FTA through a less painful transition process.

This paper also tries to analyse the economic impact of removing tariffs in the region on agricultural commodities. Domestic support and export subsidies which also distorted in agricultural commodities trade are not considered in this study. Emphasis is placed on the effect of economic impact on the five agricultural commodities due to change in trade policy in East

Asian region. In all the previous experiments, simulation results are compared with update of GTAP data set or post-NAFTA and post- AFTA data set to determine the effect of East Asian trade liberalization, but for assessing the effect of East Asian trade liberalization on agricultural commodities, simulation results are compared with the base line data from the Version 6 GTAP database, which is benchmarked to 2001.

The results of the simulation experiments indicate that the impact on agriculture sector in East Asian countries is so large. Implementation of trade liberalization in East Asia is expected to lead to a structural change in regional food markets whereby food production would shift from highly protected regions to low-protected regions or non-protected regions. However, the effect of trade liberalization on highly differentiated agricultural products such as rice in Japan may be different from the results suggested by the simulation. Producers from agriculture and food importing countries will be loss while those from agricultural exporting countries would gain.

Under the East Asian trade liberalization, rice output in Japan and Korea is projected to shrink while the rice output from the two largest rice-exporting countries, Thailand and China is projected to rise. The rate of protection in China and Thailand was low before trade liberalization scenario. The increase in import demand for rice in other East Asian member countries, as a result of reducing import tariffs, Thailand, Vietnam and China rice sector would expand. With regard to output changes in other food and agricultural sectors; vegetables and fruit, oilseed, fish and fish product and sugar, the results suggest that the removing tariff in East Asian region would have a low impact on output changes except of sugar output in Thailand and Japan and oilseed output in Vietnam and Korea. Sugar production in Thailand and oilseed output in Vietnam estimate to grow considerably. However, the outputs of sugar in Japan and oilseed in Korea would decline as a result of trade liberalization.

This paper examines the consequences of the elimination of trade barriers in East Asian region. However, as there are some other factors which are not studied in this paper, the consequences may not be full impacts of the free trade agreement. For example, Potential economic of scale, more competitive environment, foreign direct investment, technology transfer, regional labor mobility must also be realized as effects of trade liberalization. Therefore,the trade liberalization among East Asian countries would have adverse effect on the producers from uncompetitive sectors. Such inefficient sectors need adjustments assistance and to re-structure in order to compensate for any losses.

Free Trade between two countries can be mutually beneficial as they specialize in production and export of sectors with comparative advantage. In the case of ASEAN Plus 3, we can

generally divide capital intensive countries like Japan, Korea and labor intensive countries like most of ASEAN countries and China. There is also considerable overlap in the composition of their major export items, particularly in textiles and apparel and other labor-intensive manufactures between China and ASEAN countries. ASEAN firms face competition from Chinese companies in third-country markets (especially the United States, the European Union, and Japan) and domestic markets in products ranging from labor-intensive manufacturing (textiles, footwear, and toys) to high technology (chip manufacturing). We can also see that Japan and Korea have comparative advantage with their capital investment, technology know-how, and institution and cooperation of industries, compared with ASEAN and China. So to establish East Asia economic integration, they need negotiations in a comprehensive framework for confronting rivalry problems that arises from the competitive comparative structure between them.

Trade policies suggest that free trade may be economically the most efficient policy, but it may be the most difficult to achieve politically. Historical tensions and lack of mutual understanding among East Asian countries is one of the obstacles of East Asia FTA. Another obstacle to East Asia FTA is agricultural issue which is strongly influenced by Japan and Korea. For ASEAN-China FTA, agriculture has been included in the "early harvest" element, but on the other hand, agriculture is a very difficult and sensitive sector particularly for Japan and Korea. East Asian economies need to find the ways for co-existence in the area of agriculture, which defines cooperation in the region.

The movement towards 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 have been crucial for East Asian region to establish free trade areas.

Appendices 1

Common Effective Preferential Tariff (CEPT) Scheme

The ASEAN Free Trade Area (AFTA) was formally established in 1992 to realize an FTA within the 15 years beginning 1 January 1993. AFTA takes the excluding products list approach for liberalizing tariff using the CEPT. There are 4 lists under CEPT scheme—the Inclusion list (IL), Temporary Exclusion list (TEL), Sensitive List (SL), and General Exception List (GEL) as key instruments to determine the pace and scope of liberalization.

Products in the IL enjoy tariff concessions from member countries. Products in the Inclusion List (IL) were targeted to reduce tariffs to 0-5% by 2002 for Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand (ASEAN6), (2006 for Vietnam, 2008 for Laos and Myanmar, and 2010 for Cambodia).

The items in Temporary exclusions list (TEL) were initially excluded from tariff reductions, but these items are to be transferred to the (IL) and will ultimately be lowered to 0-5%.; transferred products are subject to the same rate of tariff reduction as other products under IL.

Sensitive Products have different timeframes. The Sensitive List (SL) is for some unprocessed agricultural products which would be allowed to be phased into the IL during the period of (2001-2003) under CEPT Scheme and to be reduced to 0-5 % at a later date: 2010 for Brunei Darussalam, Indonesia, Malaysia, Philippines and Thailand, 2013 for Viet Nam, and 2015 for Laos and Myanmar, 2017 for Cambodia.

General exceptions refer to products which it considers necessary for the protection of its national security, the protection of public morals, the protection of human, animal or plant life and health, and the protection of articles of artistic, historic or archaeological value. The provision on General Exceptions in the CEPT Agreement is consistent with Article X of the General Agreement on Tariffs and Trade (GATT) 1994.

Member countries are required to eliminate quantitative restrictions on products and eliminate other non-tariff barriers (NTB) within five years after receiving CEPT concessions. Based on the UNCTAD classification of NTBs, a working definition of NTBs covers para-tariff measures, price control measures, finance measure, monopolistic measures, and technical measures (ASEAN Secretariat, 1995).

Appendices 2

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

Appendices 3

Regional Trade Agreements Involving East Asian Countries

Proposed	Under Negotiation		Concluded	
	Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation
1. ASEAN- EU Free Trade Area 2. East Asia Free Trade Area 3.United State-Brunei Free Trade Area 4.China-India Regional Trading Arrangement 5. China-Japan-Korea FTA 6. China-Korea Free Trade Agreement 7.China-Peru Free Trade Agreement	1.ASEAN-India Regional Trade and Investment Area 2.ASEAN-Japan Comprehensive Economic Partnership 3. New Zealand-China Free Trade Agreement 4.China-Australia FTA 5.China-Iceland FTA	1.ASEAN-Australia and New Zealand Free Trade Area 2.Japan-Brunei Free Trade Area 3.Chin-Gulf Cooperation Council FTA 4.China-Singapore Free Trade Agreement 5.China-South African Customs Union FTA 5.Japan-Indonesia Economic Partnership Agreement (EPA)	1.ASEAN-Korea Free Trade Area 2.China-Pakistan Free Trade Agreement 2. Preferential Tariff Arrangement-Group of Eight Developing Countries 3.Japan-Philippines EPA	1. ASEAN Free Trade Area 2. ASEAN-CHINA Free Trade Area 3. Trans-Pacific Strategic Economic Agreement 4.Asia-Pacific Trade Agreement 5.China-Chile Free Trade Agreement 6.China-Macao Closer Economic Partnership Arrangement 7. China-Thailand Free Trade Agreement

Appendix. 3 Continued

Proposed	Under Negotiation		Concluded	
	Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation
8.China-South Africa Free Trade Agreement 9. Shanghai Cooperation Organization Free Trade Agreement 10.India-Indonesia Comprehensive Economic Cooperation Arrangement 11. Indonesia-European Free Trade Association FTA 12. US-Indonesia FTA 13.Australia-Japan FTA 14. Japan-Canada FTA 15.Japan-India EPA	6.Pakistan-Indonesia FTA 7.Trade Preferential System of the Organization of the Islamic Conference 8.Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) FTA 9.India-Thailand Free Trade Area 10.Thailand-Bahrain FTA	6.Japan- Chile EPA 7.Japan-Gulf Cooperation Council FTA 8.Japan-Korea FTA 9.Japan-Thailand EPA 10. Japan-Vietnam FTA 11.India-Korea Comprehensive EPA 12.Korea-Canada FTA 13.Korea-Mexico Strategic Economic Complementation Agreement		8. China-Hong Kong Closer Economic Partnership Arrangement 9.Japan-Malaysia EPA 10.Japan-Mexico EPA 11. Japan-Singapore Economic Agreement for a New-Age Partnership 12. Korea-Chile FTA 13. Korea-European Free Trade Association FTA 14. Korea-Singapore FTA

Appendix. 3 Continued

Proposed	Under Negotiation		Concluded	
	Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation
16.Japan-Switzerland FTA 17.Australia-Korea FTA 18.Korea-European Union FTA 19. Korea-MERCOSUR Preferential Trading Agreement (PTA) 20.Korea-South Africa FTA 21. Malaysia-Korea FTA 22. New Zealand-Korea Closer Economic Partnership 23. Korea-Thailand FTA 24.Malaysia-Chile FTA 25.Malaysia-India Comprehensive Economic cooperation Agreement	11.Thailand-Peru FTA	14. Korea-US FTA Malaysia-Australia FTA 15.Malaysia-New Zealand FTA 16.Malaysia-Pakistan FTA 17.US-Malaysia FTA 18.Canada-Singapore FTA 19.Pakistan-Singapore FTA 20.Singapore-Egypt FTA 21. Singapore-Kuwait FTA		15.Laos-Thailand Preferential Trading Arrangement 16.US- Singapore FTA 17.Singapore-Panama FTA 18.Singapore-Jordan FTA 19.Singapore-Australia Free Trade Agreement 20. New Zealand-Singapore Closer Economic Partnership 21.India-Singapore Comprehensive Economic Cooperation Agreement

Appendix. 3 Continued

Proposed	Under Negotiation		Concluded	
	Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation
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		22. Singapore-Mexico FTA 23. Singapore-Qatar FTA 24.Thailand-European Free Trade Association FTA 25. US-Thailand FTA		22. European Free Trade Association-Singapore FTA 23.Thailand-Australia FTA 24. .Thailand-New Zealand Closer Economic Partnership Agreement

Sources; ADB, Asia Regional Integration Center, http://aric.adb.org/FTAbyCountryAll.ph

Appendices 4

Equation for the East Asian FTA, GTAP model

Market clearing condition for tradable commodities

$$VOM(i,r) * qo(i,r) = VDM(i,r) * qds(i,r) + VST(i,r) * qst(i,r) + \sum_{s \in REG} VXMD(i,r,s) * qxs(i,r,s) + VOM(i,r) * tradslack(i,r)$$

Equilibrium in the domestic market for tradable commodities imported from region(r)

$$VIM(i,r) * qim(i,r) = \sum_{j \in PROD} VIFM(i,j,r) * qfm(i,j,r) + VIPM(i,r) * qpm(i,r) + VIGM(i,r) * qgm(i,r)$$

Equilibrium in the domestic market for tradable commodities produced domestically

$$VDM(i,r) * qds(i,r) = \sum_{j \in PROD} VDFM(i,j,r) * qfd(i,j,r) + VDPM(i,r) * qpd(i,r) + VDGM(i,r) * qgd(i,$$

Market clearing condition for the nontradable, Endowment commodities

$$VOM(i,r) * qo(i,r) = \sum_{j \in PROD} VFM(i,j,r) * qfe(i,j,r) + VOM(i,r) * endwslack(i,r)$$

$$qoes(i,j,r) = qfe(i,j,r)$$

Zero pure profit condition

$$VOA(j,r) * ps(j,r) = \sum_{i \in ENDW} VFA(i,j,r) * pfe(i,j,r) + \sum_{i \in TRAD} VFA(i,j,r) * pf(i,j,r) + VOA(j,r) * profitslack(j,$$

Zero pure profit condition for the international transport sector

$$VT * pt = \sum_{i \in TRAD\_COMM} \sum_{r \in REG} VST(i,r) * pm(i,r)$$

Composition of regional income

$$PRIVEXP(r) * yp(r) = INCOME(r) + y(r) - SAVE(r) * [pasve + qsave(r)] - \sum_{i \in TRAD} VGA(i,r) * [pg(i,r) + qg(i,r)]$$

Generating available income in each region

$$\begin{aligned} INCOME(r) * y(r) = & \sum_{i \in ENDW} VOA(i,r)[ps(i,r) + qo(i,r) - VDEP(r) * [pcgds(r) + kb(r)] \\ & + \sum_{i \in NSAV} VOM(i,r) * [pm(i,r) + qo(i,r)] - VOA(i,r) * [ps(i,r) + qo(i,r] \\ & + \sum_{i \in ENDWM} \sum_{j \in PROD} VFA(i,j,r)[pfe(i,j,r) + qfe(i,j,r)] - VFM(i,j,r) * [pm(i,r) + qfe(i,j,r)] \\ & + \sum_{j \in ENDWS} \sum_{i \in PROD} VFA(i,j,r) * [pfe(i,j,r) + qfe(i,j,r)] - VFM(i,j,r) * [pmes(i,j,r) + qfe(i,j,r \\ & + \sum_{j \in PROD} \sum_{i \in TRAD} VIFA(i,j,r) * [pfm(i,j,r) + qfm(i,j,r)] - VIFM(i,j,r) * [pim(i,r) + qfm(i,j,r) \\ & + \sum_{j \in PROD} \sum_{i \in TRAD} VDFA(i,j,r) * [pfd(i,j,r) + qfd(i,j,r)] - VDFM(i,j,r) * [pim(i,r) + qfd(i,j,r \\ & + \sum_{i \in TRAD} VIPA(i,r) * [ppm(i,r) + qpm(i,r)] - VIPM(i,r) * [pim(i,r) + qpm(i,r)] \\ & + \sum_{i \in TRAD} VDPA(i,r) * [ppd(i,r) + qpd(i,r)] - VDPM(i,r) * [pm(i,r) + qpd(i,r)] \\ & + \sum_{i \in TRAD} VIGA(i,r) * [pgm(i,r) + qgm(i,r)] - VIGM(i,r) * [pim(i,r), qgm(i,r)] \\ & + \sum_{i \in TRAD} VDGA(i,r) * [pgd(i,r) + qgd(i,r)] - VDGM(i,r) * [pm(i,r) + qgd(i,r)] \\ & + \sum_{i \in TRED} \sum_{s \in REG} VXWD(i,r,s) * [pfob(i,r,s) + qxs(i,r,s)] - VXMD(i,r,s) * [pm(i,r) + qxs(i,r,s) \\ & + \sum_{i \in TRAD} \sum_{s \in REG} VIMS(i,s,r) * [pms(i,s,r) + qxs(i,s,r)] - VXMD(i,r,s) * [pm(i,r) + qxs(i,r,s)] \\ & + INCOME(r) * incomeslack(r) \end{aligned}$$

Price Linkage Equations

$ps(i, r) = to(i, r) + pm(i, r)$

$pfe(i, j, r) = tf(i, j, r) + pm(i, r)$

$pfe(i, j, r) = tf(i, j, r) + pmes(i, j, r)$

$ppd(i, r) = tpd(i, r) + pm(i, r)$

$pgd(i, r) = tgd(i, r) + pm(i, r)$

$pfd(i, j, r) = tfd(i, j, r) + pm(i, r)$

$ppm(i, r) = tpm(i, r) + pim(i, r)$

$pgm(i, r) = tgm(i, r) + pim(i, r)$

$pfm(i, j, r) = tfm(i, j, r) + pim(i, r)$

$pms(i, r, s) = tm(i, s) + tms(i, r, s) + pcif(i, r, s)$

$pr(i, s) = pm(i, s) - pim(i, s)$

$pcif(i, r, s) = FOBSHR(i, r, s) * pfob(i, r, s) + TRNSHR(i, r, s) * pt$

$pfob(i, r, s) = pm(i, r) - tx(i, r) - txs(i, r, s)$

Composite Imports Net

$$pim(i,s) = \sum_{k \in REG} MSHRS(i,k,s) * pms(i,k,s)$$

$$qxs(i,r,s) = qim(i,s) - \sigma_{M}(i) * [pms(imr,s) - pim(i,s)]$$

Behavioral Equations for producers

Composite intermediates net:

$$pf(i,j,r) = FMSMR(i,j,r) + pfm(i,j,r) + [1 - FMSMR(i,j,r)] * pfd(i,j,r)$$

$$qfm(i,j,s) = qf(i,j,s) - \sigma_D(i) * [pfm(i,j,s) - pf(i,j,s)]$$

$$qfd(i,j,s) = qf(i,j,s) - \sigma_D(i) * [pfd(i,j,s) - pf(i,j,s)]$$

Value-added net:

$$pva(j,r) = \sum_{K \in ENDW} SVA(k,j,r) * [pfe(k,j,r) - afe(k,j,r)]$$

$$qfe(i,j,r) + afe(i,j,r) = qva(j,r) - \sigma_{VA}(j) * [pfe(i,j,r) - |afe(i,j,r) - pva(j,r)]$$

Total Output net:

$$qva(j,r) + ava(j,r) = qo(j,r) - ao(j,r)$$

$$qf(i,j,r) + af(i,j,r) = qo(j,r) - ao(j,r)$$

Zero Profits (revised):

$$VOA(j,r) * [ps(j,r) + ao(j,r)] = \sum_{i \in ENDW\_COMM} VFA(i,j,r) * [pfe(i,j,r) - afe(i,j,r) - ava(j,r)] + \sum_{i \in TRAD\_COMM} VFA(i,j,r) * [pf(i,j,r) - af(i,j,r)] + VOA(j,r) * profitslack(j,r)$$

Household Behavior

Aggregate utility

$$Income(r)*u(r) = PRIVEXP(r)*up(r)+GOVEXP(r)*[ug(r)+pop(r)] + SAVE(r)*pop(r)]$$

Equivalent variation, *$ US million*

$$INCOMEEV(r) = yev(r)$$

$$EV(r) = [INCOMEEV(r) / 100] * yev(r);$$

Per capita utility from aggregate household expenditure in region r

$$\begin{aligned} u(r) = au(r) &+ DPARPRIV(r) * \log(UTILPRIV(r) * dppriv(r) \\ &+ DPRGOV(r) * \log(UTILGOV(r)) * dpgov(r) \\ &+ DPRSAVE(r) * \log(UTILSAVE(r)) * dpsave(r) \\ &+ [1/UTILELAS(r) * y(r) - pop(r) - p(r)] \end{aligned}$$

The percentage change in each region term of trade

$$tot(r) = psw(r) - pdw(r)$$

The GDP quantity index

$$\begin{aligned} GDP(r) * vgdp(r) = &\sum_{i \in TRAD} VGA(i,r) * [pg(i,r) + qg(i,r)] + \sum_{i \in TRAD} VPA(i,r) * [pp(i,r) + qp(i,r)] \\ &+ REGINV(r)[pcgds(r) + qcgds(r)] + \sum_{i \in TRAD} \sum_{s \in REG} VXWD(i,r,s) * [pfob(i,r,s)qxs(i,r, \\ &+ \sum_{i \in TRAD} VST(i,r) * [pm(i,r) + qst(i,r)] - \sum_{i \in TRAD} \sum_{r \in REG} VIWS(i,r,s) * [pcif(i,r,s) + qxs(i,1 \end{aligned}$$

$$GDP(r) * pgdp(r) = \sum_{i \in TRAD} VGA(i,r) * pg(i,r) + \sum_{i \in TRAD} VPA(i,r) * pp(i,r) + REGINV(r) * pcgds(r)$$
$$+ \sum_{i \in TRAD} \sum_{s \in REG} VXWD(i,r,s) * pfob(i,r,s) + \sum_{i \in TRAD} VST(i,r) * pm(i,r)$$
$$- \sum_{i \in TRAD} \sum_{r \in REG} VIWS(i,r,s) * pcif(i,r,s)$$

$$qgdp(r) = vgdp(r) - pgdp(r)$$

The percentage change in Export and Import

$$VXW(i,r) * vxwfob(i,r) = \sum_{s \in REG} VXWD(i,r,s) * [qxs(i,r,s) + pfob(i,r,s)$$
$$+ VST(i,r) * [qst(i,r) + pm(i,r)]$$

$$VIW(i,s) * viwcif(i,s) = \sum_{r \in REG} VIWS(i,r,s) * [pcif(i,r,s) + qxs(i,r,s)$$

REG	Regions
NSAV_COMM	Non-Savings Commodities
TRAD_ COMM	Tradable Commodities
DEMD_COMM	Demanded Commodities
PROD_COMM	Produced Commodities
ENDW_COMM	Endowment Commodities
ENDWS_COMM	Sluggish Endowment Commodities
ENDWM_COMM	Mobile Endowment Commodities
CGDS_COMM	Capital Goods Commodities ("cgds")
ENDWC_COMM	Capital Endowment Commodity ("capital")

Variables

i	commodity
j	industry
r	region
s	destination
qcgd	output of capital goods sector

qds	total domestic sales of commodity
qf	demand for commodity
qfe	percentage change in endowment demand
qfd	Percentage change in quantity of domestic tradable commodity
qfm	Percentage change in quantity imported tradable commodity
qg	percentage change in government household demand for imports
qgd	government household demand for domestic
qgm	government household demand for imports
qim	aggregate imports, market price weights
qo	percentage change in output
qpd	private household demand for domestic i in region s
qpm	private household demand for imports
qp	private household demand for commodity
qst	demand for regional supply of global transportation service
qxs	Percentage change in quantity of exports of tradable commodity
qva	value added in industry
pcgds	price of investment goods
pcif	CIF world price of commodity
pdw	index of prices paid for tradeables used in region
pf	firms' price for commodity
pfd	price index for domestic purchases
pfe	firms' price for endowment commodity
pfm	price index for imports
pfob	FOB world price of commodity
pg	government consumption price for commodity
pgd	price of domestic i in government consumption
pgm	price of imports of i in government consumption
pim	market price of composite import
pm	market price of commodity
pmes	market price of sluggish endowment
pms	domestic price for commodity
ppd	price of domestic i to private households in s
pp	private consumption price for commodity i in region r
ao	output augmenting technical change in sector j of r
ava	value added augmenting technical change in sector i of r
dppriv	private consumption distribution parameter

dpgov	government consumption distribution parameter
dpsave	saving distribution parameter
tf	tax on primary factor i used by j in region r
tfd	tax on domestic i purchased by j in r
tgm	tax on imported i purchased by government
tm	change in tax on imports of i into s
tms	change in tax on imports of i from r into s
tpd	shift in tax on private consumption of domestics
tpm	shift in tax on private consumption of import
to	output (or income) tax in region r
tot	terms of trade for region
tx	change in subsidy on exports of i from r
txs	change in subsidy on exports of i from r to s
ug(r)	per capita utility from government expenditure in region r
up(r)	per capita utility from private expenditure in region r
yev(r)	regional household income in region r
y(r)	regional household income in region r
kb(r)	beginning-of-period capital stock in r
pop(r)	regional population
psave	price of savings in region r
qsave	regional demand for NET savings
vgdp	change in value of GDP
vxwfob	value of merchandise regional exports, by commodity, FOB
viwcif	value of merchandise regional imports, by commodity, CIF

Behavioral and Other Parameter

VDM	= Value of Domestic sales at market price
VDEP	= value of capital depreciation in r (exogenous)
VDFA	= purchases of domestic i for use by j in region r
VDFM	= Value of purchases of domestic tradable commodity by firm at market price
VDPM	=Value of expenditure on domestic tradable commodity by household at market price
VDGA	= government consumption expenditure on domestic i in r

VDGM	= Value of expenditure on domestic tradable commodity by government at market price
VFA	= producer expenditure on i by j in r valued at agent's prices
VFM	= Value of purchases of endowment commodity by firm at market price
VGA	= government consumption expenditure on i in r at agent's prices
VIM	= Value of imports at market price
VIFA	= purchases of imported i for use by j in region r
VIFM	= Value of purchases of imported tradable commodity by firm evaluated a market price
VIGA	= government consumption expenditure on imported i
VIGM	= Value of expenditure on imported tradable commodity by government at market price
VIMS	= imports of i from r to s valued at domestic market prices
VIPA	= private consumption expenditure on imported i in r
VIPM	= Value of expenditure on imported tradable commodity by household evaluated at market
VIW	= value of commodity imports i into s at CIF prices
VIWS	= imports of i from r to s valued CIF (tradeables only)
VOA	= value of commodity i output in region r at agent's prices
VOM	= Value of endowment Output at market prices
VPA	= private household expenditure on i in r valued at agent's prices
VST	= Value of sales to the international transport sector
VT	= international margin supply
VXW	= value of exports by commodity i and region r at FOB prices
VXMD	= Value of exports of tradable commodity at market price
VXWD	= exports of i from r to s valued FOB (tradeables only)
DPARPRIV	= private consumption distribution parameter
DPARGOV	= government consumption distribution parameter
DPARSAVE	= saving distribution parameter
FOBSHR	=share of fob price in the cif price for tradable commodity I exported from source r to destination s
FMSMR	= share of imports in the composite for tradeable commodity used by firms in sector j of region r evaluated at agents' prices

GOVEXP	= government consumption expenditure
MSHRS	=market share of source r in the aggregate imports of tradeable commodity i in region s evaluated at market price
PRIVEXP	= private consumption expenditure
REGINV	= regional GROSS investment in r
SVA	= share of i in total value added in j in r
TRNSHR	= share of transport price in the cif price for tradeable commodity I exported from source r to destination s
UTILELAS	= elasticity of cost of utility
UTILPRIV	= utility from private consumption
UTILGOV	= utility from government consumption
UTILSAVE	= utility from saving

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