The Impact of ASEAN'S FTAs with China, Japan, Korea and Australia-New Zealand: An Analysis in GTAP Framework

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Abstract

ASEAN is one of dynamic and fast growing economic regionalism. ASEAN has shown rapid growth in trade liberalization with the free trade agreement (FTA), established with China Korea, Japan, Australia and New Zealand. The aim of this research is to investigate the effects of the free trade agreement between ASEAN-China (ACFTA), ASEAN-Korea (AKFTA), ASEAN-Japan (AJCEP), ASEAN-Australia-New Zealand (AANZFTA). The Computable General Equilibrium (CGE) model and the Global Trade Analysis Project (GTAP) database version 9 are applied with the partial and full liberalization scenarios. The GTAP simulations results shows that ACFTA provides a greater positive impact than the other FTAs for each region. In the long run, the welfare of each region has increased, the trade balance has decreased, the volume of exports and imports has increased

1.   Introduction

Economic regionalism is the process of policy implementation by a group of countries in a particular region, with the aim of increasing the volume of exchange of goods and services as well as factors of production between countries (Wyatt and Walter 1999). Other objectives of economic regionalism are including the reduction or elimination of trade barriers in the form of tariffs and non-tariffs in the form of free trade agreements (FTA) or preferential trade agreements (PTA) (Bowen *et al.* 2001). The FTAs likely increases the market access, strengthens international trade flows and encourages bilateral and multilateral trade relations (Shohibul, Mulyadi, et al. 2016).

ASEAN is an economic region where it aims to achieve sustainable prosperity and equitable economic growth through economic regionalism. According to the Asian Development Bank (ADB, 2008) the development of regionalism in East Asia is relatively fast and growing dynamically. ASEAN FTA conducted cooperation with China (ASEAN - China FTA), Korea (ASEAN - Korea FTA), India (ASEAN-India FTA), Australia and New Zealand (ASEAN - Australia - New Zealand FTA) and Japan (ASEAN - Japan Comprehensive Economic Partnership) (Badan Kebijakan Fiskal Kementrian Keuangan 2013).

Estrada, et al. (2011) reveal that ASEAN-China-Japan-Korea (ASEAN+3) agreement would provide positive welfare and GDP for the entire region. Shohibul (2014) argue that ASEAN – India (AIFTA) provides a greater positive impact than the ASEAN – Korea (AKFTA) for each region in terms of welfare, GDP, trade and investment; India's outcomes suffered negative welfare impacts during partial liberalization. Singapore, Malaysia and Thailand experience gains in the phase of partial liberalization. Indonesia and Vietnam have positive benefits (Nag dan Sikdar 2011). The establishment of ASEAN FTA with China, Japan, Korea Australia and New Zealand brought a new atmosphere in free trade agreements. FTAs have a positive or negative impact, this impact can be trade diversion or trade creation for each region. It is expected that inter-regional trade cooperation can improve the prosperity and profit for both ASEAN and partner countries. It's just a critical question of whether the benefits are distributed to all member countrys therein.

This paper aims to analyze the impact of ASEAN FTA between China, Korea, Japan, Australia and New Zealand for each region. The rest of this paper is organized as follows. Part 2 describes the the ASEAN and partners trade relations. Literature review is presented in Part 3. Methodology is in Part 4. Results and discussion are elaborated in Part 5. And finally, Part 6 draws concluding remarks.

2. ASEAN and Partners Trade Relations

2.1 ASEAN – China Trade Relation

ASEAN - China has a long-term relationship with interactions through trade, education, investment, tourism, natural resources and public health. China is the largest bilateral partner for ASEAN and as a major player in the ASEAN FTA. For China, ASEAN is a very crucial partner, to market products from China. ASEAN becomes the main destination for China's export activities. The two-way investment relationship, bilateral trade flows between China and ASEAN have grown rapidly in absolute terms and are also relatively important for their total trade (Sheng, Tang and Xu 2012).

According to Developing ASEAN-China Relations (Swee-Hock, Lijun and Wah 2005) China currently serves as the new power of the world economy at the time when the developed countries are not able to explore new sources of growth in the near future. ACFTA is an important vehicle to strengthen the economic relations of both parties in increasing trade, investment, and the flow of goods and services. Following Yean and Yi (2014) China was the top trading partner of ASEAN and became an important destination for ASEAN's exports.

By 2010 the ASEAN export was USD 112 billion, the ASEAN export was USD 154 billion in 2014, ASEAN's export continue to increase and the largest ASEAN's export in 2014 (see Figure 1). Not only export, but also ASEAN's import has increased every year. ASEAN's import in 2010 was USD 122 billion, in 2011 was USD 154 billion and continue to increase in 2016 was USD 224 billion. ASEAN's largest import in 2016. This implies that the dependence of ASEAN against China is very strong.
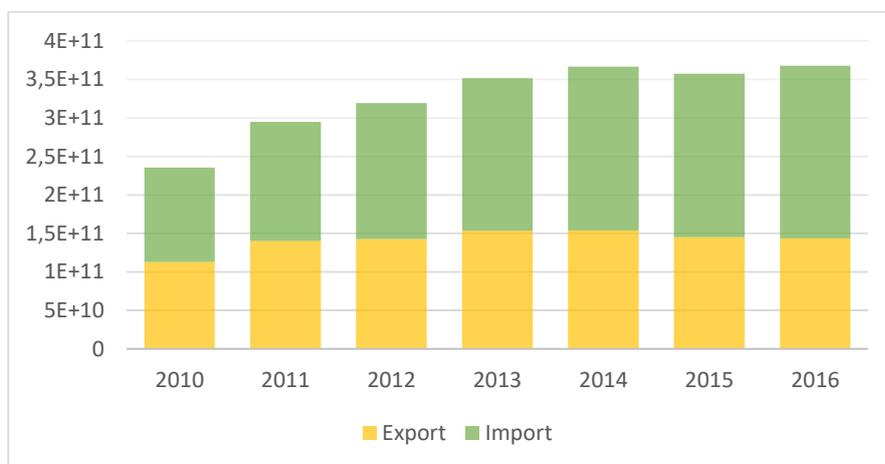
Figure 1 ASEAN's Export and import to China (Billions USD)

In producing goods, China involve to require raw materials from its partner countries. Thus, china is expanding its cooperation with other countries to get supplies of raw materials. So ASEAN becomes a strategic partner for the interests of China.

Trade cooperation between China and ASEAN is complementary. China has a complete industrial system with sophisticated and efficient technology. As China enters the global economic

community, ASEAN can take part in the production chain to China. Conversely, economic growth in China will require more resources and minerals. By establishing cooperation with ASEAN resources needs can be fulfilled.

2.2 ASEAN – Japan Trade Relation

Japan is now the ASEAN's second-biggest trading partner behind the China. As for the background behind the ASEAN - Japan trade relations are: Firstly, to meet the needs of raw materials and energy. ASEAN is the source of suppliers of production raw materials for Japan. Secondly, Japan's desire to develop its industrial marketing area. ASEAN countries have a very wide scope, which will be a potential market for Japan. ASEAN being an important production center for Japan multinationals; strategic sources of raw materials and energy; and an increasingly important consumer market (Versetti and Heal 2015).

As the one of biggest investor in ASEAN, Japan have provided significant opportunities for employment, technology, information and science transfer, and skills development for human capital. ASEAN has received financial and technological assistance for infrastructure development which is support the economy.

In figure 2 ASEAN experienced an increase in imports for 4 years, from 2010 to 2013 and experienced a decrease in import in 2014 and 2015. The biggest ASEAN's import from Japan was USD 82 billions in 2013. The biggest ASEAN's export in 2012 was USD 55 billion. This implies that ASEAN and Japan are committed to each other in economic activity. With great economic activity reflected in export and import activities, ASEAN and Japan can alleviate poverty and play an important role in the Asian economy.
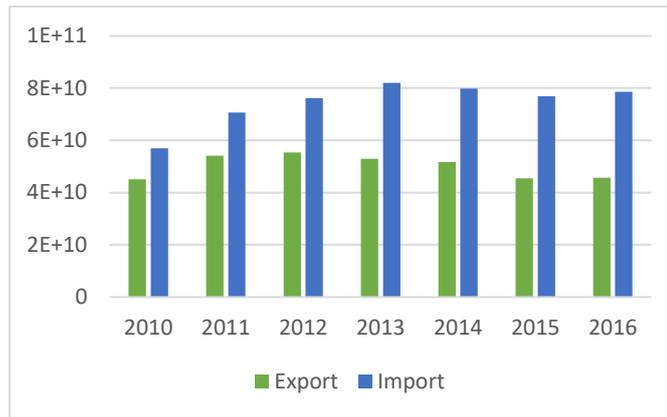
Source: data.aseanstats.org (accessed 11 December 2017) processed

Figure 2 ASEAN's export – import to Japan (in Billions USD)

Japan is also a major investor in ASEAN, besides China, India, the European Union and the United States. In 2013 Japan's FDI for ASEAN continues to increase. Japan's FDI for ASEAN amounts to USD 24,750.2 million (see figure 3). This value is higher than that invested by the EU and China to ASEAN. According to Tieying (2016), the ASEAN market has the potential to improve the economy in Japan and the gap in the ASEAN region begins to diminish.
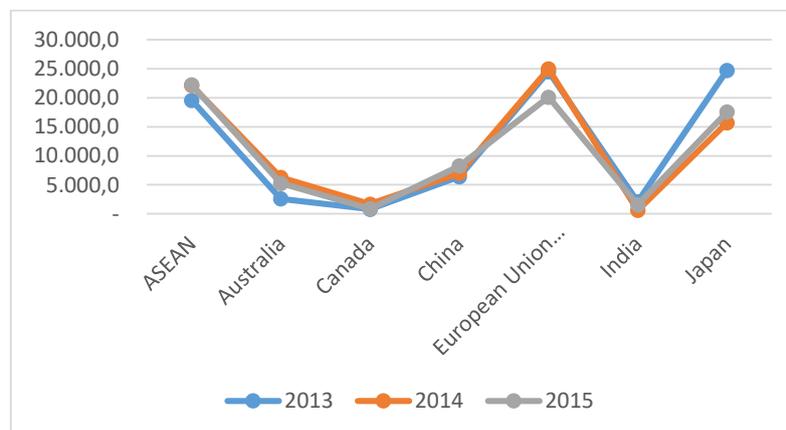
Source: ASEAN Secretariat (accessed 11 December 2017) processed
Figure 3 Foreign Direct Investment Net Inflows in ASEAN

2.3   ASEAN – Korea Trade Relation

Korea-ASEAN FTA strengthens and enhances their economic cooperation through the following: progressive elimination of tariffs and non-tariff barriers in substantially all trade in goods; progressive liberalisation of trade in services with substantial sectoral coverage, establishment of an

open and competitive investment regime that facilitates and promotes investment among the parties and establishment of effective trade and investment facilitation measures (ASEAN Corporation 2006). With the reduction of tariff barriers in trade between ASEAN - Korea, each region will enjoy the greater and easier in market access.

ASEAN is an important economic partnership for Korea and vice versa. As ASEAN is one of the fastest growing market, and being one of Korea's most important economic partners. The other reason, ASEAN is emerging as the pivot of economic integration in East Asia and have actively engaged in FTA with ASEAN.
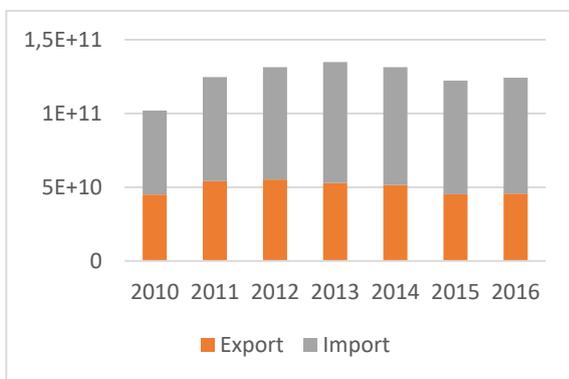
Source: data.aseanstats.org (accessed 11 December 2017) processed

Figure 4
ASEAN's export – import to Korea Billions USD
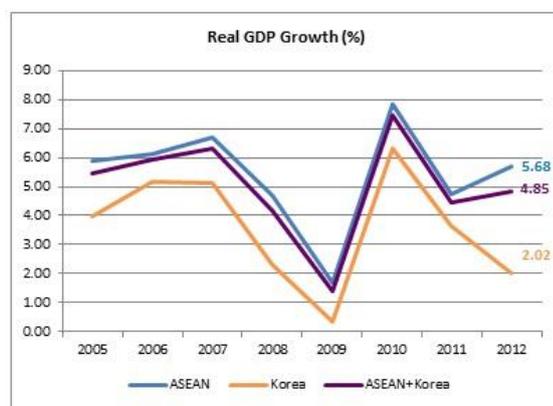
Source: http://akfta.asean.org/ (accessed 8 November 2017) *processed*

Figure 5
Real GDP Growth AKFTA

In figure 4 shows ASEAN's export and import activities for Korea. ASEAN's export has increased from 2010 to 2012, declined in 2013 and 2014, and then increased in 2015 and 2016. As for import, ASEAN has increased for 3 years, from 2010 to 2013. ASEAN's import declined in 2014 and 2015, then it improves again. The greatest ASEAN's export was USD 55,3 billion in 2012 and import was USD 82 billion in 2013 (see figure 4). This implies that there is a dependency between ASEAN and Korea.

Establishing effective trade and investment facilitation will have a positive impact. This is reflected in real GDP growth in significant AKFTA frameworks (see Figure 5). Figure 5 implies that

the unification of economic activity is likely expected to be mutually beneficial. The real GDP in AKFTA scheme has increased 5,68% during 2005 to 2012.

2.4   ASEAN – Australia – New Zealand Trade Relation

ASEAN-Australia-New Zealand Free Trade Area agreement was completed in August 2008. The AANZFTA objective is to strengthen and enhance economic cooperation, trade in goods, trade in services and investment between member countries, liberalizing trade progressively and creating a transparent system and to facilitate investment and explore new areas of cooperation.

The ASEAN Australia New Zealand FTA is quite comprehensive, as it covers all sectors including goods, services and investments, intellectual property simultaneously. Meanwhile for ASEAN, AANZFTA is the trade agreement is the most comprehensive ever negotiated (Badan Kebijakan Fiskal Kementrian Keuangan 2013).

Within the AANZFTA framework, each party undertakes extensive tariff reductions or tariff elimination extensively and gradually. Elimination of this tariff will strengthen trade cooperation. ASEAN's cooperation with Australia and New Zealand will create great opportunities for trade and access to international markets. The ease of accessing international markets will have an impact on trading activities.

Export ASEAN for Australia increased from 2010 to 2012, then decreased until 2016. While ASEAN exports to New Zealand increased from 2010 to 2015. The largest ASEAN exports to Australia in 2012 reached US $ 46 billion and New Zealand in 2014 of US $ 6 billion (see figure 6). ASEAN imports from Australia and New Zealand tend to fluctuate. The biggest import from Australia in 2014 was USD 28 billions and from New Zealand in 2014 was USD 43 billions.
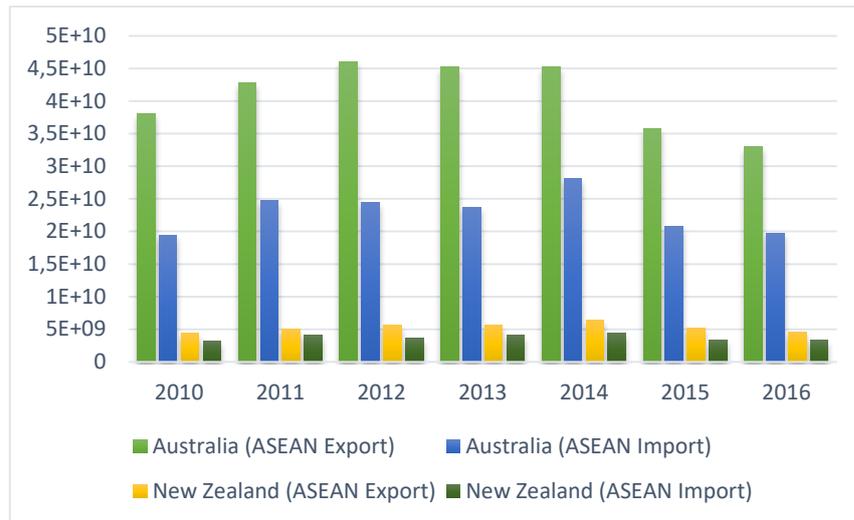
Figure 6 ASEAN's export import to Australia and New Zealand (in Billions USD)

3. Literature Reviews

In this analysis used the Computable General Equilibirum (CGE) incorporates Armington import substitution mechanism written in CES functional form and also used the assumption of perfectly competitive market. CGE formulations are based on socioeconomic structures using Social Accounting Matrix (SAM) disaggregations multisectoral, and multicasagement. These elements are at the core of the multimarket model, in which the decision of an economic agent is a response of price and market in reconciling demand and supply.

Other than that, according to Burfisher (2008) CGE modelling is dynamic field for any researches. CGE model are comprehensive, its describe all part of an economy simultaneously and how these parts interact with each other. Global Trade Analysis Project (GTAP) is a useful source up to date information on CGE model database. GTAP is a CGE model that is relatively accessible to researchers. GTAP Model has a fully documented, publicly available and global database (Hertel, 1997)

The empirical research by Gunning and Keyzer (1995) argues that the CGE model can be used to simulate or evaluate various government policy models focused on tax and tariff reform, markup pricing and imperfect competition markets, and a decrease in market neutrality. Janvry and Sadoulet

(1987) on the empirical analysis of pricing policies for agricultural products, food subsidies and cross-sectoral investment allocations analyzed by general equlibrium model for six countries. The CGE model analysis can also be applied to empirical research to see the effects of bilateral or multilateral free trade patterns. For example Siriwardana (2004) examines Indo-Lanka (ILFTA) free trade agreements between India and Sri Lanka that have demonstrated trade liberalisation among SAARC countries (South Asian Association for Regional Cooperation). Using the Global Trade Analysis Project (GTAP) model to measure the impact of liberal trade between Sri Lanka and India. The results show that Sri Lanka and India will experience some of the welfare benefits of ILFTA. The expansion of trade agreements to all SAARC countries can create significant welfare improvements in Sri Lanka.

The CGE model is also used to examine the effects of liberalisation of free trade that are trans-regional. Shohibul (2014) examined the influence of free trade liberalisation between ASEAN (Association of Southeast Asian Nation), India and Korea using the modeled approach of Global Trade Analysis Project (GTAP) version 8. The aim of the study was to examine the impact of free trade cooperation between ASEAN- India (AIFTA) and ASEAN-Korea (AKFTA). The simulation results with GTAP indicate that AIFTA gives a greater positive impact than the AKFTA for each country.

Hertel *et al.* (2001) conducted CGE model simulation of "new age" free trade agreement between Japan and Singapura. Hertel *et al.* (2001) simulated the CGE model of a new age-free trade agreement between Japan and Singapore taking into account other issues, including: rules governing foreign investment, e-commerce regulations, trade in services, harmonization of technical standards, sanitary and phyto-sanitary regulations, and the streamlining of customs procedures. The study found out that the impacts of this new-age FTA on bilateral trade and investment flows are playing the most important role in driving increases in trade. The FTA also boosts rates of return foreign and domestic investment as well as GDP.

Aside to increasing welfare, trade flows and GDP, previous literature also examined the adverse effects of FTAs on various macroeconomic variables. Biswajit Nag and Chandrima Sikdar investigated

the assessment of the welfare implication of AIFTA agreement considering various implementation stages. The results of this research is India's outcomes suffered negative welfare impacts during partial liberalisation, it implies that partial liberalisation caused trade diversion for India. Singapore, Malaysia and Thailand experience gains in the phase of partial liberalisation. Indonesia and Vietnam have positive benefits. The welfare of India will increase only at the stage of full liberalisation.

The effect of trading volume is felt more by regional agreement than in other bilateral agreements in the study by Kitwiwattanachai *et. al* (2010). Their simulation is to analyze the impact of the various FTAs in East Asia on the economy using GTAP Version 6, with 14 regions, 14 sectors, and 3 primary factors. The simulation results indicate that the preferred strategy for the members of the regions is multilateral agreements rather than bilateral, as it results in higher returns in welfare and greater economic impact. Multilateral agreements have a positive impact of trade creation.

4.   Methodology

4.1   Data

This study utilized Global Trade Analysis Project (GTAP) Database version 9A from Center for Global Trade Analysis, Purdue University. The database covers 140 regional units and 57 sectors with reference year 2004, 2007, and 2011. In this research used the latest reference year.

4.2   Aggregation

Aggregation of commodity in this study is fit with its characteristic and type, refers to Hertel (1997) which consist of Agricultural Products/Grains and Crops, Livestock and Meat Product, Processed Food, Mining and Extraction, Textiles and Clothing, Heavy Manufacturing, Light Manufacturing, Utilities and Construction, Transport and Comunication. While region aggregation is based on research purposes, which classified into 15 countries (ASEAN 10, China, Japan, Korea, Australia, and New Zealand) in accordance with ASEAN Free Trade Agreements

4.3   Simulation Scenario

Shock used in this study is in the form of tariff reduction and performed in two ways, tariff reduction of ASEAN member countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Singapore and Vietnam) on one of partner countries (China, Japan, Korea, Australia, and New Zealand) and vice versa, with equal level of tariff reduction for each country. Shock in the form of tariff reduction is divided in two scenarios, (i) short-term scenario, in the form of tariff reduction up to 5% or commonly as partial liberalisation for all aggregated goods commodities; (ii) long-term scenario, in the form of tariff elimination up to 0% or full liberalisation for all goods classification and all regions.

4.3   The GTAP Model

The GTAP model, a multi-region computable equilibrium (CGE) model for analyzing the impact of trade policy. According to Broekmeier (2001), GTAP model based on a multi-regions, sectors, computable general equilibrium (CGE), perfect competitive market, zero profit, and the constant return to scale where model Armington assumption using bilateral trade. Armington assumption here is assumed consumers to distinguish the goods – goods based on origin. In the GTAP model economy is in no profit or zero profit. Siriwardana and Yang (2007), GTAP model assumed that markets are perfect competitive, supply and demand in equilibrium conditions in all markets where it is implies that the manufacturer selling price is equal to marginal cost (P = MC), but with the existence of taxes and subsidies, so the regional government affects the manufacturer's selling price and the purchase price.

The theory behind the GTAP model is based on the two types of equations, the first equation includes the relationship of accounting, to ensuring that the income and expenses of the economic agents – agents are in balance and (ii) the equation of behavior based on microeconomic, this equation determines the behaviour of agents in the economy, such as the optimization of the function. The GTAP model contains exogenous and endogenous variables. Exogenous variables are independent variables, so that these variables can be given a shock. The endogenous variables include income, investments, trade quantity, excess supply, walraslack, product differentiation, and price savings.

According to Hertel (1997) the model has the following conditions.

1) The regional household allocates expenditures across three categories: private household, government, and savings based on the theory of the Cobb-Douglas utility functions.

2) The behavior of producers in producing goods and services in GTAP, is constant return to scale technologies. Firms minimize their cost of production in Constant Elasticity of Substitution (CES) functional form. Firms are assumed to be price takers.

3) There are two types of inputs — intermediate inputs and primary factors used for production.

4) Producers will get revenue in the form of sales to the domestic market and the world in the form of export. Producers spend their income on primary factor and intermediate input produced within the country and import of intermediate input.

5) Investment and saving calculated globally. If market is in equilibrium, then there is zero profit and households are on budget constraint, thus global investment will be equal to global saving.

The full model was introduced in Hertel (ed., 1997). Kyophilavong (2012) argues that there are various advantages to the GTAP model. Firstly, since it is a multi-regional model of world production and trade, it can take into account the overall trade implications of ASEAN as well as third-party countries. Secondly, it contains a database for different sectors and thus can explore the trade implications for various sectors of interest.

5. Results

5.1 Macroeconomics

ASEAN free trade cooperation in the ASEAN + 4 FTA scheme (ACFTA, AJCEP, AKFTA and AANZFTA) is might to provided positive impact for all regions through trade creation for all countries. Table 1 shows the ASEAN + 4 FTA simulation results in two scenarios using GTAP Version 9.

Table 1 Simulation of Macro Economic Effect from ASEAN + 4 FTA

Region	Equivalent Variation	Trade Balance (USD Million Dollars)	Real GDP	Equivalent Variation	Trade Balance (USD Million Dollars	Real GDP
	Simulation 1 Partial Liberalisation			Simulation 2 Full Liberalisation		

China	-4635,21	-2010,2	-0,220	1340,89	-142,75	0,112
Japan	4962,68	444,38	0,370	-2374,59	-4460,49	0,540
Korea	-1734,81	3330,81	-0,304	8612,85	-5771,22	3,326
Australia	-84,284	-351,436	-0,280	712,43	845,578	0,111
New Zealand	-53,874	32,913	-0,117	126,442	73,122	0,111
Cambodia	-40,97	-109,35	0,160	-140,93	-227,39	-0,336
Lao PDR	-85,61	-40,94	0,031	59,94	-82,59	0,171
Vietnam	-41,53	-806,66	0,304	1554,76	-6086	1,633
Thailand	1156,8	-385,28	0,145	3162,25	-5974,43	3,521
Singapore	-1282,22	-76,44	-0,194	331,26	159,45	0,301
Philippines	-1410,65	2517,93	-0,092	-306,24	-61,94	-0,016
Malaysia	-1776,1	234,61	0,002	249,18	-3727,51	1,107
Indonesia	-1863,24	3441,09	-0,034	1273,95	2041,44	1,128
ROW	1122,678	-2047,123	0,112	-145,225	1079,182	0,002

Source: Model Simulation

Equivalent variation is used by GTAP model as a measurement of a country's welfare gain or loss. Based on table 1, firstly GTAP model predicted that in the first scenario all ASEAN member countries face declining welfare, as well as partner countries such as China, Korea, Australia and New Zealand. It means that ASEAN + 4 FTA with partial liberalisation likely create a trade diversion. Only Thailand and Japan faced increasing welfare. It implies that the existence of ASEAN + 4 FTA will create a trade creation for Thailand and Japan. Rest of the world (RoW) experiences a positive welfare, this implies that these FTA do not cause trade diversion for RoW. In otherwise condition occurs in second scenario, for all countries experience positive welfare (except Cambodia, Philippines and Japan). This shows that full liberalisation might provides greater positive effect in terms of improving welfare for member countries compared to partial liberalisation.

Economic cooperation between ASEAN member country with partner through FTA have access to their markets, strong trade flows, a vibrant domestic consumer market and enable them to prosper and develop industry which is lead to increased welfare. Negative welfare value for RoW indicates that the establishment of these free trade agreements causing trade diversion for the countries outside their region. The country with the biggest welfare in second scenario is Korea (USD 8.612,85 million),

followed by Thailand (USD 3.162,25 million), Vietnam (USD 1.554,76 million) and China (USD 1.340,89 million) while the smallest change in welfare received by Lao PDR with USD 59,94 million.

Secondly, in the full liberalisation trade balance in all sectors of each country incorporated in the ASEAN + 4 FTA is in deficit condition (except Singapore, Indonesia, Australia and New Zealand). Vietnam is the country with the biggest deficit with USD 6,086 million, followed by Thailand (USD 5,974.43 million), Japan (USD 4,460.49 million) Korea and China (USD 142.75 million) while the country with smallest deficit is Philippines (USD 61.94 million). Singapore, Indonesia, Australia and New Zealand experience a surplus in their international balance of trade, where a country's exports exceed its imports. A trade surplus represents a net inflow of domestic currency from foreign markets. Furthermore, full liberalization resulted in more regions are experiencing deficits on the trade balance.

Thirdly, in scenario of full liberalisation all regions (except Cambodia and Philippines) experience an increase in real GDP. The existance of ASEAN + 4 FTA has raised living standard around ASEAN members and partners. Developing country will likely to experience an improvement in production activities in world trade and increase the income of each country. Thailand is the country with biggest increase in GDP (3.521 percent), followed by Vietnam (1.633 percent), Indonesia (1.128 percent) and Malaysia (1.38 percent), while the country with the smallest GDP growth in Australia and New Zealand (0.111 percent). In general full liberalisation schemes are likely more profitable than partial liberalisation.

5.2   Export – Import

The ASEAN + 4 FTA also has affected on trade performance for each member. The effects on trade flows in the international trade content are presented in Table 2.

Table 2 Change of Export and Import Volume from ASEAN + 4 FTA

Regions	Simulation 1 Partial Liberalisation		Simulation 2 Full Liberalisation	
	Export (%)	Import (%)	Export (%)	Import (%)
China	0,441	-0,733	0,488	0,657
Korea	0,446	0,633	1,225	1,98

Japan	0,532	-0,282	0,353	1,536
Australia	-0,749	-1,801	1,146	0,728
New Zealand	-0,39	-0,661	1,127	0,576
Kamboja	0,064	1,102	4,934	5,861
Lao	0,025	0,178	-0,159	0,919
Vietnam	1,863	1,855	3,328	8,165
Thailand	0,183	0,582	2,639	6,123
Singapura	-1,215	-1,82	0,183	0,297
Philippines	-0,892	-4,666	1,151	0,753
Malaysia	0,782	-1,132	1,628	3,386
Indonesia	0,328	-2,209	3,301	2,903

Source: Model Simulation

Table 2 show that changes in export and import volume in two scenarios. In partial liberalisation, all regions except Japan, Australia, New Zealand, Singapore and the Philippines experienced a decrease in exports. Singapore is the country with the biggest decline in export Singapore (1.215 percent), followed by Philippines (0.892 percent) and Australia (0.749 percent). Then China. Japan, Australia, New Zealand, Singapore Philippines, Malaysia and Indonesia face decreased imports. The decline in export and import activities indicates that there is a trade diversion shown by the reduction of trade flows. With trade liberalisation, Vietnam is the country with the highest increase in import volume (1.855 percent) and followed by Cambodia (1.102 percent). This means that trade liberalisation leads to an increase in the contribution of exports and imports to some FTA member countries.

Meanwhile, in the second scheme, almost all regions experienced an increase in exports except Laos, The country with the highest export volume is Cambodia (4.934 percent), followed by Vietnam (3.328 percent), Indonesia (3.301 percent) and Thailand (2.639 percent). However, although all regions experienced an increase in merchandise volume, the countries also experienced an increase in import volume. The country with the highest import volume increase is Vietnam (8.165 percent), Thailand (6.123 percent) and Cambodia (5.861 percent).

Increasing export and import in full liberalization is due to lower production costs. Decrease in production costs due to tariff reductions including marketing costs and import taxes are levied on raw materials from ASEAN member countries to partner countries or vice versa. Trade liberalization

provides market access easier and trade flow getting stronger. The existance of trade flow, consumer choices on the types of products available in the domestic market are more varied (Mazure and Tiltina 2015)

5.3   Sectoral Effects

The significant effect of establishing a free trade area leads to the allocation of natural resources, labor, capital and land which then leads to use at some level. Efficient use of resources will lead to increased welfare and profit. According to Siriwardana and Yang (2007) and Brown et al. (2006) contends that a country or world will benefit from the liberalization of trade if the country allocates its resources on the sectors that have a comparative advantage.

A country has a comparative advantage in producing a good when the country's opportunity cost of producing the good is lower than the opportinuty cost of producing the good in another country (Bowen, Hollander and Viaene 2001). By exporting goods that are comparative advantage, there are gains from the trade for both countries. Table 3, 4, 5, and 6 shows the changes of trade balance in full liberalisation under 4 FTA.

Tabel 3 changes of trade balance in ACFTA Scheme (US $ million)

ACFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufactu ring	Heavy Manufactu ring	Utilities and Construction	Transport and Communicati on	Other Services
Brunei Darussalam	-0,052	1,60	**8,575**	-0,459	-0,584	-10,04	-14,666	-0,139	0,387	0,124
Cambodia	-11,655	-5,067	-8,125	-9,464	**148,913**	-37,297	-184,625	-5,826	-46,253	-39,074
Indonesia	-79,196	-1,71	-128,058	**388,551**	-217,897	-651,958	**563,512**	-6,198	-32,532	-32,39
Lao PDR	-9,596	1,052	19,535	-7,016	0,929	-73,171	2,52	5,839	1,793	4,39
Malaysia	-368,865	-33,568	-62,64	**1069,29**	-147,471	-734,294	-645,077	-29,052	-115,92	-156,466
Myanmar	-48,423	-8,076	-39,716	-68,363	16,66	-88,097	**1,028**	-0,85	-6,464	-11,896
Philippines	-0,27	-4,125	-12,873	16,177	-3,151	-163,771	**139,193**	-0,609	**23,035**	**17,469**
Thailand	-320,116	-30,488	-568,82	**376,959**	-453,892	-1085,09	**8,681**	-39,894	-340,8	-170,467
Singapore	-11,425	-8,753	-304,483	**72,669**	-11,505	**46,465**	**1376,72**	-29,193	-213,091	-597,28
Vietnam	-225,766	-14,154	-209,843	-396,9	**977,105**	-931,418	-1859,56	-80,772	-153,31	-371,691

Source: Model Simulation

Under ACFTA scheme, all ASEAN member countries shows deteriorations in the trade balance. Vietnam And Cambodia experienced an increase in textile and clothing sector. Indonesia, Malaysia, Thailand and Singapore experienced an increase in trade balance in the processed food

sector. The greatest increase experienced by Malaysia (USD 1069 millions). Singapore is the only country experiencing an increase in the trade balance in the light manufacturing sector as well as Brunei Darussalam in the mining and extraction, Phillipines in the transport and communication. All ASEAN member countries experienced a decrease in trade balance in grains and crops, live stock and meat products and utilities an construction. This implies that ASEAN member countries are importing more than exporting to these sectors

Tabel 4 changes of trade balance in AJCEP Scheme (US $ million)

AJCEP	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	-3,514	-0,223	-5,532	-0,51	0,437	-10,148	-5,92	0,245	1,25	1,361
Cambodia	**7,548**	0,461	-1,447	2,24	6,446	-9,329	-18,06	0,796	3,995	-0,796
Indonesia	**5,145**	**6,256**	**150,13**	**228,133**	**148,113**	-1114,766	-161,017	**20,056**	**108,812**	**73,467**
Lao PDR	3,052	**7,508**	16,51	7,01	1,456	-36,726	-6,054	5,859	2,391	3,504
Malaysia	-64,905	-11,055	-126,677	-3,576	-6,211	-1113,79	-714,104	**15,028**	-4,998	-71,492
Myanmar	-6,332	0,472	-10,678	**30,767**	6,563	-56,285	8,158	0,375	0,691	3,192
Philippines	-12,484	**15,428**	-17,96	**109,415**	19,29	-336,638	175,414	1,283	31,309	24,505
Thailand	**4390,87**	-131,27	**382,481**	**548,76**	-514,056	-2251,43	-3781,97	-64,122	-1001,65	-575,957
Singapore	-19,328	**7,643**	**195,959**	**24,575**	6,069	-310,24	-780,609	**32,142**	**262,252**	**348,038**
Vietnam	-40,627	-6,375	-66,42	**47,392**	13,429	-90,578	-487,267	-11,755	-19,055	-67,283

Source: Model Simulation

In the AJCEP scheme, it seems that ASEAN member countries are experiencing a better improvement than ACFTA. All ASEAN member countries experienced a decrease in trade balance in light and heavy manufacturing. This implies that ASEAN member countries import more than export. ASEAN tends to have a comparative disadvantage in light and heavy manufacturing. Cambodia, Indonesia, Lao PDR and Thailand experienced an increase grains and crops. Indonesia, Lao PDR, Phillipines and Singapore experienced an increase in live stock. Moreover 6 out of 10 ASEAN member countries have increased in processed food, the biggest increase experienced by Thailand, followed by Indonesia and Phillipines

Tabel 5 changes of trade balance in AKFTA Scheme (US $ million)

AKFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services

	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	-0,876	-0,16	41,986	-0,86	-0,611	-13,544	-13,572	-1,247	-4,226	-4,573
Cambodia	**13,047**	-0,876	27,913	-17,565	38,729	-40,866	-32,417	-1,285	-10,048	-8,902
Indonesia	**5305,788**	-140,136	755,706	-1835,427	129,201	-598,324	-729,747	1,61	-107,428	42,693
Lao PDR	**1,341**	-0,256	20,369	-0,709	-2,134	-81,58	-1,667	6,597	1,731	5,715
Malaysia	**26,639**	-3,27	**-5,478**	-181,456	-6,841	-194,93	-152,054	-1,825	-16,533	-37,357
Myanmar	**418,021**	-18,961	**-72,815**	-60,694	54,124	-91,464	-23,748	-1,933	-12,792	-33,077
Philippines	**80,221**	-8,285	0,876	33,478	18,586	-198,691	-54,037	-0,025	-2,944	-4,337
Thailand	**100,262**	90,392	74,76	**1175,078**	-166,839	-805,629	-741,74	-17,528	-229,206	-127,662
Singapore	-21,389	2,061	0,461	15,926	5,347	-9,389	-45,367	-2,028	44,594	-52,678
Vietnam	**949,249**	-113,624	**-51,119**	-380,777	**469,553**	-1040,73	-1733,77	-65,659	-165,435	-345,48

Source: Model Simulation

The same case occurs in the AKFTA scheme, in which the All ASEAN member countries are experiencing a decrease in trade balance in light and heavy manufacturing. In the grains and crops sector, 8 out 10 countries experience better circumstances. Indonesia experienced the largest increase in grains and crops sector, followed by Vietnam, Myanmar and Thailand. As well as in mining and extraction sector, only Malaysia, Myanmar and Vietnam experienced a decrease in trade balance. Thailand experienced the biggest increase in the processed food sector (USD 1.175,078 millions) and Vietnam experienced the biggest increase in the textile and clothing (USD 469,533 millions.

Tabel 6 changes of trade balance in AANZFTA Scheme (US $ million)

AANZFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	**1,082**	-0,013	1,914	-0,122	0,05	-0,28	-1,509	-0,085	-0,172	-0,305
Cambodia	-2,377	-2,606	0,374	-1,324	1,726	2,326	-2,051	0,003	0,661	0,78
Indonesia	-77,595	-77,589	-57,892	-151,439	**78,272**	285,948	-226,474	-4,73	-21,343	-26,869
Lao PDR	-2,629	-0,334	0,996	-1,293	0,52	-0,695	-0,332	0,287	0,231	0,22
Malaysia	**2,133**	-0,696	-13,812	-60,404	4,419	-23,033	1,321	-1,622	-2,278	-8,494
Myanmar	-0,292	-3,407	3,142	-3,358	0,571	1,128	0,22	0,032	0,223	0,51
Philippines	**4,099**	-7,648	-11,733	-24,675	2,544	-12,718	29,443	-0,091	-1,761	-3,42
Thailand	-116,97	-26,645	-4,044	-8,815	**60,171**	35,403	-149,729	-2,255	3,956	3,022
Singapore	**2,199**	-6,147	**7,579**	-12,814	0,422	-3,401	-45,707	0,758	19,544	25,285
Vietnam	-7,436	-2,218	**6,958**	-78,968	23,319	32,296	15,417	0,343	5,224	5,593

Source: Model Simulation

As with the AAZFTA scheme, ASEAN member countries are experiencing a decline in the livestock and meat products and processed food. In real terms, Australia and New Zealand are the world's largest producer of livestock and meat products. ASEAN tends to import more from Australia and New Zealand. However, it is possible to export products from other sectors, such as grains and

crops, mining and extraction, and textile. Table 6 shows that in the textile and clothing, all ASEAN countries experienced a decrease in trade balance. Indonesia experienced the largest increase in textile and clothing, followed by Thailand. Brunei Darussalam, Malaysia, Philippines and Thailand experenced an increase trade balance in grains ad crops sector. In mining and extractiron sector, 6 out 10 increased in trade balance, the biggest trade balance change is Singapore followed by Vietnam. Later, some ASEAN countries also experienced an increase in the trade balance on light and heavy manfactures, transport and communication.

Table 7, 8, 9 and 10 represents the output of export trade produced by ASEAN member countries after the establishment of a free trade agreement with China, Japan, Korea, Australia and New Zealand. The direction of change is similar to that in Tables 3, 4, 5 and 6 for sector-based trade balance under certain FTA schemes.

Table 7 Estimation of Change in Trade Output of ASEAN Member based on Sectors (%)

ACFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	-0,323	-4,415	**0,076**	-1,705	-0,408	**0,382**	1,197	**0,068**	0,066	-0,077
Cambodia	-3,935	-5,728	-10,069	-4,175	**7,111**	**5,927**	4,858	**2,27**	-4,779	-7,91
Indonesia	-0,742	-0,156	-0,196	2,149	-1,215	-1,444	1,606	-0,396	-0,364	-0,47
Lao PDR	-3,856	**0,72**	2,632	-1,628	**2,691**	-9,091	2,517	4,042	1,121	3,554
Malaysia	-4,729	-5,038	-0,297	**4,416**	4,915	**0,119**	0,486	-0,663	-0,627	-1,182
Myanmar	-4,155	-12,266	-1,05	-2,017	**17,527**	**0,427**	15,467	-1,169	-2,431	-2,187
Philippines	**0,191**	**0,457**	**0,395**	**0,719**	**0,563**	-0,856	0,497	**0,431**	0,383	0,345
Thailand	**2,333**	**0,388**	-3,271	**4,136**	**1,52**	**1,634**	2,163	**-0,99**	-1,67	-2,12
Singapore	-0,78	-0,204	**0,037**	**3,531**	-1,499	**1,486**	0,954	-1,427	-0,535	-1,371
Vietnam	-1,893	-3,576	-2,306	-3,669	**20,96**	**1,723**	0,195	-6,051	-3,698	-9,415

Source: Model Simulation

Under ACFTA scheme in grains and crops, only Philippines and Thailand had a positive increase in trade output. The other ASEAN member countries shows deteriorations in trade output. Lao PDR, Phillipines and Thailand experienced an increase in trade output of live stock and meat product. The same case occurs in the other sector. Only in the heavy manufacturing sector, all ASEAN member countries experienced in positive increase in trade output after the formation ACFTA. There

are some exceptions. For example, in Thailand and Philippines, grains and crops are experienced in deficit for the trade balance, but it becomes better for the output under ACFTA scheme.

Table 8 Estimation of Change in Trade Output of ASEAN Member based on Sectors (%)

AJCEP	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	-6,653	-3,173	0,026	-3,657	0,633	-0,123	-0,818	0,499	0,201	0,125
Cambodia	1,622	-1,992	0,259	-0,285	0,325	1,258	-1,214	1,145	0,397	-0,182
Indonesia	-1,092	**1,017**	0,321	0,933	1,629	1,129	1,711	1,664	1,085	0,964
Lao PDR	-0,803	-5,54	2,141	-0,1	0,784	-6,592	-1,277	3,135	1,568	3,001
Malaysia	-3,814	-1,667	-0,404	-0,056	0,342	2,45	1,18	0,621	-0,011	-0,577
Myanmar	-0,74	**1,696**	-0,092	7,093	3,333	1,051	-0,357	1,005	0,29	0,643
Philippines	-0,482	**14,136**	0,196	2,789	0,639	-1,729	0,644	0,922	0,536	0,495
Thailand	**35,463**	-8,858	**-1,348**	1,501	-4,934	5,725	-1,014	-1,088	-4,056	-4,404
Singapore	-4,064	**2,723**	0,729	0,84	-0,006	-4,44	-0,555	2,074	0,578	0,832
Vietnam	-0,499	-0,954	-0,666	1,158	1,41	2,162	-0,081	-0,716	-0,468	-1,859

Source: Model Simulation

In AJCEP scheme, all ASEAN member country had a decrease in trade output of grains and crops (except, Thailand). Indonesia, Myanmar, Phillipines, and Singapore experienced in positive change in trade output of live stock and meat product. In the mining and extraction, Malaysia, Myanmar, Vietnam and Thailand had a decline in trade output. Thailand has the biggest decline, about 1,348% and Lao PDR has a biggest increase about 2,141%. In the textile and clothing, 8 out 10 ASEAN member countries experienced positive change in trade output. As well as in utilities and construction, some of ASEAN member country experienced a positive change in trade output. While in the textile and clothing sector, under the AJCEP scheme, Malaysia performs worse for the trade balance, but shows the positive change in trade output. Similar conditions occur in Indonesia in the light manufacturing sector, under the AJCEP scheme

Table 9 Estimation of Change in Trade Output of ASEAN Member based on Sectors (%)

AKFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	-1,838	-2,148	0,168	-1,053	-1,154	-0,829	-2,435	-1,098	-0,579	-0,899
Cambodia	3,878	-3,324	42,013	-3,053	1,65	0,235	-2,242	-0,495	-1,176	-1,865
Indonesia	179,237	-18,611	1,044	-7,968	1,14	-2,113	-1,213	-0,417	-1,246	0,264
Lao PDR	-0,337	-4,163	2,688	-0,362	-1,137	-9,712	0,423	4,051	1,096	5,058
Malaysia	3,794	-0,217	0,127	-0,998	0,32	0,64	0,493	-0,006	-0,1	-0,304
Myanmar	28,21	-21,746	-1,734	-4,299	14,66	-7,417	-7,034	-5,375	-5,121	-5,982
Philippines	3,317	-1,444	0,204	1,353	1,387	-0,27	0,153	0,018	-0,043	-0,09
Thailand	1,13	2,835	0,999	6,402	-1,419	-0,954	-0,258	-0,595	-0,969	-1,094
Singapore	-0,121	3,686	1,175	0,706	1,197	-0,059	0,03	-0,051	0,062	-0,122
Vietnam	9,702	-15,038	-0,869	-1,13	8,403	1	-3,867	-6,058	-3,733	-8,04

Source: Model Simulation

In AKFTA scheme only Brunei, Lao PDR and Singapore had a decrease change in trade output, another ASEAN member countries experienced in increase change in trade output. Meanwhile, 8 out 10 ASEAN member country experienced a decline trade output of livestock and meat product, Thailand and Singapore experienced in positive increase. Myanmar and Singapore experienced in decrease trade output of mining and extraction. Myamnar is the biggest decrease followed by Singapore.

Table 10 Estimation of Change in Trade Output of ASEAN Member based on Sectors (%)

AANZFTA	Grains and Crops	Livestock and Meat Products	Mining and Extraction	Processed Food	Textiles and Clothing	Light Manufacturing	Heavy Manufacturing	Utilities and Construction	Transport and Communication	Other Services
Brunei Darussalam	0,036	-5,822	0,008	-0,882	0,205	0,087	-0,095	-0,068	-0,019	-0,061
Cambodia	-0,047	1,43	0,617	0,011	0,078	0,39	0,399	0,142	0,082	0,151
Indonesia	0,597	0,773	-0,098	-0,071	0,696	1,618	0,169	-0,276	-0,217	-0,345
Lao PDR	-0,995	0,562	0,13	-0,817	0,455	-0,047	0,159	0,197	0,149	0,144
Malaysia	-0,322	0,009	0,083	0,047	0,204	0,143	0,081	-0,031	-0,015	-0,072
Myanmar	-0,009	-14,315	0,071	-0,23	0,11	0,099	0,108	0,087	0,095	0,103
Philippines	0,052	-0,183	0,459	-0,423	0,16	-0,072	0,113	-0,039	-0,028	-0,07
Thailand	0,846	1,198	-0,09	0,874	0,798	0,261	-0,01	-0,082	-0,02	-0,09
Singapore	0,041	-9,465	0,008	-0,607	0,023	-0,086	-0,033	0,007	0,039	0,058
Vietnam	0,147	1,023	0,144	0,501	0,313	0,24	0,155	0,089	0,126	0,094

Source: Model Simulation

Under AANZFTA, all ASEAN member countries experienced a positive change in trade output on textile and clothing sector, meanwhil while not all ASEAN member countries experienced a positive change in the trade output. There are some exceptions, in Malaysia, grains and crops are growing faster for the trade balance, but the worse the result under AANZFTA.

This situation implies that with the abolition of trade tariffs, the two economies between FTA member countries and partner countries will adjust their sectoral structure in accordance with the comparative advantage of each country. In some sectors, both exports and imports as well as domestic production increased at the same time.

The main ASEAN export commodity groups are constituted by agricultural and food products, textile and clothing, while also engineering products, heavy and light manufactures, are the main import commodity groups. The main cooperation countries for Latvia are China, Korea, Japan, Australia and New Zealand

6.   Conclusion and Implication

Free trade cooperation between ASEAN and China, Japan, Korea, Australia and New Zealand has been shown likely to provide greater benefits for strong and sustainable growth between the two economies based on highly complementary trade relations. Welfare, real GDP, trade balance, volume export and import, of all countries joined in ASEAN + 4 FTA tends an increase. The ASEAN + 4 FTA generates likely a greater trade creation effect than trade diversion. Almost all ASEAN + 4 FTA member experienced an increase in export and import volumes.

Sectoral effects are mixed. The results show that trade between ASEAN + 4 FTA would expand, with the export from China, Korea, Japan, Australia and New Zealand to ASEAN are growing faster than ASEAN's exports. The bilateral removal of tariffs would cause more significant structural adjustments in the ASEAN economy. The sectors that benefit most from the ASEAN are grains and crops, textiles, clothing, processed food, several extractive industry and technology, whereas partner countries are more focused on heavy and light manufacturing, technology, equipment, utilities and construction. Therefore the allocation of resources usage (land, labor, and capital) for ASEAN countries is more focused on profitable sectors, until every economy will move towards a sector where they have a comparative advantage.

Implementing full liberalization in Southeast Asia with major countries, China, Japan, Korea, Australia and New Zealand may harm some small countries in the region. Therefore in anticipation of greater losses:

1. It is necessary to strengthen cooperation in a ASEAN, transfer science, technology and innovation issues among small countries, import product selection in each country and improve the security of each region to anticipate the existence of illegal imports.

2. The Ministries of Finance and Economics of Latvia should facilitate the granting of aid to sectors promoted in the total EU exports within the common trade policy.

3. Policymakers in the ASEAN region should facilitate the provision of assistance in the form of short-term or long-term input subsidies to sectors promoted in ASEAN's total exports in general trade policy to improve the economy in ASEAN.

4. To develop ASEAN export competitiveness, ASEAN policy makers can provide financial support in addition to tax incentives or other bonuses for companies engaged in foreign trade with high value-added products.

5. The policy implication of the research results is that ACFTA will have a positive impact on the greater welfare followed by AJCEP, AANZFTA and AKFTA. Therefore policy makers should prioritize policies that support cooperation in the ACFTA scheme, review policies. In this study there are some limitations of writing.

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