

ASEAN FREE TRADE AGREEMENTS: GLOBAL TRADE ANALYSIS PROJECT (GTAP) MODEL

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Abstract: The wave of regionalism (Regional Trade Agreement-RTA) in the form of free trade and preferential trading agreement (PTA) has been growing rapidly after 1990. ASEAN as a form of regionalism in South East Asia area has established a Free Trade Agreement (FTA), both internally and externally. The purpose of this study is to analyze both qualitatively and quantitatively of the effect of free trade cooperation in the ASEAN formation + 5 FTA (AJFTA, AIFTA, ACFTA, AKFTA, and AANZFTA). Quantitative analysis in this study used Computable General Equilibrium (CGE) model with Global Trade Analysis Project (GTAP) approach. The simulation in this study includes partial and full liberalization.

Free trade cooperation among ASEAN members with Japan, India, China, Korea, Australia, and New Zealand in the schema ASEAN + 5 FTA, provides bigger benefits in full liberalization scenario for all regions, except Cambodia and Australia-New Zealand. The formation of ASEAN + 5 FTA has formed a trade creation in the form of less efficient domestic production transfer, which is replaced by more effective import among FTA member countries. Welfare, real Gross Domestic Product (GDP), international trade, and the investment of all countries joined in ASEAN + five FTA has increased. India is a country which experiences the highest increase in welfare, while Vietnam experiences the highest increase in real GDP, international trade, and direct investment. In the sectoral analysis, partner countries' balance of trade (Japan, India, China, Korea, Australia, and New Zealand) compared to ASEAN member countries balance of trade, the condition is better than the vice versa. The effect of resources usage allocation (land, labor, and capital) for ASEAN countries is more focused on the sector of agriculture product, food, textile, and some extractive industries and technologies, while for the partner countries is more focused on heavy industry, technology, equipment, construction, and services.

Keywords: Regionalism, FTA, ASEAN + 5 FTA, GTAP.

JEL Classification: F10, F13, F14, F15.

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1. INTRODUCTION

The wave of regionalism (Regional Trade Agreements-RTA) in the form of free trade or Preferential Trading Arrangements (PTA) has been growing rapidly in the last few decades. The growth rate of Free Trade Agreement (FTA), dominated after post-1990, which is characterized by the emergence of various dynamic regions in the proliferation of FTA. Statistical data from World Trade Organization (WTO) shows that, the number of RTA in 1970 is 13 agreements, increased to 22 in the next decade, in 1990 reach 85 RTA, and until the end of 2007 the number of RTA is 377, which is followed by 153 countries in the world.

FTA which will increase market access and strengthen the flow of international trade is a driving force in increasing bilateral and multilateral trade relations. FTA, besides providing positive effect in the form of trade creation, also resulted in the emergence of trade diversion, as well as changes in welfare (Salvatore, 2007). Abedini and Péridy (2008) assume that Greater Arab Free Trade Area (GAFTA) has a positive and significant effect in the form of increased trade intensity and trade creation for the member countries up to 20 percent; Siriwardana and Yang (2007), analyze about bilateral relationship of FTA between Australia and China, this FTA has a positive effect on complementary trade patterns, so that the mechanism of trade specialization which will lead to comparative advantages for both countries is formed; Bulmer (2000) argues that, free trade cooperation between European Union (EU) and MERCOSURE¹ will increase market access, trade flows, and direct investment for both regions; Gilbert (1998) assumes that, FTA will provide positive effect in the form of increase in welfare, trade intensity, and balance of trade for member countries. Some economists consider that free trade has a negative effect for countries that enter into agreement and the countries outside its region.

Free trade cooperation between EU and MENA (EUROMED)² will only resulted in increased import and the presence of asymmetric trade liberalization for both regions (Ciecelik and Hagemeyer, 2009); ASEAN-India Free Trade Agreements (AIFTA) has a negative effect on India agriculture sector and leads to the decreased welfare for the country (Pal and Dasgupta, 2009); the agreement of European Union and Republic of Southern Africa Free Trade Agreement (EU RSA FTA³) has a negative effect for countries in the South Africa and around this area (McDonald and Walmsley, 2003); FTA among MERCOSUR member countries (Brazil, Argentina, Paraguay, Uruguay, and Venezuela) do not lead to the comparative advantage for each country and has a negative effect on welfare (Yeats, 1997); liberalization and free trade between the two regions do not have an effect on welfare (Baldwin and Venables, 1995); North American Free Trade Agreements (NAFTA) will has a negative effect on several developing countries in East Asia, that is the presence of trade diversion for East Asia countries exports (Kim and Weston, 1993).

ASEAN (Association of Southeast Asian Nations)⁴ is an economic block in the Southeast Asia area which has a relative fastest and dynamic growth. ASEAN regionalism wave has started since January 1993, by the formation of ASEAN free trade area (AFTA). The purposes of AFTA are to create trade among members, avoid the shift of global investment, attract investment to enter ASEAN and want to become a full participant in the global economy as a form of new regionalism, and open itself for free trade cooperation with other regions [(Bowles, 1997); (Naya and Plummer, 1997)]. To implement these purposes, ASEAN has made FTA with several countries in the world, ASEAN-Japan Free Trade Agreements (AJFTA) (2008); ASEAN-India Free Trade Agreements (AIFTA) (2009); ASEAN-China Free Trade Agreements (ACFTA) (2010); ASEAN-Korea Free Trade Agreements (AKFTA) (2010); and ASEAN-Australia New Zealand Free Trade Agreements (AANZFTA) (2010). These free trade cooperation covers goods, services, investment, and intellectual property.

The main purpose of this study is to assess, both qualitatively and quantitatively, the free trade cooperation made between ASEAN and Japan, India, China, Korea, Australia, and New Zealand. The qualitative analysis based on economic integration theory and the quantitative analysis used Computable General Equilibrium (CGE)⁴ model with Global Trade Analysis Project (GTAP) approach as analysis tool. Quantitatively, variables used in this study include Gross Domestic Product (GDP), welfare, and sectoral analysis. This study consists of several parts, the second part explains about theoretical framework used. The qualitative analysis about ASEAN trade relationship is explained in the third part. The next part explains about quantitative analysis of ASEAN free trade cooperation which covers research method, simulation, empirical framework, and result analysis. The last part contains conclusion and policy implication.

2. THEORETICAL FRAMEWORK

2.1 Economic Integration

The theory of economic integration was first proposed by Viner (1950). There are two approaches in economic integration analysis, that is static analysis (supply side) and dynamic analysis (demand side). Static analysis (Viner, 1950; Lipsey, 1957; and Balassa, 1967) argued that, economic integration will cause the change in welfare for both regions in the form of trade creation (increase in welfare of custom member countries) and trade diversion (decrease in welfare of custom member countries).

Trade creation happens when domestic production in a country of union member is replaced by cheaper import from another country in a region/union. Trade creation custom union can increase the welfare for non member countries due to some increase in revenue (because of greater specialization in production) exceed increase in import from the world (Salvatore, 2007). The illustration about trade creation can be explained by Figure 1 below.

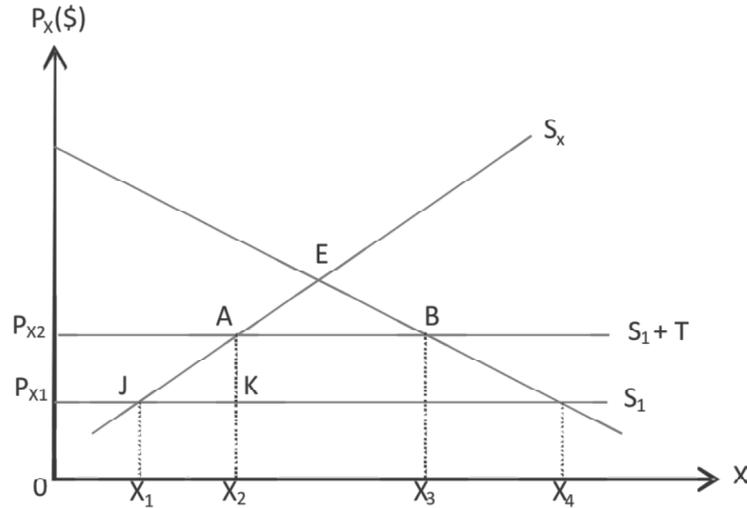


Figure 1: Trade Creation Customs Union

Source: Salvatore, (2007)

With an assumption that employee in full employment condition, S_1 is a perfect elastic supply curve of country 1 to country 2, $S_1 + T$ is an inclusive supply curve, X is traded goods worth of P_{x1} (price after free trade) in country 1, and P_{x2} is price in country 3 (rest of the world), while country 2 is considered too small to influence prices. If country 2 initially charged ad valorem nondiscrimination tariff at 100 percent from total import X , then country 2 will import from country 1 for P_{x2} . Country 2, when the price P_{x2} , consumption of $0 - X_3$ (domestic production of $0 - X_2$ and import from country 1 of $X_1 - X_2$). Country 2 will not import from country 3, because inclusive tariff of commodity X is above P_{x2} . After country 1 and 2 establish Free Trade Area (FTA) the price is reduced to P_{x1} , thus total consumption of country 2 is $0 - X_4$ (domestic production $0 - X_1$ and import from country 1 is $X_1 - X_4$). The area of P_{x1}, P_{x2}, B, M is the results of FTA formation, the area of P_{x1}, P_{x2}, A, J is decrease in rent; the rectangular area of K, A, B, L is the lost of country 2 income from tariff sector; and the triangle of J, A, K and L, B, M is benefit in the form of welfare for country 2. The triangle of J, A, K (producer's surplus) is a shift in welfare from trade creation, which is a component of production, from the shift of domestic production (J, K) which is not efficient in country 2 (X_1, J, A, X_2) replaced by more efficient production from country 1 (X_1, J, K, X_2). The triangle of L, B, M (consumer's surplus) is a shift of welfare from trade creation which is a component of consumption derived from the increase in consumption L, M in country 2, with the expenditure of X_3, L, M, X_4 it gained X_3, B, M, X_4 .

Trade diversion happens when there is a shift in the products origin from nonmember custom union country which has cheaper resources, replaced by custom union member countries which is actually has more expensive resources but looks

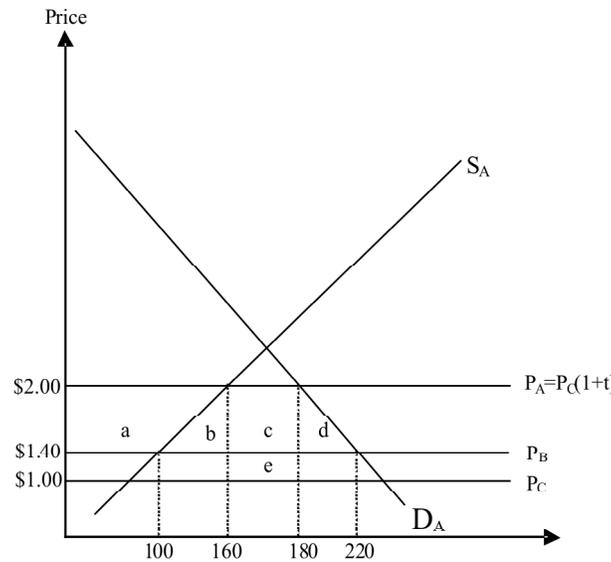


Figure 2: Trade Diversion Customs Union

Source: Appleyard and Field (2001)

cheaper due to FTA scheme or customs union. This shift is an implication from resources movement to the free trade scheme and can decrease the welfare from the country which establishes FTA (Appleyard and Field, 2001). The illustration of trade diversion will be explained on Figure 2. Illustrated there are three countries, A (home country), B (customs union partner), and C (countries outside union) and production cost from each country is USD 2.00 (must pay a tariff), 1.40, and 1.00. Country A will import from country C, because the prices are relatively cheaper than importing from country B, that is equal to USD 1.40 + 50%*(1.40) or USD 2.20. If country A and B establish an FTA (eliminate all forms of barriers especially tariff), then the import of goods for country A from country B (USD 1.40) become cheaper than country C (USD 1.50). However, after the elimination of tariff, the government of country A does not earn revenue from tariff like when importing from country C that is equal to the area of c and e. Thus, the benefit from economic integration only equal to $(b + d - e)$.

Demand side analysis gives an emphasis on dynamic effect of an economic integration (Cheong, 2007) and (Dolimov, 2009). The elimination of tariff from an area/ union will create more competitive behavior and can reduce previous monopoly power. The production economic scale of a country is one of accesses to the economic integration. In the economics of scale, price reduction is not only caused by reduction in tariff, but can be reached from rationalization of production like increasing the number of production, technology, and management. With an increasing number of productions there will be a dynamic growth in which income earned will be reinvested for internal growth.

2.2 Computable General Equilibrium (CGE)

In general equilibrium system, market is a system which consists of several kinds of inter-related markets. General equilibrium will take place when demand and supply in a state of simultaneous balance. The presence of changes in balance in a market will affects all elements in the system and will lead to a new balance.

The general equilibrium model, in its development, then becomes well known as Computable General Equilibrium (CGE). The formulation of CGE is based on socio-economic structure with using Social Accounting Matrix (SAM), multisectoral disaggregation, and multiclass. These elements are the cores of multi-market model where decisions from economic agents is a response from prices and markets in reconcile the demand and supply. The CGE model also covers various macro variables such as investment, saving, balance of payments, and government budget.

The study about CGE has been conducted by Shoven and Walley (1992), and in Janvry and Sadoulet (1995) about principles and construction of a general equilibrium model; Gunning and Keyzer (1995) about the application of general equilibrium model for various policy analysis; Janvry and Sadoulet (1987) about empirical analysis of price policies for agricultural products; Karunaratne (1998) the application of CGE model on free trade in Thailand; and Morley, Pineiro, and Robinson (2011) about the dynamics of CGE model.

Gunning and Keyzer (1995) argued that CGE model can be used to stimulate and evaluate various models of government policy, which focused on reformation of taxes and tariffs, mark up pricing and imperfect competitive market, and decline in the market neutrality. While the basic model of CGE according to Gunning and Keyzer is how economic agents interact in achieving balance which consist of maximization of consumer's utility with budget constraint, and maximization of benefit for company or producer. Thus, the balance solution produced is on relative/positive prices.

Janvry and Sadoulet (1995) conducted an empirical analysis about pricing of agricultural products in six countries, Mexico, India, Korea, Peru, Sri Lanka, and Egypt by using CGE model approach. In their analysis, they used six policy experiments,

- (i) exogenous output increase with flexible prices;
- (ii) exogenous output increase with fixed prices;
- (iii) exogenous price increase with fixed supply;
- (iv) exogenous price increase with elastic supply;
- (v) investment in agricultural sector rather than industry sector; and (vi) increase in agricultural subsidies (food).

The result shows that investment policy, price, and productivity show five structural features as an effect of poverty reduction policies in these six countries. These five structural features are

- (i) the presence of sufficient land access for peasants to create a net sellers of agricultural products, if they want to increase their profit from the increase of production through a price support program or open economy;
- (ii) the advances in technology is targeted on peasant's cropping pattern, if there is a difference with farmers;
- (iii) the condition of labor market which makes agricultural wages are sensitive to changes in the value of marginal labor's productivity, require resorbing of surplus labor;
- (iv) downward flexible price which allows translation from most of the increase in productivity in agricultural field to the lower price of foods and higher real income for net buyers; and
- (v) an industry sector is able to respond to the change of effective demand created by an increase in investment productivity in the agricultural field.

The general equilibrium analysis of price and technology policies, inter-sectoral investment allocation, and food subsidy program reveal that this intervention makes income effect becomes more complex in all social groups and between periods of time, where net profits derived from all groups and all time periods.

3. QUALITATIVE ASSESSMENT OF ASEAN TRADE RELATIONSHIP

One of the objectives of this study is to analyze qualitatively the effect of free trade in free trade agreements scheme run by ASEAN. Based on the theory of economic integration, the establishment of free trade agreements is in the form of reduction or elimination of trade barriers progressively in the form of tariffs by countries inside the region. The purpose of the elimination of trade barriers is to increase the access to goods, service, and investment, and labor among countries in the region. The initial stage of ASEAN economic integration is in the form of liberalization of trade in goods (Estrada *et al.*, 2011).

In a free trade area, each country member agrees to reduce/eliminate import barriers from another countries and agrees to establish tariffs from countries that do not belong to the member. This will cause two consequences in the form of trade creation and trade diversion. One example of positive effect (trade creation) is Indonesian domestic production which is less effective, replaced by import from China. While the negative effect of FTA is in form of import shift from countries outside free trade area, which is actually effective, replaced by import from other countries inside free trade area, such as commodities from Thailand. The size of changes in welfare as a result of economic integration depends on static factor such as size of free trade area, level of development, investment, the tariffs before FTA, factor of distance, and member and nonmember level of trade.

3.1 The Size of Free Trade Area

The measure of country's income in FTA, has a great potency to the benefit of an FTA. The larger the size of a country in the FTA, it is possible that it has a greater possibility of obtaining a benefit from the free trade. A large number of population will cause a large consumption of goods and services, thus FTA will provide benefit in the form of increase in economy and welfare. According to Ekanayake (2010), countries that are larger in size will have the ability to absorb imports more powerful than the small countries, and are more capable to achieve economies of scale, thus the development of their comparative advantage is better than small countries. While income per capita of the people shows income from each individual in a country. A similar income per capita from different regions shows conduciveness of trade integration. This can be analogized that with almost the same income level, each country/region will have the same consumption pattern for the scope of intra industry trade.

Table 1 shows the size of free trade area (the number of population, national income, and income per capita) from each ASEAN member country and FTA partners.

Table 1
Country and Free Trade Agreements Comparison

Region	Population	GDP (Current US\$, billion)	GDP (PPP, billion)	GDP Percapita (Current, US\$)	GDP Percapita (PPP)
Cambodia	14,36	11,24	30,61	782,62	2.131,22
Indonesia	240,68	709,19	1.025,60	2.946,66	4.261,33
Laos	6,40	7,18	15,78	1.122,85	2.466,84
Malaysia	28,28	247,53	429,36	8.754,24	15.184,63
Philippines	93,44	199,59	365,34	2.135,92	3.909,66
Singapore	5,08	217,20	292,20	42.783,72	57.557,19
Thailand	66,40	318,91	583,52	4.802,66	8.787,71
Vietnam	86,93	115,93	289,83	1.333,58	3.334,02
ASEAN	541,57	1.826,78	3.032,25	8.082,78	12.204,08
Japan	127,45	5.495,38	4.291,00	43.117,77	33.667,94
India	1.205,62	1.710,91	4.140,70	1.419,11	3.434,49
China	1.337,71	5.930,53	10.036,54	30.015,05	7.502,80
Korea	49,41	1.014,89	1.413,76	20.540,18	28.612,83
Australia	22,07	1.141,79	862,59	51.746,12	39.092,53
New Zealand	4,37	143,25	133,46	32.796,09	30.555,98
ASEAN-Japan FTA	669,02	6.036,95	4.832,56	5.688,95	4.638,97
ASEAN-India FTA	1.747,19	2.252,48	4.682,27	1.055,77	1.279,70
ASEAN-China FTA	1.879,27	6.472,10	10.578,10	4.233,09	1.731,73
ASEAN-Korea FTA	590,98	1.556,46	1.955,33	3.180,33	4.077,29
ASEAN-ANZ FTA	568,00	1.826,61	1.537,62	10.291,67	8.636,81
ASEAN + 5 FTA	3.288,19	17.263,53	23.910,29	17.449,75	17.472,89

Source: International Monetary Fund, <http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/weorept> (accessed August 9, 2015).

The GDP of ASEAN-Japan and ASEAN-China FTA is the biggest compared to another FTA, with more than USD 6000 billion worth of GDP value, thus it is possible that these two FTA will provide greater impact than the other FTA. The average value of ASEAN income per capita is nearer to India than to the other partner, which makes the potency of intra-industry trade between the two is stronger. Whereas Korea, China, New Zealand, and Japan has income per capita far above ASEAN income per capita (except Singapore), then the potency of inter-industry trade is stronger. As an example, trade relationship between ASEAN and Japan is very strong although there is a huge lag in income, this relationship also provide greater benefits in the form of increase in welfare when compared to another country. The other effect is the different specialization pattern between ASEAN member countries and partners (Korea, China, Australia, New Zealand, and Japan).

3.2 Distance of FTA

The factor of distance between a country and another country will affect its international trade activities. The theory of economic integration stated that distance will affects the incurred cost, especially transportation cost. Besides affecting transportation cost, distance will also affect market access, market information, and time, thus, distance will affect the decision made by a country when it wants to enter the international market. Ekanayake *et al.*, (2010) stated that the distance between a region with another region will inversely or negatively affect trade patterns. Table 2 shows geographic distance among ASEAN member countries with FTA partner countries and destination

Table 2
Geographical Proximity

Region	Japan	India	China	Korea	Australia	New Zealand	EU	NAFTA
Cambodia	4.400	3.441	3.337	3.623	6.968	9.227	9.748	11.962
Indonesia	5.767	4.987	5.193	5.272	5.396	7.726	11.411	13.476
Laos	4.142	2.844	2.771	3.220	7.671	9.899	9.042	11.477
Malaysia	5.315	3.831	4.335	4.603	6.518	8.838	10.256	12.944
Philippina	2.988	4.760	2.839	2.610	6.270	8.296	10.521	10.699
Singapore	5.311	4.142	4.463	4.664	6.204	8.523	10.565	12.990
Thailand	4.607	2.916	3.292	3.722	7.462	9.738	9.262	11.997
Vietnam	3.668	3.006	2.321	2.739	7.727	9.896	8.993	11.012
ASEAN (Average)	4.525	3.741	3.569	3.807	6.777	9.018	9.975	12.070
Japan		5.848	2.099	1.155	7.918	9.246	9.472	7.713
India	5.844		3.780	4.695	10.338	12.640	6.425	11.338
China	2099	3.784		956	8.978	10.757	7.981	8.710
Korea	1.155	4.695	956		8.384	9.993	8.728	8341
Australia	7.918	10.338	8.978	8.384		2.332	16.712	12.700
Zew Zealand	9.246	12.640	10.757	9.993	2.332		18.716	11.633
EU	9.472	6.425	7.981	8.728	16.712	18.716		7966
NAFTA	7.713	11.338	11.170	8.341	12.700	11.633	7.966	

Source: Time and Data, <http://www.timeanddate.com/worldclock/distanceresult.html?p1=33&p2=48> (accessed August 21, 2015).

area of world trade (European Union and NAFTA). The average distance of ASEAN trade centre is nearer to China, India, Korea, and Japan, with less than 4000 thousand kilometers on average. In accordance with the opinion of Ekanayake *et al.*, (2010), that distance is inversely proportional to the intensity of the trade, then trade access of ASEAN member countries is greater with the four aforementioned countries (China, India, Korea, and Japan) compared to the other countries. Australia and New Zealand has a relative far distance to ASEAN, with 6077 and 9018 kilometers respectively, thus theoretically trade intensity with ASEAN is relatively small compared to the four aforementioned countries. Whereas the other trade centers, countries joined in European Union and NAFTA, have a relatively far distance to ASEAN, thus with the presence of free trade cooperation (ASEAN + 5), the potency of ASEAN trade with these regions will be decreased.

The transportation connections between ASEAN and FTA member partners (Japan, China, India, Korea, Australia, and New Zealand) are dominated by marine and air transportation, so it is possible if trade relationship is dominated by the trade which is intra-industry trade in nature.

3.3 Trade Relationship Before FTA

One of the purposes of this study is to simulate the effect of FTA between ASEAN-Japan (AJFTA), ASEAN-India (AIFTA), ASEAN-Korea (AKFTA), ASEAN-China (ACFTA), and ASEAN-Australia and New Zealand (AANZFTA). The purpose of FTA is to stimulate trade between members, trade level among members before FTA has a significant effect on incentive of each county in establish the FTA.

Table 3 and 4 shows export and import value from ASEAN with FTA member partners in 2008 and 2009. Intra-ASEAN trade has the biggest contribution on ASEAN

Table 3
Intra Regional and Share of Total Export

Region	Export		Share	
	2008	2009	2008	2009
ASEAN	215.616,48	197.477,42	24,5	24,6
ASEAN-Japan FTA	322.670,37	278.850,76	36,7	36,8
ASEAN-India FTA	232.995,76	224.362,17	26,5	26,9
ASEAN-China FTA	322.730,77	275.295,70	36,7	34,7
ASEAN-Korea FTA	256.158,00	231.718,71	29,1	27,1
ASEAN-ANZ FTA	233.524,41	231.759,02	26,5	27,7
ASEAN + 5 FTA	505.613,38	452.076,70	57,5	57,4

Source: ASEAN Database, <http://www.aseansec.org> (accessed August 6, 2015)

Table 4
Intra Regional and Share of Total Import

Region	Import		Share	
	2008	2009	2008	2009
ASEAN	242.497,5	171.113,15	29,2	23,8
ASEAN-Japan FTA	347.359,10	266.404,46	41,8	37,1
ASEAN-India FTA	272.583,27	185.265,39	32,8	25,8
ASEAN-China FTA	328.055,21	253.364,33	39,5	35,3
ASEAN-Korea FTA	277.436,11	211.231,40	33,4	29,4
ASEAN-ANZ FTA	276.178,74	189.364,16	33,2	26,4
ASEAN + 5 FTA	531.622,57	421.177,15	64,0	58,6

Source: ASEAN Database, <http://www.aseansec.org> (accessed August 6, 2015)

total trade. Intra-ASEAN share export is 24.5 percent (2008) and 24.6 percent (2009), whereas the import is 29.2 percent (2008) and 23.8 percent (2009). Both on export and import, AJFTA has the biggest trade relationship among ASEAN free trade partner countries (India, China, Korea, Australia, and New Zealand). AJFTA total trade is USD 322,670.36 million (export in 2008) or 36.7 percent, USD 278,850.76 million (export in 2009) or 36.8 percent, and USD 347,359.10 million (import in 2008) or 41.8 percent, USD 266,404.45 million (import in 2009) or 37.1 percent.

The second biggest partner country of ASEAN is China. Trade between ASEAN and China provides total contribution of 36.7 percent (export in 2009) and 34.7 percent (2009), whereas for the import of 39.5 percent (2008) and 35.3 percent (2009). The next ASEAN biggest trade partner are Korea, Australia-New Zealand, and India, which respectively provide contribution between 26–29 percent (export) and 26–33 percent (import). Free trade cooperation of ASEAN + 5 FTA (Japan, India, China, Korea, Australia, and New Zealand) provide contribution of more than a half of ASEAN total trade.

3.4 Investment

Foreign Direct Investment (FDI) of a country reflects the level of economic relationship between countries, the bigger the FDI between countries, then the bigger the economic relationship between countries and vice versa. With economic power, pluralism, stability, and cultural diversification, ASEAN is one of investment destination region that attractive for countries in the world.

In accordance with the purpose of ASEAN, that is to attract foreign investment and to prevent the transfer of investment [(Bowles, 1997); (Naya and Plummer, 1997)],

Table 5
Foreign Direct Investment Inflow ASEAN

Region	Investment		Share	
	2008	2009	2008	2009
ASEAN	9.449,28	5.222,46	20,1	13,8
ASEAN-Japan FTA	13.578,65	8.985,09	28,8	23,7
ASEAN-India FTA	9.996,57	6.048,96	21,2	16,0
ASEAN-China FTA	11.323,23	9.148,08	24,1	24,1
ASEAN-Korea FTA	11.044,99	6.693,97	23,5	17,7
ASEAN-ANZ FTA	10.154,38	6.261,28	21,6	16,5
ASEAN + 5 FTA	19.044,05	16.488,55	40,5	43,5

Source: ASEAN Database, <http://www.aseansec.org/18144.htm> (accessed August 8, 2015)

ASEAN tries to improve investment climate that interesting for countries in the world. Table 5 shows investment flow (FDI) that enter ASEAN from FTA partner countries (Japan, India, China, Korea, Australia, and New Zealand).

Direct investment from ASEAN internal members provides the biggest contribution for all investment in the area. More than a fifth of ASEAN direct investments in 2008 come from inside the region. Similar with the trade relationship, Japan provides the biggest contribution for ASEAN compared to the other ASEAN FTA partner countries. The total of direct investment that enter ASEAN in the framework of AJFTA is USD 13,578.65 million (2008) or 28.8 percent and decline to USD 8,985.08 million or 23.7 percent (2009).

China provides the contribution of 10.4 percent for direct investment in ASEAN in 2009 and placed second after Japan. The next position is occupied by Korea, India, and Australia-New Zealand with contribution of 3.9 percent, 2.3 percent, and 2.7 percent in 2009 respectively. With the presence of ASEAN + 5 FTA scheme the total of direct investment that enter ASEAN is 40.5 percent (2008) and 43.5 percent (2009). ASEAN + 5 FTA will have a potency of increasing number of direct investment that enters ASEAN.

3.5 Tariff

The purpose of FTA establishment is to reduce or eliminate tariff among members in a region, to enhance trade relationship among members. The level of tariff to non-FTA member is likely to create trade diversion. Net welfare from the existence of FTA will be bigger if the valid tariff for member before the existence of FTA is higher or

Table 6
Applied Tariff Rate (Simple Mean of all Products, %)

Region	2006	2007	2008	2009	2010
Cambodia	-	12,45	12,36	-	-
Indonesia	5,99	5,88	-	5,24	4,79
Laos	6,47	5,81	9,25	-	-
Malaysia	3,41	3,13	3,4	3,95	-
Philippina	5,4	5	5,38	5,32	5,31
Singapura	0	0,04	0,17	0,14	0
Thailand	10,81	10,06	10,3	11,22	-
Vietnam	11,9	11,68	8,02	-	7,13
Jepang	3,48	4,21	3,74	3,27	2,59
India	-	-	10	11,46	-
China	8,88	8,62	8,36	8,18	7,74
Korea	9,13	8,51	-	9,74	10,33
Australia	3,95	2,84	4,18	4,25	2,79
New Zealand	4,61	3,79	2,86	2,61	2,48

Source: World Bank, <http://databank.worldbank.org/ddp/home> (accessed August 8, 2015)

lower and there is only little difference in the level of tariff between member and nonmember. Table 6 shows the average tariff for all commodities from ASEAN member countries and FTA partners from 2006 to 2010. Among all ASEAN member countries, Cambodia, Thailand, and Vietnam have the highest tariff structure, above 10 percent on average. This has a possibility to create trade diversion for trade activity in these three countries. Whereas the lowest average tariff among ASEAN member countries is Singapore, with less than one percent. So that Singapore has better preparedness in dealing with both regional and bilateral FTA.

The tariff structure in India and Korea is the biggest among ASEAN FTA partner countries (above 9 percent). With the existence of higher tariff in India and Korea, it is possible that with the existence of AIFTA and AKFTA will support the creation of trade creation for most of ASEAN countries, especially Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, and Singapore and trade diversion for Cambodia, Thailand, and Vietnam. While Japan and New Zealand has the lowest tariff structure among ASEAN FTA partner countries. The tariff structure for both countries is around two up to three percent. With the existence of relatively small tariff, then AJFTA and AANZFTA will provides a large contribution in the form of increased trade and market access for both regions.

4. QUANTITATIVE ANALYSIS OF ASEAN TRADE

4.1 Research Method and Simulation: Global Trade Analysis Project (GTAP)

Research using GTAP has been widely conducted, among others are Estrada *et al.*, (2011) about ASEAN, Japan, China, and Korea FTA; Bhattacharyya and Mandal (2010) about the effect of ASEAN and India free trade on India's balance of trade; Birur *et al.*, (2008) on bio fuel on world agricultural market; Siriwardana and Yang (2007) on free trade between Australia and China; Elbehri and Person (2005) on the implementation of bilateral quota and tariff; Siriwardana (2004) on free trade cooperation between India and Sri Lanka; Brockmeier (2001) on the development of GTAP model; Gilbert (1998) on Korea-United States FTA, etc.

GTAP is a software and database used to simulate the effect of international trade integration. GTAP is created and developed in 1992 by the Department of Agricultural Economics, Purdue University, United States. Theory structure and comprehensive documentation of GTAP can be seen in Hertel (1997)⁵.

The structure of GTAP is based on multi-region, multi-sector, computable general equilibrium (CGE), perfectly competitive market, and constant return to scale, while bilateral trade model is formulated using Armington assumption. The GTAP model stated that the economy lies in the condition of no profit or zero profit. In the GTAP model, equation system used is based on:

- (i) Accounting relation, which makes sure that revenues and expenses of economic agents are in the equilibrium condition, and
- (ii) Behavioral equation which is based on macroeconomics theory that is behavior optimization of agents in economics just like demand function (Brockmeier, 2001).

Economy openness, which consists of many countries and industries, is the characteristic of GTAP. In an open economy system, the economic agents include regional household, private household, government, producer, global saving, and rest of the world. The interaction among economic agents in the global economic. From production side, company will receives increase in revenue in the form of sales to the rest of the world in the form of export (VXMD). On the other side, producers not only spend their income on primary factor and intermediate input produced within the country, but also used to import intermediate input (VIFA). Thus, producer must also pay import taxes to the regional household. Government and private household, beside spend their income for national production, must also import commodities which is denoted by VIPA and VIGA, so that they also have to pay taxes. While the elasticity of imported goods and domestic goods is assumed equal. The last economic agent in an open economy system with many countries is GLOBAL saving. In GTAP, investment and saving calculated globally. If market is in equilibrium, then there is no profit/zero profit and households are on budget constraint, thus global investment will be equal to global saving.

This study used GTAP application version 8 as analysis tool with aggregation data with 2004 and 2007 as base year. In this version, region and commodity aggregation consist of 129 countries and 57 commodities. Commodity/sector used in GTAP version 8 refers to Central Product Classification (CPC) which consist of 14 sectors (CPC code 2,3,4, and 5 digits) and International Standard Industry Classification (ISIC) Rev. 3 which consist of 44 sectors (ISIC3 code 2, 3, and 4).

Agglomeration/aggregation of commodity in this study is fit with its characteristic and type, refers to Park *et al.*, (2008); and McDonald and Walmsley (2003) which consist of Agricultural Products, Food Products, Extractive Industry, Textiles, Heavy Manufacturing, Technology-intensive Manufacturing, Utilities, Construction, and Services.

While region aggregation is based on research purposes, which classified into 13 countries (ASEAN 8, Japan, India, China, Korea, Australia, and New Zealand) in accordance with ASEAN Free Trade Agreement (AJ-FTA, AI-FTA, AC-FTA, AK-FTA, and AANZ-FTA).

The simulation in this study is conducted separately by conducting aggregation of member countries which joined in ASEAN free trade agreement with partner countries (Japan, India, China, Korea, Australia, and New Zealand). Which then run with giving shock from each FTA. Shock given in this study is in the form of tariff reduction and performed in two ways, tariff reduction of ASEAN member countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, and Vietnam) on one of partner countries (Japan, India, China, 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 five percent/partial liberalization for all aggregated goods commodities; (ii) long-term scenario, in the form of tariff elimination up to zero percent/full liberalization for all goods classification and all regions.

4.2 Result Analysis

This study purpose is to analyze quantitatively the effect of free trade cooperation between ASEAN and Japan, India, China, Korea, Australia, and New Zealand. Variables used as parameters in this study are macroeconomic analysis, which consist of welfare, GDP, export-import, balance of trade, investment, and sectoral analysis which is simulated in two schemas (partial liberalization and full liberalization).

4.2.1 Macroeconomic Analysis

ASEAN free trade cooperation in the scheme ASEAN + 5 FTA [AJFTA, AIFTA, ACFTA, AKFTA, and AANZFTA] is expected to provide positive effect for all regions through the creation of trade creation for all countries. Table 7 shows the result of ASEAN + 5 FTA simulation in two scenarios with using GTAP.

Table 7
Simulation of Macro Economic Effect, Welfare, and Investment from ASEAN + 5 FTA

	<i>Equivalent Variation (EV)</i>	<i>Real GDP</i>	<i>Export</i>	<i>Import</i>	<i>Trade Balance</i>	<i>Current Net Rate of Return on Capital</i>
Scenario 1						
Cambodia	-6,76	-0,33	0,54	1,16	-39,91	1,97
Indonesia	-570,85	-0,10	-0,80	-1,21	271,56	-0,40
Laos	5,89	0,02	-0,92	-0,74	-1,51	0,45
Malaysia	-884,77	-0,76	-1,30	-1,90	234,38	-1,55
Philippines	-1298,74	-2,98	-2,80	-4,19	725,96	-2,80
Singapore	-1432,60	-1,32	-2,37	-3,48	837,89	-3,54
Thailand	-521,97	-0,58	-0,68	-0,68	-201,66	0
Vietnam	646,74	1,47	4,14	5,37	-1203,98	6,60
Japan	2322,00	0,20	-0,28	-0,63	2231,55	-0,16
India	3246,82	-0,36	1,30	1,11	-194,47	0,15
China	-393,45	-0,01	-0,33	-0,46	324,42	-0,12
Korea	637,04	0,07	-0,20	-0,31	389,97	-0,13
Australia_New Zealand	98,22	-0,08	-1,10	-1,48	828,97	-0,36
RoW	4300,60	0,04	0,05	0,08	-4203,17	0,01
Scenario 2						
Cambodia	-16,81	-0,04	1,88	3,06	-78,95	3,79
Indonesia	1537,16	1,42	3,99	4,86	-73,09	1,00
Laos	3,26	0,17	-0,84	-0,55	-3,49	0,71
Malaysia	1647,1	1,10	2,22	3,51	-765,67	3,03
Philippines	179,34	0,73	1,91	2,73	-413,51	1,35
Singapore	446,2	0,50	0,77	0,91	124,49	0,45
Thailand	1730,36	1,38	3,12	5,10	-2018,89	3,58
Vietnam	1662,97	3,88	7,64	10,30	-2469,44	14,19
Japan	2974,13	0,38	0,73	1,00	-1331,56	0,17
India	3851,86	-0,31	2,22	1,89	-340,72	0,38
China	70,94	0,00	0,71	1,01	-1072,78	0,17
Korea	1147,73	0,26	0,57	0,72	-392,79	0,26
Australia_New Zealand	-35,51	-0,01	0,22	0,21	2,67	0,05
RoW	-6276,89	-0,12	-0,10	-0,17	8833,76	-0,03

Source: Model Simulation

Net welfare of ASEAN + 5 FTA is measured based on equivalent variation (EV) and real consumption expenditure. EV is revenue adjustments that alter consumer utility equal to the level that would occur if the economic changes have occurred. Negative EV value indicates that the change in the economy (income and prices) resulted in a decrease in the level of consumer welfare and vice versa (Widodo, 2006). In other words, EV is measurement of how much money consumers will spend before prices rise to prevent price increases or to obtain the same satisfaction when the price increases/after the liberalization of trade.

Based on Table 7, first, the first scenario shows that all ASEAN member countries (except Laos and Vietnam) face declining welfare, which also applies to China. Thus, for countries which experience net welfare (Laos, Vietnam, Japan, India, Korea, Australia, and New Zealand), the existence of ASEAN + 5 FTA will create a trade creation. Rest of the world (RoW) has a positive welfare, this implement that these FTA do not cause trade diversion. The opposite condition occurs in second scenario (full liberalization), all countries experience positive welfare (except Cambodia, Australia, and New Zealand). This shows that full liberalization provides greater positive effect in terms of improving welfare for member countries compared to partial liberalization.

Negative welfare value for RoW indicates that the establishment of these free trade agreements causing trade diversion for the countries outside their region. Country with the biggest welfare is India (USD 3,851.86 million), followed by Japan (USD 2,974.13 million), Thailand (USD 1,730.36 million), Vietnam (USD 1,662.97 million), Malaysia (USD 1,647.1 million), and Indonesia (USD 1,537.16 million) in the full liberalization scheme, while the smallest change in welfare received by Laos with USD 3.26 million.

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Second, all regions (except Cambodia, India, Australia, and New Zealand) experience an increase in GDP in the scenario of full liberalization. ASEAN GDP experiences an average increase of 1.14 percent, with the biggest increase in Vietnam (3.88 percent), followed by Indonesia (1.42 percent), and Thailand (1.38 percent), while the smallest GDP growth is in Korea, with 0.26 percent. In general, ASEAN + 5 FTA with full liberalization scheme is more profitable than partial liberalization.

Third, ASEAN + 5 FTA also has an effect on international trade performance of each country. As in previous analysis, full liberalization provides greater positive effect on international trade performance (export-import) than the other scenarios. In this scenario, all regions face an increase (except Laos) in trade performance, both export and import. Vietnam is a country with the biggest increase in trade performance, with 7.64 percent (export) and 10.30 percent (import). The increase in international trade performance in this free trade scheme indicates that all countries (except Australia and New Zealand) experience bigger import expansion than export in all cases. The formation of ASEAN + 5 FTA for ASEAN, tariff reduction in various sectors and domestic (both finish commodity or in process) substitutes with import, domestic production for export expansion. So that trade creation will be formed from a decrease in high cost used by domestic industry, which is replaced by bigger import because of low import cost for ASEAN + 5 FTA member.

Fourth, different with the first scenario, the condition of balance of trade from each country joined in ASEAN + 5 FTA are in deficit state (except Singapore, Australia, and New Zealand) in the second scenario. The biggest deficit of balance of trade is faced by Vietnam, with USD 2,469.44 million, followed by Thailand (USD 2,018.89 million), and Japan (USD 1,331.56 million) while the smallest deficit is faced by Laos (USD 3.49 million). This shows that there is a trade creation among the member of ASEAN + 5 FTA, that is inefficient domestic product replaced by more effective import from within FTA area. Singapore, Australia, and New Zealand region experience a surplus in their international balance of trade, with USD 124.49 million and USD 2.67 million respectively. The same thing happened to RoW with USD 8.833.76 million.

Last, the other purpose of free trade cooperation is investment. Saving allocated to an area which is aimed as an investment must have a high return. To create a perfect capital mobility, rate of return must be set equal among regions (Hertel *et al.*, 2001). While in GTAP, a perfect capital mobility will only occur in the long term. The consequence of capital mobility is if rate of return in a country is low, then the investment in the country will decrease, vice versa. Relationship between investment and rate of return is investment is a gradual movement of the difference in the rate of return among countries. The increase in rate of return will encourage additional investment, both domestic and foreign. Liberalization that fully implemented by countries joined in ASEAN + 5 FTA brings an effect on the increase of investment in each country. Vietnam is a country that gets the biggest positive effect in terms of

investment. The value of return on capital (rate of return on capital stock) of Vietnam experience an increase up to 14.19 percent, followed by Cambodia (3.79 percent), Thailand (3.58 percent), and Malaysia (3.03 percent). Australia and New Zealand is a region that accept the lowest effect from the existence of ASEAN + 5 FTA, the value of rate of return experience an increase only 0.05 percent, while *rest of the world* face a decrease of 0.03 percent.

4.2.2 Sectoral Analysis

Trade liberalization will have a significant effect on the change in the allocation of resources such as land, capital, and labor which will leads to some extents of structural adjustment in the input market. Generally, a country/world will benefit from the liberalization of trade if each country allocates its resources on sectors that have a comparative advantage (Siriwardana and Yang, 2007; Brown *et.al*, 2006). The result of sectoral effect generated from ASEAN + 5 FTA scheme, is presented in Table 8, 9, and 10 below.

Table 8 represents the output of export trade generated by ASEAN member countries toward partner countries (Japan, India, China, Korea, Australia, and New Zealand). Cambodia export to Japan decreased in all sectors (except in textile and technology-based industry sectors). Technology-based industry and textile in Cambodia experience an increase for all export destination countries. While the industries that face a decrease for all export destination countries are extractive industries, equipment, construction, and services. Indonesia export also experience an increase for all export destination countries for textile, food products (except to Australia and New Zealand), heavy industry, and technology-based industry (except to Japan). Whereas equipment, construction, and services sectors face a decrease for all export destination countries. Laos export experiences an increase for all sectors, except for food, agriculture, and textile products. Malaysia experiences an increase for textile, food, heavy equipment, and technology-based industry sectors. Philippines face a decrease for equipment, construction, and services sectors. The same thing happens to Singapore, Thailand, and Vietnam.

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Table 8
The Estimation of Change in Trade Output of ASEAN Member Countries on Partner Based on Sectors (in percentage) in the Formation of ASEAN + 5 FTA

a. Cambodia						b. Indonesia					
	Japan	India	China	Korea	Aust NZ		Japan	India	China	Korea	Aust NZ
Agricultural Products	-4.83	78.8	-1.67	391	-2.4	Agricultural Products	-13.98	141.8	25.62	330.95	-15.66
Food Products	-5.46	94.1	4.84	13.8	-3.12	Food Products	7.88	150.57	33.89	5.97	-2.94
Extractive Industry	-4.36	-10.5	-5.58	-5.23	-2.98	Extractive Industry	-5.49	94.61	6.04	1.3	-5.23
Textiles	4.16	52.6	56.5	55.4	2.4	Textiles	44.8	85	56.31	36.18	62.82
Heavy Manufacturing	-2.21	-8.97	64.6	0.528	-4.02	Heavy Manufacturing	-2.27	84.89	37.38	2.41	12.69
Technology-intensive Manufacturing	9.98	42.6	41.7	11.6	8.23	Technology-intensive Manufacturing	-2.91	79.88	53.26	5.25	30.57
Utilities	-1.62	-3.08	-2.28	-1.72	-2.26	Utilities	-4.41	-5.87	-5.07	-4.5	-5.05
Construct	-3.35	-4.18	-3.92	-3.54	-4.01	Construct	-3.86	-4.69	-4.43	-4.05	-4.52
Services	-4.55	-5.34	-5.12	-4.57	-5.23	Services	-4.63	-5.41	-5.19	-4.65	-5.31

c. Laos						d. Malaysia					
	Japan	India	China	Korea	Aust NZ		Japan	India	China	Korea	Aust NZ
Agricultural Products	-8.77	146	88.6	-13.2	-6.53	Agricultural Products	-7.81	154	30.9	9.12	-5.46
Food Products	-9.11	-94.2	22.6	-5.52	-3.26	Food Products	12.4	146	24.2	11.9	-0.16
Extractive Industry	4.39	0.958	3.54	3.74	6.01	Extractive Industry	-13.8	61.6	10.9	3.84	-12.8
Textiles	0.246	-4.36	23.6	43.1	-2.47	Textiles	2.88	97.2	53.4	48.2	24.3
Heavy Manufacturing	5.19	50.5	47	4.96	4	Heavy Manufacturing	10.4	84.8	52.8	13.9	19.1
Technology-intensive Manufacturing	11.3	33.4	124	10.2	9.43	Technology-intensive Manufacturing	0.157	33.8	6.33	5.2	11.3
Utilities	1.8	0.343	1.14	1.71	1.16	Utilities	-8.2	-9.66	-8.86	-8.3	-8.85
Construct	4.01	3.17	3.44	3.82	3.25	Construct	-3.67	-4.51	-4.24	-3.86	-4.23
Services	1.51	0.729	0.95	1.49	0.832	Services	-3.64	-6.42	-6.2	-5.66	-6.32

e. Philippines						f. Singapore					
	Japan	India	China	Korea	Aust NZ		Japan	India	China	Korea	Aust NZ
Agricultural Products	51	7.2	-5.41	92.1	-4.94	Agricultural Products	-4.57	112	35.5	104	-2.07
Food Products	16.1	23.1	11.6	48.7	10.5	Food Products	7.84	71.4	83.2	82.4	-1.37
Extractive Industry	-0.811	155	1.23	55.3	0.451	Extractive Industry	-0.365	105	51.9	44.7	1.01
Textiles	54.2	95.7	56.7	56.7	89.9	Textiles	2.12	90.4	81.1	59.4	-5.27
Heavy Manufacturing	1.12	89.2	13.6	12.3	14.2	Heavy Manufacturing	-1.09	77.7	30	30.5	-2.86
Technology-intensive Manufacturing	0.209	25.9	7.6	1.72	26	Technology-intensive Manufacturing	-0.671	50.5	12.9	17.7	-2.4
Utilities	-4.75	-6.2	-5.41	-4.84	-5.39	Utilities	-0.524	-1.98	-1.18	-0.62	-1.17
Construct	2.55	3.38	3.12	2.74	3.21	Construct	0.611	1.44	1.18	0.799	1.27
Services	-3.37	-4.15	-3.93	-3.39	-4.05	Services	-0.873	-1.65	-1.43	-0.894	-1.55

g. Thailand						h. Vietnam					
	Japan	India	China	Korea	Aust NZ		Japan	India	China	Korea	Aust NZ
Agricultural Products	13.5	82.6	-14.2	321	-14	Agricultural Products	-7.51	175	-5.82	230	-9.46
Food Products	92.1	116	104	135	-8.42	Food Products	51.7	47.9	25.4	56.6	-10.1
Extractive Industry	1.53	86.8	31.5	36	-3.6	Extractive Industry	-5.17	82.3	10.4	12	4.2
Textiles	35.1	86.3	40	35.1	36.3	Textiles	94.8	127	89.1	78.5	98.1
Heavy Manufacturing	-4.02	76.6	51	9.28	0.461	Heavy Manufacturing	-12.7	69.2	33.2	-5.66	15.6
Technology-intensive Manufacturing	2.7	70.4	14.1	8.18	3.43	Technology-intensive Manufacturing	-3.24	90	50.2	13.3	24.9
Utilities	-8.34	-9.8	-9	-8.44	-8.98	Utilities	-34.3	-35.7	-34.9	-34.4	-34.9
Construct	-6.05	-6.88	-6.62	-6.24	-6.71	Construct	-11.3	-12.1	-11.8	-11.5	-11.9
Services	-7.28	-8.07	-7.85	-7.31	-7.96	Services	-25.9	-26.7	-26.5	-25.9	-26.6

Source: Model Simulation

Table 9
The Estimation of Change in Trade Output of Partner Countries (Japan, India, China, Korea, Australia, and New Zealand) on ASEAN Member Countries Based on Sectors (in percentage) in the Formation ASEAN + 5 FTA

a. Japan									
	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	
Agricultural Products	-8.1	15.5	43.4	6.19	9.52	5.61	44.1	32.8	
Food Products	37.1	50.7	49.9	37.8	52.3	1.9	39.9	104	
Extractive Industry	2.09	8.07	1.69	7.94	14.9	2.52	76.6	106	
Textiles	25.9	18.6	58.8	25.9	23.4	-1.49	33.1	132	
Heavy Manufacturing	49.4	28.3	46.6	65.7	16.9	-0.116	30.2	41.6	
Technology-intensive	72.8	44.5	104	26	14	-2.1	41.4	31	
Utilities	-1.32	2.37	0.504	2.86	0.598	-0.932	3.51	13.1	
Construct	1.11	0.716	-2.41	0.563	0.186	-1.18	1.62	6.87	
Services	-0.211	1.19	-1.67	1.54	0.397	-1.5	2.2	11.2	
b. India									
	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	
Agricultural Products	34	27.5	141	64.6	46.1	11.4	23.1	64.3	
Food Products	106	42.3	121	34.2	41	6.93	41.1	25.7	
Extractive Industry	6.71	19.9	6.04	12.9	24	6.65	89.9	94.4	
Textiles	32.1	24.9	70.8	31.9	38.1	2.53	51.3	38.5	
Heavy Manufacturing	15.7	14.4	41.8	26.6	20.1	4.11	13.4	16.1	
Technology-intensive	62.9	75.5	9.34	36.1	71.4	2.98	7.84	9.51	
Manufacturing									
Utilities	1.58	5.27	3.4	5.76	3.5	1.96	6.4	16	
Construct	3.32	2.93	-0.198	2.78	2.4	1.03	3.83	9.08	
Services	1.55	2.25	0.087	3.3	2.16	0.26	3.26	13	
c. China									
	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	
Agricultural Products	51.3	13.6	86.3	12.6	27	6.1	28.5	32.9	
Food Products	84.2	28.5	118	76	27.1	2.82	57.8	44.3	
Extractive Industry	54	8.67	66.6	6.02	23	3.43	17.6	76.2	
Textiles	31.8	35.5	63.6	32.3	29.6	-0.397	53.5	96.3	
Heavy Manufacturing	52.8	27.5	52	20.8	17.4	1.77	27	28.4	
Technology-intensive									
Manufacturing	67.2	15.1	45.1	5.52	12.8	0.505	18.3	38.4	
Utilities	0.008	3.69	28.4	4.18	1.92	0.392	4.83	19.9	
Construct	2.3	1.91	-1.22	1.76	1.38	0.014	2.82	8.06	
Services	1.01	2.42	-0.447	2.77	1.62	-0.273	3.43	12.4	
d. Korea									
	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	
Agricultural Products	27.9	25.6	13.5	27.3	27.1	9.09	95.2	22.9	
Food Products	71.8	87.4	149	22.2	68.9	4.77	34.2	96.1	
Extractive Industry	136	7.2	2.66	8.74	23.7	3.44	74.5	109	
Textiles	40.1	27.6	67	19.2	36.2	-0.552	22.5	121	
Heavy Manufacturing	51.7	21.8	41.4	61.5	17.8	0.901	27.8	19.9	
Technology-intensive									
Manufacturing	62.8	11.2	137	11.1	11.7	-0.97	29.6	44.4	
Utilities	-0.657	3.03	1.16	3.52	1.26	-0.274	4.16	13.7	
Construct	1.55	1.16	-1.96	1.01	0.635	-0.733	2.07	7.32	
Services	0.061	1.46	-1.4	1.82	0.67	-1.23	2.48	11.5	

Cont. table 9

f. Australia-New Zealand									
	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	
Agricultural Products	23.6	16.7	32	4.18	20.8	5.04	18.1	20.3	
Food Products	74.3	41.1	93.4	8.59	14.8	2.24	33.6	80.7	
Extractive Industry	5.29	11.9	42.1	11.6	30.3	3.73	-1.39	66.1	
Textiles	86.3	14.3	73	-9.47	29.2	0.039	-7.44	16.6	
Heavy Manufacturing	30.9	9.99	32.8	16.6	18.4	1.71	-4.42	2.64	
Technology-intensive Manufacturing	140	29.1	9.6	32.7	24.6	0.502	20.7	29.9	
Utilities	0.27	3.96	2.09	4.45	2.18	0.654	5.09	14.7	
Construct	2.42	2.03	-1.1	1.87	1.5	0.128	2.93	8.18	
Services	1.2	2.6	-0.258	2.96	1.81	-0.085	3.62	12.6	

Source: Model Simulation

This shows that ASEAN FTA partner countries have a stronger economic structure and better economic development, so that ASEAN must be able to take advantage from it by creating conducive environment to increase the investment from their partner countries.

Table 10 represents the estimation of change in demand of primary factors for ASEAN + 5 FTA, which consist of land, capital, and labor (including skilled labor and

Table 10
Estimation of Change in Demand for Primary of ASEAN Member Countries and Partner (Japan, India, China, Korea, Australia, and New Zealand) Based on Sectors

	Agri_produ	Fossil_produ	Extra_ind	Textile	Heavy_man	Tech_ind	Utilities	Construct	Services	
Land	0	1.06	-0.754	2.68	-0.055	-1.18	0.864	1.22	0.701	* Cambodia
UnSkLab	-0.575	-0.335	-1.56	3.16	-3.02	-5.58	-0.949	-0.322	-1.32	
SkLab	-0.537	-0.165	-1.52	3.35	-2.83	-5.39	-0.758	-0.107	-1.13	
Capital	-0.574	-0.329	-1.56	3.17	-3.02	-5.57	-0.942	-0.315	-1.31	
Land	0	-0.779	-1.66	-3.54	-3.72	-3.44	-3.15	-2.95	-2.88	* Indonesia
UnSkLab	1.24	3.9	-0.789	-1.76	-2.17	-1.53	-0.883	-0.115	-0.262	
SkLab	1.32	4.26	-0.704	-1.35	-1.76	-1.12	-0.473	0.346	0.148	
Capital	1.33	4.29	-0.696	-1.31	-1.72	-1.08	-0.437	0.387	0.184	
Land	0	-1.54	-1.13	-2.12	-2	-5.5	-1.3	-1.45	-1.4	* Laos
UnSkLab	0.636	-0.421	-0.759	-1.59	-1.31	-9.23	0.26	0.102	0.055	
SkLab	0.662	-0.302	-0.731	-1.45	-1.17	-9.1	0.394	0.253	0.189	
Capital	0.762	0.147	-0.626	-0.95	-0.67	-8.59	0.899	0.82	0.694	
Land	0	0.197	-0.309	-1.61	-0.105	-1.12	-0.854	-1.07	-1.14	* Malaysia
UnSkLab	0.414	2.28	0.046	-1.55	1.85	-0.434	0.159	-0.245	-0.496	
SkLab	0.437	2.38	0.07	-1.44	1.97	-0.32	0.272	-0.118	-0.383	
Capital	0.391	2.17	0.022	-1.67	1.74	-0.548	0.044	-0.374	-0.611	
Land	0	-1.09	-0.805	-1.23	-1.39	-0.408	-0.951	-0.875	-0.917	* Singapore
UnSkLab	0.362	-0.678	-0.635	-0.956	-1.31	0.905	-0.322	-0.061	-0.246	
SkLab	0.386	-0.572	-0.61	-0.837	-1.19	1.02	-0.203	0.073	-0.127	
Capital	0.374	-0.625	-0.623	-0.897	-1.25	0.965	-0.262	0.007	-0.186	
Land	0	0.076	2.82	-2.22	-0.399	-1.32	-0.909	-1.4	-1.19	* New Zealand
UnSkLab	0.541	2.59	4.13	-2.28	1.83	-0.25	0.676	-0.303	0.052	
SkLab	0.544	2.6	4.13	-2.27	1.84	-0.237	0.688	-0.289	0.065	
Capital	0.523	2.51	4.11	-2.37	1.74	-0.342	0.584	-0.406	-0.04	

Cont. table 10

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	-1,37	-1,82	-5,6	-3,78	-3,52	-3,8	-4,07	-4,12
UnSkLab	1,68	4,66	-0,521	-4,16	-0,032	0,556	-0,08	-0,267	-0,804
SkLab	1,77	5,03	-0,433	-3,73	0,39	0,978	0,342	0,208	-0,382
Capital	1,69	4,68	-0,517	-4,14	-0,011	0,577	-0,058	-0,243	-0,783

2 - Thailand

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	6,34	-2,57	20,9	3,86	4,92	6,28	9,22	6,68
UnSkLab	-3,3	-1,36	-6,72	30,7	-7,93	-5,52	-2,46	3,56	-1,56
SkLab	-3,36	-1,65	-6,79	30,4	-8,26	-5,85	-2,79	3,19	-1,89
Capital	-3,27	-1,24	-6,69	30,8	-7,8	-5,39	-2,33	3,7	-1,43

1a - Vietnam

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	0,826	0,494	1,12	1,26	1,02	1,13	1,16	1,1
UnSkLab	-0,49	-0,445	0,107	0,069	0,369	-0,165	0,089	0,016	0,018
SkLab	-0,491	-0,452	0,106	0,061	0,361	-0,173	0,081	0,007	0,01
Capital	-0,491	-0,451	0,106	0,062	0,362	-0,173	0,082	0,008	0,011

2 - Japan

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	-0,311	0,79	2	1,65	1,8	1,66	1,81	1,73
UnSkLab	-0,714	-3,86	0,246	0,91	0,116	0,462	0,152	0,323	0,301
SkLab	-0,757	-4,06	0,2	0,691	-0,103	0,243	-0,067	0,077	0,082
Capital	-0,745	-4	0,213	0,754	-0,04	0,306	-0,004	0,148	0,145

3 - Korea

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	-0,001	0,06	0,173	0,111	0,174	0,13	0,153	0,117
UnSkLab	-0,059	-0,268	0,014	0,091	-0,048	0,094	-0,005	0,033	-0,034
SkLab	-0,059	-0,264	0,015	0,095	-0,044	0,098	-0,002	0,037	-0,03
Capital	-0,062	-0,279	0,011	0,079	-0,06	0,082	-0,018	0,019	-0,046

1c - China

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	1,69	1,25	4,07	1,79	1,47	1,83	1,84	1,72
UnSkLab	-0,776	0,099	0,76	5,28	0,131	-0,593	0,218	0,032	-0,034
SkLab	-0,771	0,12	0,765	5,31	0,154	-0,57	0,242	0,058	-0,011
Capital	-0,772	0,117	0,765	5,3	0,151	-0,573	0,238	0,054	-0,014

2 - Korea

	Agri prod	Food prod	Extra Ind	Textile	Heavy man	Tech ind	Utilities	Construct	Services
Land	0	-0,867	-0,529	-1,67	-1,24	-1,14	-1,18	-1,23	-1,18
UnSkLab	0,521	0,499	-0,119	-1,15	-0,161	0,062	-0,047	-0,022	-0,036
SkLab	0,526	0,522	-0,114	-1,13	-0,135	0,087	-0,021	0,007	-0,011
Capital	0,525	0,516	-0,115	-1,13	-0,142	0,081	-0,028	-0,001	-0,017

2a - New Zealand

Source: Model Simulation

unskilled labor) based on sectors for full liberalization scenario. Land use in Cambodia increased in all sectors (except for extractive industry, heavy industry, and technology-based industry), specifically for textile industry, the use of all factors (land, skilled and unskilled labor, and capital) is increased. The industry of agricultural and food products in Indonesia experience an increase in terms of the use of all endowment factors, Laos (agricultural products, equipment, construction, and services), Malaysia (agricultural products, food, extractive, and equipment), Philippines (agricultural products and several equipment industry), Singapore (food industry, agriculture, extractive, heavy industry, and equipment), Thailand (agriculture industry, food, and technology-based industry), and Vietnam (textile industry and construction).

While partners countries also experience an increase in terms of the use of all endowment factors, Japan (extractive industry, textile, heavy equipment, equipment, construction and services), India (extractive industry, textile, technology-based industry, construction, and services), China (extractive industry, textile, technology-based industry, and construction), Korea (food industry, extractive, heavy equipment,

equipment, and construction), and Australia-New Zealand (agriculture industry, food, and technology-based industry).

5. CONCLUSION AND IMPLICATION

Free trade cooperation between ASEAN and Japan, India, China, Korea, Australia, and New Zealand in ASEAN + 5 FTA scheme, provide a bigger benefits in the full liberalization scenario for all regions, except for Cambodia and Australia-New Zealand. The formation of ASEAN + 5 FTA has created trade creation in the form of transfer of less efficient domestic product which replaced by more effective import from FTA member countries.

Welfare, real GDP, international trade, and investment of all countries joined in ASEAN + 5 FTA experience an increase. India is a country that experiences the greatest increase in welfare, while Vietnam experiences the greatest increase in real GDP, international trade, and direct investment. In sectoral terms, the balance of trade of partner countries (Japan, India, China, Korea, Australia, and New Zealand) toward ASEAN member countries has a better condition than the opposite. The effect of the allocation of resources usage (land, labor, and capital) for ASEAN countries is more focused on the sector of agricultural products, food, textile, and several extractive industry and technology, whereas partner countries are more focused on heavy industry, technology, equipment, construction, and services.

The implication of this study is, shock in this study only based on the liberalization of trade tariff. In the real world, the presence of the elimination of tariff will be followed by other trade policies. For example the elimination of tariff in a country, can cause a larger export subsidy or vice versa. With the decrease in export restraint, there is a possibility that this cooperation will generate additional benefits for the economy of both regions and world as a whole. This study is a study that uses GTAP, which is comparative static model in nature, so that the dynamic effect of international trade is difficult to explain, and less reflecting changes in the actual outcome.

Natural policy implication from policy makers is to concentrate their efforts on a bilateral FTA. This study results show that AIFTA will bring bigger positive effect for ASEAN and vice versa. Thus, the policy makers must prioritize their efforts on FTA which gives bigger benefits for ASEAN.

The need to establish ASEAN as a strong common market through ASEAN single windows, which in turn will lead to a strong economy and help small states to participate in the free trade. It can be implemented with partner countries, so that, later, the dynamic effect from trade liberalization (communication, transportation, customs area, etc) from all aspects can be measured. With the existence of single market in ASEAN and with trading partners through FTA scheme, then the price of goods is considered the same, because each country in a region is assumed to have the same

endowments factors, thus each country should specialize in one/several specific sectors. So that an intra-trade can be realized in one specific area/region.

Note

1. More complete discussion about GTAP, can be found in Hertel, Thomas W., and Marinov E. Tsigas, 1997. *Global Trade Analysis: Modeling and Applications*, Cambridge University Press.

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