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ASEAN's Free Trade Agreements with China, Japan and Korea:

A Qualitative and Quantitative Analysis

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Ⅰ. Introduction

ASEAN, or the Association of Southeast Asian Nations, has been one of the fastest growing regions in the developing world.[1)]

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Singapore is a first-generation newly industrialized economy (NIE) with one of the highest per capita incomes in the world. Indonesia, Malaysia and Thailand are second-generation tigers which were integral parts of the World Bank-designated East Asian Miracle, along with Japan, Korea, Taipei, Hong Kong and Singapore. The Philippines has long lagged the other major market economies of the region but its performance has improved in recent years. Viet Nam has been one of the world's fastest-growing economies since it adopted *doimoi* market reforms in the late 1980s.[2)]Although there is a great deal of heterogeneity within ASEAN in terms of income and development level, the region as a whole has grown rapidly on a sustained basis for decades, along with the rest of East Asia. While there are a number of reasons for ASEAN's success, one central element has been high degree of openness to trade. Sustained rapid growth has enabled the region to reduce poverty on a widespread scale and spread the fruits of growth to a broad segment of the population.

Although ASEAN's overall track record of economic performance has been broadly impressive, especially in comparison with other parts of the developing world, the Asian financial crisis of 1997-1998

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1) ASEAN is a geopolitical and economic organization which was established in 1967 by Indonesia, Malaysia, Philippines, Singapore and Thailand. ASEAN has since been expanded to include Brunei Darussalam, Cambodia, Lao PDR, Myanmar and Viet Nam. Therefore, ASEAN now covers the whole of Southeast Asia.

2) The ASEAN-6－Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam －accounts for the lion's share of ASEAN's GDP. Cambodia and Lao PDR are also liberalizing their economies and growing faster as a result. The two other smaller economies of the region - Myanmar and Brunei Darussalam- are special cases. Myanmar is isolated from the world economy and the latter is a wealthy oil-rich micro state.

dealt a severe blow to the region's sky-high self-confidence. It is true that the region has staged a V-shaped recovery from that crisis, fueled by robust exports to US and other markets outside the region. Nevertheless, there has been a tangible loss of dynamism and momentum since the crisis from which the region has yet to fully recover. For example, investment rates have fallen markedly throughout the region and while growth performances have been strong, they are still below the very high rates of the immediate pre-crisis period. Even if we account for the possibility of pre-crisis over-investment and general overheating, there is a widespread perception of a drop-off in the region's potential GDP growth rate since the crisis.

Giving further cause for pessimism within ASEAN is the explosive rise of China and India as competitive threats. China in particular is viewed as a serious threat to the region's traditional engine of growth —export-oriented manufacturing. The stunning rise of China as a global manufacturing center, initially powered by an abundant pool of industrious low-wage workers but fast moving up the technology ladder and producing an ever wider range of more sophisticated products, pose a threat not only to market shares in key third-country markets such as the US but also to domestic market shares. Another major sphere of potential competition between ASEAN and China is FDI. This matters for ASEAN because the region has relied heavily on FDI from industrialized countries for its export-oriented industrialization in the past. While China, India, Viet Nam and other late starters are fast closing the gap with ASEAN, deep-seated structural problems are preventing ASEAN from closing the gap with

the NIEs and Japan. For example, Malaysia and Thailand face a critical shortage of well-educated workers and professionals which are required for the transition to more skill- and technology-intensive industries. Indonesia and the Philippines face a more general problem of raising investment and improving competitiveness, even though both countries have made big strides in recent years. In short, within ASEAN, there is a genuine fear of being sandwiched and stranded in a middle-income trap between China and the NIEs.

One possible channel for reviving the region's economic dynamism and enhancing the region's competitive position in the world economy is to invigorate intra-regional trade. Although ASEAN economies are individually small, collectively they form the world's ninth largest economy, which implies substantial gains from trade. The primary institutional framework for intra-ASEAN trade liberalization is the ASEAN Free Trade Area (AFTA), which got under way with the signing of the ASEAN Free Trade Agreement in 1992. While ASEAN is collectively sizable, it is dwarfed by the Big Three of East Asia— China, Japan and Korea. China and Japan are the world's second and third largest economies, and Korea ranks among the world's fifteen largest economies. Therefore, an attractive strategic option for ASEAN is to expand trade with the Big Three. In fact, ASEAN has been pursuing trade liberalization with China, Japan and Korea, and those efforts are yielding fruit. The ASEAN-China Free Trade Area (ACFTA), the ASEAN-Korea Free Trade Area (AKFTA), and the ASEAN-Japan Free Trade Area (AJFTA) are already in effect. There has been less progress on the ASEAN+3 Free Trade Area (A+3FTA) which brings together ASEAN and all of the Big Three but both

remain plausible and realistic avenues for intra-regional trade liberalization.

The central objective of our paper is to qualitatively and quantitatively assess the four different permutations of ASEAN's FTAs with the Big Three－i.e. ACFTA, AJFTA, AKFTA and A+3FTA.

Our qualitative analysis is based on the theory of economic integration and our quantitative analysis is based on a computable general equilibrium(CGE) model. The results of our analysis can provide guidance for ASEAN policy makers about the relative merits of the different permutations. The results will also inform us about the division of benefits from the FTA between ASEAN and its FTA partner. A large number and growing empirical literature has used the CGE model to estimate the output and welfare effects of FTAs among East Asian countries, including ASEAN (Cheong 2003; Ando 2009; Ando et al. 2006; Kawai et al. 2008;Lee et al.2008). The overall evidence from the literature indicates that A+3FTA delivers bigger output and welfare gains for ASEAN and China, Japan and Korea than bilateral FTAs. Our study extends the literature in two ways. First, we augment the CGE-based quantitative analysis used by the existing studies with qualitative analysis which looks at how well the different FTAs satisfy various theoretical criteria for integration. Second, we use a CGE model which not only captures the usual static effects of FTAs but also the effects of FTAs on capital accumulation over time. This expanded CGE model takes into account the relationship between trade, investment and growth.

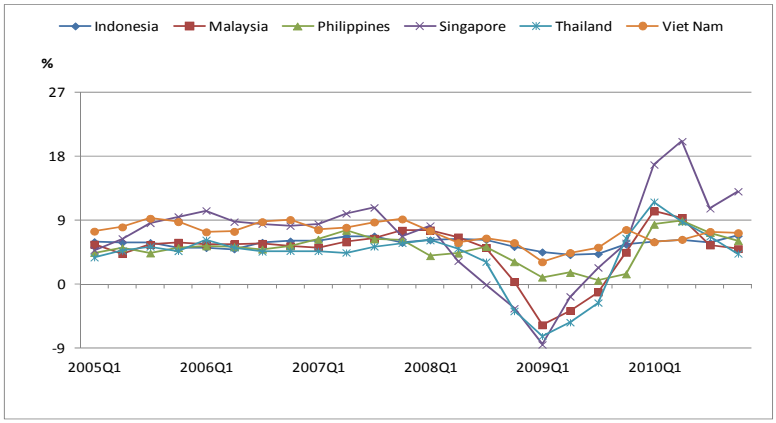
Ⅱ. Global Financial Crisis and Intra-East Asian Integration

In the previous section, it was clear that well before the global financial crisis, ASEAN countries have sought to promote trade with each other and with the Big Three. The primary motivation for such efforts lay in seeking new sources of dynamism and growth after the Asian crisis deprived the region of its momentum and self-confidence. Another factor was concerns that the region was heading toward a middle-income trap between fast-rising China and technologically more advanced Japan and NIEs. Further, the lack of progress at multilateral Doha Round of WTO trade talks drove countries around the world to pursue bilateral and regional FTAs and ASEAN was no exception to this global trend. Finally, the Asian crisis served as a catalyst for regional cooperation and integration in East Asia. There was a widespread perception that the IMF mishandled the Asian crisis and, more fundamentally, served the interests of industrialized countries outside the region. The immediate consequence was the Chiang Mai Initiative which sought to pool the foreign exchange reserves of countries in the region in order to protect the region from currency crisis. The broader consequence was a generalized trend toward deeper integration of the regional economies. Trade liberalization among East Asian countries is a concrete example of this trend.

Although regional cooperation and integration in East Asia was well under way before the global crisis, the crisis has given it a big additional push. The crisis has had a severe negative short-run impact

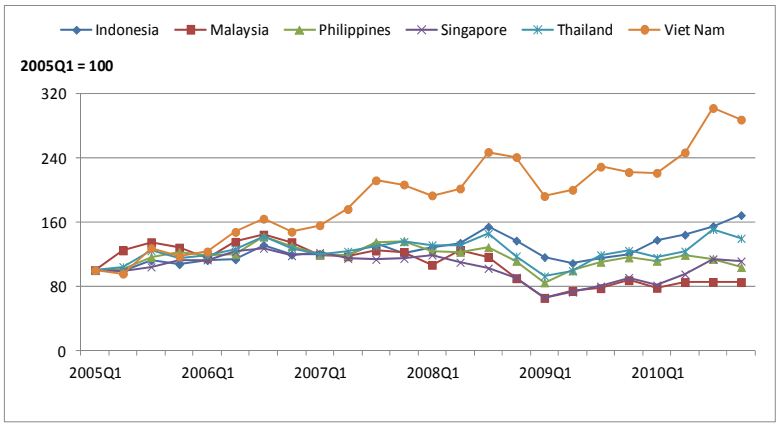
on the exports and growth of ASEAN countries [Figure 1]. For ASEAN as a whole, growth slowed down markedly from a 3-year average of 6.1% in 2005-2007 to 4.4% in 2008 and 1.4% in 2009. In contrast to the Asian crisis, ASEAN was by and large spared from

Figure 1. Quarterly GDP Growth Rate, ASEAN-6, 2005Q1 – 2010Q4



Source: CEIC Data Company (accessed 25April 2014).

Figure 2. Quarterly Export Volumes to the United States, ASEAN-6, 2005Q1 – 2010Q4



Source: International Monetary Fund, *Direction of Trade Statistics*, March 2014.

financial instability during the global crisis. Instead trade was the primary channel which transmitted the global crisis from the US and EU to ASEAN, as seen in the collapse of exports to the US and other major markets, especially during Q4 2008 and Q1 2009 [Figure 2].

ASEAN's experience during the global crisis highlights the risks of excessive dependence on extra-regional demand for exports and growth. The global crisis does nothing to invalidate ASEAN's outward-looking, export-oriented growth strategy which has delivered rapid sustained growth and substantial poverty reduction. As such, the region should continue to maintain and nurture its vital trade links with the industrialized countries and the rest of the world. At the same time, however, the transformation of East Asia from a stagnant low-income region to a dynamic middle-income region suggests that intra-East Asian trade offers the promise of a new, additional engine of demand and growth. The experience from the recent global financial crisis shows how intraregional exports within East Asia have rebounded more strongly than exports to the US and EU. Following a contraction in 2009, combined exports to the US and EU markets rose by 23% in 2010 and 10% in 2011. In contrast, exports within East Asia grew by a more substantial rate, at 32% in 2010 and 19% in 2011. Strengthening intra-regional trade will enable the region's economies to exploit potentially large but hitherto under-realized gains of trade [see ADB 2009a]. A complementary strategy is for each country to rebalance growth toward domestic demand [see ADB 2009b]. While intra-East Asian trade integration has grown rapidly, much of the trade is trade in parts and components which is ultimately geared to demand for final goods in the US and other markets outside

the region. More dynamic domestic economies can stimulate more substantive intra-regional trade based on trade in final goods.

Developing East Asia's unexpectedly speedy and robust recovery is lending further credibility to the potential of intra-regional trade as an engine of demand and growth. Unlike Asian crisis, the region was unable to export its way out of a recession this time around. In fact, what makes the region's recovery all the more remarkable is that it has taken place against the background of persistent fragility and uncertainty in US, Europe and Japan. While it would be going too far to view the region's superior post-crisis performance as definitive proof of decoupling between the region and the industrialized countries, it does suggest that the region's economy has a life of its own, to a much greater degree than previously thought. Within the region, China has turned in by far the most resilient performance, growing by a whopping 9.2% even in 2009, when the crisis peaked. This matters a lot for ASEAN and the rest of East Asia because the center of gravity of the region's economy is visibly shifting toward fast-growing China in recent years.

Ⅲ. Qualitative Assessment of ASEAN's FTAs with China, Japan and Korea

The preceding two sections should make it abundantly clear that ASEAN has a long-standing self-interest in pursuing trade liberalization with China, Japan and Korea. Furthermore, the global crisis and the consequent acceleration of the shift of global economic

power to developing East Asia has given further impetus to ASEAN's efforts to further expand trade with the Big Three. In this section, we draw upon the theory of economic integration to evaluate and compare the extent to which each of ASEAN's potential FTAs with the Big Three satisfy the theoretical criteria for successful integration. The theory of economic integration is anchored in the theory of customs union, formally developed by Viner (1950). The defining feature of regional economic integration is the progressive removal of barriers to the free movement of goods, services, capital, and labor among the economies of a region.

In theory, a customs union has both positive and negative welfare effects. In the example of AKFTA, the positive effect—i.e. trade creation—arises from Malaysia's replacement of higher cost domestic products with lower cost imports from Korea. The negative effect—i.e. trade diversion—occurs when Korea replaces low cost imports from the US with higher cost imports from Thailand. Whether a customs union is beneficial on the whole depends on which effect is larger. Static factors are important in assessing the one-off change in welfare arising from the establishment of a customs union. These include the size of the free trade area, geographical proximity, levels of economic development, complementarity of economic structures, tariff structures, and the substitutability between products of members and products of non-members. We now apply the various static criteria to ASEAN's potential FTAs with the Big Three.

Size of FTA

The larger the size of the FTA, the larger the potential gains from trade. Table 1 shows the size of the different permutations of ASEAN's FTAs. In terms of current US dollar GDP, the A+3FTA is about 75% bigger than ACFTA, the next largest FTA. The next two biggest FTAs are AJFTA and AKFTA. Even in terms of PPP GDP, A+3FTA is the biggest FTA, and among the bilateral FTAs, ACFTA remains the second largest FTA. A+3FTA about 40% bigger than ACFTA. In terms of population, A+3FTA exceeds 2 billion people and ACFTA has close to 2 billion people. Table 1 indicates that A+3FTA is by far the biggest union with AJFTA and ACFTA more or less the same and AKFTA by far the smallest union. However, it should be noted that even AKFTA has quite a sizable joint GDP.

Table 1. Size of Free Trade Area

Economy	Population (million), 2011	GDP (current US$, billion), 2011	GDP (PPP current international $, billion), 2011
Brunei Darussalam	0.4	16.4	-
Cambodia	14.3	12.8	33.7
Indonesia	242.3	846.8	1,123.5
Lao PDR	6.3	8.3	17.5
Malaysia	28.9	287.9	463.2
Myanmar	48.3	-	-
Philippines	94.9	224.8	390.7
Singapore	5.2	239.7	314.6
Thailand	69.5	345.7	601.1
Vietnam	87.8	123.6	299.7

Economy	Population (million), 2011	GDP (current US$, billion), 2011	GDP (PPP current international $, billion), 2011
ASEAN	597.9	2,106.0	3,244.0
China	1,344.1	7,318.5	11,290.9
Japan	127.8	5,867.2	4,385.9
Korea	49.8	1,116.2	1,507.6
ASEAN	597.9	2,106.0	3,244.0
ASEAN- China FTA	1,942.0	9,424.5	14,534.9
ASEAN-Japan FTA	725.7	7,973.2	7,629.9
ASEAN-Korea FTA	647.7	3,222.2	4,751.6
ASEAN-China-Japan-Korea FTA	2,119.6	16,407.9	20,428.4

Note: '-' means data not available.

Source: World Bank, *World Development Indicators* online database (accessed 10 January 2013).

Income and development level

Similarity in income and development level is conducive for integration. The basic intuition is that countries at similar income levels have similar consumption patterns, which means there is scope for intra-industry trade. There is considerable heterogeneity of income and development levels within ASEAN itself. ASEAN as a whole has a similar income to China but lags far behind Japan and Korea. This suggests that the scope for intra-industry for the entire ASEAN may be greater for ACFTA than either AJFTA or AKFTA. However, there is scope for intra-industry trade between more developed ASEAN countries such as Singapore, Malaysia and Thailand and Japan and Korea. If we view the Big Three as a single economy, it is considerably richer than ASEAN but this reflects the influence of Japan and Korea.

Geographical proximity and transport infrastructure

Geographical proximity promotes economic integration since it reduces transportation costs. For some goods, transportation costs can be a major component of total trade costs. China, Japan and Korea are much closer to ASEAN than the other two heavyweights of the world economy, US and EU. The southern parts of China are closer to ASEAN than Japan and Korea and have some land links to ASEAN. This gives ACFTA a competitive advantage over AJFTA and AKFTA. However, the dominant transport links between ASEAN and the Big Three are air and sea links, and these are relatively well developed for all three countries. A large number of commercial flights and extensive commercial shipping routes connect ASEAN with China, Japan and Korea, which bodes well for intra-regional trade.

Pre-FTA trade

While the very purpose of FTA is to stimulate trade among member, the level of pre-FTA trade among member countries has a significant effect on the incentives of countries to form an FTA. Intuitively, countries which trade heavily with each other, or which have the potential to do so, stand to gain the most from removing barriers to trade. Table 2 shows that intra-regional exports is large for East Asian countries in both absolute and relative terms. The trade patterns resoundingly confirm the conventional wisdom that trade integration among East Asian countries has already reached fairly

high levels. This suggests that ASEAN's FTAs with China, Japan and Korea will yield substantial dividends for both parties. In comparative terms, intra-FTA trade is by far the biggest for A+3FTA, followed by ACFTA and AKFTA, which are more or less equal. Even for AKFTA, intra-FTA trade is quite substantial. Intra-A+3FTA exports has reached almost US$1.4trillion, or 36% of the members' total trade, by 2010. For ACFTA, AJFTA and AKFTA, intra-FTA is about 20% or more. Overall, the amount of trade between ASEAN and the Big Three is large enough for substantial gains of trade from further liberalization.

Table 2. Intraregional Exports, 2008-2010

FTA	Amount (US$ billion) of Intraregional Exports		
	2008	2009	2010
ASEAN	251.6	198.9	262.2
ASEAN-China FTA	454.7	387.4	514.0
ASEAN-Japan FTA	461.6	357.2	478.1
ASEAN-Korea FTA	339.7	274.1	360.4
ASEAN + 3 FTA	1,247.0	1,038.0	1,374.1
FTA	Intraregional Exports as Share of Total Exports		
	2008	2009	2010
ASEAN	25.5	24.5	25.0
ASEAN-China FTA	18.8	19.2	19.6
ASEAN-Japan FTA	26.1	25.6	26.3
ASEAN-Korea FTA	24.0	23.1	23.7
ASEAN-China-Japan-Korea FTA	34.4	34.9	35.5

Source: Authors' calculations based on data from International Monetary Fund, *Direction of Trade Statistics* (accessed 10 January 2013).

Substitutability of products

Substitutability is defined as the production of similar but differentiated products. Table 3 shows the revealed comparative advantage of ASEAN, China, Japan, Korea, US, EU and rest of the world in nine sectors. The table suggests that there is substantial scope for ASEAN to substitute products from the Big Three for products from the rest of the world. This is especially true for Japan and Korea which are technologically at similar levels to US and EU, and thus produce many similar manufacturing goods. In addition, there is also significant potential for Japan and Korea to substitute agricultural and food products from ASEAN for those from the rest of the world.

Table 3. Substitutability of Products: Revealed Comparative Advantage (Average for 2008-2010)

	Sectors	ASEAN	China	Japan	Korea	NAFTA	EU-27	ROW
1.	Agriculture	0.84	0.45	0.09	0.15	1.44	1.03	1.27
2.	Beverage and food products	1.66	0.36	0.09	0.15	0.72	1.30	1.08
3.	Textile and apparel	1.03	3.13	0.25	0.63	0.36	0.82	0.94
4.	Chemical products	0.68	0.49	0.87	0.93	1.07	1.43	0.66
5.	Metal and steel products	0.57	0.87	1.05	1.04	0.81	1.00	1.26
6.	Vehicle and other transport equipment	0.42	0.53	2.39	2.25	1.21	1.32	0.32
7.	Electronic products	1.97	2.30	1.26	1.69	0.96	0.72	0.51
8.	Machinery	0.58	0.84	1.89	0.89	1.18	1.37	0.36
9.	Other manufacturing	0.97	0.59	0.58	0.61	1.03	0.78	1.62

Note: The RCA index is defined as the ratio of the share of a country's total exports of a commodity in its total exports to the share of world exports of the same commodity in total world exports. ROW refers to rest of the world.

Source: Authors' calculations based on data from United Nations ComTrade Database (accessed 10 January 2013).

Complementary economic structures

According to Meade (1955), there will be greater trade creation if pre-FTA economic structures are competitive but post-FTA economic structures are complementary. Due to high trade barriers, FTA members may produce similar goods before the FTA. After the FTA, more efficient producers replace less efficient ones and the number of similar goods produced falls. This leads to welfare gains associated with specialization and economies of scale. Table 4 shows the degree to which one country's exports are complementary with another country's structure of imports. The table indicates that ASEAN's exports are highly complementary with China's import pattern and vice versa. Furthermore, China's exports are significantly more complementary with ASEAN's import pattern than with other

Table 4. Complementarity Index (%) (Average for 2008-2010)

Importing region/country	Exporting region/country						
	ASEAN	China	Japan	Korea	EU 27	NAFTA	ROW
ASEAN		76.7	74.6	81.4	79.4	85.1	71.1
China	82.5		72.7	81.3	74.8	79.7	67.0
Japan	79.1	63.8		64.0	73.4	81.1	88.4
Korea	76.8	65.3	68.0		74.5	84.0	80.0
EU-27	79.8	66.6	70.7	74.5		90.6	75.7
NAFTA	83.2	70.9	74.5	77.2	82.2		73.5
ROW	80.5	68.0	73.3	75.2	87.9	93.7	

Note: The index measures the degree to which the export pattern of one country matches the import pattern of another. It is derived by getting the sum of the absolute value of the difference between the import shares and the export shares for each product category of two economies, divided by two and multiplied by 100.

Source: Authors' calculations based on data from United Nations ComTrade Database (accessed 10 January 2013).

countries. Therefore, economic structure favors ACFTA over AJFTA and AKFTA. However, both Japan and Korea also have economic structures which are relatively complementary with that of ASEAN, although less so than that of China.

Pre-FTA tariff rates

According to theory, the net welfare gains from FTA will be bigger the higher the pre-FTA tariff rates among members and the lower and less disparate the tariff rates against non-members. Table 5 shows the applied tariff rate, simple mean of all products, for the ASEAN

Table 5. Applied tariff rate, simple mean of all products (%)

Economy	2006	2007	2008	2009	2010
ASEAN					
Brunei Darussalam	3.10	3.05	2.66	-	3.77
Cambodia	-	12.45	12.36	-	-
Indonesia	5.99	5.88	-	5.24	4.79
Lao PDR	6.47	5.81	9.25	-	-
Malaysia	6.28	5.91	5.53	6.75	-
Myanmar	4.40	4.12	4.03	-	-
Philippines	5.40	5.00	5.38	5.32	5.31
Singapore	0.00	0.04	0.17	0.14	0.00
Thailand	10.81	10.06	10.3	11.22	-
Vietnam	11.90	11.68	8.02	-	7.13
Big Three					
China	8.88	8.62	8.36	8.18	7.74
Japan	3.48	4.21	3.74	3.27	2.59
Korea	9.13	8.51	-	9.74	10.33

Note: '-' means data not available.
Source: World Bank, *World Development Indicators* online database (10 January2013).

countries, China, Japan and Korea. The tariff rates of China and Korea are higher than Indonesia, Malaysia, Philippines and Singapore but lower than Thailand. On the other hand, the tariff rate of Japan is lower than all the ASEAN countries except free-trade Singapore. The overall pattern of tariff rates does not clearly favor ACFTA, AJFTA or AKFTA. This is because there are two opposing effects. Whereas higher tariff rates of China and Korea bodes well for trade creation under ACFTA and AKFTA the lower tariff rate of Japan reduces the scope for trade diversion.

Ⅳ. Quantitative Assessment of ASEAN's FTAs with China, Japan and Korea: CGE model

In this section, we apply the CGE model to the various permutations of ASEAN's FTAs with the Big Three in order to estimate their quantitative effects on welfare and output. In addition to looking at static, one-time effects, we also examine dynamic effects based on the ramifications of FTAs for capital accumulation. Before we delve into the CGE analysis, we provide a brief overview of the CGE model and studies which use the model to evaluate intra-East Asian FTAs.

CGE model and analysis of the impact of FTAs – A brief overview

A large and growing literature uses the CGE model and database

of the Global Trade Analysis Project (GTAP) to quantify the economic impact of free trade agreements. In general, the studies find that members of FTAs enjoy welfare gains due to trade creation while nonmembers suffer welfare losses due to trade diversion. Studies using the CGE model often adhere to assumptions of constant returns to scale, perfect competition, and the Armington structure, and in some cases, account for increasing returns to scale or firm-level imperfect competition. Some studies only analyze static effects while others examine both static and welfare effects. The static model evaluates the one-off impact of trade liberalization, which assumes elimination of merchandise tariffs among members and, in some cases, accounts for removal of nontariff barriers and liberalization of services. The dynamic model incorporate efficiency gains from resource re-allocation and capital accumulation, which often results in higher welfare gains for FTA members compared to the static model. As the studies differ in their specifications and underlying assumptions, it is not surprising that their results vary as to who are likely to gain or lose, and which FTA makes one country or region better off. The discussion below focuses on the results of CGE analysis of ASEAN's FTAs with China, Japan and Korea.

Regardless of whether static effects alone or dynamic impacts are considered, a common finding is that the larger the FTA, the bigger the total welfare gains accruing to members. A bigger collective economic size enables larger gains from trade creation. This is true for studies which look only at static effects as well as studies which also consider dynamic effects (Cheong 2003; Ando et al. 2006; Ando 2009, Lee et al. 2004, Gilbert et al. 2004; Francois et al. 2008; Lee

et al.2008;Kawai et al. 2008). In terms of the distribution of income and welfare gains from FTA, some studies find that ASEAN as a group fares better than the Big Three (Ando et al. 2006; Cheong 2003) but other studies find that China, Japan or Korea outgain ASEAN (Choi et al. 2003; Lee et al.2008). Studies which look at individual ASEAN economies also differ as to which economy would benefit the most. The literature clearly shows that ASEAN stands to gain the most from ASEAN+3 FTA. However, the literature is still divided in terms of which of the Big Three is the most ideal bilateral partner for ASEAN. There are studies which find that the best partner for ASEAN is China (Lee et al. 2008, Kawai et al. 2008), but for others it is Japan (Ando et al. 2006) or Korea (Cheong 2003).

Empirical framework and results

In addition to the traditional static model[3] which analyzes the one-off effect of FTA on output and welfare, we also run a capital accumulation CGE model which is designed to capture capital accumulation effects over time as well as static effects. This model

3) The adopted GTAP model assumes constant returns to scale (CRS) technology, perfect competition, and a global bank designed to achieve a balance between world savings and investment. The three production factors (land, labor, and capital) are assumed to be mobile across sectors within a country but immobile across borders. Aggregate household expenditure is determined as a constant share of total regional income. The household maximizes utility subject to its expenditure constraints. The constant difference of elasticities (CDE) consumer demand system is designed to capture differential price and income responsiveness across countries. International trade is linked through Armington substitution and aggregated by constant elasticity of substitution (CES) composite import function. Product differentiation between imports by region of origin allows for two-way trade across regions in each tradable product. For the GTAP model, see the GTAP website, https://www.gtap.agecon.purdue.edu/

takes into account the positive relationship between trade, investment and growth, and is especially relevant for the high-savings, high-investment economies of East Asia where capital accumulation has been a major source of economic growth. The standard GTAP model has been modified to capture medium-run growth effects of trade liberalization. That is, this second CGE model incorporates possible changes to capital formation due to FTAs. Baldwin (1989, 1992) suggests that static efficiency gains induce higher savings and investment, which in turn yield more output. Francois et al. (1999) present a useful approach to capture the capital accumulation effects of trade liberalization in the context of the neoclassical growth model. Following Francois et al. (1999), we assume that economies are initially in a steady state. Under this assumption, the magnitudes of changes in the capital stock and output can be obtained by comparing two steady states.

With respect to data, the world economy was aggregated into 10 sectors and 7 regions in our CGE model analysis. They are described in Table 6. The social accounting data are based on the GTAP version 7 database which provides global production and trade data with 2004 as a base year. In order to quantitatively measure the effects of the various potential FTAs in East Asia, we assume that both import tariffs and export taxes between members are eliminated, but trade barriers between members and nonmembers remain.

Table 6. Model Aggregations

Economies	Sectors
ASEAN (9)*: Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam China Japan Korea EU (27) NAFTA (3): Canada, USA, Mexico ROW	Agriculture/Fishing/Forestry Beverage and food products Textile and apparel Chemical products Metal and steel products Vehicle and other transport equipments Electronic products Machinery Other manufactures Services

Note: *Brunei Darussalam is excluded because of the data limitation in GTAP.

We now report and discuss the results of applying the CGE model to assess the output and welfare effect of the various proposed FTAs, which are shown in Table 7. We first look at the results of the static CGE model, which looks at the static or one-off effects of the FTAs. ACFTA delivers higher GDP gains for ASEAN, relative to the baseline, than either AJFTA or AKFTA. ACFTA also delivers higher GDP gains for ASEAN than A+3FTA. From the viewpoint of the Big Three, AKFTA delivers bigger GDP gains for Korea than ACFTA for China or AJFTA for Japan. For both Japan and Korea, A+3FTA delivers bigger GDP gains than their respective bilateral FTAs with ASEAN. In terms of welfare gains, ACFTA is more beneficial for ASEAN than AJFTA or AKFTA but A+3FTA is the most beneficial for all. Among the three bilateral FTAs, Korea experiences the highest welfare gains in percentage terms while Japan is the biggest welfare winner in dollar value terms. Both Japan and

Table 7. Output and Welfare Effects of ACFTA, AJFTA, AKFTA and A+3FTA

ASEAN-China FTA						
	Static CGE model			Capital accumulation CGE model		
	GDP (%)	Welfare (%)	Welfare (US$ million)	GDP (%)	Welfare (%)	Welfare (US$ million)
ASEAN	0.65	0.31	2,104	1.34	1.09	7,444
China	0.57	0.13	1,942	0.90	0.46	6,981
Japan	-0.15	-0.03	-1,092	-0.16	-0.05	-1,807
Korea	-0.29	-0.12	-688	-0.37	-0.20	-1,200
ASEAN-Japan FTA						
	Static CGE model			Capital accumulation CGE model		
	GDP (%)	Welfare (%)	Welfare (US$ million)	GDP (%)	Welfare (%)	Welfare (US$ million)
ASEAN	-0.13	0.19	1,317	0.87	1.33	9,091
Japan	0.65	0.10	3,824	0.69	0.17	6,705
China	-0.19	-0.06	-966	-0.21	-0.09	-1,417
Korea	-0.20	-0.07	-447	-0.25	-0.13	-747
ASEAN-Korea FTA						
	Static CGE model			Capital accumulation CGE model		
	GDP (%)	Welfare (%)	Welfare (US$ million)	GDP (%)	Welfare (%)	Welfare (US$ million)
ASEAN	0.16	0.15	993	0.49	0.53	3,616
Korea	1.40	0.44	2,606	1.90	0.97	5,775
China	-0.11	-0.05	-716	-0.12	-0.07	-1,021
Japan	-0.07	-0.01	-471	-0.06	-0.01	-409
ASEAN+3 FTA						
	Static CGE model			Capital accumulation CGE model		
	GDP (%)	Welfare (%)	Welfare (US$ million)	GDP (%)	Welfare (%)	Welfare (US$ million)
ASEAN	0.15	0.44	3,010	1.83	2.36	16,179
China	0.53	0.04	674	1.30	0.81	12,260
Japan	1.51	0.25	9,850	1.54	0.40	15,844
Korea	2.76	0.91	5,442	4.31	2.54	15,157

Note: '%' refers to percentage deviation from the baseline and `US$ million' refers to the value of deviation from the baseline. Estimated GDP and welfare effects of the FTAs on NAFTA, EU and rest of the world are available from authors upon request.

Source: Authors' estimates

Korea enjoy higher welfare gains from A+3FTA than from their bilateral FTAs with ASEAN. However, for China, the welfare gains from ACFTA are substantially higher than those from A+3FTA. Overall, the results imply that ASEAN, Japan and Korea would prefer A+3FTA whereas China would prefer ACFTA. At the same time, ASEAN's most preferred bilateral FTA is ACFTA.

We now report and discuss the results of the dynamic CGE model which incorporates the effects of FTAs on capital accumulation. As noted earlier, this model has a special resonance for East Asia, which has traditionally relied on high savings and high investment rates to power its growth. Results indicate that the positive dynamic effects of FTAs on their member-countries outweigh their static effects, consistent with a priori expectations. As in the static model, the dynamic model shows that ACFTA delivers higher GDP gains for ASEAN, relative to the baseline, than either AJFTA or AKFTA. This is indeed plausible for the following reasons: (i) ACFTA is bigger than the other two bilateral FTAs in terms of population and GDP PPP; (ii) ACFTA offers a wider scope for trade creation since China's tariffs are higher than either Korea or Japan's tariffs; (iii) there is a higher degree of complementarity between ASEAN's exports and China's imports than with either Korean or Japan's imports; and (iv) ASEAN has closer per capita incomes with China, thus, offering wider scope for intra-industry trade. However, given its size, A+3FTA delivers substantially larger GDP gains for ASEAN than ACFTA. AKFTA delivers bigger GDP gains for Korea than ACFTA for China or AJFTA for Japan, which is a reflection of how trade with ASEAN is more important for Korea than for the other two countries. Note

that the value of Korea's net exports with ASEAN is higher as a share of GDP compared to the respective shares for China and Japan. However, for all three countries. A+3FTA delivers much bigger GDP gains than their respective bilateral FTAs. In terms of welfare, AJFTA is more beneficial for ASEAN than either ACFTA or AKFTA; in the CGE's baseline year (i.e., 2004), the value of ASEAN's imports from Japan was higher than imports from China or Korea, and thus the model may be capturing marked improvements in ASEAN's welfare due to lowering of prices of imports from Japan with the tariff reductions, as well as, with improvements in productivity given enhanced competition with such a technologically advanced country as Japan. Overall, A+3FTA is the most beneficial of all on the basis of welfare changes. For all three countries, A+3FTA delivers far larger welfare gains than their respective bilateral FTAs with ASEA N.[4] Overall, the results strongly imply that A+3FTA is the most beneficial for ASEAN as well as China, Japan and Korea in terms of both GDP and welfare. Among the three bilateral FTAs, ACFTA is ASEAN's most preferred FTA in terms of GDP but AJFTA is ASEAN's most preferred FTA in terms of welfare.

4) As one of referees indicated, there is no incentive for ASEAN to move from the currently effective three bilateral FTAs with Big Three to the A+3FTA if the expansion does not generate significant additional gains to ASEAN as shown in Table 7. However, considering the negative effects of the ASEAN+1 FTAs on the Big Three and expected negative effects of possible FTA among China, Japan, and Korea on ASEAN (see Table 4 in Park 2009), the current map of the ASEAN+1 FTAs is unstable and may not be desirable for all.

V. Concluding Observations

For ASEAN, the global crisis highlighted the substantial risk of excessive dependence on exports to markets outside the region, in particular the US and EU. At a broader level, ASEAN has suffered a palpable loss of economic momentum since the Asian crisis of 1997-1998 and the rapid rise of China and India as potential competitors is also causing widespread concern within the region. As a result, ASEAN countries are actively seeking new sources of dynamism to revitalize their economies. There is no need for ASEAN to look far for potential sources of demand and growth. There are three large economies in the region's own backyard—China, Japan and Korea. China and Japan are the world's second and third largest economies and Korea also ranks among the world's fifteen biggest economies. Therefore, China, Japan and Korea are collectively large enough to offer huge potential gains from trade for ASEAN. In fact, ASEAN trades extensively with the Big Three and trade between ASEAN and each of the Big Three has grown rapidly although much of this trade is trade in parts and components which is driven by demand from outside the region. While there are elements of competition between ASEAN and the Big Three, especially China, as well as partnership, the dramatic rise of Asia as the third center of the world economy implies a corresponding expansion of the scope for intra-Asian trade.

The central objective of this paper is to qualitatively and quantitatively analyze the feasibility and desirability of four different possible options for ASEAN to further liberalize trade with the Big

Three－ACFTA, AJFTA, AKFTA and A+3FTA. According to the results of our qualitative analysis and quantitative analysis, ASEAN will gain the most from A+3FTA, which is by far the largest FTA among East Asian countries. Our finding of the primacy of A+3FTA is consistent with earlier CGE studies, as well as with economic intuition since a larger FTA generates more trade opportunities and larger dynamic efficiency gains. Among the three bilateral FTAs, the balance of evidence from both types of analysis indicates that ACFTA will deliver bigger benefits for ASEAN than AJFTA or AKFTA. However, the more fundamental finding from our analysis is that all three bilateral FTAs will deliver substantial output and welfare gains for ASEAN. China, Japan and Korean also experience sizable benefits from their bilateral FTAs, thus bilateral FTAs are in their self-interest.

In an ideal world, ASEAN and the Big Three would be working together to establish the A+3FTA which would bring together virtually all the major economies of East Asia into a single free trade area. While intra-East Asian trade integration has already reached fairly high levels, setting up the A+3FTA would give a further push to trade integration. The creation of an A+3FTA becomes even more critical as economies of large export destinations, namely, the US and EU, remain weak. There is a need to fast track initiatives toward an A+3 FTA to lessen dependence from the US and European economies and hence, vulnerability to the effects of crisis originating from those advanced economies. An A+3 FTA will provide a growing and relatively stable market for the region.

As our evidence shows, ASEAN stands to gain from free trade agreements with the Big Three. China is a vital trade partner as it

remains the center of regional production networks. While China is a key market for regional trade, Japan remains an important source of innovation and technology. Access to Japan's advanced technology through trade can help ASEAN economies move from low-skill production toward higher value production. In the same way, access to Korea's sophisticated manufacturing exports can help drive innovation within ASEAN. However, an outstanding issue is the competitiveness of ASEAN's domestic industries. Increased trade with more technologically advanced economies should be complemented by greater initiatives toward enhancing research and development within ASEAN to hasten innovation and become more competitive. ASEAN countries should also explore industry-specific policy interventions to strengthen the competitiveness of their domestic industries.

It is widely recognized that negotiating A+3FTA is much more difficult than negotiating bilateral FTAs since it requires reconciling not only the interests of ASEAN and its bilateral partner but also the interests of the Big Three, which is complicated by historical and geopolitical factors. The natural policy implication for ASEAN policy makers is to concentrate their efforts on bilateral FTAs. They have already made a lot of progress in this regard, having concluded bilateral FTAs with China, Japan, and Korea. Finally, our analysis of ASEAN's FTAs with the Big Three is predicated on the premise that ASEAN's pursuit of closer trade links with its large neighbors should not compromise its vital trade links with the outside world.

Keywords : ASEAN, China, Japan, Korea, free trade agreement, CGE model

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<국문요약>

아세안의 한중일과의 자유무역협정에 관한 정성 및 정량적 분석

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아세안은 한중일과의 무역을 통한 경제적 연계의 심화현상과 최근 글로벌 위기로 인한 경기침체를 고려하여 새로운 경제성장추진을 위해 동북아의 한중일 삼국과의 무역자유화를 적극 추진하고 있다. 이미 ASEAN-중국, ASEAN-일본, ASEAN-한국 양자간 자유무역협정(FTA)이 발효되어 실행되고 있으며, 이들 3개 양자협정을 아우르는 A+3FTA(ASEAN+중국+일본+한국) 논의도 진행중이다. 이에 본 연구는 이들 4개 자유무역협정의 경제적 효과를 분석하여 과연 A+3FTA가 아세안은 물론 동아시아 역내에서 보다 바람직한 통상정책인지를 평가한다.

본 논문의 정성적 평가는 기존의 경제통합의 경제적 효과를 결정하는 이론에 근거하여 참여국의 제반 경제적 현황(경제규모, 소득수준, 경제개발수준, 거래비용, 무역 및 산업구조, 관세율 등)을 통계적으로 비교·분석한다. 한편 정량적 평가는 무역의 경제적 파급효과 분석에 널리 이용되고 있는 연산가능한 일반균형모형(CGE)분석방법

을 적용한다. 정태적 효과의 분석을 위해서 GTAP 모형을 이용하며, 이와 더불어 동태적으로 투자를 통한 자본축적을 반영하는 자본축적 CGE 모형분석을 병행한다.

분석결과 후생 및 생산확대 측면에서 아세안의 경우 일본과의 양자간 FTA가 한국이나 중국과의 FTA에 비해 보다 긍정적인 후생증진을 가져올 것으로 기대되며, 아세안과 한중일 모두에게 A+3FTA가 동아시아 역내에서 보다 바람직한 자유무역협정이 될 것으로 평가된다.

주제어: ASEAN, 한국, 중국, 일본, 자유무역협정, CGE 모형