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**A CGE Study of Economic Impact of
Accession of Hong Kong to ASEAN-China
Free Trade Agreement**

Ken ITAKURA

Faculty of Economics, Nagoya City University, Japan

Yoshifumi FUKUNAGA

Economic Research Institute for ASEAN and East Asia (ERIA)

Ikumo ISONO

Economic Research Institute for ASEAN and East Asia (ERIA)

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Abstract: We conduct a set of global computable general equilibrium (CGE) simulations to evaluate economic effects of Hong Kong's accession to the ASEAN-China FTA (HK-ACFTA) by implementing tariff elimination, logistics enhancement, and reduction in service trade barriers. All the participating countries can benefit from the accession, resulted in higher real GDP and economic welfare. The welfare gain becomes the largest when HK-ACFTA improves the existing agreement and trade facilitation programs between ASEAN and China. The simulation results indicate that such trade facilitation could generate considerable export volume increases for both ASEAN and China.

Keywords: FTA; computable general equilibrium (CGE) model; tariff elimination; services liberalization; trade facilitation

JEL Classification: F15; F17

1. Introduction and Backgrounds

Hong Kong¹ formally requested to join the ASEAN China Free Trade Agreement (hereafter, ACFTA) in November 2011.² ASEAN Economic Ministers tasked their senior officials to study the benefits and implications of Hong Kong's accession to the ACFTA (hereafter, HK-ACFTA).³ ASEAN member states were originally expected to respond to this request at the economic ministers meeting in August 2012.⁴ However, it took longer time than that. At the ASEAN China Summit in November 2012, the Leaders called their ministers to expedite the domestic consultations and assessment process.⁵ Finally, ASEAN Leaders decided in April 2013 to pursue a bilateral FTA between ASEAN and Hong Kong, rather than having Hong Kong to accede the existing ASEAN-China FTA (ACFTA).⁶ Hong Kong is reported to be positive on this counter proposal.⁷ Nonetheless, the simulation results in this Paper have implications to the way forward of Hong Kong's regional integration with ASEAN and China as discussed in the conclusion (section 4 of this Paper).

Actually, ASEAN has been a key player in the FTA network in East Asia but has had no FTAs with Hong Kong, despite relatively large trade ties. Within ASEAN countries, there were the Common Effective Preferential Tariff (CEPT) scheme and the ASEAN Trade In Goods Agreement (ATIGA). Five ASEAN+1 FTAs have come into force, i.e., the ASEAN-Australia-New Zealand FTA (AANZFTA), the ASEAN-India FTA (AIFTA), the ASEAN-Japan Comprehensive Economic Partnership (AJCEP), the ASEAN-Republic of Korea FTA (AKFTA) and ACFTA. The Regional Comprehensive Economic Partnership (RCEP) negotiations have been launched in November 2012 by the leaders of ASEAN and 6 FTA partners. Hong Kong is currently excluded from any of these negotiations, even though she is the 8th important trade partner⁸ of ASEAN and has larger trade share than India, Australia and New Zealand.

Meanwhile, the economic impact of Hong Kong's accession to ACFTA is not straightforward. This is because Hong Kong's trade regime is free even before negotiating an FTA. As tariff is zero on the most-favored-nation basis in Hong Kong, for example, FTA does not reduce importing tariff of Hong Kong. Hong

Kong's services scheme is also known to be open and liberal.

This paper presents economic impacts of HK-ACFTA based on four potential policy scenarios. Section 2 discusses the methodology and policy scenarios. Section 3 presents the simulation results and implications. Section 4 concludes this simulation analysis.

2. Methodology

Our main objective is to quantitatively assess potential economic effects of HK-ACFTA by using a global computable general equilibrium (CGE) model of international trade. Scope of the HK-ACFTA covers all the industries in the participating economies of the ASEAN member states, China, and Hong Kong. A global CGE model can capture this multi-sector and multi-region nature of the FTA. In this section we describe the methodology adopted in our study by explaining data, model, and simulation design.

2.1. Data Inputs in this study

To reflect the current and prospective states of the global economy in our simulation, we rely on the GTAP Data Base version 8.0 (Narayanan, *et al.*, 2012) and economic forecasts from national and international organizations.

The GTAP Data Base covers the global economy with 57 sectoral details for 129 regions, and we can observe the economic structure of production, international trade and protection, and consumption corresponding to the year of 2007. The GTAP Data Base is supplemented with international factor income flows arising from holding domestic and foreign capital as assets, and it has been made available as the Dynamic GTAP Database. To reduce computational costs in time and resource, we aggregated the GTAP Data Base to 21 countries/regions and 23 sectors, and the mappings from the original data are reported in **Table 1** and **Table 2**, regional aggregation mapping and sectoral aggregation mapping, respectively.

Among the ten ASEAN member states, the GTAP Data Base covers eight countries as its individual data entry; alphabetically, Cambodia, Indonesia, Lao PDR,

Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. Because of the data limitation, Brunei and Myanmar are included in the Rest of Southeast Asia (RoSEAsia) along with Timor Leste (see **Table 1**). For the sectoral aggregation, there are eleven agricultural and resource based sectors from Rice to Minerals, seven manufacturing sectors from Apparel and OthMnfct, and service sectors from Utilities to CnstOthSrv (see **Table 2**).

Table 1: Regional Aggregation

No.	Code	GTAP 129 original regions
1	Cambodia	Cambodia.
2	Indonesia	Indonesia.
3	Lao PDR	Lao People's Democratic Republ.
4	Malaysia	Malaysia.
5	Philippines	Philippines.
6	Singapore	Singapore.
7	Thailand	Thailand.
8	VietNam	Viet Nam.
9	RoSEAsia	Rest of Southeast Asia.
10	China	China.
11	HongKong	Hong Kong.
12	Japan	Japan.
13	RoEastAsia	Korea; Mongolia; Taiwan; Rest of East Asia.
14	Oceania	Australia; New Zealand; Rest of Oceania.
15	SouthAsia	Bangladesh; India; Nepal; Pakistan; Sri Lanka; Rest of South Asia.
16	NAmerica	Canada; United States of America; Mexico; Rest of North America.
17	LatinAmer	Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Paraguay; Peru; Uruguay; Venezuela; Rest of South America; Costa Rica; Guatemala; Honduras; Nicaragua; Panama; El Salvador; Rest of Central America; Caribbean.
18	EU_25	Austria; Belgium; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Poland; Portugal; Slovakia; Slovenia; Spain; Sweden; United Kingdom.
19	MENA	Rest of Western Asia; Egypt; Morocco; Tunisia; Rest of North Africa.
20	SSA	Cameroon; Cote d'Ivoire; Ghana; Nigeria; Senegal; Rest of Western Africa; Central Africa; South Central Africa; Ethiopia; Kenya; Madagascar; Malawi; Mauritius; Mozambique; Tanzania; Uganda; Zambia; Zimbabwe; Rest of Eastern Africa; Botswana; Namibia; South Africa; Rest of South African Customs .
21	RestofWorld	Switzerland; Norway; Rest of EFTA; Albania; Bulgaria; Belarus; Croatia; Romania; Russian Federation; Ukraine; Rest of Eastern Europe; Rest of Europe; Kazakhstan; Kyrgyztan; Rest of Former Soviet Union; Armenia; Azerbaijan; Georgia; Bahrain; Iran Islamic Republic of; Israel; Kuwait; Oman; Qatar; Saudi Arabia; Turkey; United Arab Emirates; Rest of the World.

Source: GTAP Data Base version 8.0.

Table 2: Sectoral Aggregation

No.	Code	GTAP 57 original sectors
1	Rice	Paddy rice; Processed rice.
2	GrainOthFood	Wheat; Cereal grains nec; Food products nec.
3	VegeFruit	Vegetables, fruit, nuts.
4	VegeSeedsOil	Oil seeds; Vegetable oils and fats.
5	SugarCropBt	Sugar cane, sugar beet; Crops nec; Sugar; Beverages and tobacco products.
6	FiberTex	Plant-based fibers; Wool, silk-worm cocoons; Textiles.
7	MeatDairy	Cattle,sheep,goats,horses; Animal products nec; Raw milk; Meat: cattle,sheep,goats,horse; Meat products nec; Dairy products.
8	WoodPaper	Forestry; Wood products; Paper products, publishing.
9	Fishery	Fishing.
10	Energy	Coal; Oil; Gas; Petroleum, coal products.
11	Minerals	Minerals nec; Mineral products nec.
12	Apparel	Wearing apparel.
13	Chemical	Chemical,rubber,plastic prods.
14	Metal	Ferrous metals; Metals nec; Metal products.
15	Auto	Motor vehicles and parts.
16	Machinery	Transport equipment nec; Machinery and equipment nec.
17	ElecEquip	Electronic equipment.
18	OthMnfct	Leather products; Manufactures nec.
19	Utilities	Electricity; Gas manufacture, distribution; Water.
20	Trade	Trade.
21	TransComm	Transport nec; Sea transport; Air transport; Communication.
22	FinsBusi	Financial services nec; Insurance; Business services nec.
23	CnstOthSrv	Construction; Recreation and other services; PubAdmin/Defence/Health/Educat; Dwellings.

Source: GTAP Data Base version 8.0.

From the aggregated database, we can calculate useful summary economic indices. For example, nominal GDP in 2007 for the entire ASEAN is about 1.3 trillion US\$ that is more than six times bigger than Hong Kong's 207 billion US\$ (see **Table 3**). The biggest GDP component in ASEAN is export followed by import (in absolute term) and consumption, and Hong Kong has a similar structure of GDP components at smaller size.

Being export and import as important components in GDP for both ASEAN and Hong Kong, **Table 4** shows which countries/regions are the most significant trading partners for them. For ASEAN, intra regional trade has the largest share in export and import, while the trade linkages with Hong Kong are somehow insignificant. It is not surprising to observe in **Table 4** that China is the largest trading partner for Hong Kong for geographical and political proximity. However, interestingly, Hong Kong's import share from ASEAN is the third largest following China and EU. These observations on trading shares may suggest that economic impact of HK-ACFTA would have limited effects on the ASEAN's import whereas substantial change in Hong Kong's import is possible.

Table 3: GDP Components for ASEAN and Hong Kong (billion US\$, 2007)

	ASEAN	Hong Kong
Consumption	713	124
Investment	304	42
Government Expenditure	125	17
Export	889	159
Import	-735	-134
Total	1296	207

Source: GTAP Data Base version 8.0.

Table 4: Share of Trade by Trading Partner for ASEAN and Hong Kong (%)

	ASEAN		Hong Kong	
	Export Share	Import Share	Export Share	Import Share
ASEAN	17.9	21.8	7.5	15.4
China	12.9	11.9	29.8	24.1
HongKong	2.3	1.4
Japan	10.5	11.4	5.9	11.3
RoEastAsia	6.5	9.6	5	11.9
Oceania	3.9	2.9	2	2.7
SouthAsia	4.1	2.1	1.9	1.9
NAmerica	16.1	10.2	17.2	9.9
LatinAmer	1.5	1.9	2.3	1.7
EU_25	17	14.6	22.1	14.6
MENA	0.8	0.7	0.7	0.7
SSA	1.4	0.9	1.2	0.9
RestofWorld	5	10.5	4.5	5

Source: GTAP Data Base version 8.0.

Sectoral imports of ASEAN and Hong Kong is reported in **Table 5** along with corresponding average applied tariff rates. ASEAN's sectoral imports from the entire world are concentrated in Energy, Machinery, ElecEquip, and Chemical, where the average applied tariff rates are relatively low. Large sectoral imports from Hong Kong are found in similar industries. One distinctive feature of Hong Kong captured by the GTAP Data Base is the absence of trade barriers in all of the sectoral imports. Zero tariffs reported in **Table 5** do not necessarily mean that these sectors are absent from trade barriers; they may reflect a lack of information on barriers to trade expressed in the form of ad valorem tariff equivalents. We will discuss later on ad valorem tariff estimates of service trade barriers and logistic improvements.

Table 5: Sectoral Imports and Tariffs for ASEAN and Hong Kong (billion US\$, %)

	ASEAN		Hong Kong	
	Import (\$)	Tariff (%)	Import (\$)	Tariff (%)
Rice	2.3	27.3	0.2	0.0
GrainOthFood	15.4	6.2	2.5	0.0
VegeFruit	3.4	5.3	1.5	0.0
VegeSeedsOil	7.5	4.2	0.3	0.0
SugarCropBt	9.0	24.2	1.2	0.0
FiberTex	22.2	12.3	6.4	0.0
MeatDairy	8.1	4.7	3.4	0.0
WoodPaper	16.1	4.9	2.2	0.0
Fishery	0.6	2.8	0.8	0.0
Energy	106.9	1.7	9.6	0.0
Minerals	12.4	4.1	1.9	0.0
Apparel	3.5	12.3	4.0	0.0
Chemical	81.6	5.0	12.7	0.0
Metal	66.5	4.9	5.4	0.0
Auto	24.9	16.1	2.3	0.0
Machinery	127.5	2.8	13.9	0.0
ElecEquip	119.9	0.6	23.8	0.0
OthMnfct	12.5	14.6	6.3	0.0
Utilities	2.3	0.1	1.3	0.0
Trade	17.5	0.0	4.0	0.0
TransComm	32.9	0.0	13.1	0.0
FinsBusi	50.0	0.0	12.0	0.0
CnstOthSrv	18.0	0.0	5.0	0.0

Source: GTAP Data Base version 8.0.

Relative importance of Hong Kong can be measured by calculating its share in sectoral imports of ASEAN, and **Table 6** shows the results. The second column in **Table 6** lists Hong Kong's share in each of the sectoral imports to ASEAN. For example, about one fifth of ASEAN's import of TRADE service is sourced from Hong Kong, whereas SugerCropBt from Hong Kong accounts for 4.1% of its total import in ASEAN subject to 49.1% applied tariff. Most of the sectoral imports from Hong Kong are found in service sectors such as Trade, FinsBusi, and TransComm.

Table 6: Share and Tariff of Import from Hong Kong by ASEAN (%)

	ASEAN	
	Share (%)	Tariff (%)
Rice	0.0	0.0
GrainOthFood	0.1	4.1
VegeFruit	0.0	0.3
VegeSeedsOil	0.0	2.0
SugarCropBt	4.1	49.1
FiberTex	0.9	9.9
MeatDairy	0.1	0.5
WoodPaper	0.6	6.2
Fishery	0.1	2.0
Energy	0.0	0.8
Minerals	0.0	2.0
Apparel	1.4	6.5
Chemical	0.3	5.7
Metal	0.8	1.1
Auto	0.0	4.2
Machinery	0.1	2.9
ElecEquip	0.4	0.2
OthMnfct	1.5	22.0
Utilities	0.6	0.0
Trade	20.5	0.0
TransComm	4.7	0.0
FinsBusi	6.6	0.0
CnstOthSrv	1.1	0.0

Source: GTAP Data Base version 8.0.

On the other hand, relative importance of ASEAN in Hong Kong's sectoral imports is reported in **Table 7**. Significantly large sectoral import shares are found in Rice, Energy, and VegeSeedsOil from ASEAN, accounting for 50% or more. Also, there are substantially large shares observed in GrainOthFood, VegeFruit, Fishery, Chemical, ElecEquip, Trade, and FinsBusi. Being the third largest trading partner for Hong Kong, ASEAN's relative importance is also confirmed in the sectoral imports.

Table 7: Sectoral Import Share of ASEAN in Hong Kong (%)

	ASEAN
Rice	86.0
GrainOthFood	18.1
VegeFruit	20.0
VegeSeedsOil	49.2
SugarCropBt	11.8
FiberTex	5.0
MeatDairy	9.3
WoodPaper	13.1
Fishery	25.9
Energy	50.2
Minerals	3.8
Apparel	2.0
Chemical	15.4
Metal	6.1
Auto	5.5
Machinery	7.4
ElecEquip	20.9
OthMnfct	2.9
Utilities	3.5
Trade	15.3
TransComm	10.3
FinsBusi	20.2
CnstOthSrv	6.1

Source: GTAP Data Base version 8.0.

Average applied tariffs on all of the sectoral imports in Hong Kong and on service sectors in ASEAN are absent due to data limitation in the GTAP Data Base. There are elaborating estimation work by Minor and Hummels (2011) on average costs of time delays in trade, as well as Wang, *et al.* (2009) on tariff equivalents of service trade barriers.

The World Bank's Doing Business (WBDB) 2009 Survey (2010) provides us on logistic time of importing merchandise goods expressed in the number of days for 2007 benchmark year. **Table 8** shows, for example, that there would be varying time savings from 20% improvement on importing logistics. Lao PDR, being a land-lock country, would have a potential gain from such logistic improvements, more than other ASEAN member states. Hong Kong may also benefit from

efficient shipping of merchandise goods. Combining these time savings with the estimates of Minor and Hummels (2011), it is possible to simulate effects of logistic improvements under HK-ACFTA.

Table 8: Time Saving from Logistic Improvements on Imports (in number of days)

	Number of days
Cambodia	5.8
Indonesia	5.4
Lao PDR	7.4
Malaysia	2.0
Philippines	3.2
Singapore	0.8
Thailand	2.6
VietNam	4.6
RoSEAsia	4.2
China	4.8
HongKong	1.0

Source: Calculation based on (World Bank, 2010).

Trade in service sectors is an important feature between Hong Kong and ASEAN, as **Table 6** and **Table 7** indicate. Reduction in service trade barriers by implementing the HK-ACFTA would have potentially significant economic effects. In our simulation, we rely on the estimates of tariff equivalents of service trade barriers by Wang, *et al.* (2009). **Table 9** shows that there may exist considerable size of service trade barriers based on the estimation results. It should be noted that because of being set as benchmark countries, estimates for Hong Kong and Singapore are not available.

Table 9: Tariff Equivalents of Service Trade Barriers (%)

	Utilities	Trade	TransComm	FinsBusi	CnstOthSrv
Cambodia	80.7	89.1	78.4	77.4	87.0
Indonesia	178.8	185.0	167.4	159.9	181.0
Lao PDR	52.9	58.9	46.6	46.1	58.8
Malaysia	63.6	67.5	54.0	53.1	63.6
Philippines	138.0	143.4	126.6	123.2	140.2
Singapore	0.0	0.0	0.0	0.0	0.0
Thailand	97.3	110.0	96.0	93.0	107.4
VietNam	152.2	157.9	138.4	136.7	154.6
China	211.1	230.3	214.4	204.9	225.8
HongKong	0.0	0.0	0.0	0.0	0.0

Source: Calculation based on (Wang, *et al.* 2009).

To construct a baseline scenario, which is a hypothetical future state of the world economy and forms the base of comparison between simulations, we rely on the projections of population, GDP, and labor. Projections on population growth are computed from U.S. Census Bureau (2012) and aggregated for our 21 countries/regions. Projections on real GDP growth rates are from IMF (2012), and growth rates in labor are from the estimates of economically active population by ILO (2011).

2.2. Description of the Model in this study

The CGE model we used in this study is the Dynamic GTAP model, developed by Ianchovichina and McDougall (2001) and described in detail with applications in Walmsley and Ianchovichina (2012). This model extends the comparative static framework of the standard GTAP model developed by Hertel (1997) to the dynamic framework, by incorporating international capital mobility and capital accumulation. Dynamic GTAP model allows international capital mobility and capital accumulation, while it preserves all the features of the standard GTAP, such as constant returns to scale production technology, perfectly competitive markets, and product differentiation by countries of origin, so-called Armington assumption (1969). The model enhances the investment theory by incorporating international capital mobility and ownership. In this way it captures important FTA effects on investment and wealth that are missed by a static model.

Participating in a FTA could lead to more investment from abroad. Trade

liberalization often makes prices of goods in a participating country lower due to removal of tariffs, creating an increase in demand for the goods. Responding to the increased demand, production of the goods expands in the country. The expansion of production is attained by using more intermediate inputs, labor, capital, and other primary factor inputs. These increased demands for production inputs raise the corresponding prices, wage rates, and rental rates. Higher rental rates are translated into higher rates of return, attracting more investment from both home and foreign countries.

2.3. Scenarios for Simulation

There are five scenarios designed for our simulation. The baseline scenario is constructed as the first scenario to reflect a hypothetical future state prior to the Hong Kong's accession to ASEAN-China FTA over the period from 2007 to 2013. During that period, average applied tariff rates are gradually eliminated among the ASEAN member states, and between ASEAN and China as well as between China and Hong Kong (reflecting ATIGA, ACFTA, and China-Hong Kong Closer Economic Partnership Agreement (China-Hong Kong CEPA)). Logistics corresponding to these trade flows at the importer sides are assumed to gain efficiency by 20% if smooth logistic operations are fully captured. Under an assumption of weak trade facilitation arrangements⁹ and strict rule of origin¹⁰ in the existing ACFTA, logistic improvements on the route from China to ASEAN have been weakened by 10%. Logistics improvements on the route from ASEAN to China have been weakened by 12%, reflecting the fact that stock operation utilizing back-to-back certificates of origin is not currently allowed in Hong Kong, which potentially enhances ASEAN's exports to China.¹¹ Because of the ASEAN Framework Agreement on Services (AFAS) and China-Hong Kong CEPA, we assumed that tariff equivalents of service trade barriers are reduced by 20%.¹²

Four policy scenarios for the accession of Hong Kong to the ASEAN-China FTA (HK-ACFTA) are designed over the period between 2014 and 2018, and all the elimination of tariffs, logistic improvements, and reduction in tariff equivalents of service trade barriers are gradually implemented over the simulation period. A summary of the four policy scenarios is listed below:

Policy Scenarios for HK-ACFTA

P01: Tariff and Logistic+

Tariff elimination between Hong Kong and ASEAN

Logistics improvement between Hong Kong and ASEAN by 10%

Logistics improvement from ASEAN to China by 2%

(P01A: Tariff only)

Tariff elimination between Hong Kong and ASEAN only

(P01B: Tariff and Logistic)

Tariff elimination between Hong Kong and ASEAN

Logistics improvement between Hong Kong and ASEAN by 10%

P02: Tariff, Logistic++, and Service

Tariff elimination between Hong Kong and ASEAN

Logistics Between Hong Kong and ASEAN by 20%

 From ASEAN to China by 12%

 From China to ASEAN by 10%

Service Between Hong Kong and ASEAN,
 and between ASEAN and China by 20%

P01 scenarios assume that the key elements of the existing ACFTA will not be altered by Hong Kong's accession to ACFTA. Although trade facilitation effects exist, the magnitude will remain smaller than those in the ATIGA and China-Hong Kong CEPA. Thus, we assume 10% logistics improvement for trades between ASEAN and Hong Kong. In addition, Hong Kong's inclusion in the ACFTA will enable efficient stock operation in Hong Kong for ASEAN's exports to China (Shiino, 2013): additional 2% logistics improvement. Services liberalization will not provide meaningful WTO-plus commitments, and therefore we assumed no improvement for trade in services. P01A, P01B, and P01 are computed separately to determine the contribution of the three effects: tariff elimination; logistics improvement; and additional logistics improvement due to back-to-back certificates of origin.

In P02 scenario, we assume that Hong Kong's accession to the ACFTA will practically yield opportunities to ASEAN and China to revise and substantially

improve the existing agreement and trade facilitation programs. In other words, trade facilitation program among ASEAN, China, and Hong Kong will become as rich as the ASEAN trade facilitation programs, e.g., adopting ‘co-equal rule’ in rules of origin, ASEAN Single Window, and ASEAN Harmonized Tariff Nomenclature. Also, rules of origin in the ACFTA will become as liberal as in ATIGA and other ASEAN+1 FTAs. Lastly, the level of services liberalization will become much higher than the existing ACFTA, and will become as comprehensive as AFAS.

3. Simulation Results

Before discussing the simulation results obtained from the policy scenarios, we need to note again the unique economic characteristics of Hong Kong. Average applied tariffs in sectoral imports of Hong Kong are zero, so are tariff equivalents of service trade barriers. Production structure in Hong Kong is heavily skewed toward service sectors. Outputs of service sectors account for 80% of total outputs in Hong Kong, and Trade and CnsOthSrv hire more than 45% of production factor inputs. About 80 % of CnstOthSrv output are used in fixed capital formation for investment. This uniqueness of Hong Kong would affect simulation results.

All the simulation results reported in the following tables are in terms of percentage point differences from the baseline scenario, accumulated over the simulation period from 2014 to 2020. In other words, deviation from the baseline will result from the implementation of the HK-ACFTA policy scenarios, and there are three components driving such simulation results: tariff eliminations (“Tariffs” for label), logistic improvements (“Logistics”), and reduction in tariff equivalents of service trade barriers (“Service”). Logistic improvements are distinguished by their degree in reduction “Logistic” for P01B, “Logistic+” for P01, and “Logistic++” for P02.

Simulation results of HK-ACFTA on real GDP are reported in **Table 10**. Starting with the policy scenario of P01A (“Tariff”), economic impacts on real GDP for the participating economies in HK-ACFTA are very small and insignificant except for Viet Nam in which real GDP resulted in 0.18 percentage point higher than

the baseline scenario by 2020. Although it is small, the gain in GDP of Viet Nam is coming from the reform by allocating production resources more efficiently as its tariffs are gradually lowered. This scenario P01A is only implemented with tariff eliminations that applied only to the ASEAN member states. Since Hong Kong does not have any tariff and China is assumed to establish FTA with ASEAN and Hong Kong, average applied tariffs to be eliminated remain only on the ASEAN side. However, imports from Hong Kong to ASEAN account for only a small fraction of the total import, thereby the resulting impacts are insignificant for many ASEAN countries.

**Table 10: Result on GDP, 2020
(percentage point cumulative deviation from the baseline)**

	P01	P01A	P01B	P02
Cambodia	-0.04	-0.02	-0.03	0.54
Indonesia	0.02	0.00	0.00	0.37
Lao PDR	0.00	0.00	0.00	0.18
Malaysia	0.04	0.00	0.01	0.46
Philippines	0.03	0.00	0.01	0.32
Singapore	0.03	0.00	0.00	0.26
Thailand	0.05	0.02	0.02	0.44
VietNam	0.20	0.18	0.19	1.31
RoSEAsia	0.01	0.00	0.00	0.41
China	0.01	0.00	0.00	0.11
HongKong	0.10	0.04	0.10	0.14

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors' simulation results.

In the P01B policy scenario, the inclusion of logistic improvements by 10% between Hong Kong and ASEAN marginally contributes to Hong Kong and a few ASEAN member states. By allowing a little progress on stock operations using back-to-back certificates of origin between ASEAN and China under the P01 scenario, positive impacts on GDP become more visible for many ASEAN member states as well as China, yet their magnitudes are still limited. Negative sign observed for Cambodia is due to worsening terms of trade.

Significance of reduction in tariff equivalents of service trade barriers has emerged with larger impacts under the policy scenario of P02. All of the

participating economies in HK-ACFTA result in higher GDP, led by Viet Nam, Cambodia, and Malaysia. Recall that ASEAN’s sectoral imports from Hong Kong concentrate in service sectors; therefore reducing impediments in service trade play a remarkable role in generating benefits for the ASEAN member states. This can also be seen in **Table 11** for the results on investment. Logistic improvements and service trade reforms also take place between ASEAN and China, which in turn generate further gains.

Impact on investment under the scenario P02 is positive for all the countries as compared to the baseline (**Table 11**). As HK-ACFTA implements the liberalization of tariffs, logistic improvements, and especially reduction in the tariff equivalents of service trade barriers, favorable results of investment emerge for all the countries. This point is also confirmed by the simulation results on foreign ownership of capital stock reported in **Table 12**. The foreign ownership of capital stock increases in all participating countries of HK-ACFTA (P02), indicating that they attract more investment from abroad.

Table 11: Result on Investment
(percentage point cumulative deviation from the baseline)

	P01	P01A	P01B	P02
Cambodia	-0.25	-0.16	-0.18	1.01
Indonesia	0.08	0.00	0.00	1.19
Lao PDR	0.00	0.02	0.02	0.08
Malaysia	0.20	0.00	0.02	1.63
Philippines	0.11	0.00	0.02	0.98
Singapore	0.17	-0.01	0.02	1.16
Thailand	0.19	0.03	0.05	1.31
VietNam	0.42	0.31	0.33	4.73
RoSEAsia	0.02	0.01	0.00	1.27
China	0.02	-0.01	-0.01	0.24
HongKong	0.30	0.20	0.30	0.34

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors’ simulation results.

**Table 12: Result on Foreign Ownership of Capital
(percentage point cumulative deviation from the baseline)**

	P01	P01A	P01B	P02
Cambodia	-0.23	-0.19	-0.20	0.43
Indonesia	0.11	-0.01	0.00	1.11
Lao PDR	-0.01	0.00	0.00	0.26
Malaysia	0.20	0.00	0.01	1.33
Philippines	0.14	0.00	0.02	0.97
Singapore	0.19	-0.02	0.02	1.26
Thailand	0.24	0.01	0.04	1.63
VietNam	0.28	0.20	0.21	2.42
RoSEAsia	0.04	0.00	0.00	1.04
China	0.02	-0.01	-0.01	0.28
HongKong	0.35	0.26	0.35	0.42

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors' simulation results.

Impacts of the P02 policy scenario on export volume are mixed among ASEAN member states as shown in **Table 13**. By a closer look into the results, ASEAN as a whole actually increases its export volume (**Table 14**). Exports from ASEAN to China increase by 34 billion US\$, re-directing exports from intra-ASEAN trade. Logistic and service trade upgrades in China positively contribute to ASEAN's export volume increase, notwithstanding negative effects of diverting the intra-ASEAN export. **Table 15** reports the simulation results on import volume. Except for Lao PDR, under the policy scenario P02, all the participating countries observe increases in imports. Import in Lao PDR has a mixed picture similar to export, that rise in import from China was offset by fall in import from the ASEAN partners.

Table 13: Result on Export
(percentage point cumulative deviation from the baseline)

	P01	P01A	P01B	P02
Cambodia	-0.12	-0.11	-0.12	0.16
Indonesia	-0.01	0.00	0.00	-0.11
Laos	-0.03	0.00	0.00	-0.29
Malaysia	0.06	0.01	0.01	0.48
Philippines	0.06	0.02	0.02	0.40
Singapore	0.22	0.00	0.06	0.92
Thailand	0.05	0.02	0.03	0.29
VietNam	0.24	0.21	0.21	1.26
RoSEAsia	0.02	0.00	0.00	0.27
China	0.03	-0.01	-0.01	0.43
HongKong	-0.01	0.02	-0.01	-0.02

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors' simulation results.

Table 14: Decomposition of Impact on Export under the Scenario P02
(cumulative deviation from the baseline, evaluated at 2020, Billion US\$)

	ASEAN	China	HongKong	Other	Total
ASEAN	-11	34	1	-14	10
China	24	0	0	-10	14
HongKong	2	-1	0	0	0
Other	6	-15	0	9	0

Source: Authors' simulation results.

Table 15: Result on Import
(percentage point cumulative deviation from the baseline)

	P01	P01A	P01B	P02
Cambodia	-0.32	-0.26	-0.28	0.09
Indonesia	0.09	0.00	0.00	1.20
Laos PDR	-0.06	0.02	0.01	-0.45
Malaysia	0.14	0.00	0.01	1.01
Philippines	0.15	0.01	0.04	1.01
Singapore	0.30	0.00	0.07	1.41
Thailand	0.17	0.02	0.04	1.10
VietNam	0.27	0.21	0.22	1.86
RoSEAsia	0.03	0.01	0.01	0.74
China	0.04	-0.02	-0.03	0.68
HongKong	0.25	0.21	0.25	0.25

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors' simulation results.

The overall impact of the HK-ACFTA is summarized by economic welfare as reported in **Table 16**. Tariff eliminations between ASEAN and Hong Kong generate limited and marginal effects for the participating counties. Logistic improvements have additional gains to welfare even though their contributions still remain minuscule. Larger gains in welfare come from committing in service trade reform for all the countries, where the gains in welfare exhibit substantial positive effects. Hong Kong, as a special case with no estimate of service trade barrier, even shows positive impact of accession to the HK-ACFTA. However, once a set of estimates of trade barriers of Hong Kong becomes available, it is not hard to expect that the simulation would result in larger gains for Hong Kong, as well as for other countries.

Table 16: Result on Welfare
(percentage point cumulative deviation from the baseline)

	P01	P01A	P01B	P02
Cambodia	-0.21	-0.17	-0.19	0.13
Indonesia	0.02	0.00	0.00	0.35
Lao PDR	-0.02	0.00	0.00	0.16
Malaysia	0.06	-0.01	0.00	0.53
Philippines	0.05	0.00	0.01	0.43
Singapore	0.09	0.00	0.01	0.59
Thailand	0.09	0.00	0.01	0.70
VietNam	0.12	0.09	0.10	0.92
RoSEAsia	0.00	0.00	0.00	0.24
China	0.00	0.00	-0.01	0.11
HongKong	0.14	0.09	0.14	0.20

Note: P01 (Tariff and Logistic+), P01A (Tariff), P01B (Tariff and Logistic), P02 (Tariff, Logistic++, and Service).

Source: Authors' simulation results.

4. Conclusion

We conducted a set of CGE simulations to evaluate economic effects of Hong Kong's accession to the ASEAN-China FTA by implementing tariff elimination, logistic improvement, and reduction in service trade barriers. Once all of these liberalization components are included in the HK-ACFTA, all the participating countries can benefit from the FTA, resulting in higher real GDP and economic welfare. Among the liberalization components, reducing tariff equivalents of service trade barriers has the largest effects, partly reflecting the uniqueness of Hong Kong's free and service oriented economic structure.

In the policy scenario design (P02), HK-ACFTA improves the existing agreement and trade facilitation programs between ASEAN and China. This can be interpreted so as for trade facilitation between ASEAN, China and Hong Kong to become as rich as the ASEAN trade facilitation programs. Simulation results indicate that such trade facilitation could generate considerable export volume increases between ASEAN and China, while there would be diverting effect on intra-ASEAN trade.

After consideration of Hong Kong's proposal for almost two years, ASEAN offered a counter proposal of ASEAN Hong Kong FTA, instead of Hong Kong's accession to the ACFTA. Thus, HK-ACFTA is not a viable policy option any longer. However, the simulation results in the above sections suggest the following policy implications.

1. Most of the potential effects that we estimated cannot be realized in the formation of ASEAN Hong Kong FTA. First, logistics improvement due to efficient stock operation in Hong Kong will not be achieved as Hong Kong and China will not be linked in one FTA. Second, the improvement of levels of trade in services liberalization and trade facilitation between ASEAN and China is not achievable without China.
2. On the other hand, ASEAN Hong Kong FTA will pave the way for Hong Kong to join the RCEP negotiation at later stage as RCEP membership requires the existence of ASEAN+1 FTA (i.e., ASEAN Hong Kong FTA). If Hong Kong joins the RCEP, the sources of potential economic gains can be realized but probably at a later timing than the one under the HK-ACFTA.

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ENDNOTES

- ¹ In international trade, Hong Kong is a WTO member registered as “Hong Kong, China” separately from “China” for the Mainland. In this Article, we use “Hong Kong” for simplicity.
- ² Government of Hong Kong, Free Trade Area Can Benefit from HK’s Inclusion (27 September, 2012), available at http://www.news.gov.hk/en/record/html/2012/09/20120927_190736.shtml (last visited 4 April, 2013).
- ³ Brunei Times (17 November, 2011).
- ⁴ Xinhua News (28 August, 2012).
- ⁵ Chairman’s Statement of the 15th ASEAN-China Summit, Phnom Penh, Cambodia, 19 November 2012.
- ⁶ The 22nd ASEAN Summit in April 2013 “welcome[d] the decision of the ASEAN Economic Ministers to engage Hong Kong on a bilateral basis for an ASEAN-Hong Kong Free Trade Agreement that will be mutually beneficial for our people.” (Chairman’s Statement of The 22nd ASEAN Summit, “Our People, Our Future Together”, Bandar Seri Begawan 24-25 April 2013).
- ⁷ Brunei Times (29 April, 2013).
- ⁸ Following ASEAN itself; China; EU27; Japan; the United States; South Korea; and Taipei, China, in 2011.
- ⁹ While ACFTA provides trade facilitation provisions such as customs procedures and cooperation, it lacks specific and detailed provisions when compared with ASEAN’s initiatives (Wong and Pellán 2012). Trade and investment facilitation is one of the three key areas together with trade in goods and trade in services under CEPA.
- ¹⁰ ACFTA uses “RVC40” as a general rule in its rules of origin, which is relatively strict

compared with ATIGA and other ASEAN+1 FTAs (Fukunaga and Isono, 2013).

¹¹ Shiino (2013) explains the function and rationale of the movement certificate under the current ACFTA (i.e., back-to-back certificate of origin) as well as potential impacts of Hong Kong's accession to ACFTA from this perspective. Hong Kong is well located to provide efficient stock operation function for ASEAN's exports to China. On the other hand, Singapore is already providing such a function for China's exports to ASEAN.

¹² Although ACFTA has a services agreement, it does not provide much deeper commitments than the members' commitments to the WTO (Fukunaga and Isono, 2013). Thus, we did not assume services aspect for the ACFTA. Services schedules in CEPA do not follow GATS formats, and thus it is hard to compare the liberalization levels with others. However, it is generally perceived to be "most substantial progresses" (Wang, 2011).

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