The Relative Significance of EPAs in Asia-Pacific

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Abstract

This paper analyzes the relative significance of regional Economic Partnership Agreements (EPAs) in Asia-Pacific. The economy-wide impacts of tariff removals and reductions in non-tariff measures (NTMs) are estimated by using a Computable General Equilibrium (CGE) model of global trade. The Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP) are shown to complement each other rather than be competitors. The income gains of Asia-Pacific Economic Cooperation (APEC) economies as a whole account for 1.2 per cent of regional GDP by the TPP, 2.1 per cent by the RCEP, and 4.3 per cent by the Free Trade Area of the Asia-Pacific (FTAAP). Meanwhile, larger economic benefits are expected from NTMs reductions in addition to tariff removals. It is thus essential to reform domestic markets in order to enjoy greater economic benefits from international EPAs.

I. Introduction

The progress of bilateral and multilateral regional Economic Partnership Agreements (EPAs) has accelerated since the beginning of 2013 when the three largest advanced economies—the United States (US), the European Union (EU), and Japan—launched negotiations on giant triangle EPAs. In Asia-Pacific, formal negotiations on the Regional Comprehensive Economic Partnership (RCEP) began in May 2013, while Japan joined Trans-Pacific Partnership (TPP) negotiations in July of that year.

The frequently asked question about the recent framework of Asia-Pacific EPAs has been whether the TPP and the RCEP are competitors or complements? The brief answer to this question is that they are the latter. Indeed, it is generally expected that the greater the number of regional EPA members, the larger the macroeconomic benefits are. Both the TPP and the RCEP are key elements to achieving the ultimate goal of forming the Free Trade Area of the Asia-Pacific (FTAAP). Although they may compete with one another from the perspective of geopolitical interests, this will result in complementary economic benefits.

Nevertheless, the current frameworks of the TPP and the RCEP are both lacking one of the two largest economies in Asia-Pacific. The roles of the US in the TPP and China in the RCEP for generating economic benefits have related to both geopolitics and economics. This paper thus examines the breakdown of economic benefits from EPAs by the contributing economies.

Leaders of TPP negotiations economies have announced in Trans-Pacific Partnership Leaders Statement on November 12, 2011 that a "common vision to establish a comprehensive, next-generation regional agreement that liberalizes trade and investment and addresses new and traditional trade issues and 21st-century challenges" for "forging close linkages among their economies, enhancing their competitiveness, benefitting their consumers, and supporting the creation and retention of jobs, higher living standards, and the reduction of poverty in their countries." Therefore, because reductions in non-tariff measures (NTMs) will be significant elements of future agreements, this paper also estimates the economic impacts of NTMs reductions in addition to those of tariff removals.

This paper finally quantifies the relative significance of Asia-Pacific EPAs by using a Computable General Equilibrium (CGE) model of global trade based on the most updated version of the global trade and trade protection database. The remainder

Chart 1 The Asia-Pacific integration framework

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                          ┌──────────── APEC ──────────┐
          ┌──────────────────┐                            ┌────── RCEP ──────┐
          │ Hong Kong, China │                  ┌──────────┐
          │  Chinese Taipei  │                  │  China   │
          │      Russia      │                  │  Korea   │
          │        ┌───────── TPP ─────────┐    │          │
          │        │        US              │   │  Japan   │      India
          │        │      Canada            │   │ Australia │
          │        │      Mexico            │   │New Zealand│
          │        │       Chile            │   │    ┌──────── ASEAN ────────┐
          │        │       Peru             │   │    │  Burunei              │
          │        │                        │   │    │  Malaysia             │
          │        │                        │   │    │  Singapore            │
          │        │                        │   │    │  Viet Nam             │
          │        │ Papua New Guinea       │   │    │ Indonesia    Cambodia │
          │        │                        │   │    │ Philippines    Laos   │
          │        │                        │   │    │ Thailand      Myanmar │
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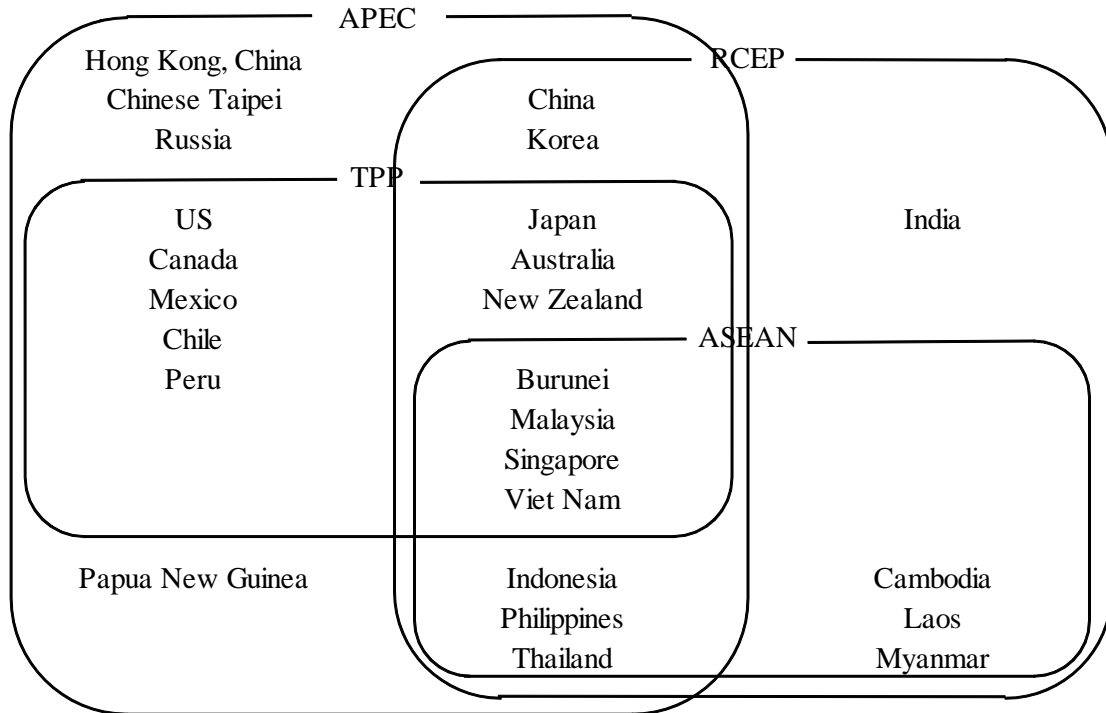
Source: Author

of this paper is organized as follows.   After the overview of the development of EPAs and trends of production and trade in Asia-Pacific in Chapter II, the impacts of Asia-Pacific EPAs are discussed in Chapter III including the data used, modeling methodology employed, and policy scenarios studied.   The relative contributions of member economies are analyzed in Chapter IV from a geopolitical perspective.   The paper draws conclusions in Chapter V.   The framework of the CGE model employed for the simulation experiments in this paper is presented in Annex I.

II. The Development of Production and Trade in Asia-Pacific

In addition to global trade liberalization, regional efforts toward free trade have been made through regional and bilateral free trade agreements.   Several regional agreements exist in Asia-Pacific Economic Cooperation (APEC) economies including the Association of South-East Asian Nations (ASEAN), which has been central to EPAs in East Asia, the North American Free Trade Agreement (NAFTA) that came into force in 1994, and the China–ASEAN Free Trade Agreement that came into effect in 2005 for goods and 2007 for services.

Table 1 GDP of the Asia-Pacific economies

	GDP (USD bil.)		World Share (%)	
	2007	2010	2007	2010
Both TPP and RCEP Economies	5,881	7,463	10.6	11.8
Japan	4,356	5,489	7.8	8.7
Brunei	12	12	0.0	0.0
Malaysia	187	247	0.3	0.4
Singapore	178	227	0.3	0.4
Viet Nam	71	104	0.1	0.2
Australia	946	1,244	1.7	2.0
New Zealand	132	140	0.2	0.2
Only TPP Economies	16,768	17,481	30.1	27.7
US	14,029	14,499	25.2	22.9
Canada	1,424	1,577	2.6	2.5
Mexico	1,035	1,035	1.9	1.6
Chile	173	216	0.3	0.3
Peru	107	154	0.2	0.2
Only RCEP Economies	6,558	9,866	11.8	15.6
China	3,494	5,930	6.3	9.4
Korea	1,049	1,015	1.9	1.6
Indonesia	432	708	0.8	1.1
Philippines	149	200	0.3	0.3
Thailand	247	319	0.4	0.5
Cambodia	9	11	0.0	0.0
Laos	4	7	0.0	0.0
Mymmar	20	45	0.0	0.1
India	1,153	1,630	2.1	2.6
Other APEC Economies	607	664	1.1	1.1
Hong Kong, China	207	224	0.4	0.4
Chinese Taipei	393	430	0.7	0.7
Papua New Guinea	6	10	0.0	0.0
Russia	1,300	1,487	2.3	2.4
TPP Economies	22,649	24,945	40.7	39.5
RCEP Economies	12,439	17,329	22.3	27.4
APEC Economies	28,628	33,781	51.4	53.5
World	55,685	63,180	100.0	100.0

Source: IMF Data and Statistics

Other such agreements include the Japan ASEAN Comprehensive EPA that came into force in 2008, the Korea–ASEAN Free Trade Agreement completed in 2009, the ASEAN–Australia and New Zealand Free Trade Agreement signed in 2009, and the Trans-Pacific Strategic EPA (P4 Agreement) between New Zealand, Brunei, Chile, and

Table 2 Trade of the Asia-Pacific economies

	Exports	Imports	Exports	Imports
	(USD bil.)		World Share (%)	
Both TPP and RCEP Economies	1,396	1,313	9.4	8.6
Japan	742	709	5.0	4.6
Malaysia	196	148	1.3	1.0
Singapore	205	184	1.4	1.2
Viet Nam	53	64	0.4	0.4
Australia	167	174	1.1	1.1
New Zealand	33	34	0.2	0.2
Only TPP Economies	2,153	2,956	14.6	19.3
US	1,366	2,226	9.2	14.5
Canada	415	414	2.8	2.7
Mexico	273	245	1.8	1.6
Chile	69	51	0.5	0.3
Peru	30	21	0.2	0.1
Only RCEP Economies	2,235	2,018	15.1	13.2
China	1,223	989	8.3	6.5
Korea	405	408	2.7	2.7
Indonesia	129	107	0.9	0.7
Philippines	73	67	0.5	0.4
Thailand	177	149	1.2	1.0
Cambodia	6	6	0.0	0.0
Laos	1	2	0.0	0.0
India	222	290	1.5	1.9
Other APEC Economies	799	639	5.4	4.2
Hong Kong, China	143	134	1.0	0.9
Chinese Taipei	278	226	1.9	1.5
Russia	377	278	2.6	1.8
TPP Economies	3,550	4,269	24.0	27.9
RCEP Economies	3,632	3,330	24.6	21.7
APEC Economies	6,355	6,628	43.0	43.3
World	14,779	15,321	100.0	100.0

Source: GTAP database 8.1

Singapore concluded in 2005.

Moreover, RCEP negotiations started in May 2013 following the development of two free trade agreements in East Asia, namely the East Asia Free Trade Agreement (EAFTA) between ASEAN and China, Japan, and Korea, and the Comprehensive Economic Partnership in East Asia (CEPEA) that covers ASEAN, Australia, China, India, Japan, Korea, and New Zealand.   Japan joined the TPP negotiations in July 2013

as the 12th member, which is an expansion of the P4 Agreement that already includes the US, Australia, Peru, Viet Nam, Malaysia, Canada, and Mexico.

APEC economies are the fastest-growing regions in the world, with the region's proportion of global GDP rising above 50 per cent in 2010 (Table 1). TPP economies account for approximately 40 per cent of global GDP compared to more than 20 per cent for the largest economy (the US). Meanwhile, RCEP economies account for approximately 30 per cent of global GDP, with China and Japan each having a proportion of approximately 10 per cent alongside India and three ASEAN countries that are not APEC member economies.

The exports and imports of APEC economies are also rising (see Table 2). However, in comparison with GDP, these trade ratios are somewhat lower because of the lower trade ratios in larger economies such as the US, China, and Japan. Higher trade ratios are a common feature of smaller APEC economies.

III. The Impacts of EPAs in Asia-Pacific

1. Trade Protection Data

The impacts of tariff removals and NTMs reductions through the implementation of EPAs can closely be determined by actual trade structures and the magnitudes of those policy measures, in addition to the comparative regional advantage of these sectors, which is suggested to be a key factor in standard trade theory. The magnitudes of import protection in terms of import tariffs and NTMs in this study are shown in Table 3.

The tariff data used in this paper are derived from the current Global Trade Analysis Project (GTAP) database (version 8.1) without any modifications. They are expressed in the form of ad valorem equivalent (AVE) tariffs. After the update of the database in version 8.0 released in March 2012, serious data issues were addressed in version 8.1 released in February 2013. Major changes/fixes were found for the tariffs imposed by China, Korea, and, to some extent, Switzerland. Earlier simulation studies based on data derived from the 8.0 database might thus have overestimated the impact of tariff removals in China and Korea because of significantly higher tariff data that were subsequently revised downward in the 8.1 database.

Table 3 Import protection by the Asia-Pacific economies

	Tariff (%)			NTMs (%)			
	Agr	Mfg	Ave	Agr	Mfg	Ser	Ave*
Both TPP and RCEP Economies	10.3	1.9	2.8	28.0	7.6	9.6	9.7
Japan	13.1	0.8	2.3	23.6	3.8	6.2	6.2
Malaysia	7.8	3.1	3.5	44.8	22.1	23.9	23.8
Singapore	0.2	0.0	0.0	52.3	12.7	14.0	14.5
Viet Nam**	12.4	10.3	10.5	28.9	9.6	11.5	11.8
Australia	2.0	3.8	3.6	28.8	4.2	6.0	6.1
New Zealand	1.3	2.5	2.4	23.0	7.3	9.7	9.3
Only TPP Economies	3.2	1.3	1.5	15.5	3.9	4.7	4.9
US	1.7	1.2	1.2	14.8	3.3	4.4	4.3
Canada	9.3	1.0	1.8	11.4	2.4	3.3	3.3
Mexico	3.7	2.4	2.5	26.1	12.3	13.6	13.6
Chile	1.5	1.5	1.5	17.2	1.3	2.5	2.6
Peru	6.6	5.6	5.7	22.5	2.9	6.9	5.7
Only RCEP Economies	14.4	5.1	5.7	10.5	3.9	3.7	4.2
China	5.2	4.2	4.2	6.1	5.1	5.2	5.2
Korea	23.5	3.4	4.7	0.6	0.1	0.1	0.1
Indonesia	5.9	3.1	3.4	11.5	0.5	1.3	1.7
Philippines	10.9	2.8	3.6	34.3	15.4	18.0	17.3
Thailand	12.2	4.8	5.3	24.9	0.6	2.5	2.2
Cambodia**	14.1	10.5	10.9	28.9	9.6	11.5	11.8
Laos**	7.0	8.1	8.0	28.9	9.6	11.5	12.1
India	52.9	12.0	13.8	26.2	4.8	5.5	5.7
Other APEC Economies	10.5	4.3	5.0	19.0	5.4	6.6	6.8
Hong Kong, China	0.0	0.0	0.0	20.3	0.8	1.3	2.4
Chinese Taipei***	9.0	2.4	2.8	23.6	3.8	6.2	5.0
Russia	14.4	8.1	9.1	16.9	9.2	10.4	10.4
TPP Economies	5.6	1.5	1.8	19.7	5.0	6.4	6.4
RCEP Economies	12.4	3.9	4.6	20.9	6.5	8.3	7.7
APEC Economies	7.1	2.4	2.8	17.4	4.7	5.7	5.8
World	6.0	2.3	2.7	n.a	n.a	n.a	n.a

Source: GTAP database 8.1 & World Bank (2012)

* Recalculated using the trade weights in the GTAP database.

** NTMs are assumed to be the average of Indonesia, Malaysia, Thailand and the Philippines.

*** NTMs are assumed to be equal to Japan.

Trade liberalization has been widely promoted in the global economy during the past several decades.　However, according to version 8.1 of the GTAP database, an import tariff of approximately 2.7 per cent remained in world trade on average in 2007 and 2.8 per cent in APEC economies.[1]　By economy, trade barriers are lower in North

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[1] It may be noted that this figure is weighted by the actual volume of imports.　If the import

America and free trade is mostly realized in Hong Kong, China; and Singapore. However, higher tariffs are still generally observed in developing and emerging economies. Further, tariff levels are shown to be higher in RCEP economies on average than they are in TPP economies. By commodity, tariffs are higher in primary products and food ("Agr" in Table 3) than other manufacturing products ("Mfg").

According to earlier studies such as Ecorys (2009) and Copenhagen Economics (2010), NTMs are defined as all non-price and non-quantity restrictions on trade in goods, services, and investment at the federal and state levels. This includes border measures (customs procedures, etc.) as well as behind-the-border measures that flow from domestic laws, regulations, and practices. These measures induce additional costs for foreign producers and therefore increase the cost of cross-border trade.

Data on the AVEs of NTMs are guided by the Overall Trade Restrictiveness Index provided by the World Bank (2012),[2] which summarizes the trade policy stance of a country by calculating the uniform tariff that will keep its overall imports at their current level when the country has different tariffs for different goods. Those in service sectors are assumed to be at the average of goods sectors in this paper.

The levels of the AVEs of NTMs have been found to be two to three times higher than tariffs in APEC economies in general. By economy, NTMs are higher in Mexico, Russia, and several ASEAN countries including Singapore, which operates no tariff system. The averages in RCEP economies are also higher than those in TPP economies but the relative differences are smaller than those for tariffs. By commodity, NTMs are much higher in agricultural products than they are in manufacturing products.

2. Methodology for Model Simulations

In addition to the quantification of trade protection measures by tariffs and NTMs, the methodology for incorporating those measures into simulation studies by adding exogenous shocks into the model structure must be carefully designed. In the case of tariff removals, the import tax in Equation (a) is eliminated without any exemptions for the import of good (i) from exporting region (r) to importing region (s):

(a) $pms(i,r,s) = tms(i,r,s) + pcif(i,r,s)$
    pms: Import prices

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volume of certain products with higher import protection were smaller, the average level of import protection in this measurement would be calculated to be somewhat lower.

tms: Import tax

pcif: CIF prices

The possible trade cost reduction by reducing NTMs is composed of two parts.[3] One is the trade cost part, which represents the costs associated with the differences in regulation between the two countries, whose key feature is much closer to a tax. Therefore, in this study, import tax is removed in order to evaluate the impacts of reducing the trade cost part of NTMs. The second is the rent cost part, which represents the price increase that results from the market segmentation induced by regulation differences, which reduce the competition of imported products in domestic markets and increase the prices of domestic products. Import-augmenting technological improvements (ams) are incorporated into equation (b) in order to reflect the reductions of the rent cost part of NTMs in line with the approaches of previous GTAP model simulations.

(b) $qxs(i,r,s) = -ams(i,r,s) + qim(i,s)$
$$- ESUBM(i) * [pms(i,r,s) - ams(i,r,s) - pim(i,s)]$$

qxs: Export sales

ams: Import-augmenting technological changes

qim: Aggregate imports in the region

pim: Market prices of composite imports

ESUBM: The elasticity of substitution among imports from different destinations

The trade cost and rent cost parts are broadly assumed to be 50 per cent each in this paper based on the empirical findings presented in EC (2012).[4] Moreover, two further key assumptions are made to estimate the likely magnitude of the impacts of NTMs reductions. First, the "actionability" of NTMs reductions is assumed to be 50 per cent guided by Ecorys (2009).[5] "Actionability" is the degree to which NTMs or regulatory divergence may be reduced through various methods. Second, the

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[2] See Kee, Nicita, and Olarreaga (2009) for the empirical methodology.

[3] See Kawasaki (2010) for another breakdown of trade costs into the administrative part and the production factor part estimated from the costs shown in the *Doing Business* report by the World Bank.

[4] The levels of NTMs in Japan are estimated to be 4.9 per cent for the trade cost part and 4.3 per cent for the rent cost part by sector average. Those in the EU are estimated to be 4.4 per cent for the trade cost part and 3.1 per cent for the rent cost part.

[5] Actionability levels range from 39 to 66 per cent in the US by sector and from 35 to 70 per cent in the EU.

magnitude of spillover effects is also assumed to be 50 per cent.[6] Many NTMs relate to differences in regulations, which mostly cannot be altered on a purely bilateral basis. Once addressed, they will improve market access for third countries as well. Therefore, to a large extent, NTMs reductions operate on a most favored nation basis.

3. Policy Scenarios

The following six scenarios of Asia-Pacific EPAs are studied in this paper and the impacts of the TPP, RCEP, and FTAAP are compared. Moreover, the impacts of NTMs reductions are studied in addition to those by tariff removals.

Scenario 1:	Tariff removals in the RCEP
Scenario 2:	Tariff removals and NTMs reductions in the RCEP
Scenario 3:	Tariff removals in the TPP
Scenario 4:	Tariff removals and NTMs reductions in the TPP
Scenario 5:	Tariff removals in the FTAAP[7]
Scenario 6:	Tariff removals and NTMs reductions in the FTAAP

As discussed above, tariff removals are mechanically assumed to be 100 per cent in all scenarios. On the other hand, the actionability of NTMs reductions is assumed to be 50 per cent with spillover effects to the third country at 50 per cent, which implies 25 per cent NTMs reductions to non-member economies.

4. Simulation Outcomes

According to conventional simulations carried out by using a CGE model of global trade, EPA measures, including tariff removals and NTMs reductions, will stimulate trade by lowering the prices of tradable goods. This will result in increases in the national output of exporting countries while increasing access to the market for trading partners. Meanwhile, domestic production resources—land, capital, labor, and intermediate inputs—will be used more efficiently in importing countries, particularly when domestic distortions, including those due to trade barriers, are reduced. These combined effects—one from foreign markets and the other from the domestic

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[6] EC (2012) assumed that 65 per cent of NTMs reductions yield benefits for third countries, while 35 per cent of any reductions deliver a strictly bilateral benefit. On the other hand, Japan and Canada (2012) assumed moderate spillover effects.

[7] In these FTAAP simulations, it is assumed that APEC economies remove tariffs from APEC economies but not from non-member economies. This assumption is different from the APEC spirit of "open" trade liberalization, in which tariffs are also removed from the remaining APEC

market—are expected to result in the expansion of production and an increase in income and welfare.   In addition, economic benefits would expand dynamically through capital formation mechanisms and productivity improvements.   Although negative impacts due to trade diversion effects and terms of trade effects are suggested by theoretical studies, empirical analyses, including model simulations, have generally indicated the macroeconomic benefits of EPAs.

The income gains from Asia-Pacific EPAs measured in terms of changes in equivalent variation are shown in Table 4 as the percentage of regional GDP in 2010. APEC economies as a whole benefit both from the TPP and from the RCEP and those income gains are larger from the FTAAP, which account for 2.3 per cent of GDP from tariff removals and 4.3 per cent from tariff removals and NTMs reductions.   The wider EPAs are in terms of participants and trade policy measures, the larger the economic benefits are.

The relative size of income gains from EPAs depends largely on the degree of trade liberalization,[8] namely the degree of protection prior to the implementation of EPAs.   As shown in Table 3, there tends to be more scope to liberalize trade in developing and emerging APEC economies, which benefit more from Asia-Pacific EPAs.   In terms of percentage GDP changes in equivalent variation, several ASEAN countries such as Malaysia, Singapore, the Philippines, Thailand, and Viet Nam are suggested to enjoy relatively large gains.   Meanwhile, advanced and larger APEC economies such as Japan and the US are unlikely to experience significantly larger gains.   Trade liberalization is thus expected to correct income differentials among these economies.

The macroeconomic benefits of NTMs reduction are estimated to be generally larger than those related to tariff removals.   Moreover, they are relatively significant in developed economies compared with a number of developing and emerging economies primarily because of the degree of price changes due to tariff removals and NTMs reductions discussed above.   That said, it is indicated that there is larger room for income gains from NTMs reductions than from tariff removals, which have already

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economies as well.

[8] It must be noted that the outcomes of model simulations may vary according to macroeconomic assumptions and closures.   These variations are suggested in terms not only of magnitudes but also of directions.   See, for example, Kawasaki (1999) for a diagnostic analysis of such model sensitivities in the case of simulations on the impact of trade liberalization. Relatively large macroeconomic benefits are estimated in developing economies when the dynamic aspects of capital formation and pro-competitive productivity growth effects are incorporated.

Table 4 Income gains from the Asia-Pacific EPAs

	TPP12		RCEP		FTAAP	
						(% of GDP)
	Tariff	+NTMs	Tariff	+NTMs	Tariff	+NTMs
Both TPP and RCEP Economies	0.9	3.0	2.3	4.9	2.8	5.4
Japan	0.8	1.6	1.7	2.8	2.1	3.2
Malaysia	3.0	20.6	6.2	27.5	6.0	28.3
Singapore	1.0	14.0	3.6	18.2	3.3	18.8
Viet Nam	9.9	20.1	17.7	31.0	15.6	30.0
Australia	0.5	1.9	2.7	4.7	3.9	5.9
New Zealand	1.6	5.1	2.8	6.9	3.4	7.8
Only TPP Economies	0.1	1.3	-0.2	0.0	1.0	2.4
US	0.1	0.8	-0.2	0.0	0.8	1.7
Canada	0.4	2.2	-0.1	0.3	0.6	2.7
Mexico	0.5	7.3	-0.3	-0.2	3.4	11.1
Chile	0.3	1.6	-0.1	0.8	0.8	3.2
Peru	0.8	1.6	0.0	0.4	0.3	1.6
Only RCEP Economies	-0.3	-0.4	3.0	5.0	3.5	5.3
China	-0.3	-0.4	1.8	3.4	4.1	6.0
Korea	-0.2	-0.6	5.6	6.4	6.3	7.1
Indonesia	-0.3	0.1	3.7	5.8	2.5	4.6
Philippines	-0.3	-0.9	4.8	18.3	5.3	19.9
Thailand	-0.8	-0.2	8.8	12.9	8.7	12.7
Cambodia	-1.0	0.0	12.3	21.6	-12.4	-11.3
Laos	0.0	0.3	4.8	9.8	0.1	0.5
India	-0.2	-0.2	4.2	6.2	-1.2	-1.2
Other APEC Economies	-0.1	0.0	-0.5	0.0	3.3	6.5
Hong Kong, China	-0.1	1.0	0.1	2.0	2.6	7.1
Chinese Taipei	-0.2	-0.8	-2.5	-3.6	6.6	10.0
Russia	-0.1	0.1	0.0	0.8	2.5	5.4
TPP Economies	0.4	1.8	0.6	1.5	1.5	3.3
RCEP Economies	0.3	1.1	2.7	4.9	3.2	5.4
APEC Economies	0.2	1.2	1.0	2.1	2.3	4.3
World	0.1	0.6	0.6	1.4	0.9	2.1

Source: Author's simulations

been lowered as a result of recent trade liberalization.

The members of both TPP and RCEP economies will benefit from the TPP and the RCEP, whereas only TPP member economies will benefit from the TPP but not necessarily from the RCEP. Meanwhile, only RCEP member economies will benefit from the RCEP but not from the TPP. It is essential to participate in EPAs in order to enjoy those benefits rather than expecting "free rider gains" without joining EPAs.

Trade diversion effects are clearly suggested in the case of those tariff removals applied to members of EPAs on a preferential basis.   The spillover effects of NTMs reductions may also benefit third economies but to a limited degree.

The impacts of the TPP and the RCEP are typically highlighted in the following four economies in light of the memberships of these two EPAs:

- In Japan (both a TPP and a RCEP economy), higher levels of achievement in the TPP including NTMs reductions will generate sizable income gains. Meanwhile, larger income gains may be expected from the RCEP by expanding growing and relatively large Asian markets.   Complementary benefits from the FTAAP will include participating in both the TPP and the RCEP.

- For the US (only a TPP economy), income gains from the TPP will mainly derive from NTMs reductions rather than tariff removals.   On the other hand, income losses are expected from the RCEP, particularly because of tariff removals due to trade diversion effects.   Much larger economic benefits are expected from the FTAAP than from the TPP.

- China (only a RCEP economy) will lose from the TPP both through tariff removals and through NTMs reductions.   Large income gains are expected from the RCEP, in which tariff removals are suggested to remain an important element.   Further income gains will be generated from the FTAAP by expanding the members of EPAs.

- Chinese Taipei (another APEC economy) will lose from both the TPP and the RCEP due to trade diversion effects.   These income losses are suggested to be larger from the RCEP, thereby reflecting its closer linkages with neighboring East Asian economies.   Significant economic benefits are expected from the FTAAP joining the framework of the EPAs in Asia-Pacific.

By breaking down the income gains of APEC economies as a whole from tariff removals and additional NTMs reductions, as shown in Chart 2, the sources of those macroeconomic benefits are shown to differ among the six policy scenarios studied in this paper.   In the case of tariff removals, income gains from more efficient resource allocation will be relatively large compared with the case of additional NTMs reductions; in these cases, income gains from technological improvements will be relatively large.   On balance, the income gains from the dynamic effects of technological improvements and expansion of capital stock are shown to be much larger

Chart 2 Sources of income gains from the Asia-Pacific EPAs
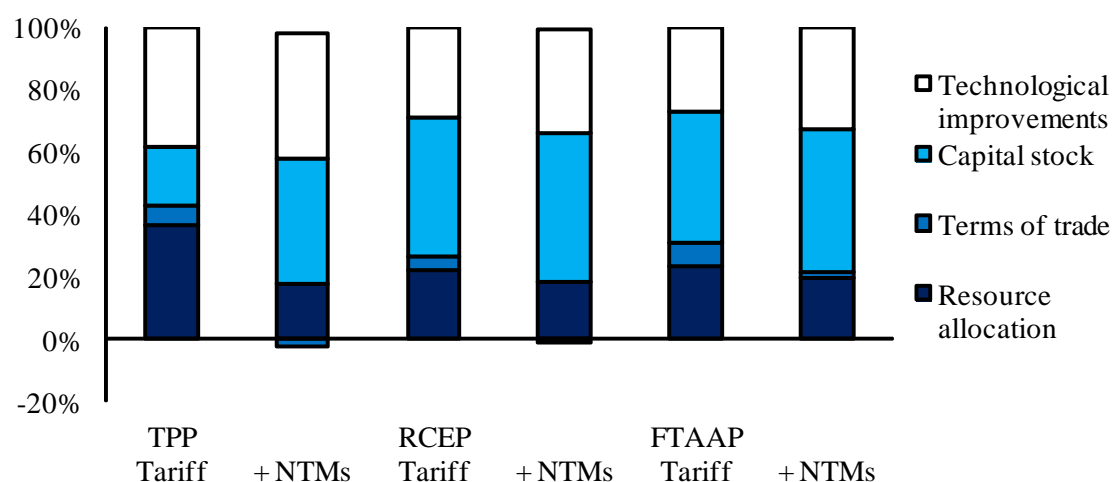
Source: Author's Simulations

than the static effects of more efficient resource allocation and improvements in terms of trade.

IV. Key Contributors to Asia-Pacific EPAs

Four main groups of economies exist in Asia-Pacific from the perspective of the memberships of the TPP and the RCEP. The relative significance of income gains from these two EPAs and geopolitical interests are important aspects. Indeed, the income gains of both TPP and RCEP economies from the RCEP are estimated to be larger than those from the TPP based on the presented model simulations.

However, it must be noted that the current study would overestimate the impacts of tariff removals, particularly from the RCEP, by assuming 100 per cent trade liberalization. Indeed, agreements may allow some exemptions from tariff removals. According to Fukunaga and Kuno (2012), for example, the tariff removals agreed in existing ASEAN EPAs are on average 91.3 per cent in terms of the tariff lines of HS2007 on a six-digit basis. The corresponding tariff concession rates in ASEAN+ EPAs are found to be 94.1 per cent in China, 91.9 per cent in Japan, 90.5 per cent in Korea, and 78.8 per cent in India, which is compared with 100.0 per cent in Australia and New Zealand. Moreover, the remaining commodities may be more significantly protected by higher than average tariffs. Therefore, income gains from existing EPAs

are likely to below 90 per cent of those from full tariff removals.[9]

On the other hand, the TPP aims to achieve more ambitious levels of tariff removals. Depending on the agreement, these impacts may be closer to current estimates, assuming full tariff removals.[10] In addition, the achievement of NTMs reductions would also be expected to be greater compared with the RCEP, while the relative significance of income gains from the TPP may not be as small as those from the RCEP.

Nevertheless, policymakers may still be concerned about which economies of Asia-Pacific would be key drivers of generating macroeconomic benefits in the region. The income gains of Asia-Pacific EPAs in those EPA economies as a whole are broken down by the contribution of the EPA measures of those member economies in Chart 3-A for the TPP, Chart 3-B for the RCEP, and Chart 3-C for the FTAAP.

It is shown in Chart 3-A that income gains from the TPP will be driven by the US, Mexico, and Malaysia, particularly by NTMs reductions. Singapore will still significantly contribute to NTMs reductions, although tariffs may no longer be cut. On the other hand, the contribution of Japanese tariff removals will relatively be large among TPP economies.

From Chart 3-B, China will be a key driver of income gains from the RCEP followed by India, which is not an APEC economy. The contribution of the NTMs reductions by Malaysia, Singapore, and the Philippines will also be sizable. Further, China will generate the largest income gains from the FTAAP (Chart 3-C) followed by Russia,[11] which is a member of neither the TPP nor the RCEP, and then the US.

The further breakdown of those contributions is examined for selected APEC economies in Chart 4-A for Japan, Chart 4-B for the US, and Chart 4-C for China. Japanese income gains from the FTAAP will firstly be given by Japanese tariff removals

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[9] According to the estimates by the Cabinet Secretariat (2010) of the Japanese government, real GDP in Japan would be boosted by 0.66 per cent by the action of full tariff removals between Japan and China. This value is compared with 0.36 per cent if China were to exempt tariff removals for automobiles and if Japan were to exempt five sensitive commodities (rice, wheat, beef, dairy products, and sugar), whose proportion is 6.5 per cent in terms of tariff lines.

[10] Petri, Plummer, and Zhai (2012) assumed that tariffs would be removed by 96 per cent in the TPP based on an average of five recent US agreements and P4 and by 90 per cent in the ASEAN+3 (China, Japan, and Korea) EPA based on ASEAN EPAs.

[11] Seriously higher net export tariffs are suggested in Russia from the recent versions of the GTAP database, which results in larger income gains through the removal of those tariffs.

Chart 3-A Contributions to the income gains of the TPP

(USD bil.)

- Tariff removals
- Tariff removals and NTMs reductions

US, Mexico, Malaysia, Japan, Singapore, Canada, Australia, Viet Nam, New Zealand, Peru, Chile
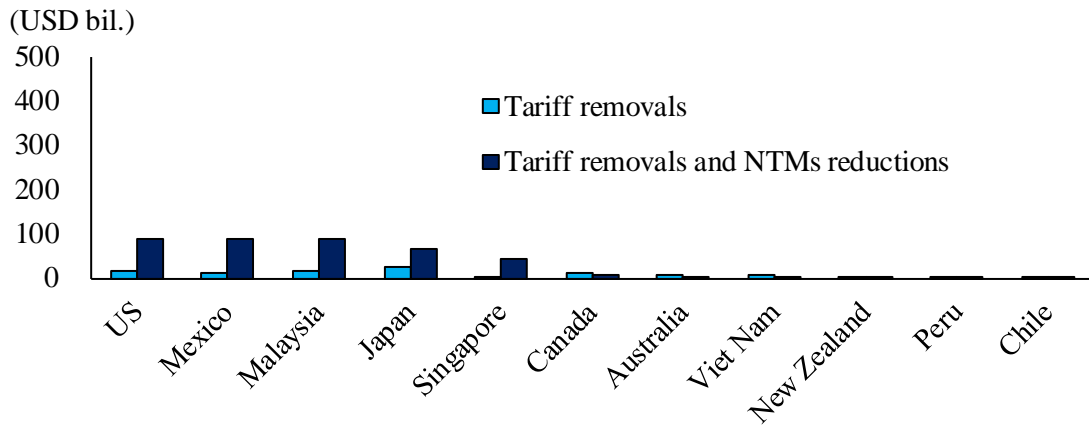
Chart 3-B Contributions to the income gains of the RCEP

(USD bil.)

- Tariff removals
- Tariff removals and NTMs reductions

China, India, Malaysia, Japan, Singapore, Philippines, Thailand, Korea, Australia, Indonesia, Viet Nam, New Zealand, Cambodia, Laos
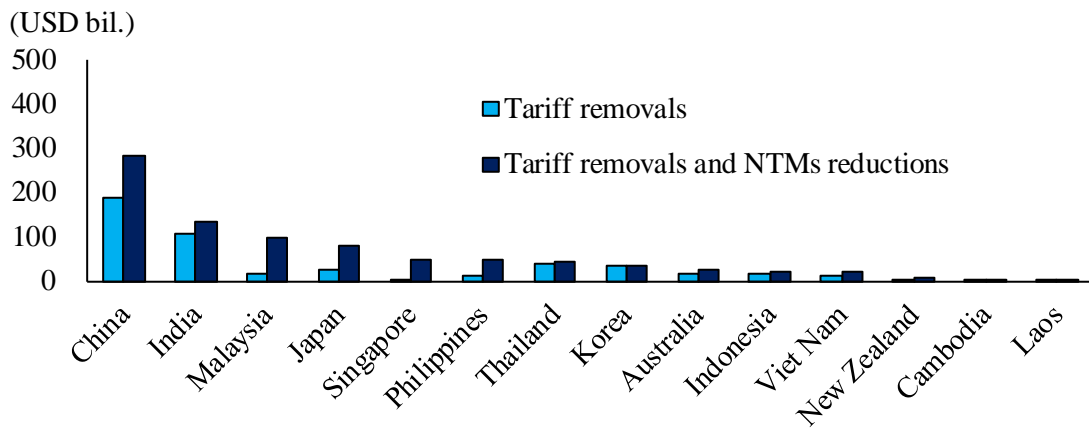
Chart 3-C Contributions to the income gains of the FTAAP

(USD bil.)

- Tariff removals
- Tariff removals and NTMs reductions

China, Russia, US, Malaysia, Mexico, Japan, Singapore, Philippines, Thailand, Chinese Taipei, Korea, Canada, Australia, Indonesia, Viet Nam, New Zealand, Peru, Chile, Hong Kong, China
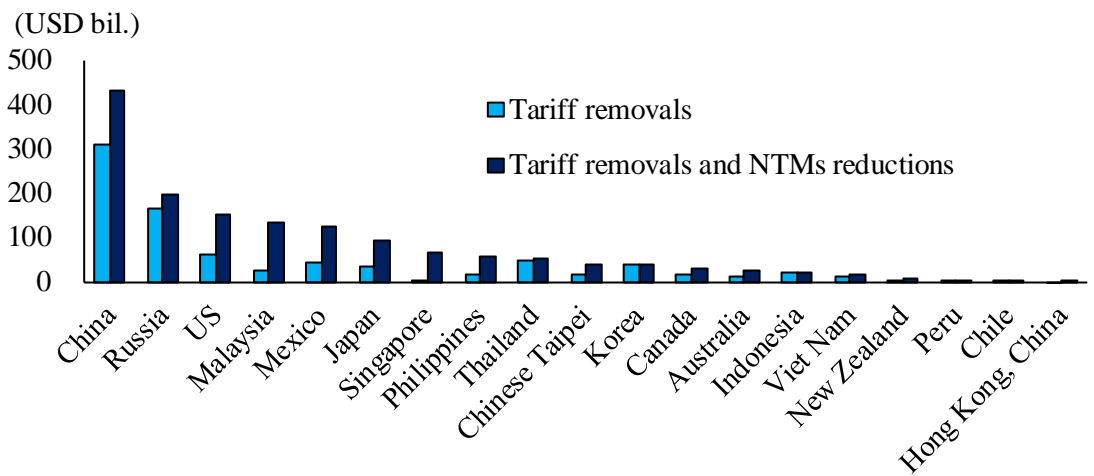
Source: Author's simulations

and NTMs reductions.   The contribution of China will also be significant, particularly from tariff removals.   In the case of the TPP, Japan's own contribution will be relatively large, whereas the Chinese contribution will be major in the case of the RCEP. Therefore, it may be worth joining the RCEP in addition to the TPP.

The US's income gains from the FTAAP will firstly be influenced by Chinese policy measures.   Although the US's own contribution will be large enough, it may be advisable to extend the areas of EPAs to East Asia including China.   In the case of the TPP, Japan's contribution to tariff removals will show a larger proportion.   On the other hand, Mexico's tariff removals may have adverse impacts by diversifying trade with the US, which is already free as a result of NAFTA, compared with other economies that still have room for trade liberalization.   Meanwhile, the US's own NTMs reductions will be significant.

Chinese income gains from the FTAAP will primarily be driven by its own policy measures.   It is essential to remove tariffs and reduce NTMs in the RCEP and in the FTAAP.   Contributions by trade partners both in the RCEP and in the FTAAP will be limited, although India's contribution in the RCEP and Russia's contribution in the FTAAP will be noted.   These structures vary by APEC member economy, which may be of interest to policymakers prioritizing the framework of EPAs.

Meanwhile, the income gains of the economies of Asia-Pacific are split between their own policy measures and those by the remaining economies of Asia-Pacific, as shown in Chart 5-A for the TPP, Chart 5-B for the RCEP, and Chart 5-C for the FTAAP.

The income gains from the TPP will be equally generated by their own tariff removals/NTMs reductions and those of their trade partners except in Malaysia and Mexico (Chart 5-A).   On the other hand, the relative significance of income gains by tariff removals vary by TPP economy.   Singapore and the US will dominantly benefit from the tariff removals of trade partners.   Meanwhile, Malaysia, Canada, Mexico, and Chile will benefit more by their own tariff removals.

Japan, Korea, Australia, and New Zealand will benefit more by the tariff removals and NTMs reductions of trade partners in the RCEP (Chart 5-B), while ASEAN countries in general, especially Malaysia and the Philippines, will benefit more by their own tariff removals and NTMs reductions.   China and India will also gain more from their own measures rather than those of their trade partners.

In Japan, the US, Australia, and New Zealand, larger benefits from the FTAAP

Chart 4-A Contributions to Japan's income gains by the economies

(%)

Legend: ☐ Malaysia ☐ US ☐ Russia ☐ China ☐ Japan

Categories: TPP Tariff, +NTMs, RCEP Tariff, +NTMs, FTAAP Tariff, +NTMs
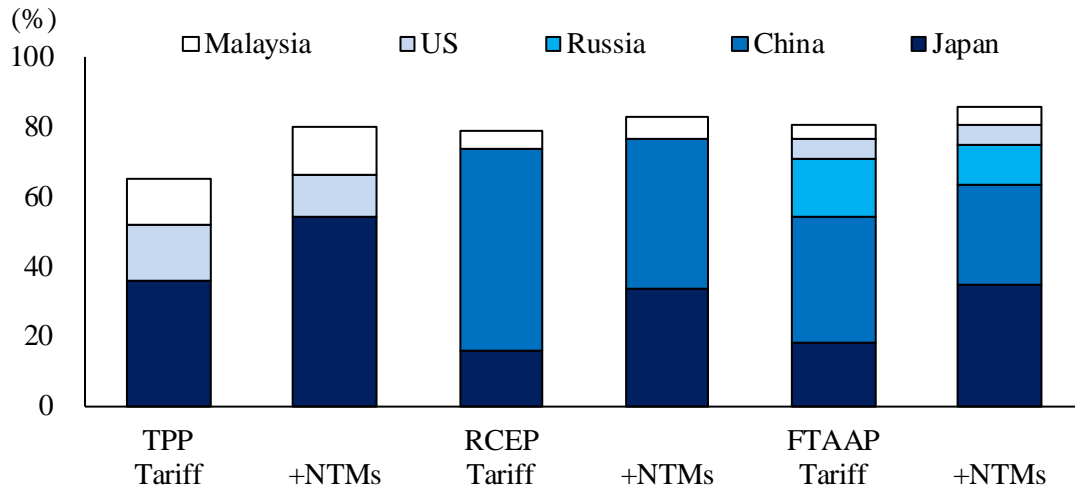
Chart 4-B Contributions to US's income gains by the economies

(%)

Legend: ☐ Japan ☐ Mexico ☐ Russia ☐ US ☐ China

Categories: TPP Tariff, +NTMs, RCEP Tariff, +NTMs, FTAAP Tariff, +NTMs
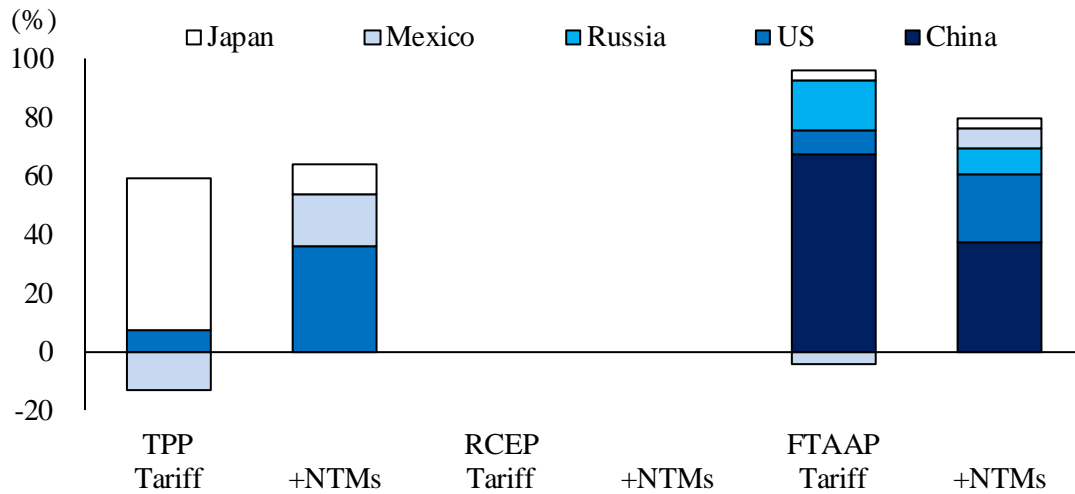
Chart 4-C Contributions to China's income gains by the economies

(%)

Legend: ☐ Japan ☐ India ☐ US ☐ Russia ☐ China

Categories: TPP Tariff, +NTMs, RCEP Tariff, +NTMs, FTAAP Tariff, +NTMs
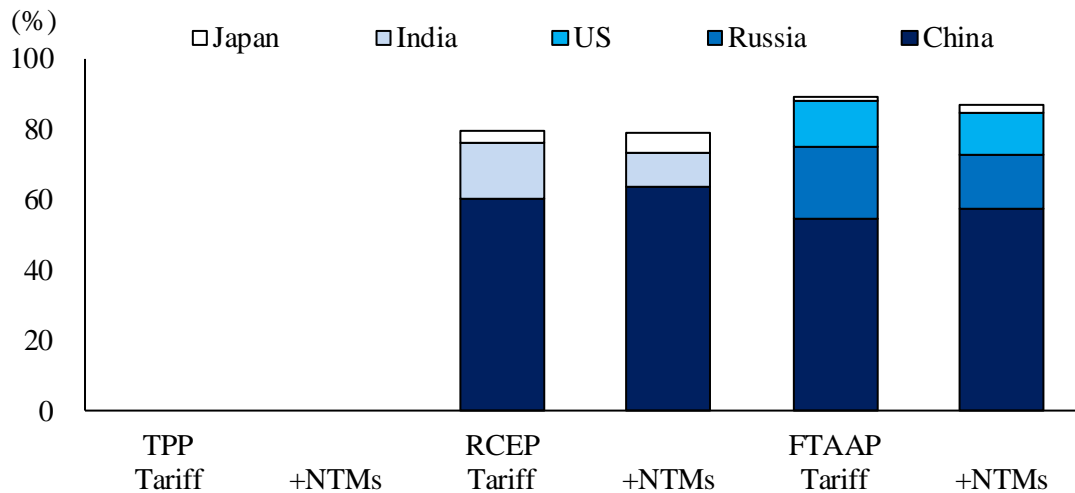
Source: Author's simulations

will be given by their trade partners (Chart 5-C).   In China and Russia, contributions by their own policy measures and those of their partners will be similar.   However, in many ASEAN countries as well as Canada, Mexico, and Peru, contributions through their own initiatives will be much larger than those by partners.   It is thus suggested that domestic reforms in several countries are essential in order to enjoy macroeconomic benefits.

V. Summary and Conclusions

In this paper, the impacts of EPAs in Asia-Pacific were quantitatively analyzed by using a CGE model of global trade.   In particular, the impacts of NTMs reductions were studied in addition to those of tariff removals.

It was estimated that the income gains of APEC economies as a whole would account for 1.2 per cent of regional GDP from the TPP, 2.1 per cent from the RCEP, and 4.3 per cent from the FTAAP.   The TPP and the RCEP would thus complement one another rather than be competitors when establishing the FTAAP.

By economy, developing and emerging economies are suggested to enjoy relatively large gains from EPAs in comparison with developed economies and, therefore, the income differentials among these economies are expected to be corrected.

Breaking down the sources of the macroeconomic benefits of Asia-Pacific EPAs by the policy measures of APEC member economies showed that the contribution by China would be the largest.   Nonetheless, in many ASEAN countries and outside this region, contributions by a country's own initiatives will be much larger than those by its trade partners, including China.   Meanwhile, larger economic benefits are expected from NTMs reductions in addition to tariff removals.   It is thus suggested that domestic reforms are essential in order to enjoy the macroeconomic benefits of international EPAs.

Chart 5-A Income gains from the TPP by own policies

(%)

Legend: ■ Tariff removals ■ Tariff removals and NTMs reductions

Categories: Japan, Malaysia, Singapore, Viet Nam, Australia, New Zealand, US, Canada, Mexico, Chile, Peru
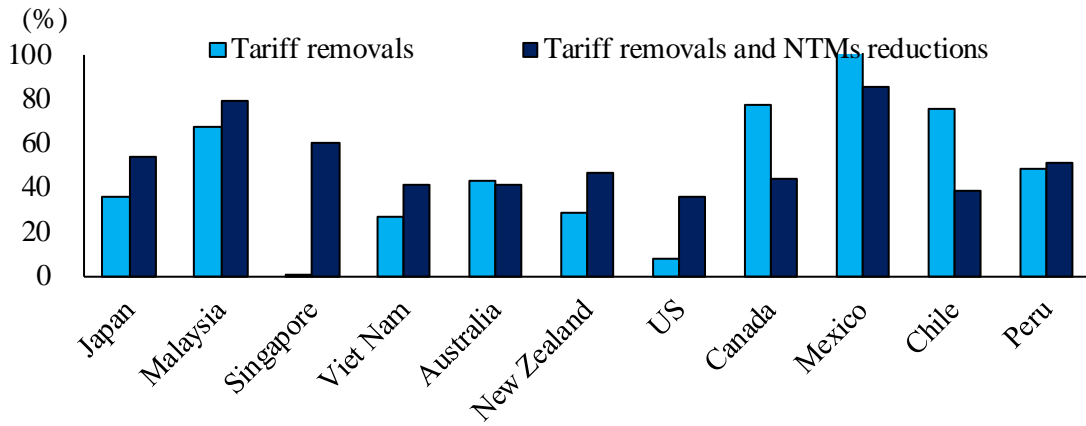
Chart 5-B Income gains from the RCEP by own policies

(%)

Legend: ■ Tariff removals ■ Tariff removals and NTMs reductions

Categories: Japan, China, Korea, Indonesia, Malaysia, Philippines, Sinagpore, Thailand, Viet Nam, Cambodia, Laos, India, Australia, New Zealand
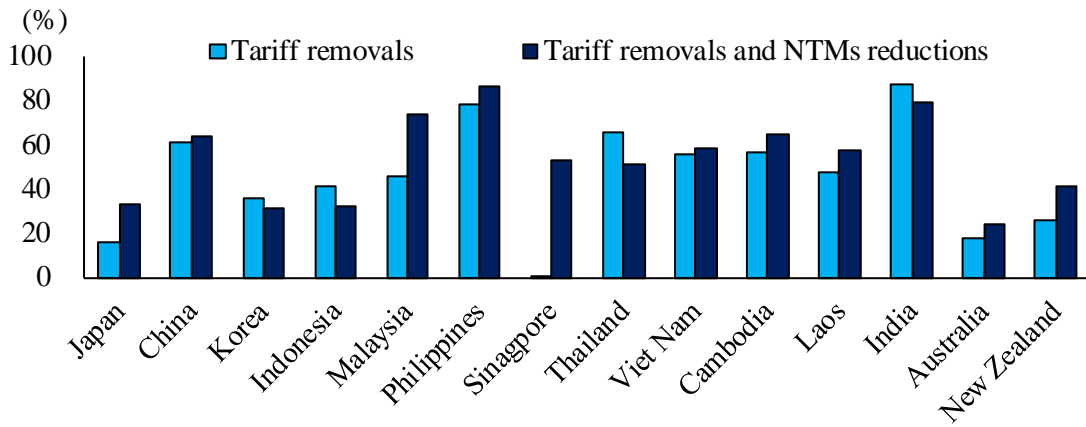
Chart 5-C Income gains from the FTAAP by own policies

(%)

Legend: ■ Tariff removals ■ Tariff removals and NTMs reductions

Categories: Japan, China, Korea, Hong Kong, China, Chinese Taipei, Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam, Australia, New Zealand, US, Canada, Mexico, Chile, Peru, Russia
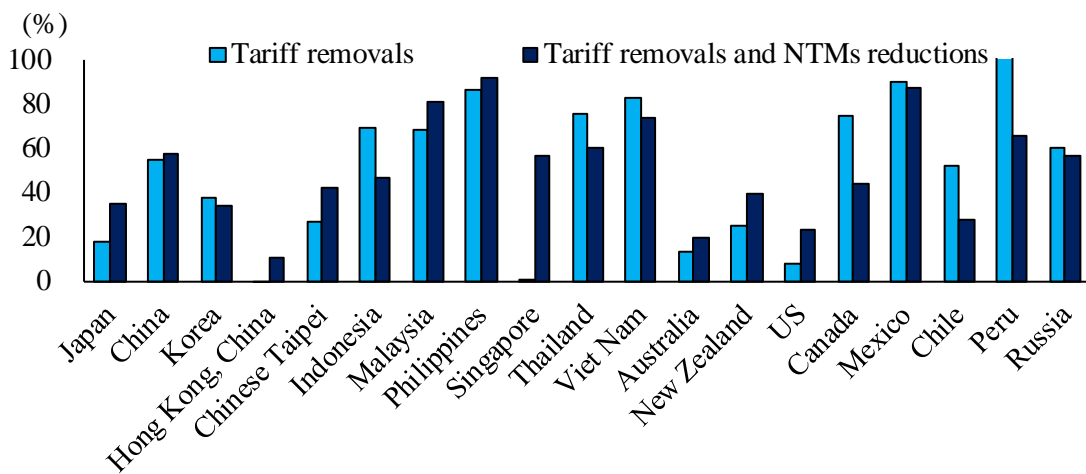
Source: Author's simulations

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Annex I: Framework of the CGE Model Simulations

To analyze the economy-wide impact of trade liberalization, a CGE model of global trade is employed for the model simulations in this paper. A CGE model numerically simulates the general equilibrium structure of the economy. It is built on the Walrasian general equilibrium system, the central idea of which is that market demand equals supply for all commodities at a set of relative prices. Moreover, a CGE model has solid micro-foundations that are theoretically transparent. Functional forms are specified in an explicit manner, and interdependencies and feedback are incorporated. Therefore, the model provides a framework for assessing the effects of policy and structural changes on resource allocation by clarifying "who gains and who loses."

These characteristics differentiate it from 1) the partial equilibrium model, which is not economy-wide, 2) the macroeconomic model, which is not multi-sectoral, and 3) the input-output model, in which economic agents do not respond to changes in prices. Moreover, the multi-country model is required to analyze international economic affairs such as trade and investment policies, which affect not just one but a number of economies.

On the other hand, it must be noted that the estimated economic impact of a CGE model is not a forecast. As described in Dee, Geisler, and Watts (1996), economic policy measures will be implemented over time and adjustments to those changes may take time. During the course of such adjustments, other economic changes will also take place. However, those changes, including economic growth and structural changes in trade and industries, are not taken into account in the current analysis. The model simulation shows the differences at a certain point in time between when trade liberalization and facilitation measures were implemented and when they were not.

The basic framework of the trade model is guided by the comparative advantage theory by Hecksher (1919) and Ohlin (1933). However, the original theory of comparative advantage cannot explain such aspects as the two-way trade seen in actual trading behavior. This is because the theory makes no distinctions between the same goods from different areas of production. Therefore, the general equilibrium model introduces heterogeneity into the same goods according to their production areas, namely imperfect substitutes of goods between home and abroad—the so-called

Armington assumption[12]—and thus describes realistic trade developments.

Among others, the GTAP database and standard model[13] are utilized as a basis for the simulation experiments in this paper. The standard version of the GTAP model includes several key assumptions. It must be noted that the amount of total labor—one primary factor of production—among other factors is fixed. This means that the model assumes full employment. The amount of total capital is also fixed in the standard GTAP model.

A common criticism has often been that a standard CGE model focuses on the evaluation of static efficiency improvements and therefore the dynamic effects among production, income, and savings and investment are not captured. In fact, concerning the dynamic impact of trade liberalization, the growth effects through productivity gains and capital accumulation have been pointed out. In this paper, certain dynamic aspects are studied in the model simulations.

One deals with the dynamic aspects of capital formation by modifying the standard version of the GTAP model. Two mechanisms are considered in this paper. First, the important "dynamic" effects of capital accumulation are introduced[14] into the standard static model. The initial increase in income is assumed to increase savings (a fixed proportion of additional income is saved) and investment. The induced savings and investment (larger capital stock) in turn link to production capacities and cause a further increase in income. Second, the trade balance is endogenously determined and international capital movement is allowed. It is assumed that the expected rate of return on capital is equalized among regions.

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[12] See Armington (1969) for a description of the Armington assumption.

[13] The GTAP model was applied to analyze the economic impact of the Uruguay Round Agreement by the Secretariat of the General Agreement on Tariff and Trade (GATT) for that day, as seen in GATT (1994). Later, in 1997, it was also utilized in the assessment of the economic impact of the Manila Action Plan for APEC by the APEC Economic Committee, as seen in APEC (1997). At present, this model and database are widely used by international organizations and researchers on international affairs. See Hertel (1997) for a description of the GTAP database and model.

[14] See Francois, McDonald, and Nordstrom (1996) for the methodology to implement this mechanism into the GTAP model. They explored the interaction between trade policy and capital accumulation in the GTAP model. According to growth theory, a medium-run growth or accumulation effect induces additional savings and investment, which yields more output. In general, a permanent shock to GDP is translated into a shock to the steady-state level of capital. The magnitude of this effect crucially depends on the assumed underlying savings behavior. Under the assumption of a fixed saving ratio, the change in steady-state capital stock is proportionate to the change in the steady-state level of GDP.

In addition to these, pro-competitive productivity growth effects[15] are also investigated in the model simulations.   It is assumed that the productivity of domestic industries increases in order to compensate for the lower import prices.   Such a rate of productivity increase is set as equal to the rates of change in import prices weighted by the proportion of imports over total production, including domestic goods.

The GTAP database provides well-arranged data on countries and regions in Asia-Pacific, such as Asian newly industrializing economies and ASEAN countries. One notable distinguishing feature of the model is its function to evaluate separately mutual dependence among APEC economies.   The GTAP database consists of 57 disaggregated sectors and 134 economies, which are aggregated into the appropriate version for the simulations.   In this paper, as shown in Annex Table I-1, economies are aggregated into 31 areas, and 19 areas are allocated to APEC economies.   APEC economies are disaggregated individually where data are available (note that data on Brunei Darussalam and Papua New Guinea are unavailable).   Commodities are aggregated into 29 sectors in accordance with the medium classifications of standard national accounts, while several sensitive commodities in the primary and food sectors are further disaggregated to some extent.

The current GTAP database (version 8.1) was released in February 2013. However, its base year remains 2007.   The benchmark data used in this study were updated to 2010 in order to reflect the recently growing number of states counted in the world economy.   Those data were downloaded from the Data and Statistics section of the website of the International Monetary Fund.

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[15] For example, see Itakura, Hertel, and Reimer (2003) regarding earlier studies that incorporate productivity linkages into the GTAP model simulations and Ianchovichina, Binkley, and Hertel (2000) for incorporating pro-competitive productivity effects into a CGE model with an assumption of imperfect competition.   On the other hand, Zhai (2008) introduced the Melitz (2003) theoretical framework with firm heterogeneity in contrast to traditional CGE models based on Armington's (1969) assumption and incorporated the dynamic effects of trade liberalization on the "extensive margin" of trade, that is, exports by companies not involved in international markets before trade liberalization.   However, those empirical analyses are issues for future studies, including the development of the solid statistics on the numbers of domestic and international firms.

Annex Table I-1 Regional and Commodity Aggregations

Countries and Regions		Commodities	
JPN	Japan	RIC	Rice
CHN	China	WHT	Wheat
KOR	Korea	GRO	Other cereal grains
HKG	Hong Kong, China	V_F	Vegetables, fruits and nuts
TWN	Chinese Taipei	OSD	Oils seeds
IDN	Indonesia	SGR	Sugar
MYS	Malaysia	MIL	Dairy products
PHL	Philippines	MET	Bovine cattle, sheep and goat products
SGP	Singapore	OMT	Other animal products
THA	Thailand	FRS	Forestry
VNM	Viet Nam	FSH	Fishing
KHM	Cambodia	OAF	Other primary
LAO	Laos	B_T	Beverages and tobacco products
IND	India	OFD	Other processed foods
AUS	Australia	OPF	Vegetable oils and fats
NZL	New Zealand	MNG	Mining
USA	US	TXL	Textiles and wearing apparel
CAN	Canada	CHM	Chemical products
MEX	Mexico	MTL	Metals
CHL	Chile	MVH	Motor vehicles and parts
PER	Peru	OTN	Other transport equipment
RUS	Russia	ELE	Electronic equipment
EUM	EU	OME	Other machinery and equipment
CHE	Switzerland	OMF	Other manufacturing
MNG	Mongolia	CNS	Construction
COL	Colombia	EGW	Electricity, gas and water
TUR	Turkey	T_T	Transportation
GCC	GCC	OSP	Other private services
OAO	Other Asia	OSG	Public services
OAM	Other America		
ROW	Rest of the world		

Source: Author based on GTAP database version 8.1

Annex Table II-1-A The contributions by TPP economies: Tariff removals

(USD mil.)

	TPP	AUS	CAN	CHL	JPN	MEX	MYS	NZL	PER	SGP	USA	VNM
Japan	41,966	4,784	1,849	434	14,970	2,908	5,608	411	198	0	6,714	3,714
Malaysia	7,292	317	93	25	270	551	4,911	24	6	0	891	196
Singapore	2,279	22	52	4	409	137	497	-1	15	9	244	839
Viet Nam	10,294	189	299	18	871	925	189	27	11	0	4,526	2,785
Australia	6,611	2,825	36	71	2,262	278	614	-187	-70	0	687	140
New Zealand	2,213	36	554	-1	154	296	82	633	13	0	445	38
US	10,816	-835	2,946	-92	5,568	-1,412	1,952	178	1,126	-1	841	789
Canada	6,423	21	4,995	113	1,075	-1	60	-18	13	0	78	-112
Mexico	4,837	66	-530	-19	-788	7,462	86	-12	236	9	-1,351	-273
Chile	552	-19	-75	418	78	42	-23	-4	-42	0	232	-16
Peru	1,160	-5	-2	3	-29	56	-10	-1	560	0	611	-14
China	-15,033	-986	-487	-69	-1,953	-936	-1,086	-115	-57	0	-4,849	-3,935
Korea	-2,191	-363	-22	-45	-271	-158	-351	-24	11	0	-142	-727
Indonesia	-2,453	-121	-117	-3	-496	-39	-399	-20	-67	0	-547	-563
Philippines	-566	-21	-7	1	-141	-23	20	-4	-7	0	-246	-117
Thailand	-2,574	-943	-176	-16	-427	-44	-189	-29	-10	0	-173	-503
Cambodia	-115	0	-6	0	0	-13	7	0	0	0	-95	4
Laos	0	-1	0	0	6	2	-15	0	0	0	4	4
India	-3,548	-220	-286	-13	-636	-141	-440	-21	-41	0	-790	-847
Hong Kong, China	-170	-33	16	-2	21	-30	77	-3	5	0	-111	-96
Chinese Taipei	-890	-90	-24	-2	-58	-21	-214	-9	1	0	-18	-387
Russia	-1,685	-225	-145	-12	-552	245	-39	-36	-295	0	-294	-257
EU	-16,217	-2,433	-2,152	-34	-4,460	-318	182	-250	-427	-4	-3,407	-2,433
TPP economies	94,443	7,400	10,219	973	24,840	11,242	13,964	1,049	2,066	18	13,918	8,085
RCEP economies	44,175	5,518	1,783	405	15,016	3,743	9,445	694	2	10	6,669	1,028
APEC economies	68,883	4,618	9,256	824	20,963	10,236	11,783	809	1,646	19	7,539	1,501
World	34,127	812	4,699	548	12,280	10,054	11,368	368	-491	14	-25	-4,115

Annex Table II-1-B The contributions by TPP economies: Tariff removals and NTMs reductions

(USD mil.)

	TPP	AUS	CAN	CHL	JPN	MEX	MYS	NZL	PER	SGP	USA	VNM
Japan	86,601	5,454	1,189	508	46,955	978	11,778	560	226	2,097	10,646	5,049
Malaysia	50,777	620	57	30	1,143	430	40,064	60	6	4,350	1,837	490
Singapore	31,814	288	38	11	923	-53	7,848	30	22	19,233	940	1,233
Viet Nam	20,830	390	301	21	1,461	1,069	1,310	48	11	842	5,436	8,502
Australia	23,189	9,518	-162	76	3,709	152	4,268	504	-79	3,258	1,547	323
New Zealand	7,139	671	570	0	428	413	563	3,326	22	293	821	75
US	112,962	333	11,050	130	11,537	20,531	16,924	364	1,393	9,101	40,607	844
Canada	35,054	79	15,354	129	1,456	-334	2,440	-6	29	1,319	14,291	-204
Mexico	75,123	-64	-1,197	29	-1,046	64,313	1,202	-45	247	850	10,799	-583
Chile	3,464	-41	-183	1,324	395	302	632	-7	6	464	624	-23
Peru	2,465	-13	-6	28	17	86	211	-2	1,249	149	778	-25
China	-25,844	-1,159	-1,986	-20	-425	-7,753	-392	-289	-23	398	-6,465	-6,200
Korea	-5,831	-351	-252	-31	322	-1,420	-2,264	-28	19	-637	-166	-833
Indonesia	720	-208	-372	-5	-746	-566	1,178	-48	-85	3,523	-855	-846
Philippines	-1,796	-41	-74	2	-125	-386	-860	-7	-9	233	-236	-190
Thailand	-681	-1,000	-281	-16	-74	-487	1,419	-46	-14	784	-282	-459
Cambodia	-2	1	-5	0	8	-19	51	-1	0	49	-92	34
Laos	23	-1	-1	0	6	-1	-8	0	-1	11	5	15
India	-2,720	-250	-507	-8	-805	-1,228	1,166	-68	-50	1,340	-719	-1,402
Hong Kong, China	2,327	3	33	3	269	-46	975	0	7	1,089	132	-133
Chinese Taipei	-3,431	-93	-129	3	297	-666	-1,954	-18	4	-339	-22	-373
Russia	1,940	-495	-834	-9	-1,247	-158	4,287	-90	-371	2,442	-1,131	-441
EU	-9,119	-3,497	-5,459	40	-5,878	-6,943	16,209	-489	-510	7,561	-5,385	-4,315
TPP economies	449,419	17,236	27,013	2,285	66,977	87,885	87,240	4,832	3,131	41,956	88,325	15,682
RCEP economies	184,220	13,931	-1,484	567	52,778	-8,872	66,121	4,041	44	35,774	12,417	5,791
APEC economies	416,823	13,891	23,118	2,212	65,247	76,402	89,629	4,307	2,659	49,450	79,300	6,206
World	407,201	7,987	11,711	2,051	52,114	66,257	125,799	3,369	163	69,565	68,282	-3,386

Annex Table II-2-A The contributions by RCEP economies: Tariff removals

(USD mil.)

	RCEP	AUS	CHN	IDN	IND	JPN	HKG	KOR	LAO	MYS	NZL
Japan	95,179	3,916	54,594	2,378	2,874	15,377	24	5,710	-13	4,803	430
Malaysia	15,279	209	3,290	337	2,138	260	9	-23	2	7,043	18
Singapore	8,183	-70	2,137	540	2,944	634	38	-82	2	515	1
Viet Nam	18,332	109	3,431	255	834	528	49	494	3	160	16
Australia	33,312	5,930	11,103	1,012	7,341	3,340	64	1,893	2	494	-271
New Zealand	3,898	-105	1,493	157	189	361	-1	193	1	96	1,019
US	-27,379	-2,411	-13,156	-658	-5,842	-918	118	-3,900	-19	599	-123
Canada	-790	-103	464	130	-1,600	-111	10	-168	-2	163	-9
Mexico	-3,389	-220	-1,508	87	-1,861	164	-17	95	-5	251	1
Chile	-282	-10	94	69	-739	-67	10	-32	-1	15	-2
Peru	8	-2	129	33	-214	-5	0	-4	0	6	-2
China	107,877	4,160	65,392	1,250	17,096	3,280	-56	7,165	14	2,211	474
Korea	56,422	977	24,641	277	5,545	787	63	19,967	11	1,156	91
Indonesia	26,253	803	8,177	10,824	5,064	122	-48	38	-5	-19	40
Philippines	9,500	69	857	85	266	-9	-8	-92	-1	161	9
Thailand	27,937	-1,022	5,112	336	2,376	1,207	256	20	73	365	-7
Cambodia	1,387	-4	207	0	18	-41	785	14	1	21	-1
Laos	329	-2	38	0	-11	-2	-1	-2	157	-18	0
India	68,709	-22	5,170	455	59,837	150	-63	468	-4	933	25
Hong Kong, China	245	-36	-188	16	207	-20	-5	64	-1	131	-4
Chinese Taipei	-10,769	-148	-7,797	-379	-187	7	-50	-452	-1	-254	-8
Russia	-684	-92	1,727	518	-4,864	239	25	-33	-9	270	-9
EU	-35,946	-3,578	-15,956	-516	-11,241	297	-16	-3,411	-37	1,427	-183
TPP economies	142,350	7,242	62,069	4,339	6,064	19,564	303	4,176	-31	14,146	1,077
RCEP economies	472,596	14,949	185,640	17,906	106,512	25,995	1,111	35,761	243	17,922	1,844
APEC economies	359,131	11,954	159,991	17,266	31,567	25,177	480	30,853	51	18,167	1,663
World	377,984	7,222	151,405	18,933	58,655	26,168	1,102	26,758	141	21,820	1,412

(Cont) Annex Table II-2-A The contributions by RCEP economies: Tariff removals

(USD mil.)

	PHL	SGP	THA	VNM
Japan	1,216	0	4,834	2,397
Malaysia	96	0	1,803	107
Singapore	78	0	966	683
Viet Nam	408	0	785	10,139
Australia	469	0	1,962	-93
New Zealand	137	0	213	27
US	596	0	357	-1,294
Canada	67	0	726	-268
Mexico	-18	0	537	-689
Chile	17	0	417	-56
Peru	4	0	129	-64
China	2,283	0	4,119	-1,941
Korea	252	0	-134	2,977
Indonesia	41	0	2,327	-1,231
Philippines	7,469	0	1,058	-273
Thailand	303	0	18,332	17
Cambodia	0	0	405	-15
Laos	0	0	164	10
India	452	0	499	-1,813
Hong Kong, China	69	0	227	-241
Chinese Taipei	-301	0	-498	-760
Russia	93	0	2,059	-579
EU	871	0	2,846	-5,469
TPP economies	3,069	1	12,730	10,889
RCEP economies	13,202	1	37,334	10,990
APEC economies	13,276	1	40,221	8,856
World	15,046	1	53,588	-5,158

Annex Table II-2-B The contributions by RCEP economies: Tariff removals and NTMs reductions

(USD mil.)

	RCEP	AUS	CHN	IDN	IND	JPN	KHM	KOR	LAO	MYS	NZL
Japan	153,467	4,582	66,172	2,361	3,043	51,255	27	5,737	-20	9,764	602
Malaysia	67,876	408	4,474	362	2,577	921	19	-22	4	49,938	45
Singapore	41,493	193	3,083	642	3,555	1,143	59	-79	3	7,341	34
Viet Nam	32,080	266	4,130	358	934	1,001	110	497	9	1,285	30
Australia	58,193	13,745	15,276	1,233	8,354	5,205	83	1,908	0	4,726	377
New Zealand	9,606	476	1,902	216	255	688	-1	196	2	670	3,935
US	-4,214	-2,913	-8,287	-831	-6,364	-163	224	-3,906	-21	12,726	-216
Canada	4,802	-149	1,776	93	-1,852	-329	14	-169	-4	3,025	-24
Mexico	-2,166	-331	-2,050	66	-2,313	193	-32	95	-7	1,737	-29
Chile	1,651	-38	563	78	-858	-160	14	-31	-2	910	-4
Peru	678	-8	277	36	-257	-5	-1	-4	-1	314	-3
China	199,420	5,720	127,196	1,054	19,348	11,095	-173	7,228	2	10,608	627
Korea	65,384	1,221	31,338	260	6,086	2,395	85	20,288	16	934	146
Indonesia	41,380	1,117	9,871	13,350	5,338	1,353	-70	42	-9	3,689	67
Philippines	36,464	107	2,349	71	279	612	-14	-94	-2	158	19
Thailand	41,168	-780	6,582	403	2,669	2,476	400	20	163	4,333	20
Cambodia	2,426	-2	227	-1	17	-34	1,572	14	1	85	-2
Laos	672	-2	52	-1	-12	-2	-2	-2	387	2	-1
India	101,409	208	8,434	533	79,919	653	-96	470	-5	4,351	38
Hong Kong, China	4,550	10	961	16	250	279	-3	66	-1	1,246	0
Chinese Taipei	-15,319	-137	-9,267	-404	-157	324	-59	-456	-1	-2,397	-12
Russia	11,410	-218	4,319	565	-5,744	188	34	-30	-17	6,237	-39
EU	1,510	-4,236	-10,272	-701	-12,923	1,086	-11	-3,421	-42	22,464	-324
TPP economies	363,465	16,231	87,316	4,615	7,072	59,750	515	4,222	-38	92,437	4,747
RCEP economies	851,039	27,257	281,085	20,842	132,362	78,762	1,996	36,204	550	97,883	5,938
APEC economies	747,923	23,271	260,665	19,929	35,139	78,471	714	31,287	114	117,245	5,576
World	891,970	17,744	272,026	21,561	78,608	81,163	2,009	27,193	406	171,276	5,100

(Cont) Annex Table II-2-B The contributions by RCEP economies: Tariff removals and NTMs reductions

(USD mil.)

	PHL	SGP	THA	VNM
Japan	2,953	1,921	5,263	3,151
Malaysia	319	4,298	1,965	311
Singapore	487	21,778	1,056	980
Viet Nam	854	883	848	18,662
Australia	1,404	3,734	2,189	18
New Zealand	367	344	259	65
US	2,861	5,083	555	-2,436
Canada	623	1,508	784	-478
Mexico	5	1,042	591	-1,174
Chile	205	561	449	-94
Peru	73	184	141	-86
China	6,687	4,046	4,320	-3,210
Korea	-2	163	-131	3,734
Indonesia	581	5,547	2,428	-1,491
Philippines	31,566	598	1,086	-344
Thailand	729	1,512	21,133	519
Cambodia	3	60	420	69
Laos	1	13	187	58
India	1,111	2,778	562	-2,404
Hong Kong, China	406	1,251	260	-307
Chinese Taipei	-1,137	-515	-520	-851
Russia	1,278	3,252	2,264	-880
EU	5,002	10,088	3,407	-8,415
TPP economies	10,154	41,336	14,099	18,919
RCEP economies	47,063	47,673	41,586	20,118
APEC economies	50,263	57,188	44,939	16,088
World	61,810	84,639	59,838	-4,050

Annex Table II-3-A The contributions by FTAAP economies: Tariff removals

(USD mil.)

	FTAAP	AUS	CAN	CHL	CHN	HKG	IDN	JPN	KOR	MEX	MYS
Japan	114,268	3,712	1,868	444	41,268	0	2,206	20,656	4,037	1,781	4,779
Malaysia	14,932	207	85	28	1,388	0	313	208	-135	383	10,147
Singapore	7,589	-85	86	11	1,093	0	496	422	-232	164	585
Viet Nam	16,157	108	60	9	-335	0	237	391	457	524	148
Australia	48,254	6,180	114	78	9,926	0	970	1,877	1,452	684	486
New Zealand	4,830	-104	556	-1	1,193	0	137	82	99	338	97
US	120,706	-2,056	1,320	-219	81,485	0	818	4,706	2,131	-4,495	2,336
Canada	9,963	9	7,437	115	2,747	0	200	1,044	-37	399	284
Mexico	34,946	63	-628	-14	-4,571	0	99	-503	-115	31,330	437
Chile	1,679	1	-37	866	701	0	90	37	1	210	65
Peru	464	2	-13	-5	47	0	36	-35	-15	107	18
China	243,694	4,078	3,235	203	133,441	1	304	1,978	5,386	6,125	2,149
Korea	64,432	947	448	210	18,290	0	165	578	24,062	2,596	1,185
Indonesia	18,052	789	102	57	1,990	0	12,487	-116	-172	854	46
Philippines	10,518	71	61	12	-696	0	59	-42	-235	131	235
Thailand	27,746	-1,066	-47	90	1,780	0	317	602	-187	255	400
Cambodia	-1,391	-4	-64	-2	-1,171	0	-10	-39	13	-37	21
Laos	9	-2	-1	0	-36	0	-1	1	-3	3	-20
India	-20,353	-453	-472	-25	-11,268	0	-903	-657	-1,195	-237	-522
Hong Kong, China	5,827	49	66	0	2,766	0	52	25	161	43	240
Chinese Taipei	28,317	123	222	53	11,304	0	174	418	541	901	980
Russia	37,439	-102	53	17	7,239	0	610	-177	77	1,473	683
EU	-125,475	-3,746	-1,870	21	-43,033	0	-963	-3,701	-6,804	316	2,155
TPP economies	373,788	8,038	10,847	1,312	134,943	0	5,600	28,885	7,642	31,426	19,381
RCEP economies	548,736	14,379	6,029	1,114	196,864	0	16,777	25,943	33,347	13,563	19,734
APEC economies	809,812	12,927	14,986	1,954	311,057	0	19,769	32,151	37,277	43,804	25,298
World	573,915	7,515	10,502	1,609	227,411	0	19,466	24,673	25,949	47,764	28,856

(Cont) Annex Table 3-A The contributions by RCEP economies: Tariff removals

(USD mil.)

	NZL	PER	PHL	RUS	SGP	THA	TWN	USA	VNM
Japan	392	223	1,084	19,061	1	4,567	2,589	6,292	2,112
Malaysia	15	7	50	98	0	1,722	-27	566	84
Singapore	-4	28	38	3,174	16	880	76	282	647
Viet Nam	14	-1	408	-1,088	1	795	445	2,043	13,328
Australia	-316	-66	457	22,654	-1	1,990	516	1,201	-250
New Zealand	1,203	14	132	325	0	202	115	483	-31
US	115	811	1,583	20,567	-1	2,745	2,281	9,530	-135
Canada	-19	20	193	-2,715	0	854	209	-858	-302
Mexico	-5	143	-70	12,156	9	557	80	-3,511	-864
Chile	-3	-73	96	-1,231	0	527	130	491	-43
Peru	-2	900	7	-887	0	146	42	403	-67
China	411	944	1,947	50,337	0	3,342	2,417	31,283	-5,869
Korea	82	160	145	11,381	0	-290	312	2,149	2,425
Indonesia	31	9	-2	-65	0	2,235	218	3,093	-1,613
Philippines	7	18	9,072	614	0	970	153	1,013	-350
Thailand	-13	44	266	3,299	0	21,071	229	1,040	-180
Cambodia	-1	-1	-2	54	0	128	26	-567	-32
Laos	0	-1	0	-4	0	67	1	0	6
India	-36	-65	18	51	0	-444	-273	-2,272	-2,943
Hong Kong, China	0	7	169	1,495	0	340	209	524	-110
Chinese Taipei	23	66	405	1,744	4	844	7,618	1,646	1,892
Russia	-25	-279	140	22,545	0	2,235	490	1,414	-367
EU	-286	-377	869	-61,360	-7	2,835	-711	-326	-7,244
TPP economies	1,390	2,006	3,979	72,115	26	14,985	6,455	16,922	14,478
RCEP economies	1,785	1,313	13,612	109,893	19	37,234	6,797	46,606	7,335
APEC economies	1,907	2,974	16,120	163,465	31	45,732	18,101	59,084	10,306
World	1,408	607	17,473	44,396	24	57,914	18,289	50,703	-8,141

Annex Table II-3-B The contributions by FTAAP economies: Tariff removals and NTMs reductions

(USD mil.)

	FTAAP	AUS	CAN	CHL	CHN	HKG	IDN	JPN	KOR	MEX	MYS
Japan	176,966	4,222	1,212	522	50,328	128	2,154	62,030	4,056	-722	9,161
Malaysia	69,736	376	31	32	2,273	22	333	700	-136	111	56,205
Singapore	42,667	136	79	20	1,768	80	597	848	-230	-66	7,208
Viet Nam	31,099	253	36	10	306	9	338	792	461	578	1,264
Australia	73,855	14,626	-58	85	13,922	86	1,116	3,092	1,462	735	4,711
New Zealand	10,991	440	574	0	1,580	21	181	286	100	480	659
US	251,825	-1,329	8,846	-16	94,456	286	868	9,629	2,162	16,174	19,215
Canada	42,716	51	18,938	131	5,027	58	183	1,286	-36	313	3,465
Mexico	114,731	-62	-1,371	34	-4,802	28	55	-617	-116	99,828	2,009
Chile	6,865	-22	-137	1,897	2,022	17	98	295	4	546	1,009
Peru	2,531	-4	-18	19	501	4	39	15	-15	164	338
China	355,549	5,301	2,776	348	204,789	642	48	8,598	5,438	1,603	9,521
Korea	72,290	1,153	320	252	23,608	34	139	2,112	24,426	2,199	602
Indonesia	32,705	1,032	-92	60	3,428	31	15,273	787	-169	575	3,676
Philippines	39,723	96	14	15	281	14	40	463	-237	-220	6
Thailand	40,367	-863	-94	98	2,846	24	379	1,662	-188	-68	4,324
Cambodia	-1,270	-5	-66	-2	-1,168	-1	-11	-36	13	-48	78
Laos	33	-3	-3	0	-31	0	-1	0	-3	1	-12
India	-19,243	-500	-681	-20	-11,754	-16	-895	-770	-1,200	-1,332	1,517
Hong Kong, China	15,953	172	113	10	5,591	1,636	57	589	165	82	1,598
Chinese Taipei	43,177	239	186	65	14,612	26	158	1,264	540	507	-123
Russia	80,431	-282	-525	32	11,590	56	649	-198	82	1,644	6,959
EU	-104,442	-5,116	-5,043	106	-39,793	50	-1,299	-5,119	-6,835	-5,772	23,039
TPP economies	823,980	18,687	28,132	2,734	167,381	740	5,962	78,357	7,713	118,141	105,244
RCEP economies	925,466	26,264	4,047	1,421	292,174	1,076	19,690	80,564	33,794	3,826	98,921
APEC economies	1,504,174	25,534	30,830	3,614	434,125	3,204	22,705	93,634	37,771	124,463	131,806
World	1,340,002	17,777	19,878	3,394	363,984	3,282	21,991	82,126	26,398	120,960	184,517

(Cont) Annex Table II-3-B The contributions by RCEP economies: Tariff removals and NTMs reductions

(USD mil.)

	NZL	PER	PHL	RUS	SGP	THA	TWN	USA	VNM
Japan	545	254	2,332	20,524	1,559	4,979	3,883	9,234	2,756
Malaysia	38	7	183	252	4,400	1,884	-1	1,100	283
Singapore	23	36	302	3,297	24,308	963	129	890	917
Viet Nam	26	-2	869	-1,021	925	857	693	2,510	22,788
Australia	273	-74	1,388	22,865	3,678	2,180	1,057	2,113	-229
New Zealand	4,353	22	340	389	349	234	208	836	-21
US	256	1,035	6,134	22,433	9,490	3,247	4,543	58,557	-728
Canada	-9	38	906	-2,522	1,707	926	492	11,747	-495
Mexico	-33	141	-122	12,294	1,109	601	263	6,265	-1,418
Chile	-5	-33	403	-1,192	610	564	261	882	-72
Peru	-3	1,661	82	-879	199	157	85	547	-92
China	518	1,083	6,152	55,364	3,474	3,492	5,471	41,685	-8,086
Korea	134	186	-448	12,386	-98	-296	352	3,396	3,055
Indonesia	50	-2	452	76	5,715	2,324	424	3,624	-1,956
Philippines	15	19	36,398	679	541	993	157	1,464	-435
Thailand	8	48	583	3,498	1,536	24,144	319	1,560	265
Cambodia	-2	-2	1	52	54	141	37	-603	-15
Laos	-1	-1	0	-5	12	74	0	0	10
India	-81	-74	312	87	1,587	-456	-206	-2,561	-4,051
Hong Kong, China	16	12	660	1,528	1,827	395	462	1,221	-151
Chinese Taipei	43	78	140	1,998	-50	857	18,180	2,469	2,502
Russia	-61	-346	1,416	45,118	3,606	2,455	1,139	1,475	-653
EU	-537	-452	4,832	-61,422	9,844	3,290	786	-3,739	-10,863
TPP economies	5,464	3,086	12,816	76,439	48,334	16,592	11,614	94,679	23,690
RCEP economies	5,900	1,501	48,864	118,443	48,041	41,512	12,524	65,247	15,281
APEC economies	6,188	4,165	58,168	197,086	64,884	50,955	38,119	151,573	18,229
World	5,202	1,437	68,776	80,562	91,201	64,360	42,025	137,384	-8,216