

Chapter 1

Assessing the Economic Effects of the Regional Comprehensive Economic Partnership on ASEAN Member States

Ken Itakura

Nagoya City University, Japan

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Chapter 1

Assessing the Economic Effects of the Regional Comprehensive Economic Partnership on ASEAN Member States

Ken Itakura
Nagoya City University

By applying a recursively dynamic computable general equilibrium (CGE) model of global trade, supplemented with the recent database, we conducted a set of policy simulations of the Regional Comprehensive Economic Partnership (RCEP), focusing on Association of Southeast Asian Nations (ASEAN) member states (AMSs). Simulation results revealed that all of the member countries gain in terms of real gross domestic product (GDP) from participating in the RCEP by liberalising their trade and fostering investment. Once the investment commitment by the member countries leads to lowering country-specific risk, the gain in real GDP is bolstered further. Investment in all member countries rises as the RCEP is implemented and as more capital from abroad is attracted. Trade volumes expand as the participating countries commit to deeper tariff reductions. Economic welfare also improves for most RCEP member countries.

1. Introduction

This paper aims to evaluate the potential economic impact of the Regional Comprehensive Economic Partnership (RCEP) Agreement on Association of Southeast Asian Nations (ASEAN) member states (AMSs). The RCEP is a regional trade agreement that involves 16 participating countries – the AMSs, Australia, China, India, Japan, Korea, and New Zealand. Since ASEAN has already established bilateral free trade agreements (FTAs) with the six partner countries, establishing the RCEP is an attempt to merge the existing FTAs into an integrated market across the region. This integration may go beyond the conventional trade liberalisation of tariff reduction and/or elimination; it would liberalise trade in services, facilitate trade, and promote investment in the region.

To evaluate the economic effects of the RCEP, we conduct a set of simulations by using a computable general equilibrium (CGE) model of global trade. In the simulations, we explore potential economic gains from liberalisation of goods and services trade, logistic improvements, and investment commitments under the RCEP. To make the simulation setting realistic, we collect and utilise recent data inputs from various national and international organisations to set up the baseline scenario in which the hypothetical simulations of the RCEP are examined.

Our simulation results indicate that for the AMSs, in general, implementation of the RCEP leads to higher real gross domestic product (GDP), and more trade volume and investment. The six partner countries also gain economically from the RCEP.

In the next section, we describe the database and the CGE model, as well as the simulation design for this study. Section 3 reports the simulation results, followed by a summary discussion.

2. Methodology

Our objective is to obtain quantitative measures that can capture the potential economic effects of the RCEP. For this purpose, we conduct a set of hypothetical simulations with a recursively dynamic CGE model of global trade. Since the RCEP will have economy-wide effects on the economic activities in the participating economies of the

AMSS, Australia, China, India, Japan, Korea, and New Zealand, it is reasonable to use the global CGE model for evaluating the repercussions arising from the multi-sector and the multi-region interactions induced by the RCEP implementation. In this section, we describe the database, the CGE model, and the simulation design.

2.1. Data Bases

To reflect the current and prospective states of the global economy in our simulation analysis, we rely on the GTAP Data Base version 8.1 (Narayanan, Aguiar, and McDougall, 2012) and economic forecasts from international organisations. The GTAP Data Base records the entire global economy with detailed information about 57 industrial sectors for 134 regions. With this database, we are able to observe the economic structure of production, international trade and protection, and consumption, benchmarked at the year 2007. The GTAP Data Base is supplemented with international factor income flows due to domestic and foreign assets holdings. To reduce computational burden, we aggregated the GTAP Data Base to 27 countries/regions and 25 sectors, and the mappings from the original disaggregated data are reported in Tables 1.1 and 1.2. The GTAP Data Base covers eight AMSs – Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, and Viet Nam. Because of the limited data, Brunei Darussalam and Myanmar are lumped into the ‘Rest of Southeast Asia’ (RoSEAsia) along with Timor–Leste.

Table 1.1: List of Countries/Regions

| No. | Country/Region | No. | Country/Region |
|-----|----------------|-----|----------------|
| 1 | Cambodia | 14 | Australia |
| 2 | Indonesia | 15 | New Zealand |
| 3 | Lao PDR | 16 | Hong Kong |
| 4 | Malaysia | 17 | Taiwan |
| 5 | Philippines | 18 | USA |
| 6 | Singapore | 19 | Canada |
| 7 | Thailand | 20 | Mexico |
| 8 | Viet Nam | 21 | Brazil |
| 9 | RoSEAsia | 22 | Chile |
| 10 | Japan | 23 | Argentina |
| 11 | China | 24 | UK |
| 12 | Korea | 25 | Germany |
| 13 | India | 26 | UAE |
| | | 27 | RestofWorld |

Source: GTAP Data Base version 8.1.

Table 1.2: Sectoral Aggregation

| No | Name | GTAP 57 sectors |
|----|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Primary | Paddy rice; Wheat; Cereal grains nec; Vegetables, fruit, nuts; Oil seeds; Sugar cane, sugar beet; Plant-based fibers; Crops nec; Cattle, sheep, goats, horses; Animal products nec; Raw milk; Wool, silkworm cocoons; Forestry; Fishing; Minerals nec; Meat: cattle, sheep, goats, horse; Meat products nec; Vegetable oils and fats; Dairy products; Processed rice; Sugar; Food products nec. |
| 2 | Energy | Coal; Oil; Gas |
| 3 | BvrgTbcc | Beverages and tobacco products |
| 4 | Textile | Textiles |
| 5 | Apparel | Wearing apparel |
| 6 | Leather | Leather products |
| 7 | Wood | Wood products |
| 8 | Paper | Paper products, publishing |
| 9 | PetCoProduct | Petroleum, coal products |
| 10 | Chemical | Chemical, rubber, plastic products |
| 11 | Minerals | Mineral products nec. |
| 12 | FerrousMetal | Ferrous metals |
| 13 | OtherMetal | Metals nec. |
| 14 | MetalProduct | Metal products |
| 15 | Motorvehicle | Motor vehicles and parts |
| 16 | TrnsprtEquip | Transport equipment nec. |
| 17 | ElecEquip | Electronic equipment |
| 18 | Machinery | Machinery and equipment nec. |
| 19 | OthMnfct | Manufactures nec. |
| 20 | Utilities | Electricity; Gas manufacture, distribution; Water |
| 21 | Construction | Construction |
| 22 | Trade | Trade |
| 23 | TransComm | Transport nec; Sea transport; Air transport; Communication |
| 24 | FinsBusi | Financial services nec; Insurance; Business services nec. |
| 25 | OthSrvc | Recreation and other services; PubAdmin/Defence/Health/Educat; Dwellings |

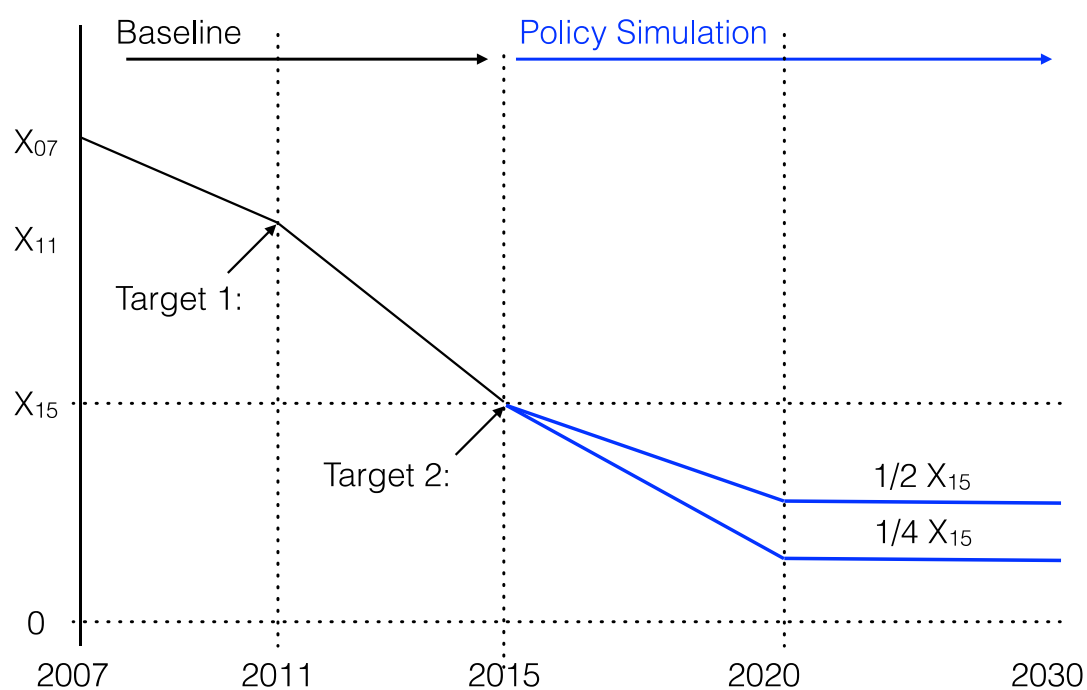
Source: GTAP Data Base version 8.1.

Our first task is to construct a baseline scenario, which is a hypothetical future state of the global economy and forms a basis of comparison against the RCEP policy simulations. We rely on the projections of total population, working-age population (age 15–64), and real GDP. Projections of total and working-age population growth rates are computed from those of the United Nations (UN) (2013) and mapped for our 27 regional aggregation. Projections of real GDP growth rates are from the International Monetary Fund (2014).

As the AMSs have been progressing toward the establishment of the ASEAN

Economic Community by 2015, our hypothetical simulation analysis is designed to focus on the period 2015–2030. However, the trade liberalisation of the ASEAN Economic Community and each ASEAN+1 FTA that was implemented prior to the RCEP seems to be in progress, lowering trade barriers towards the target level each FTA has committed to. In this study, we take into account this progressing nature by introducing two sets of targets of bilateral tariffs into the baseline scenario.

Figure 1.1 illustrates these two targets. The first target is specified by the year 2011. The pre-release of the GTAP Data Base version 9 provides us with the estimates of bilateral tariffs for 2011. For all 25 sectoral trade flows of the 27 regions, we make sure that the baseline simulation passes through the bilateral tariffs of the 2011 target (Target 1 in Figure 1.1). The second target is specified as the year 2015 (Target 2). The ASEAN Economic Community and the ASEAN+1 FTAs, listed in Table 1.3, are subject to this second bilateral tariff targets, assuming a gradual reduction from the first target. Among the AMSs participating in the FTAs listed in Table 1.3, there are different completion years for the ASEAN+1 FTAs. According to Fukunaga and Isono (2013), delayed target years are set for the CLMV (Cambodia, Lao PDR, Myanmar, and Viet Nam) countries compared with other AMSs. From the aggregated GTAP Data Base, combined with the two targets, we can compute average applied tariff rate for AMSs for 2007, 2011, and 2015. Table 1.4 reports the results. For example, Cambodia's average applied tariff rate was 9.4 percent in 2007, 10 percent in 2011, and 4.4 percent in 2015. In general, average applied tariff rates in the AMSs are falling over the baseline as computed with the two targets.

Figure 1.1: Assumptions of Tariff Reduction Schedule, 2007–2030

Source: Author.

Table 1.3: FTAs in the Baseline

| | ASEAN6 | CLMV | Partner |
|-----------------------------|--------|------|---------|
| ASEAN–FTA | 2015 | 2015 | .. |
| ASEAN–Australia–New Zealand | 2020 | 2020 | 2020 |
| ASEAN–China | 2010 | 2018 | 2010 |
| ASEAN–India | 2017 | 2022 | 2017 |
| ASEAN–Japan | 2018 | 2023 | 2018 |
| ASEAN–Korea | 2012 | 2018 | 2010 |

Note: ASEAN6 (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand), CLMV (Cambodia, Lao PDR, Myanmar, and Viet Nam).

Source: Author's assumptions based on Fukunaga and Isono (2013).

Table 1.4: Average Applied Tariff Rate for ASEAN, 2007, 2011, 2015 (%)

| | 2007 | 2011 | 2015 |
|-------------|------|------|------|
| Cambodia | 9.4 | 10.0 | 4.4 |
| Indonesia | 2.8 | 2.5 | 1.6 |
| Lao PDR | 7.2 | 7.4 | 3.0 |
| Malaysia | 3.1 | 3.3 | 2.4 |
| Philippines | 3.0 | 2.0 | 1.4 |
| Singapore | 0.0 | 0.0 | 0.0 |
| Thailand | 4.4 | 4.5 | 2.8 |
| Viet Nam | 8.2 | 5.7 | 3.8 |
| RoSEAsia | 3.2 | 3.4 | 2.0 |

Source: Computed from GTAP Data Base version 8.1, and the baseline result.

Sectoral average applied tariff rates for merchandise trade and estimates of tariff equivalents of service trade barriers by Wang, Mohan, and Rosen (2009) are reported in Table 1.5. Since construction is used as a benchmark sector in their estimates, we dropped it from Table 1.5. Applying the sector-specific gravity model, Wang, Mohan, and Rosen (2009) estimated the tariff equivalents of service trade barriers. Their estimating equation is as follows:

$$M_{i,j} = a_i + a_j + a_1 \ln GDP_j + a_2 \ln PCI_j + \varepsilon_j.$$

Imports of sector i in country j is regressed upon sector dummy a_i , country dummy a_j , GDP, and per capita income PCI, by using the GTAP Data Base version 7. Then, country average of trade-cost equivalent (T_j) is computed with the import substitution elasticity parameter (σ) extracted from the GTAP Data Base.

$$a_j = -\sigma \ln T_j^*(\bullet)$$

$$T_j^* = \exp(-a_j / \sigma).$$

Minor and Hummels (2011) did elaborating estimating work on average costs of time delays in trade, which are considered as another trade barrier. The World Bank's *Doing Business 2009 Survey* (2010) provides information on logistics time of importing merchandise goods expressed in number of days for our 2007 benchmark year. Table 1.6 shows, for example, that there would be varying time- savings of at least 7 percent on importing logistics.

Table 1.5: Sectoral Average Applied Tariff Rate for ASEAN, 2015 (%)

| | Cambodia | Indonesia | Lao PDR | Malaysia | Philippines | Singapore | Thailand | Viet Nam | RoSEAsia |
|--------------|----------|-----------|---------|----------|-------------|-----------|----------|----------|----------|
| Primary | 4.1 | 3.1 | 3.4 | 3.7 | 4.2 | 0.0 | 7.0 | 4.4 | 1.8 |
| Energy | 0.0 | 0.0 | 0.7 | 1.7 | 0.0 | 0.0 | 0.0 | 0.5 | 1.9 |
| BvrgTbcc | 6.4 | 7.6 | 5.7 | 38.5 | 5.2 | 1.4 | 14.1 | 24.4 | 12.0 |
| Textile | 4.2 | 1.6 | 0.8 | 5.7 | 1.5 | 0.0 | 4.7 | 6.3 | 6.9 |
| Apparel | 15.3 | 6.9 | 2.2 | 9.2 | 1.9 | 0.0 | 12.7 | 11.1 | 4.2 |
| Leather | 4.8 | 2.7 | 1.8 | 3.2 | 4.0 | 0.0 | 10.7 | 6.5 | 2.6 |
| Wood | 9.0 | 1.3 | 3.4 | 2.3 | 2.5 | 0.0 | 5.7 | 3.7 | 3.6 |
| Paper | 3.3 | 1.6 | 1.5 | 4.2 | 2.9 | 0.0 | 2.5 | 5.2 | 1.0 |
| PetCoProduct | 3.9 | 1.0 | 1.2 | 0.2 | 0.0 | 0.0 | 1.8 | 4.2 | 0.7 |
| Chemical | 2.6 | 2.4 | 1.6 | 2.9 | 1.7 | 0.0 | 4.3 | 2.1 | 1.3 |
| Minerals | 3.7 | 3.8 | 0.8 | 7.7 | 1.7 | 0.0 | 5.0 | 7.5 | 1.1 |
| FerrousMetal | 2.1 | 2.1 | 0.6 | 11.3 | 0.9 | 0.0 | 2.3 | 1.1 | 0.7 |
| OtherMetal | 3.0 | 1.0 | 2.9 | 2.3 | 0.5 | 0.0 | 0.5 | 0.7 | 1.1 |
| MetalProduct | 5.2 | 2.1 | 1.4 | 6.5 | 2.0 | 0.0 | 6.2 | 5.2 | 1.2 |
| Motorvehicle | 11.8 | 5.1 | 8.6 | 8.2 | 4.6 | 0.0 | 12.3 | 12.2 | 6.8 |
| TrnsprtEquip | 5.8 | 1.1 | 8.5 | 1.2 | 3.3 | 0.0 | 3.5 | 7.7 | 1.7 |
| ElecEquip | 8.6 | 0.2 | 2.2 | 0.1 | 0.6 | 0.0 | 1.1 | 1.0 | 4.0 |
| Machinery | 6.8 | 2.0 | 1.8 | 1.9 | 0.8 | 0.0 | 3.8 | 2.2 | 2.7 |
| OthMnfct | 4.9 | 2.7 | 5.5 | 4.0 | 1.1 | 0.0 | 5.6 | 11.5 | 3.5 |
| Utilities | 80.7 | 178.8 | 52.9 | 63.6 | 138.0 | 0.0 | 97.3 | 152.2 | .. |
| Trade | 89.1 | 185.0 | 58.9 | 67.5 | 143.4 | 0.0 | 110.0 | 157.9 | .. |
| TransComm | 78.4 | 167.4 | 46.6 | 54.0 | 126.6 | 0.0 | 96.0 | 138.4 | .. |
| FinsBusi | 77.4 | 159.9 | 46.1 | 53.1 | 123.2 | 0.0 | 93.0 | 136.7 | .. |
| OthSrv | 87.0 | 181.0 | 58.8 | 63.6 | 140.2 | 0.0 | 107.4 | 154.6 | .. |

Source: Baseline result and Wang *et al.* (2009).

Table 1.6: Time-Saving from Logistic Improvements on Imports
(in number of days)

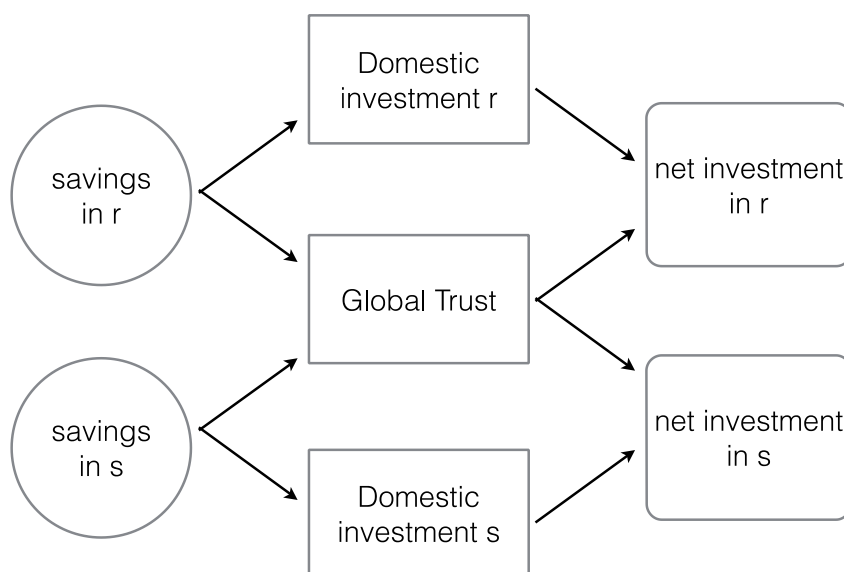
| | Days |
|-------------|------|
| Cambodia | 2.0 |
| Indonesia | 1.9 |
| Lao PDR | 2.6 |
| Malaysia | 0.7 |
| Philippines | 1.1 |
| Singapore | 0.3 |
| Thailand | 0.9 |
| Viet Nam | 1.6 |
| RoSEAsia | 1.5 |

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

2.2. Overview of Dynamic GTAP Model

For all simulations in this paper, we used the Dynamic GTAP model developed by Ianchovichina and McDougall (2001) and updated by Walmsley *et al.* (2012). Ianchovichina and McDougall (2001) extended the comparative static standard GTAP model (Hertel, 1997; McDougall, 2003) by introducing international capital mobility and capital accumulation. In the standard GTAP model, capital is assumed to be mobile between sectors in a country, but not across borders.

The Dynamic GTAP model preserves all the main features of the standard GTAP model—constant return to scale production technology, perfectly competitive markets, and product differentiation by origin, known as the Armington assumption (Armington, 1969). The Dynamic GTAP model uses as its core inputs the GTAP Data Base (Narayanan *et al.*, 2012) augmented with foreign income data from the *Balance of Payments Statistics* of the International Monetary Fund to infer international capital ownership and foreign wealth.

Figure 1.2: Savings and Investment in the Model

Source: Author based on Walmsley *et al.* (2012).

In the Dynamic GTAP model, each region is endowed with fixed physical capital stock. The physical capital is accumulated over time with new investments. This dynamics is driven by the net investment, which is sourced from regional households' savings. Figure 1.2 shows the international linkage of the sources of net investment. Net investment in region r is a composite of domestic investment and foreign investment from 'global trust' that is assumed to be the sole financial intermediary for all foreign investments. Regional households own indirect claims to the physical capital in the form of equity, which are of two types – equity in domestic firms and equity in foreign firms. The regional household directly owns the domestic equity but only indirectly the foreign equity by holding shares in a portfolio of foreign equities provided by the 'global trust'. The values of the household's equity holdings in domestic firms and in the global trust change over time, and the household allocates savings for investment. Collecting such investment funds from regions, the global trust reinvests the funds in firms around the world and offers a portfolio of equities to households. The sum of the household's equity holdings in the global trust is equal to the global trust's equity holdings in firms around the world.

Incentives for investments or equity holdings are governed by rates of return, which would be equalised across regions if capital is perfectly mobile. However, this equalisation of rates of return seems impractical, at least in the short run. Further, there are empirical

observations of so-called ‘home bias’ in savings and investment, equity holdings by households, and capital flows. Home bias refers to empirical observations that domestic markets are preferred to foreign markets. These empirical observations suggest that capital is not perfectly mobile, leading to varying rates of return across regions. The Dynamic GTAP model allows inter-regional differences in rates of return in the short run, which will be eventually equalised in the long run. Differences in rates of return are attributed to the errors in investors’ expectations about the future rate of returns. However, the errors in expectation are gradually adjusted to the actual rate of return. Eventually the errors are eliminated and the unique rate of return across regions can be attained. Therefore, we assume perfect capital mobility applies only in the long run.

Participating in FTAs could lead to more investment from abroad. Trade liberalisation often makes prices of goods from a participating country cheaper due to removal of tariffs, creating increased demand for the goods. Responding to the increased demand, production of the goods may expand in the exporting country. To increase the production, more intermediate goods, labour, capital, and other primary factors are demanded. This increased demand for production inputs raises the corresponding prices, wage rates, and rental rates. Higher rental rates can be translated into higher rates of return, attracting more investment from both home and foreign countries. These are part of the expected repercussions induced by the liberalisation.

2.3. Scenarios for Simulation

Three policy scenarios were designed for our simulation experiments of the RCEP implementation. The baseline scenario is constructed to reflect the hypothetical future state of world economy without the RCEP implementation, for the period 2007–2030. During this period, average applied tariff rates are gradually reduced for the two targets, as discussed above (see Figure 1.1).

Three policy scenarios for the RCEP are applied over the period 2016–2030. Each policy scenario is designed to examine the effect of varying degrees of tariff reductions (50 percent and 75 percent) as well as the effect of investment commitment that is assumed to lower country-specific risk by 0.05 percentage points. Trade liberalisation includes gradual elimination of tariffs, logistic improvements, and reduction in tariff equivalents of

services trade barriers. Average applied tariffs in the RCEP region after 2015 are gradually reduced or eliminated by 2020 (see Figure 1.1 for two different tariff reduction schedules under Policy Simulation). We assume a 7 percent improvement in logistics and a 7 percent reduction in services trade barriers, following the empirical study by Hayakawa and Kimura (2014).

Countries participating in the RCEP would commit to promoting investment, and this commitment can improve the rate of return on capital by reducing country-specific negative factors. This effect of investment commitment is implemented in the policy scenarios by lowering country-specific risk by 5 basis points. A summary of the three policy scenarios is listed below:

Policy Scenario for RCEP implementation:

(S1) Tariff reduction (50 percent) + logistics improvements on merchandise trade and reduction of barriers to service trade by 7 percent

(S2) S1 with tariff reduction (75 percent)

(S3) S2 + lowering country-specific risk by 5 basis point

3. Simulation Results

All simulation results reported in the following tables are in terms of percent difference from the baseline scenario, accumulated over the simulation period from 2016 to 2030. In other words, the deviation from the baseline results from the RCEP policy scenario. There are two major components driving such simulation results – different degrees of tariff reduction and investment commitment.

Simulation results of the RCEP on real GDP are reported in Table 1.7. All participating countries in the RCEP gain in real GDP compared with the baseline scenario. Cambodia stands out, as its increases in real GDP are larger than for other AMSs. The country has higher tariffs on imports used for forming physical capital, and liberalisation lowers the price of capital goods. Because of the fall in the price of capital goods, the large increase in investment in Cambodia contributes to the higher gain in real GDP. On the other hand, non-participating countries are clearly negatively affected. By increasing the degree of reduction in tariffs from 50 percent in S1 to 75 percent in S2, the gains in real GDP become larger. By

committing to investment promotion as shown in S3, thereby reducing country-specific risk, all participating countries show the largest gain in real GDP. Taking Cambodia as an example, Figures 3 and 4 show the time path of simulation results for the baseline scenario and S3. In Figure 1.3, it can be clearly seen that because of RCEP Cambodian real GDP growth rates are higher than those in the baseline scenario. These differences in annual growth rates are accumulated over time, as shown in Figure 1.4 as deviation from the baseline, and by 2030 Cambodia's real GDP is 8.9 percent higher than the baseline.

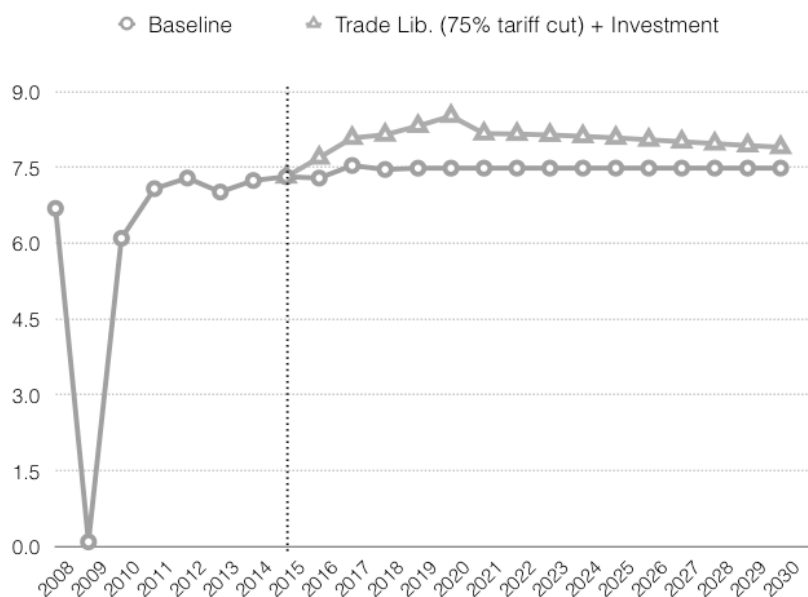
Table 1.7: Results on GDP, 2030
(cumulative deviation from the baseline, %)

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 6.1 | 8.0 | 8.9 |
| Indonesia | 1.0 | 1.0 | 2.3 |
| Lao PDR | 1.3 | 1.3 | 2.2 |
| Malaysia | 1.3 | 1.6 | 2.9 |
| Philippines | 1.2 | 1.1 | 4.2 |
| Singapore | 1.4 | 1.6 | 4.5 |
| Thailand | 2.4 | 3.1 | 5.3 |
| Viet Nam | 1.8 | 2.2 | 2.9 |
| RoSEAsia | 0.8 | 0.7 | 1.8 |
| Japan | 0.5 | 0.7 | 2.2 |
| China | 0.7 | 0.9 | 1.8 |
| Korea | 2.8 | 3.9 | 5.0 |
| India | 0.8 | 1.2 | 2.1 |
| Australia | 0.4 | 0.5 | 1.9 |
| New Zealand | 0.8 | 0.9 | 4.1 |
| Hong Kong | -0.5 | -0.6 | -1.3 |
| Taiwan | -0.9 | -1.3 | -2.1 |
| USA | -0.1 | -0.1 | -0.3 |
| Canada | 0.0 | -0.1 | -0.3 |
| Mexico | -0.4 | -0.6 | -1.8 |
| Brazil | -0.1 | -0.1 | -0.6 |
| Chile | -0.6 | -0.8 | -1.8 |
| Argentina | -0.1 | -0.2 | -0.4 |
| UK | -0.1 | -0.1 | -0.6 |
| Germany | -0.1 | -0.2 | -0.6 |
| UAE | -1.0 | -1.3 | -2.5 |
| RestofWorld | -0.2 | -0.3 | -0.9 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom, USA = United States of America.

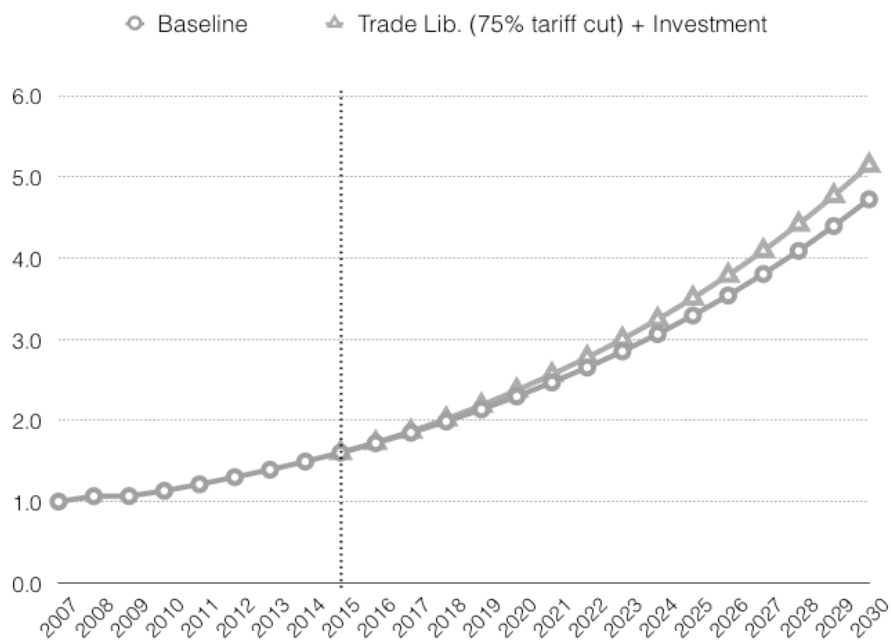
Source: Author's simulation results.

Figure 1.3: Cambodia's Real GDP Growth Rate, 2007–2030
(year-on-year, %)



Source: Author's simulation results.

Figure 1.4: Cambodia's Real GDP, 2007–2030 (2007=1.0)



Source: Author's simulation results.

The simulation results on export volume are reported in Table 1.8 and those on import volume in Table 1.9. The potential impact of the RCEP has a similar effect on trade volumes – the deeper the cuts in bilateral tariffs, the higher the trade volumes for RCEP members. In a few cases, the results of export volume under S3 fall below the baseline, indicated by negative results. The reason is that higher export prices induced by competing demands for factor inputs eventually lead to higher production costs than in the baseline scenario. This is the case for Lao PDR, Australia, and New Zealand.

The results on investment are reported in Table 1.10. Freer trade in goods and services and efficient logistics lead to higher investment in all RCEP member countries. As expected, improvements in the rate of return caused by reducing the country-specific risk resulted in higher investment, as reported in S3. Table 1.11 reports the impacts on foreign ownership of capital stock. The results on increased foreign ownership of capital stock indicate that capital will flow into the regions. Thus, the results in Table 1.11 show that once the RCEP is implemented, all RCEP participating countries would attract more investment from abroad.

The overall impact of the RCEP can be summarised in terms of economic welfare, as reported in Table 12. The RCEP could bring economic benefits to all participating countries for most of the policy scenarios. Further, economic welfare gains become more substantial once the RCEP includes investment commitment. However, the Philippines and India experienced negative welfare results. Such exceptional results are mainly attributed to changes in the regional households' holdings of foreign wealth. Because of the larger investment at home, the regional households accumulated more wealth at home, shifting away from foreign wealth. Income accrued from foreign wealth becomes smaller than the baseline over the simulation period, and the reduction in welfare slightly lower than the baseline for these countries.

Table 1.8: Results on Export Volume, 2030
(cumulative deviation from the baseline, %)

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 3.8 | 6.4 | 7.3 |
| Indonesia | 1.7 | 2.0 | 2.8 |
| Lao PDR | 0.6 | 1.1 | -0.9 |
| Malaysia | 2.1 | 2.9 | 4.7 |
| Philippines | 1.4 | 1.8 | 3.1 |
| Singapore | 1.4 | 1.7 | 3.2 |
| Thailand | 3.6 | 5.3 | 7.8 |
| Viet Nam | 1.2 | 2.7 | 2.9 |
| RoSEAsia | 0.6 | 0.8 | 0.6 |
| Japan | 1.7 | 2.4 | 3.6 |
| China | 2.4 | 3.4 | 4.6 |
| Korea | 3.8 | 5.9 | 7.7 |
| India | 1.7 | 2.9 | 3.8 |
| Australia | 1.0 | 1.5 | -0.3 |
| New Zealand | 1.2 | 1.7 | -0.1 |
| Hong Kong | -0.7 | -0.8 | -1.1 |
| Taiwan | -1.1 | -1.4 | -1.6 |
| USA | -0.3 | -0.4 | -0.3 |
| Canada | -0.4 | -0.6 | -1.1 |
| Mexico | -0.2 | -0.3 | -0.8 |
| Brazil | -0.8 | -1.1 | -0.9 |
| Chile | 0.3 | 0.6 | 0.9 |
| Argentina | -0.6 | -0.9 | -2.1 |
| UK | -0.3 | -0.5 | -0.9 |
| Germany | -0.3 | -0.4 | -0.7 |
| UAE | -0.8 | -1.2 | -1.5 |
| RestofWorld | -0.4 | -0.6 | -1.3 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom, USA = United States of America.

Source: Author's simulation results.

Table 1.9: Result on Import Volume, 2030
(cumulative deviation from the baseline, %)

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 4.2 | 6.8 | 7.6 |
| Indonesia | 1.7 | 2.2 | 4.0 |
| Lao PDR | 1.8 | 2.6 | 6.2 |
| Malaysia | 2.8 | 3.8 | 6.5 |
| Philippines | 1.6 | 1.6 | 5.7 |
| Singapore | 2.1 | 2.5 | 5.4 |
| Thailand | 4.4 | 6.1 | 8.9 |
| Viet Nam | 1.5 | 2.7 | 4.1 |
| RoSEAsia | 1.1 | 1.6 | 3.7 |
| Japan | 2.9 | 4.3 | 6.2 |
| China | 3.3 | 4.6 | 5.8 |
| Korea | 6.1 | 9.3 | 10.5 |
| India | 2.3 | 3.9 | 4.7 |
| Australia | 2.3 | 3.3 | 7.2 |
| New Zealand | 2.3 | 3.1 | 9.2 |
| Hong Kong | -1.0 | -1.2 | -1.6 |
| Taiwan | -2.1 | -2.9 | -3.8 |
| USA | -0.5 | -0.7 | -1.3 |
| Canada | 0.0 | 0.1 | 0.1 |
| Mexico | -0.8 | -1.1 | -3.2 |
| Brazil | 0.2 | 0.2 | -0.5 |
| Chile | -1.1 | -1.5 | -2.7 |
| Argentina | 0.1 | 0.0 | 0.3 |
| UK | -0.2 | -0.3 | -0.8 |
| Germany | -0.4 | -0.5 | -1.3 |
| UAE | -1.2 | -1.5 | -2.4 |
| RestofWorld | -0.3 | -0.4 | -1.1 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom,
 USA = United States of America.

Source: Author's simulation results.

Table 1.10: Result on Investment
(cumulative deviation from the baseline, %)

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 14.8 | 20.2 | 23.4 |
| Indonesia | 1.1 | 1.2 | 3.7 |
| Lao PDR | 2.3 | 2.8 | 7.1 |
| Malaysia | 3.8 | 4.9 | 10.2 |
| Philippines | 2.1 | 2.0 | 10.2 |
| Singapore | 3.2 | 3.8 | 12.2 |
| Thailand | 6.0 | 7.7 | 13.7 |
| Viet Nam | 3.2 | 4.0 | 7.7 |
| RoSEAsia | 1.3 | 1.4 | 4.5 |
| Japan | 2.0 | 2.8 | 9.6 |
| China | 0.6 | 0.7 | 2.6 |
| Korea | 15.0 | 22.4 | 24.7 |
| India | 1.9 | 2.8 | 5.8 |
| Australia | 1.6 | 2.1 | 9.9 |
| New Zealand | 2.2 | 2.7 | 14.9 |
| Hong Kong | -1.0 | -1.1 | -2.0 |
| Taiwan | -4.2 | -5.7 | -9.5 |
| USA | -0.2 | -0.3 | -1.2 |
| Canada | 0.2 | 0.3 | 0.0 |
| Mexico | -0.9 | -1.3 | -4.2 |
| Brazil | 0.2 | 0.2 | -0.9 |
| Chile | -1.7 | -2.5 | -4.8 |
| Argentina | 0.4 | 0.6 | 1.3 |
| UK | -0.2 | -0.2 | -1.5 |
| Germany | -0.2 | -0.3 | -1.6 |
| UAE | -1.7 | -2.2 | -4.4 |
| RestofWorld | -0.3 | -0.5 | -2.1 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom,
 USA = United States of America.

Source: Author's simulation results.

Table 1.11: Results on Foreign Ownership of Capital, 2030**(cumulative deviation from the baseline, %)**

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 10.4 | 14.4 | 17.6 |
| Indonesia | 3.9 | 3.9 | 13.9 |
| Lao PDR | 2.8 | 3.4 | 10.9 |
| Malaysia | 5.1 | 6.8 | 16.2 |
| Philippines | 1.5 | 1.2 | 8.0 |
| Singapore | 5.3 | 6.2 | 19.8 |
| Thailand | 13.7 | 18.8 | 37.7 |
| Viet Nam | 4.5 | 6.0 | 10.7 |
| RoSEAsia | 1.3 | 1.2 | 8.7 |
| Japan | 4.2 | 6.1 | 18.0 |
| China | 2.0 | 2.6 | 9.9 |
| Korea | 17.9 | 27.4 | 37.4 |
| India | 7.5 | 12.4 | 34.3 |
| Australia | 1.5 | 1.9 | 10.3 |
| New Zealand | 2.0 | 2.4 | 13.1 |
| Hong Kong | -1.4 | -1.6 | -3.1 |
| Taiwan | -4.0 | -5.5 | -8.8 |
| USA | -0.5 | -0.7 | -2.2 |
| Canada | -0.1 | -0.1 | -1.0 |
| Mexico | -1.0 | -1.4 | -4.6 |
| Brazil | -0.2 | -0.3 | -2.7 |
| Chile | -1.8 | -2.5 | -4.7 |
| Argentina | -0.2 | -0.6 | -1.7 |
| UK | -0.3 | -0.4 | -1.8 |
| Germany | -0.5 | -0.7 | -2.6 |
| UAE | -1.6 | -2.0 | -3.7 |
| RestofWorld | -0.5 | -0.6 | -2.6 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom,

USA = United States of America.

Source: Author's simulation results.

Table 1.12: Results on Welfare, 2030
(cumulative deviation from the baseline, %)

| | S1 | S2 | S3 |
|-------------|------|------|------|
| Cambodia | 4.1 | 3.2 | 2.5 |
| Indonesia | 0.8 | 0.9 | 1.4 |
| Lao PDR | 1.3 | 1.3 | 2.9 |
| Malaysia | 0.7 | 0.6 | 0.8 |
| Philippines | 0.3 | -0.3 | 1.4 |
| Singapore | 1.2 | 1.3 | 1.2 |
| Thailand | 0.8 | 0.4 | 0.2 |
| Viet Nam | 1.6 | 1.7 | 2.6 |
| RoSEAsia | 1.0 | 1.1 | 2.2 |
| Japan | 0.5 | 0.6 | 0.7 |
| China | 0.3 | 0.3 | 0.2 |
| Korea | 2.2 | 2.8 | 2.3 |
| India | 0.1 | 0.0 | -0.4 |
| Australia | 0.6 | 0.8 | 1.9 |
| New Zealand | 0.5 | 0.5 | 2.3 |
| Hong Kong | -0.4 | -0.5 | -0.7 |
| Taiwan | -1.3 | -1.8 | -2.7 |
| USA | -0.1 | -0.1 | -0.3 |
| Canada | 0.1 | 0.1 | 0.3 |
| Mexico | -0.3 | -0.4 | -1.0 |
| Brazil | 0.0 | 0.0 | -0.2 |
| Chile | -0.8 | -1.2 | -2.0 |
| Argentina | 0.0 | 0.0 | 0.1 |
| UK | 0.0 | -0.1 | -0.2 |
| Germany | -0.1 | -0.2 | -0.4 |
| UAE | -0.1 | -0.1 | 0.1 |
| RestofWorld | 0.0 | 0.0 | 0.0 |

RoSEAsia = Rest of Southeast Asia, UAE = United Arab Emirates, UK = United Kingdom, USA = United States of America.

Source: Author's simulation results.

4. Summary

By applying the Dynamic GTAP model with the recent database, we conducted a set of policy simulations of the RCEP, focusing on the AMSs. Simulation results reveal that all participating countries in the RCEP gained in terms of real GDP by liberalising their trade and promoting investment. Once investment commitment led to a reduction in country-specific risk, the increase in real GDP was bolstered further. Investment in all member countries rose as the RCEP was implemented; more foreign capital was likewise attracted to the RCEP region by higher rates of return. Trade volume expanded as the participating countries implemented deeper tariff reductions. Economic welfare also improved for most RCEP member countries.

This study has some limitations that can be addressed with additional information and updated data. We assumed full utilisation of the RCEP, but in reality many producers and consumers did not use the preferential treatments made available by existing FTAs. Utilisation rates can be incorporated into the simulation setting to reflect the under-utilisation of FTAs. Movement of labour across the participating countries is not considered because of the current model's limitation. Although it is not easy, the model can be extended to capture international labour movement, based on pioneering work found in the literature, for example Walmsley, Winters and Ahmed (2007).

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