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**Impact of the Regional Comprehensive
Economic Partnership (RCEP): A Global
Computable General Equilibrium (CGE)
Simulation**

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Abstract: *This study estimates the potential economic effects of the Regional Comprehensive Economic Partnership (RCEP) by using a recursively dynamic computable general equilibrium (CGE) model, which incorporates the global supply chains (GSCs) structure, also referred as the global value chains (GVCs). The tariff reduction schedules for the RCEP agreement are incorporated in addition to other large FTAs, such as the CPTPP. Second, the structure of GSCs is included in the CGE model to take into account the importance of trade in intermediate goods and services. This study implements the RCEP simulation scenarios for tariff reductions, services trade liberalization, logistic improvements, and investment commitments. Results show that the real GDP of RCEP members increases by \$675 billion in total, of which ASEAN grows by \$160 billion.*

Keywords: Economic Integration; RCEP; CGE

JEL Classification: F13; F15; D58

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1. Introduction

The Regional Comprehensive Economic Partnership (RCEP) agreement, which entered into force on 1 January 2022, represents the largest free trade area in the world. Those that ratified RCEP are the Association of Southeast Asian Nations (ASEAN) Members,¹ Australia, China, Japan, the Republic of Korea, and New Zealand. These members account for about 30% of the world's population; gross domestic product (GDP); and trade in goods, services, and intermediate inputs in 2022 (UN, 2019; IMF, 2021; OECD, 2021). A modern free trade agreement (FTA), RCEP covers the liberalisation of trade in goods and services, trade facilitation, investment commitments, and more in 20 chapters (RCEP, 2020). Because of the economic size of RCEP, fulfilment of the agreement is expected to have substantial economic effects on members.

This chapter estimates the potential economic effects of RCEP through a recursively dynamic computable general equilibrium (CGE) model, which incorporates global supply chain (GSC) structure, also referred as global value chains. Literature does exist employing the CGE model to quantify the economic effects of large FTAs in Asia like RCEP, such as Kawai and Wignaraja (2008); Lee, Owen, and van der Mensbrugghe (2009); Cheong and Tongzon (2013); Urata (2014); Lee and Itakura (2018); Itakura (2019a); Petri and Plummer (2020); and Park, Petri, and Plummer (2021). More recently, Nicita (2021) and UNCTAD (2021) reported the expected impact of the RCEP tariff concessions on trade.

This chapter contributes to the existing studies in two ways. Firstly, the tariff reduction schedules for RCEP are incorporated as well as those for other FTAs, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Secondly, the structure of GSCs is included in the CGE model to take into account the importance of trade in intermediate goods and services. Indeed, CGE models with GSC structures have begun to explore the impact of trade policies, such as in Carrico (2017), Walmsley and Minor (2018), Dixon and Rimmer (2019), Greenville et al. (2019), Bellora and Fontagné (2019), Itakura (2019b), and Webb et al. (2020).

¹ ASEAN Members are Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

Simulations are conducted for 2022–2035 based on four different scenarios. Import tariff reductions amongst RCEP members are simulated in the first scenario. For the second scenario, services trade liberalisation is added to the first scenario. Logistics improvements, due to trade facilitation, are included in the third scenario, and investment commitments are added to the last scenario. The simulation results show that real GDP of RCEP members increases by \$53 billion for the first scenario, \$148 billion for the second scenario, \$235 billion for the third scenario, and \$675 billion for the fourth scenario. Also, the real GDP for ASEAN grows by \$12 billion in the first scenario, \$34 billion in the second scenario, \$84 billion in the third scenario, and \$160 billion in the fourth.

An overview of the database and model is given in the next section, followed by a description of the baseline and RCEP scenarios in Section 3. Section 4 reports the simulation results, and the final section provides a summary.

2. Database and Model

To reflect the current and prospective states of the global economy, the Global Trade Analysis Project (GTAP) Database Version 10 (Aguiar et al., 2019), Inter-Country Input-Output tables (OECD, 2021), and economic forecasts from various international organisations are used. The GTAP database has detailed information on 65 industrial sectors for 141 countries and regions. With this database, the economic structure of production, international trade and protection, and consumption can be observed, benchmarked at the year 2014. The Inter-Country Input-Output tables extend the GTAP database to trade in intermediate goods and services, distinguished from trade in final goods and services. Finally, the extended database is supplemented with international factor income flows from domestic and foreign asset holdings.

To reduce the computational burden, the database is aggregated into 25 countries and regions and 24 industrial sectors (Tables 1 and 2). The extended database covers nine ASEAN Members – Brunei Darussalam, Cambodia, Indonesia, the Lao People’s Democratic Republic (Lao PDR), Malaysia, Philippines, Singapore, Thailand, and Viet Nam. Due to data limitations, Myanmar is included in the rest of

South-East Asia along with Timor-Leste. Other RCEP members are also covered in the database as well as major countries and regions in the world.

Table 1: Regional Aggregation for the Study

Country	Definition
China	China, Hong Kong
European Union	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
Rest of World	Rest of Oceania; Mongolia; Rest of East Asia; Bangladesh; Nepal; Pakistan; Sri Lanka; Rest of South Asia; Rest of North America; Argentina; Bolivia; Brazil; Colombia; Ecuador; Paraguay; Uruguay; Venezuela; Rest of South America; Costa Rica; Guatemala; Honduras; Nicaragua; Panama; El Salvador; Rest of Central America; Dominican Republic; Jamaica; Puerto Rico; Trinidad and Tobago; Caribbean; Switzerland; Norway; Rest of European Free Trade Association; Albania; Belarus; Russian Federation; Ukraine; Rest of Eastern Europe; Rest of Europe; Kazakhstan; Kyrgyzstan; Tajikistan; Rest of Former Soviet Union; Armenia; Azerbaijan; Georgia; Bahrain; Iran, Islamic Republic of; Israel; Jordan; Kuwait; Oman; Qatar; Saudi Arabia; Turkey; United Arab Emirates; Rest of West Asia; Egypt; Morocco; Tunisia; Rest of North Africa; Benin; Burkina Faso; Cameroon; Côte d'Ivoire; Ghana; Guinea; Nigeria; Senegal; Togo; Rest of West Africa; Central Africa; South Central Africa; Ethiopia; Kenya; Madagascar; Malawi; Mauritius; Mozambique; Rwanda; Tanzania; Uganda; Zambia; Zimbabwe; Rest of East Africa; Botswana; Namibia; South Africa; Rest of South African Customs Union; Rest of World

Source: Author's aggregation based on Aguiar et al. (2019).

Table 2: Sector Aggregation for the Study

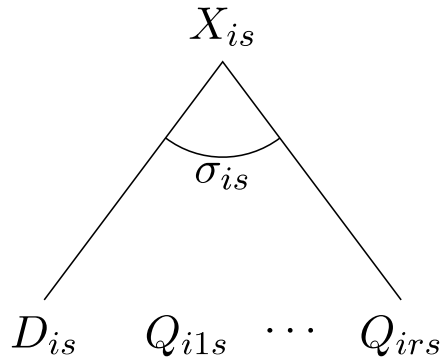
No.	Sector	Definition
1	Primary	Paddy rice; wheat; cereal grains; vegetables, fruit, nuts; oilseeds; sugar cane, sugar beets; plant-based fibres; crops; bovine cattle, sheep, goats; animal products; raw milk; wool, silkworm cocoons; forestry; fishing; bovine meat products; meat products; vegetable oils and fats; dairy products; processed rice; sugar; food products; beverages; tobacco products
2	Extraction	Coal, oil, gas, minerals
3	Textiles and Apparel	Textiles, wearing apparel, leather products
4	Wood, Paper	Wood products, paper products, publishing
5	Petroleum, Coal	Petroleum, coal products
6	Chemicals	Chemical products
7	Pharmaceuticals	Basic pharmaceutical products
8	Rubber and Plastic	Rubber and plastic products
9	Minerals	Mineral products
10	Basic Metal	Ferrous metals, metals
11	Metal Products	Metal products
12	Computers, Electronics	Computer, electronics, optics
13	Electrical Equipment	Electrical equipment
14	Machinery	Machinery and equipment
15	Motor vehicles	Motor vehicles and parts
16	Transport Equipment	Transport equipment
17	Other Manufacturing	Manufactures
18	Utilities	Electricity, gas manufacture and distribution, water
19	Construction	Construction
20	Trade	Trade
21	Transport	Transport, water transport, air transport, warehousing and support activities
22	Communications	Communications
23	Finance and Business	Financial services, insurance, real estate activities, business services
24	Other Services	Accommodations, food, and services; recreational and other services; public administration and defence; education; human health and social work; dwellings

Source: Author's aggregation based on Aguiar et al. (2019).

For the RCEP simulations, the GSC structure is incorporated into the dynamic GTAP model, which is a multisector, multiregion recursive dynamic CGE model of global trade (Ianchovichina and McDougall, 2001; Ianchovichina and Walmsley, 2012). The dynamic GTAP model keeps the standard features in the comparative static GTAP model while integrating capital accumulation and international capital mobility (Hertel, 1997; McDougall, 2003). Constant returns to scale and perfect competition are assumed in all sectors. Capital and skilled and unskilled labour are mobile across sectors, while land and natural resources are sector-specific and immobile. Products are differentiated on the basis of their origin, i.e. the Armington assumption (Armington, 1969). The transport sector accounts for the difference between the freight onboard and cost, insurance, and freight prices – i.e. the transport margin – for each commodity shipped along a specific route.

The GSC structure, in which each economic agent decides demand for domestically produced goods and imports, is added to the dynamic GTAP model's demand structure (Figure 1). In country s , each agent – such as producer, consumer, or government – decides demands for domestic goods (D_{is}) and imports from different trading partners indexed with r (Q_{irs}), given composite goods (X_{is}) and substitution parameter (σ_{is}). The constant elasticity of substitution (CES) function is assumed. With this GSC structure, each agent has a different source composition of imported products.

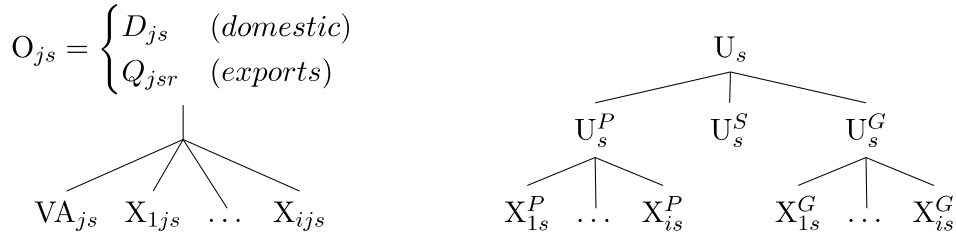
Figure 1: Demand Structure for Study



Source: Author.

Producer j determines demand for intermediate inputs (X_{ijs}) and the value added (VA_{js}) composite of skilled and unskilled labour, capital, land, and natural resources, based on the Leontief production function (Figure 2, left-hand panel). The output of the producer (O_{js}) is supplied to domestic market (D_{js}) or to foreign markets as exports (Q_{jsr}). A representative household's utility (U_s) is derived from the sub-utility of a private household (U_s^P), government household (U_s^G), and savings (U_s^S), using a Cobb-Douglas-type function (Figure 2, right-hand panel). A private household's utility is determined by the constant difference elasticity function of composite goods (X_{is}^P), whereas the government household utility is determined by the CES function. Because of the non-homotheticity in a private household's utility, the adjustment to shift the distribution parameter of expenditures is introduced by McDougall (2003).

Figure 2: Structure of Production and Consumption



Source: Author.

Each region is endowed with fixed physical capital stock, which is accumulated with new investments over time. Net investment drives this dynamic, and it is sourced from regional households' savings. Net investment in a region is a composite of domestic and foreign investment. The global trust acts as a financial intermediary for all foreign investment. Regional households own indirect claims to the physical capital stock in the form of equity of two types – equity in domestic firms and equity in foreign firms. While regional households directly own domestic equity, they indirectly own foreign equity by holding shares in a portfolio of foreign equities that the global trust provides.

Values of the households' equity holdings in domestic firms and in the portfolio change over time. The sum of the households' 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 equal across regions if capital were to be perfectly mobile. However, this equalisation of rates of return seems unrealistic, at least in the short term. There are empirical observations of home bias in savings and investment, equity holdings by households, and capital flows. Home bias refers to the 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 interregional differences in rates of return in the short term, which are eventually equalised in the long term. Differences in the rates of return are attributed to errors in investors' expectations about the future rates of return. However, errors in expectations are gradually adjusted to the actual rate of return. Eventually, the errors are eliminated, and a unique rate of return across regions can be attained. Therefore, perfect capital mobility is assumed to apply only in the long term.

RCEP may attract more investment from abroad. Trade liberalisation tends to make prices of goods from partner countries cheaper because of lower tariff rates, stimulating demand for those goods. With the increased demand in destination, producers in exporting countries may increase production. To increase production, more intermediate goods, labour, capital, and other primary factors are demanded. This derived demand for production inputs raises the corresponding prices, wage rates, and rental rates in the competitive markets. Higher rental rates lead to higher rates of return, attracting more investment from both home and foreign countries.

3. Baseline and Scenarios

3.1. Baseline

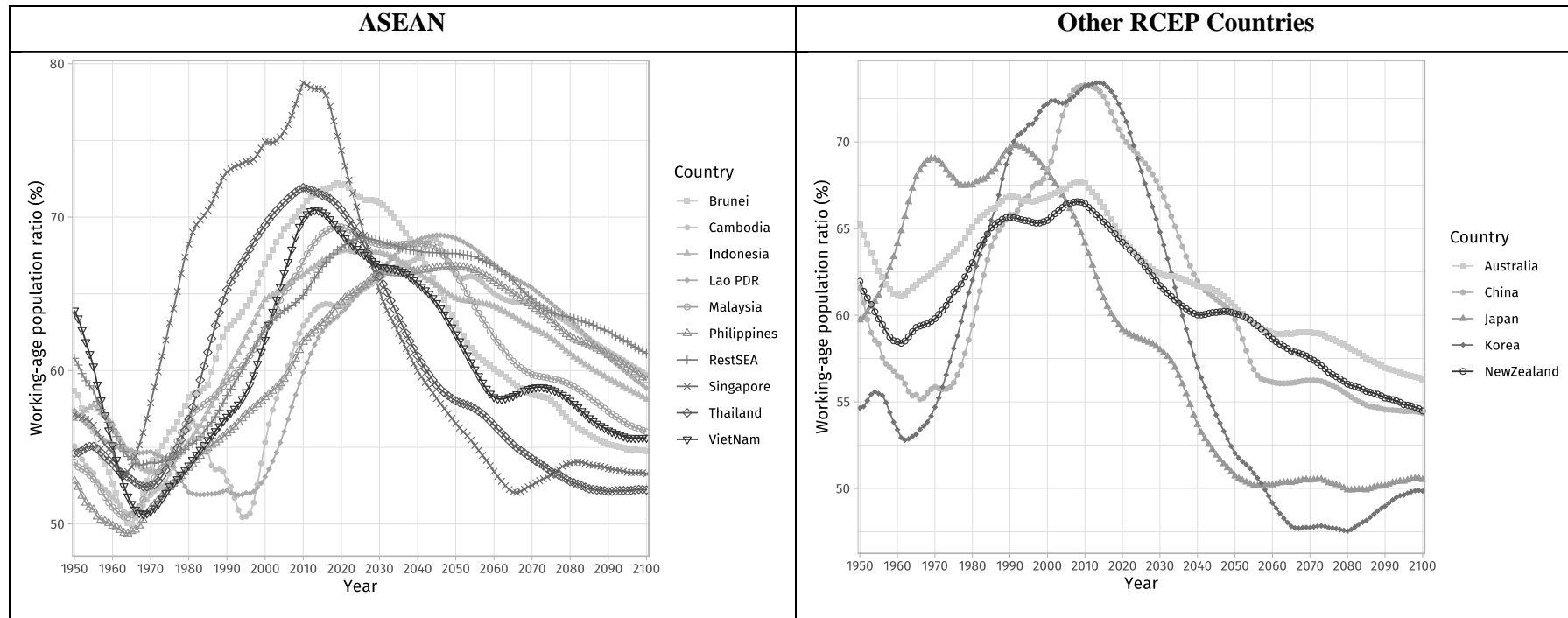
A baseline scenario is constructed for 2014–2035, which is a hypothetical future state of the global economy without RCEP. The baseline scenario is used as the basis to measure the impacts of the four RCEP scenarios. Projections for the total population, working-age population, GDP, and gross investment are used. Projections for the total and working-age population growth rates are computed from UN (2019) based on the medium projection variant. Projections for real GDP and gross investment are obtained from IMF (2021). The real GDP growth rates in 2026 to the end of the simulation period of 2035 are extrapolated. Given the projections for 2014–2035, the model can compute technological change as a measure of productivity.

The baseline scenario includes FTAs that are already in effect. The International Trade Centre’s Market Access Map² is an important database of tariff reduction schedules, which covers more than 450 trade agreements enacted by 2019 (Ngavozafy et al., 2020). This database is used to implement the tariff reductions under existing FTAs in the baseline scenario. For example, CPTPP tariff reductions are imposed on the baseline scenario by reflecting the ratification status, as seven countries under the CPTPP begin reducing tariffs in 2019, and other member countries followed later that year.

To illustrate the projections used in the baseline scenario, Figure 3 shows the long-term demographic trends for ASEAN Members and other RCEP countries. For the simulation period of 2014–2035, the ratio of the working-age population to the total population declines for most RCEP countries except for Cambodia and the Lao PDR.

² ITC, Market Access Map, <http://www.macmap.org> (accessed 5 January 2021).

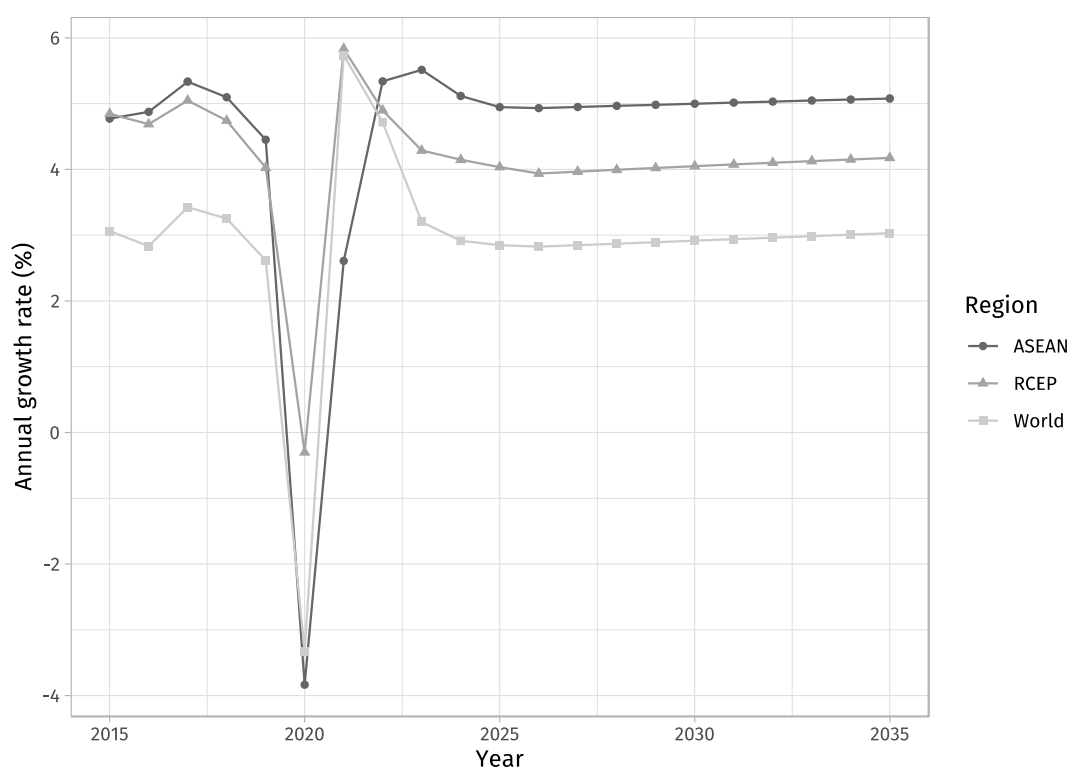
Figure 3: Ratio of Working-Age Population to Total Population in RCEP Members



Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, SEA = South-East Asia.
Source: Author's computation based on UN (2019).

Figure 4 shows the annual growth rates of real GDP for ASEAN, RCEP members, and the world. ASEAN's annual growth rate of real GDP plummeted in 2020 to -3.8% due to the COVID-19 pandemic, but it is projected to recover quickly to the pre-pandemic level of about 5.0% .

Figure 4: Annual Real Gross Domestic Product Growth Rates, Selected Regions

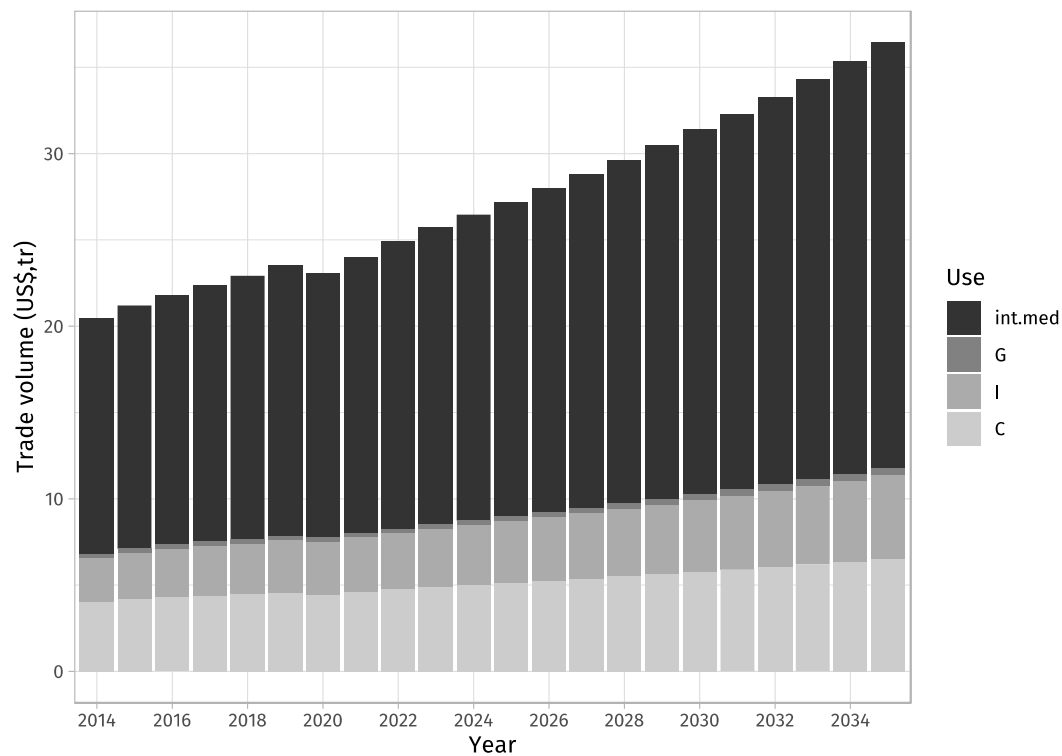


ASEAN = Association for Southeast Asian Nations, RCEP = Regional Comprehensive Economic Partnership.

Source: Author's computation based on IMF (2021).

World trade volume measured in constant US dollars continues to grow (Figure 5). Trade in intermediate goods and services has a large share in the world trade volume, about 70%. Thus, most of the world trade volume is used as intermediate inputs to produce final goods and services for consumption, government use, and investment.

Figure 5: World Trade Volume (\$ trillion)

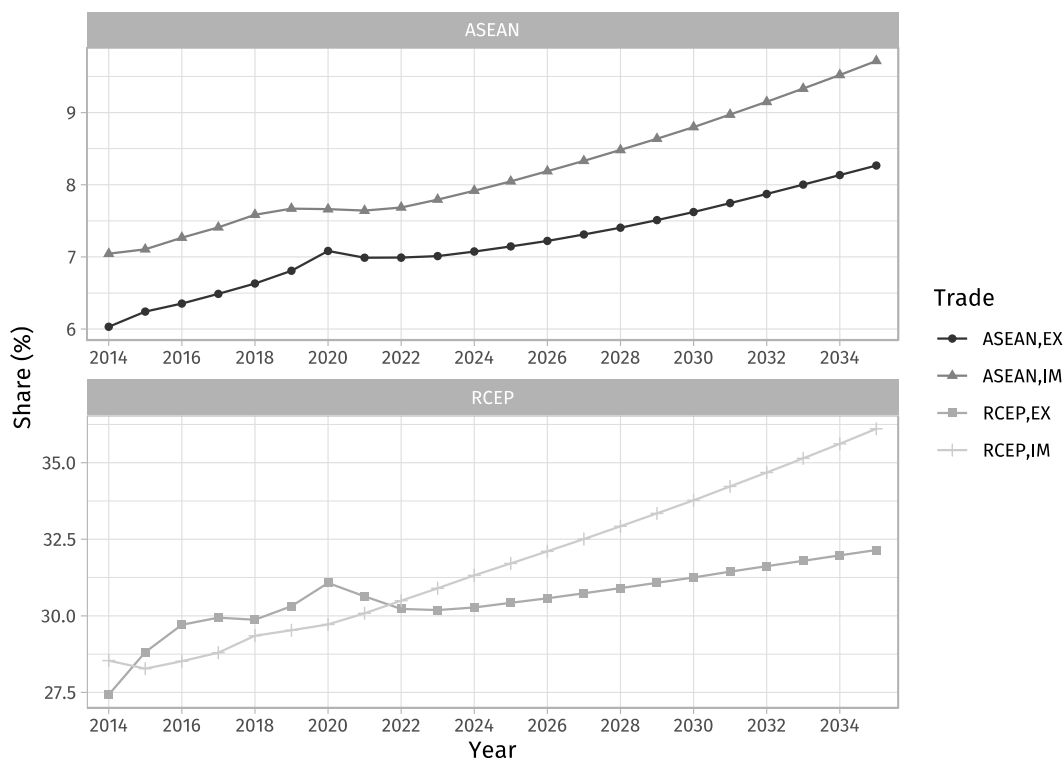


C = consumption, G = government use, I = investment.

Source: Author's baseline simulation results.

In Figure 6, RCEP members' share in the world trade volume of intermediate goods and services grows from 27% in 2014 to 32% in 2035 for exports, and from 29% in 2014 to 36% in 2035 for imports. ASEAN's share also continues to grow for both exports and imports.

Figure 6: Share of World Trade, ASEAN and RCEP Members (%)



ASEAN = Association for Southeast Asian Nations, EX = exports, IM = imports, RCEP = Regional Comprehensive Economic Partnership.

Source: Author's baseline simulation results.

3.2. Scenarios

As stated previously, each scenario is constructed to demonstrate a different liberalisation component of RCEP:

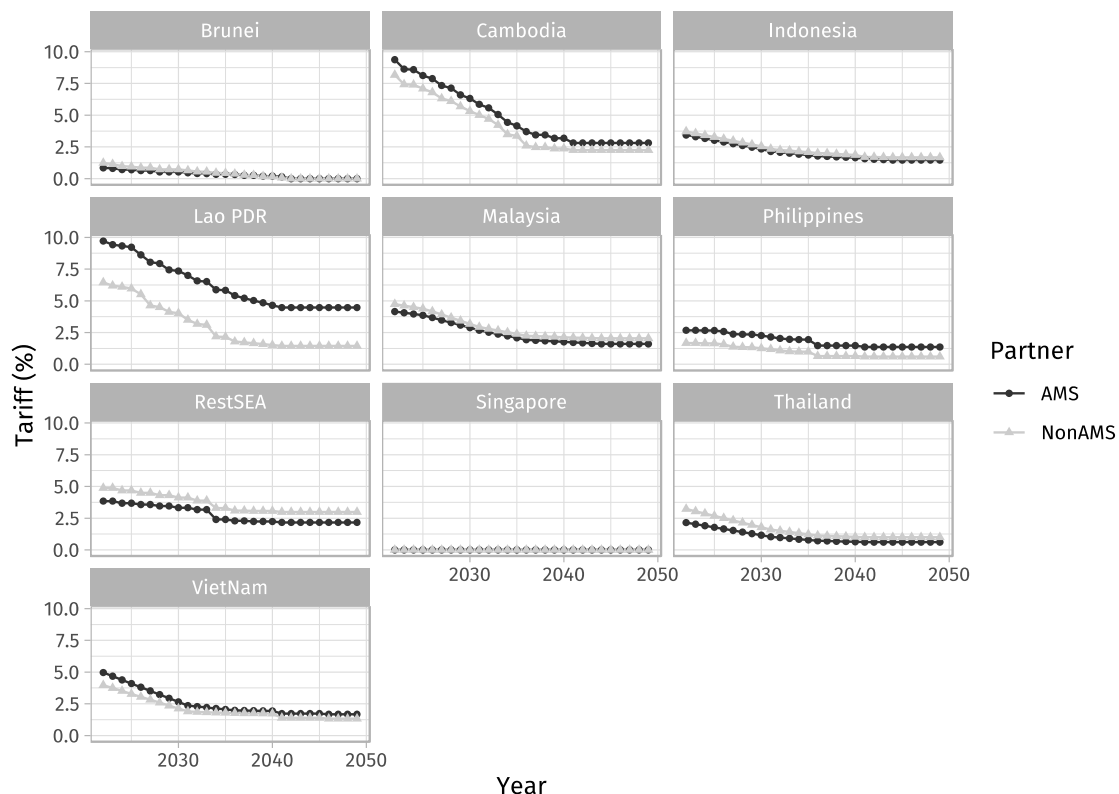
- (i) **Baseline.** Baseline scenario without RCEP, 2014–2035.
- (ii) **Scenario 1 (S1).** This includes tariff reduction according to RCEP Annex I, setting 2022 as year 1.
- (iii) **Scenario 2 (S2).** S1 and ad valorem tariff equivalents of services trade are reduced by 20% over 10 years, 2022–2031.
- (iv) **Scenario 3 (S3).** S2 and logistics improvements reducing the time cost of trade by 20%, 2022–2031.
- (v) **Scenario 4 (S4).** S3 plus investment commitments

In Scenario 1, the bilateral import tariffs on goods amongst RCEP members are set to decrease from 2021 levels. The reduction rates are computed from RCEP

Annex I (RCEP, 2020), and applied over 2022–2035. Since the schedule of tariff commitments are specified at the national tariff line levels, they are aggregated to the 24 sectors of the extended GTAP database. Also, the schedule differs by RCEP member for duration and applicable partners. For example, Singapore eliminates all tariffs for all partners in 2022, whereas Viet Nam’s schedule spans 25 years and varies for ASEAN Members and other RCEP countries.

Figure 7 and Figure 8 show the tariff reduction schedules for RCEP members in which average applied tariffs are aggregated with the partner’s weights. In Figure 7, Cambodia and the Lao PDR lower tariffs from relatively higher levels at a faster pace than other ASEAN Members, except for Singapore. These tariff commitments may generate larger economic benefits to Cambodia and the Lao PDR. In Figure 8 for other RCEP members, it can be observed that gaps exist in tariff reductions between ASEAN and other RCEP members for China and the Republic of Korea.

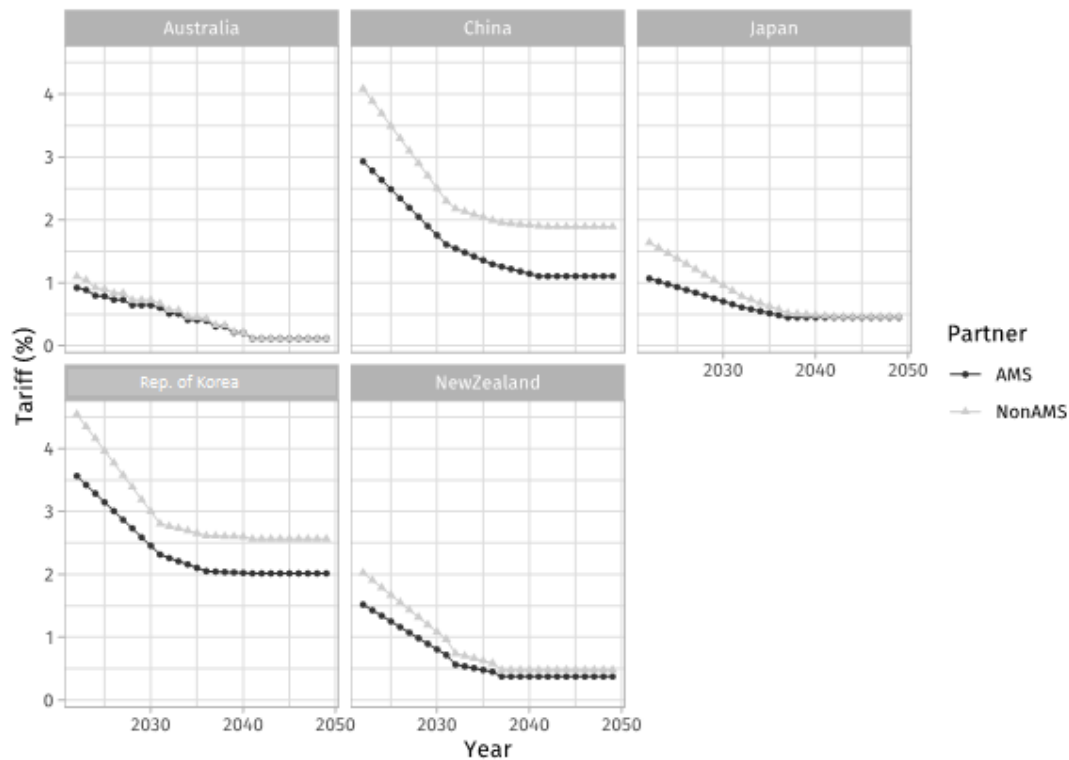
Figure 7: RCEP Tariff Reduction Schedules, ASEAN Members



AMS = ASEAN Member State, ASEAN = Association of Southeast Asian Nations, RCEP = Regional Comprehensive Economic Partnership.

Source: Author’s computation based on RCEP (2020), Aguiar et al. (2019) and Horridge et al. (2020).

Figure 8: RCEP Tariff Reduction Schedules, Non-ASEAN Members



AMS = ASEAN Member State, ASEAN = Association of Southeast Asian Nations, RCEP = Regional Comprehensive Economic Partnership.

Sources: Author's computation based on RCEP (2020), Aguiar et al. (2019), and Horridge et al. (2020).

In Scenario 2, the ad valorem tariff equivalents of services trade are assumed to fall by 20% over 10 years, 2022–2031. Ad valorem tariff equivalents in services trade are computed as averages of the gravity-model estimates of Wang, Mohan, and Rosen (2009) and the values employed by Brown, Kiyota, and Stern (2010). There are greater variations in tariff equivalents of services trade than in commodities.

Table 3 reports ad valorem tariff equivalents of services trade and average applied tariffs on goods by sector for ASEAN Members for 2021. These estimates are obtained from the baseline simulation results. Benz and Jaax (2020) offered more recent estimates on the costs of regulatory barriers to trade in services, which can be utilised for updating this study.

Table 3: Average Applied Tariffs for ASEAN Members, 2021 (%)

	Brunei									Rest of
	Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Viet Nam	South-East Asia
Primary	0.8	1.9	2.9	4.1	5.6	5.7	1.6	16.2	2.7	0.6
Extraction	0.0	0.6	0.1	0.2	0.6	0.2	0.0	0.0	0.2	0.0
Textiles and Apparel	0.4	0.7	2.0	1.3	0.7	0.9	0.0	2.2	3.7	0.7
Wood, Paper	0.1	2.4	1.3	1.2	2.0	1.8	0.0	1.4	1.2	0.3
Petroleum, Coal	0.0	4.6	0.7	4.8	0.1	0.0	0.0	0.4	5.3	0.5
Chemicals	0.6	0.8	2.0	0.4	1.1	0.8	0.0	1.2	0.7	0.6
Pharmaceuticals	0.0	0.0	1.9	2.7	0.0	1.0	0.0	3.6	0.9	0.4
Rubber, Plastic	0.2	3.2	3.6	2.2	2.9	3.1	0.0	1.8	1.8	1.1
Minerals	0.0	1.1	2.6	1.1	3.3	0.7	0.0	2.9	5.5	0.1
Basic Metal	0.0	0.3	2.4	0.6	2.1	0.5	0.0	0.6	0.6	0.1
Metal Products	0.0	1.3	2.4	0.0	1.3	2.1	0.0	2.4	1.8	0.3
Computers, Electronics	1.2	1.4	0.3	0.3	0.0	0.3	0.0	0.2	0.4	2.1
Electrical Equipment	2.8	2.1	1.9	0.1	0.8	0.8	0.0	2.3	1.3	0.3
Machinery	1.2	2.1	2.5	0.5	1.0	0.5	0.0	1.3	0.5	0.3
Motor vehicles	0.6	16.5	5.6	7.7	4.5	5.5	0.0	15.0	8.0	7.8
Transport Equipment	0.0	4.0	2.0	0.5	0.4	3.6	0.0	1.9	3.9	1.5
Other Manufacturing	0.7	0.6	1.8	1.6	0.4	1.3	0.0	1.6	1.7	0.3
Utilities	20.6	20.6	64.4	20.6	17.4	52.6	0.0	44.9	53.7	20.6
Construction	20.6	20.6	64.4	20.6	17.4	52.6	0.0	44.9	53.7	20.6
Trade	32.5	32.5	98.5	32.5	36.0	80.2	1.3	63.5	82.7	32.5

	Brunei								Rest of	
	Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Viet Nam	South-East Asia
Transport	16.6	16.6	84.2	16.6	27.6	68.0	1.3	53.0	69.7	16.6
Communications	32.8	32.8	88.4	32.8	30.0	71.5	1.3	56.1	73.5	32.8
Finance and Business	20.0	20.0	92.5	20.0	30.2	72.6	1.5	58.1	74.7	20.0
Other Services	15.7	15.7	94.5	15.7	33.2	73.9	2.2	58.2	79.0	15.7

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic.

Source: Author's computation based on Aguiar et al. (2019); Brown, Kiyota, Stern (2010); and Wang, Mohan, Rosen (2009).

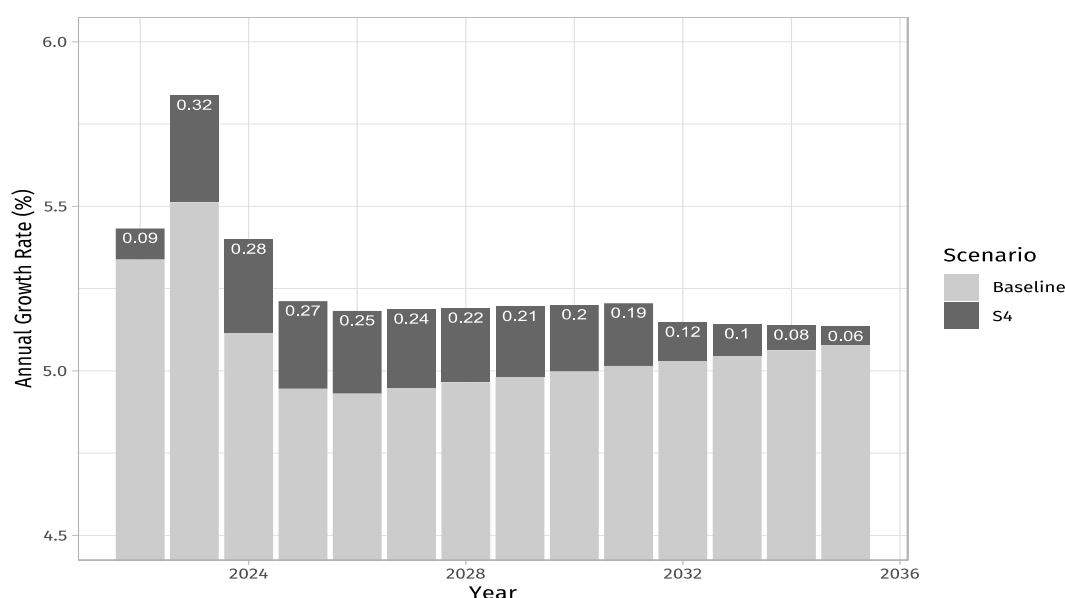
In Scenario 3, the reduction in time costs of trade is added, because RCEP's liberalisation measures are expected to improve the logistics for merchandise goods. Time costs of trade can be considered as the product of the average cost of a 1-day delay in trade multiplied by the number of days of shipping delays. For example, shipping delays arising from regulatory procedures and inadequate infrastructure incur time costs of trade. Hummels and Schaur (2013) provided empirical estimates of the average costs of time delays in trade. Minor (2011) compiled information about time in transit and the empirical estimates in a database. The database is updated with World Bank (2020) to compute the reduction in time costs of trade by 20% over the 2022–2031 period of the RCEP's implementation.

In Scenario 4, for the investment commitments, the empirical relationship between inward foreign direct investment (FDI) flow and investment treaties are incorporated with Scenario 3. There are several empirical studies for the relationship, such as Busse, Königer, and Nunnenkamp (2010) and Urata (2015). Following Itakura (2019a), investment commitments under RCEP are assumed to reduce country-specific risk, which reflects the difference in rate of return to investment by country. On average, the inward FDI flow following RCEP is assumed to be 19.6% higher. For this fourth scenario, the change in country-specific risk in the rate of return is computed to target the increase in FDI inflow.

4. Simulation Results

After the four RCEP scenarios are implemented, the differences from the baseline scenario are computed by using GEMPACK software (Harrison and Pearson, 1996). Figure 9 shows the impact of RCEP on ASEAN's annual growth rate of real GDP. For Scenario 4, the annual growth rate of real GDP is higher than the baseline's growth rate. Reflecting the increased investment, the second year of RCEP results in the largest impact, 0.32 percentage point higher than the baseline. RCEP's impact on the real GDP growth rate tapers off to 0.08 percentage point higher than the baseline in 2035.

Figure 9: RCEP Impact on ASEAN Annual Growth Rate of Gross Domestic Product

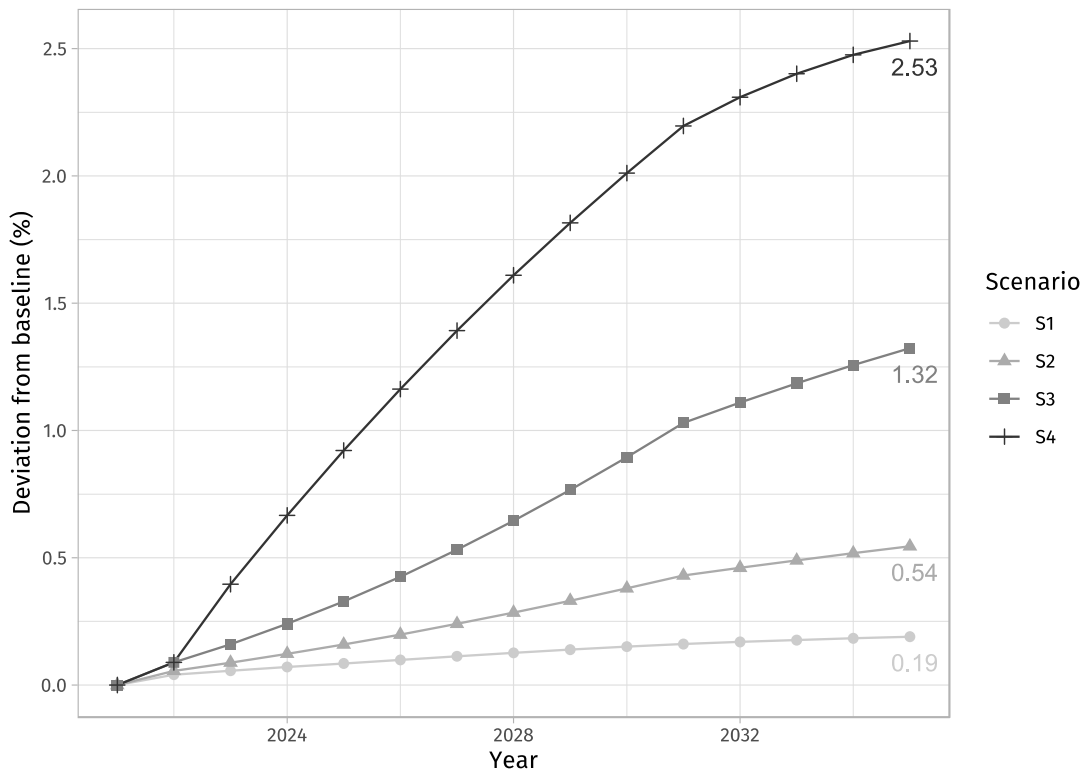


ASEAN = Association of Southeast Asian Nations, S = scenario.
Source: Author.

As RCEP raises the growth rate, the level of ASEAN's real GDP becomes greater than the baseline level. This deviation from the baseline is another measure to evaluate the impact of RCEP. Figure 10 illustrates the impact of RCEP on ASEAN's real GDP for the four scenarios in terms of the deviation. When all of the liberalisation components are included in Scenario 4, ASEAN's real GDP shows the biggest impact over time, reaching 2.5% more than the baseline in 2035. The impact of tariff reduction under Scenario 1 is rather small compared to the reductions in services trade barriers (Scenario 2) and logistics improvement (Scenario 3). This is because ASEAN has been lowering tariffs through the existing FTAs within ASEAN as well as with RCEP partner countries.³

³ UNCTAD (2021) explores the effects of tariff concessions of the RCEP in detail.

Figure 10: RCEP Impact on ASEAN Real Gross Domestic Product

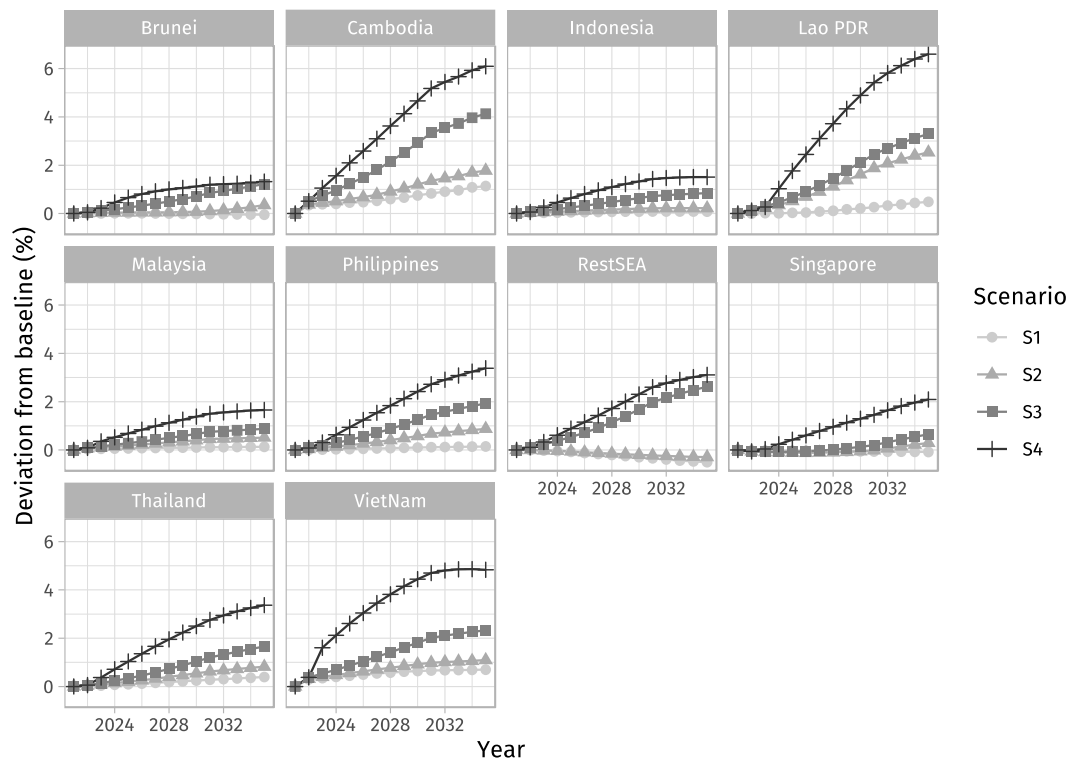


ASEAN = Association of Southeast Asian Nations, RCEP = Regional Comprehensive Economic Partnership.

Source: Author.

More potential gains from RCEP are expected from services trade liberalisation and the seamless movement of merchandise goods. Further, attracting more investment into the region may contribute to gains in real GDP. In Figure 11, each ASEAN Member confirms these observations.

Figure 11: RCEP Impact on Real Gross Domestic Product for ASEAN Members



Lao PDR = Lao People's Democratic Republic, S = scenario, SEA = South-East Asia.
Source: Author.

Table 4 reports the impact of RCEP on real GDP in 2035 for all regions in this study. Real GDP of RCEP members increases by \$53 billion in Scenario 1, \$148 billion in Scenario 2, \$235 billion in Scenario 3, and \$675 billion in Scenario 4. Also, ASEAN's real GDP grows by \$12 billion in Scenario 1, \$34 billion in Scenario 2, \$84 billion in Scenario 3, and \$160 billion in Scenario 4 in 2035. The world's real GDP absorbs the largest impact under Scenario 3, because investment is attracted more to RCEP members and diverted from others.

All RCEP members benefit from the increased real GDP under Scenario 3 and Scenario 4. When RCEP implements only tariff reduction in Scenario 1, small negative effects are observed for several RCEP members. It should be noted that the baseline growth rates are positive, except for 2020 due to the COVID-19 pandemic; therefore, the small negative impacts indicate that Scenario 1 is slightly below the baseline level. Since RCEP covers more area for liberalisation beyond tariff reduction, it seems unlikely that RCEP will result in negative real GDP.

Table 4: Impact on Real Gross Domestic Product, 2035

	(% changes relative to baseline)				(\$ billion)			
	S1	S2	S3	S4	S1	S2	S3	S4
Brunei Darussalam	0.0	0.3	1.2	1.3	0.0	0.1	0.3	0.3
Cambodia	1.1	1.8	4.1	6.1	0.6	1.0	2.3	3.4
Indonesia	0.1	0.2	0.8	1.5	1.9	5.3	20.2	36.2
Lao PDR	0.5	2.5	3.3	6.6	0.2	0.9	1.2	2.3
Malaysia	0.1	0.5	0.9	1.7	1.1	4.3	7.4	14.0
Philippines	0.1	0.9	1.9	3.4	1.3	7.7	17.0	29.9
Singapore	-0.1	0.3	0.7	2.1	-0.4	1.5	3.3	10.7
Thailand	0.4	0.8	1.7	3.4	2.9	6.1	12.4	25.3
Viet Nam	0.7	1.1	2.3	4.8	5.0	7.8	16.6	34.4
Rest of South-East Asia	-0.5	-0.3	2.6	3.1	-0.5	-0.3	2.8	3.4
Japan	0.4	0.5	0.6	1.3	19.7	26.3	32.4	65.9
China	0.1	0.2	0.3	1.2	16.3	72.3	98.8	377.8
Rep. of Korea	0.2	0.5	0.6	1.4	5.7	12.3	14.7	33.9
Australia	0.0	0.1	0.2	1.2	-0.4	1.7	3.9	29.2
New Zealand	-0.1	0.3	0.4	2.4	-0.2	0.9	1.2	8.1
India	-0.1	-0.1	-0.1	-0.9	-3.4	-6.5	-9.1	-60.2
Taiwan	-0.1	-0.2	-0.2	-0.8	-0.9	-1.4	-2.2	-7.1
United States	0.0	0.0	0.0	-0.3	-4.9	-7.1	-11.4	-79.8
Canada	0.0	0.0	-0.1	-0.5	-0.8	-1.1	-1.9	-13.0
Mexico	-0.1	-0.1	-0.2	-1.4	-1.2	-2.0	-3.2	-25.7
Chile	0.0	-0.1	-0.1	-0.6	-0.2	-0.3	-0.4	-2.6
Peru	0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.2	-1.2
European Union	0.0	-0.1	-0.1	-0.9	-10.2	-17.0	-26.6	-207.6
United Kingdom	0.0	-0.1	-0.1	-0.8	-1.5	-2.4	-3.7	-31.0
Rest of World	0.0	-0.1	-0.1	-0.6	-10.3	-15.2	-24.3	-167.2
ASEAN	0.2	0.5	1.3	2.5	12.0	34.4	83.7	160.0
RCEP	0.1	0.3	0.5	1.4	53.0	147.9	234.6	674.9
World	0.0	0.1	0.1	0.1	19.5	94.8	151.6	79.5

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author's simulation results.

Welfare impacts are reported in Table 5. A representative household's utility U_s is used as the welfare measure, as described in section 2. Economic welfare is mainly determined by allocative efficiency, terms of trade, contribution to the equivalent variation of change in the price of investment goods, and contribution to the equivalent variation of change in equity owned by a region. Under Scenario 3 and Scenario 4, the economic welfare of all RCEP members increases in 2035. In percentage terms, welfare gains are relatively large in the Lao PDR and Viet Nam. Cambodia's welfare gains become smaller under Scenario 4 due to the higher price of investment goods and large share of equity owned by foreign countries.

Table 5: RCEP Impact on Economic Welfare, 2035

	(% changes relative to baseline)				(\$ billion)			
	S1	S2	S3	S4	S1	S2	S3	S4
Brunei Darussalam	0.0	0.3	0.7	1.0	0.0	0.1	0.2	0.2
Cambodia	2.4	3.1	3.4	0.3	0.3	0.4	0.4	0.0
Indonesia	0.0	0.1	0.5	0.6	-0.2	1.8	8.1	10.0
Lao PDR	0.3	2.6	3.2	6.6	0.1	0.5	0.6	1.2
Malaysia	0.1	0.4	0.7	0.9	0.3	2.3	4.0	5.1
Philippines	0.1	0.9	1.4	1.8	0.2	3.4	5.3	6.8
Singapore	0.0	0.5	0.8	1.4	-0.2	1.9	3.3	5.5
Thailand	0.0	0.4	0.9	1.1	-0.1	1.7	4.2	5.6
Viet Nam	-0.2	0.2	0.6	2.1	-0.6	0.6	2.2	7.6
Rest of South-East Asia	-0.3	-0.1	1.5	1.6	-0.2	-0.1	1.3	1.4
Japan	0.4	0.5	0.6	0.7	17.5	23.4	29.2	33.9
China	0.0	0.2	0.3	0.5	6.7	45.5	66.9	126.9
Rep. of Korea	0.2	0.5	0.6	0.8	3.9	8.9	11.9	15.3
Australia	0.0	0.1	0.2	0.7	-0.7	1.2	2.7	12.0
New Zealand	-0.1	0.3	0.4	1.2	-0.1	0.6	0.8	2.5
India	0.0	-0.1	-0.1	-0.5	-1.5	-3.1	-4.3	-21.2
Taiwan	-0.1	-0.1	-0.2	-0.3	-0.5	-0.8	-1.2	-2.1
United States	0.0	0.0	0.0	-0.1	-1.4	-2.3	-3.5	-28.0
Canada	0.0	0.0	0.0	-0.2	-0.4	-0.4	-0.7	-4.2

Mexico	0.0	0.0	-0.1	-0.5	-0.3	-0.4	-0.8	-5.7
Chile	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	-0.3
Peru	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.3
European Union	0.0	0.0	0.0	-0.4	-3.1	-5.8	-8.3	-74.2
United Kingdom	0.0	0.0	0.0	-0.4	-0.5	-0.8	-1.2	-11.0
Rest of World	0.0	0.0	0.0	-0.3	-4.1	-3.7	-6.4	-58.0
ASEAN	0.0	0.3	0.8	1.1	-0.5	12.6	29.6	43.5
RCEP	0.1	0.2	0.4	0.6	26.8	92.2	141.0	234.2
World	0.0	0.1	0.1	0.0	15.0	74.9	114.4	29.3

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author's simulation results.

The impact on investment, export volume, and import volume are reported in Tables 5-6, 5-7, and 5-8, respectively. RCEP stimulates more investment in the region, and it contributes to \$490 billion more investment in 2035 under Scenario 4 compared to the baseline. RCEP increases the volumes of exports and imports, and under Scenario 4, the increase in volume grows into more than \$500 billion for both exports and imports. Higher trade volumes in RCEP members translate into greater trade volumes in intermediate goods and services.

Table 6: RCEP Impact on Investment, 2035

	(% changes relative to baseline)				(\$ billion)			
	S1	S2	S3	S4	S1	S2	S3	S4
Brunei Darussalam	−0.1	2.0	3.6	3.0	0.0	0.3	0.5	0.5
Cambodia	0.2	0.9	4.7	11.5	0.0	0.2	0.9	2.1
Indonesia	0.0	0.1	1.2	2.1	0.5	1.3	11.7	21.6
Lao PDR	1.1	5.1	6.8	13.3	0.2	0.7	0.9	1.9
Malaysia	0.3	0.6	1.3	3.4	0.5	1.2	2.8	7.1
Philippines	0.2	1.0	2.9	6.2	0.5	2.6	7.7	16.4
Singapore	−0.1	2.4	3.4	5.8	−0.2	5.1	7.3	12.4
Thailand	1.2	1.9	4.0	7.1	3.4	5.3	11.1	19.6
Viet Nam	1.2	1.7	4.8	11.4	3.6	5.0	13.9	33.2
Rest of South-East Asia	−1.5	−0.7	6.0	6.1	−0.6	−0.3	2.5	2.6
Japan	1.5	1.8	2.1	3.2	23.9	29.1	34.2	50.7
China	0.0	0.2	0.2	1.7	3.7	24.0	37.7	263.5
Rep. of Korea	0.8	1.2	1.5	3.1	8.2	13.4	15.8	32.7
Australia	−0.1	0.1	0.2	2.3	−0.8	0.6	2.1	19.5
New Zealand	−0.3	0.7	0.9	5.5	−0.3	0.7	1.0	6.2
India	−0.2	−0.3	−0.5	−2.3	−4.9	−9.1	−13.0	−61.6
Taiwan	−0.4	−0.6	−1.0	−2.8	−1.5	−2.4	−3.6	−10.4
United States	−0.1	−0.2	−0.3	−1.2	−9.5	—	−23.6	−94.2
						14.7		
Canada	−0.1	−0.2	−0.4	−1.5	−1.3	−2.0	−3.4	−13.8
Mexico	−0.2	−0.4	−0.6	−3.0	−1.3	−2.1	−3.5	−16.3
Chile	−0.2	−0.3	−0.4	−1.8	−0.2	−0.3	−0.4	−1.9
Peru	−0.1	−0.2	−0.3	−1.2	−0.1	−0.2	−0.3	−1.4
European Union	−0.2	−0.3	−0.5	−2.7	—	—	−36.4	—
					13.9	23.2		181.7
United Kingdom	−0.2	−0.3	−0.5	−2.4	−1.9	−3.1	−5.0	−23.9
Rest of World	−1.1	−1.8	−3.0	−2.3	−2.8	−4.4	−7.5	−5.8
ASEAN	0.3	0.9	2.5	5.0	8.0	21.3	59.4	117.3
RCEP	0.2	0.4	0.7	2.3	42.7	89.0	150.2	490.0
World	0.0	0.1	0.1	0.2	5.2	27.5	53.4	79.1

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author's simulation results.

Table 7: RCEP Impact on Export Volume, 2035

	(% changes relative to baseline)				(\$ billion)			
	S1	S2	S3	S4	S1	S2	S3	S4
Brunei Darussalam	-0.1	0.4	0.9	1.1	0.0	0.0	0.1	0.1
Cambodia	-0.2	0.2	2.2	5.8	-0.2	0.2	1.9	4.9
Indonesia	1.2	2.5	4.5	5.7	5.1	10.4	18.9	24.2
Lao PDR	0.2	2.2	2.9	6.2	0.0	0.4	0.6	1.2
Malaysia	0.5	1.1	1.8	2.9	3.3	6.9	11.6	18.5
Philippines	0.8	1.3	3.3	5.1	3.1	5.1	13.5	20.7
Singapore	0.0	0.1	1.0	2.4	0.0	1.0	6.6	16.0
Thailand	1.2	1.8	3.1	5.4	6.9	9.9	17.6	30.9
Viet Nam	2.4	2.9	4.7	6.9	14.8	17.9	28.5	42.0
Rest of South-East Asia	-0.6	-0.6	3.6	4.7	-0.4	-0.3	2.2	2.9
Japan	3.3	3.9	4.7	6.2	40.1	47.4	56.7	75.3
China	0.9	2.3	3.0	3.9	57.0	141.4	183.3	237.9
Rep. of Korea	1.1	1.7	2.3	3.2	12.4	19.4	26.3	37.3
Australia	-0.1	0.8	1.2	1.8	-0.6	3.2	5.0	7.6
New Zealand	0.0	0.8	1.2	2.9	0.0	0.7	1.0	2.5
India	0.0	0.1	0.1	0.1	-0.3	0.8	0.6	1.8
Taiwan	-0.2	-0.3	-0.5	-0.6	-1.4	-1.8	-3.1	-3.2
United States	0.1	0.1	0.2	0.2	2.2	3.5	4.9	5.0
Canada	0.0	0.0	0.1	-0.2	0.2	0.2	0.4	-1.4
Mexico	-0.1	-0.1	-0.2	-2.0	-0.5	-0.8	-1.3	-14.8
Chile	0.0	-0.1	-0.1	-0.7	-0.1	-0.1	-0.1	-1.0
Peru	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
European Union	0.0	0.0	-0.1	-0.8	-2.7	-3.2	-5.4	-73.5
United Kingdom	0.0	0.0	0.0	-0.4	0.2	0.4	0.5	-5.2
Rest of World	-0.1	-0.1	-0.1	-0.9	-4.6	-7.7	-12.6	-75.5
ASEAN	0.9	1.5	2.9	4.6	32.6	51.5	101.5	161.4
RCEP	1.1	2.1	3.0	4.2	141.6	263.5	373.9	522.1
World	0.4	0.7	0.9	0.9	134.6	254.9	357.9	354.3

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author's simulation results.

Table 8: RCEP Impact on Import Volume, 2035

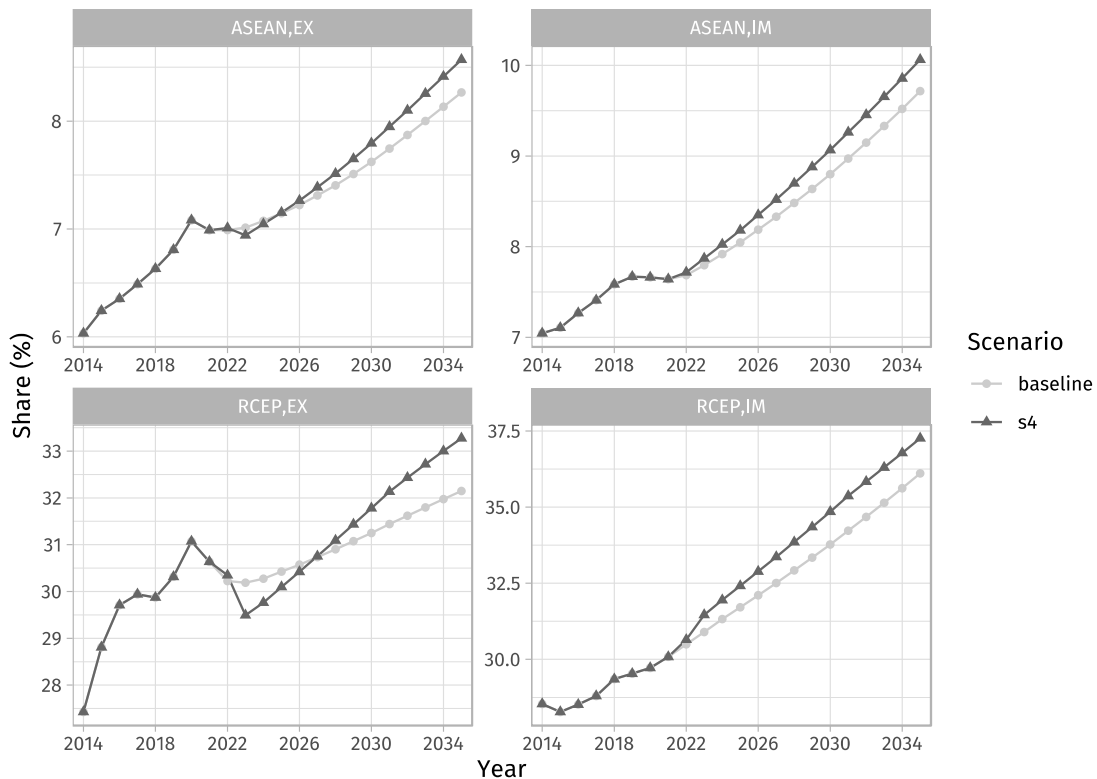
	(% changes relative to baseline)				(\$ billion)			
	S1	S2	S3	S4	S1	S2	S3	S4
Brunei Darussalam	-0.1	1.9	2.6	2.4	0.0	0.3	0.3	0.3
Cambodia	-0.2	0.2	2.2	5.9	-0.1	0.1	1.2	3.2
Indonesia	0.6	1.5	3.3	3.7	3.2	8.1	17.8	20.0
Lao PDR	0.4	3.7	4.8	10.2	0.1	1.0	1.2	2.6
Malaysia	0.5	1.0	1.8	2.9	2.6	5.4	9.7	15.2
Philippines	0.7	1.5	3.5	5.3	2.1	4.4	10.1	15.3
Singapore	0.0	0.9	1.9	3.2	0.1	5.9	13.0	21.6
Thailand	1.2	1.8	3.4	5.3	6.2	9.7	18.4	28.2
Viet Nam	1.9	2.4	4.3	7.7	12.5	15.7	28.7	51.1
Rest of South-East Asia	-1.0	-0.7	4.2	4.8	-0.6	-0.4	2.6	3.0
Japan	3.7	4.4	5.2	5.5	53.5	63.2	74.8	79.3
China	0.8	2.2	2.9	3.8	48.1	126.0	167.1	222.8
Rep. of Korea	1.4	2.1	2.9	3.7	18.2	27.9	37.5	48.3
Australia	-0.3	0.6	1.1	1.9	-2.0	3.7	6.3	11.5
New Zealand	-0.2	1.2	1.7	3.5	-0.2	1.1	1.6	3.2
India	-0.2	-0.3	-0.5	-1.5	-2.6	-4.2	-6.5	-20.4
Taiwan	-0.4	-0.6	-0.9	-1.4	-2.2	-3.2	-5.2	-7.6
United States	-0.1	-0.1	-0.2	-0.8	-3.9	-6.5	-11.2	-40.5
Canada	-0.1	-0.1	-0.2	-0.7	-0.7	-1.1	-1.9	-6.8
Mexico	-0.1	-0.2	-0.3	-1.7	-0.9	-1.5	-2.5	-13.0
Chile	-0.1	-0.1	-0.1	-0.4	-0.1	-0.1	-0.2	-0.6
Peru	-0.1	-0.1	-0.2	-0.5	-0.1	-0.1	-0.2	-0.5
European Union	-0.1	-0.1	-0.2	-1.2	-8.9	-14.1	-21.9	-112.6
United Kingdom	-0.1	-0.1	-0.2	-0.9	-0.8	-1.3	-2.0	-10.4
Rest of World	0.0	0.0	-0.1	0.1	-2.5	-2.3	-5.2	4.2
ASEAN	0.8	1.5	3.0	4.7	26.2	50.1	103.0	160.5
RCEP	1.1	2.2	3.1	4.2	143.8	272.0	390.3	525.7
World	0.3	0.6	0.9	0.8	121.0	237.8	333.7	317.4

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author's simulation results.

When measured in terms of share in the world, the exports and imports of intermediate inputs become larger than the baseline for ASEAN and RCEP (Figure 5-12). It can thus be interpreted that ASEAN and RCEP are connected more deeply to GSCs in the world.

Figure 12: RCEP Impact on Share of ASEAN and RCEP in World Trade Volume of Intermediate Goods and Services



ASEAN = Association of Southeast Asian Nations, EX = exports, IM = imports, RCEP = Regional Comprehensive Economic Partnership, S = scenario.

Source: Author.

5. Summary

The impact of RCEP was evaluated using the modified dynamic GTAP model, which incorporates the GSC structure. For the simulation experiments, a set of economic database and empirical estimates were used to explore the potential economic gains from RCEP. The four RCEP scenarios simulated liberalising goods and services trade, improving the logistics for merchandise goods trade, and fostering investment in the RCEP region. The results show that all participating countries in RCEP gain in terms of real GDP, economic welfare, trade, and investment by liberalising trade and promoting investment. Trade volumes in exports and imports expand for RCEP and ASEAN Members, and this indicates that they are connected more deeply to the GSCs in the world.

This study has some limitations that can be addressed with additional information and updated data. The simulations are limited in the scope of RCEP liberalisation, so other factors affect the results. Also, complexities in RCEP are assumed away in simplifying simulation settings. The cost-reducing effect of consolidating existing FTAs, cost-incurring effect of complying with different rules of origin, and complexities in the liberalisation of services trade and investment are not considered. The methodology will continue to evolve to address the limitations in future studies.

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