

Estimating the Economic and Distributional Impacts of the Regional Comprehensive Economic Partnership

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Abstract

This paper applies a top-down, macro-micro modeling framework that links a computable general equilibrium model with the survey-based global income distribution dynamics model to assess the economic and distributional effects of the implementation of the Regional Comprehensive Economic Partnership (RCEP). Reductions of tariffs and non-tariff measures, implementation of a rule of origin, together with productivity gains stemming from trade cost reductions can strengthen regional trade and value chains among Regional Comprehensive Economic Partnership members. The results of the analysis indicate that in an already deeply integrated region, tariff liberalization alone brings little benefit, with estimated real income gains of 0.21 percent relative to the baseline (without the RCEP) in

2035. With liberal rules of origin, the gains in real income could double to 0.49 percent. The biggest benefits accrue when the productivity gains are considered, increasing real income by as much as 2.5 percent for the trade bloc. In this scenario, trade among RCEP members increases by 12.3 percent in 2035 relative to the baseline. The RCEP also has the potential to lift 27 million additional people to middle-class status by 2035. It will also boost wages, with faster gains in sectors that employ larger shares of women. The aggregate effects mask large variety of outcomes across countries, with Vietnam expected to register the highest trade and income gains. Implementation of the RCEP help partially mitigate the negative economic impacts of COVID-19 in the East Asia and the Pacific region.

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Estimating the Economic and Distributional Impacts of the Regional Comprehensive Economic Partnership

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1 Introduction

In November 2020, 15 countries in the East Asia Pacific region signed the Regional Comprehensive Economic Partnership (RCEP), which is expected to have a huge impact on regional trade flows. In January 2022, RCEP entered into force. The aim of the paper is to assess the impact of the agreement on the participating economies, focusing on the impact on growth and trade flows, and the potential reduction of poverty and inequality. As many countries participating in RCEP are already part of regional trade agreements, we expect the agreement to have a differentiated impact among RCEP members. Applying a global computable general equilibrium model, the analysis focuses on some features of the agreement: reduction of tariff and non-tariff barriers, as well as other trade costs. Even though the RCEP has been evaluated before,³ this paper presents several distinctive features. First, the simulation of tariff reduction follows the negotiated tariff reduction schemes, and this reduction is implemented in phases in line with the text of the agreement. In all markets, tariff reduction schedules are expected to be implemented over at least 20 years; however, a large proportion of tariffs will be eliminated on the date of entry into force of RCEP. Second, we present a sensitivity analysis to evaluate the reduction of non-tariff measures (NTMs) using alternative data sources. Finally, we extend the analysis to assess the impact of RCEP on poverty and income distribution among its members.

The Regional Comprehensive Economic Partnership (RCEP) was recently signed among 15 countries in the East Asia-Pacific region: Australia, Brunei, Cambodia, China, Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, Myanmar, New Zealand, the Philippines, Singapore, the Republic of Korea, Thailand, and Vietnam. Ten of those countries were already part of the Association of Southeast Asian Nations (ASEAN), while seven of those countries are part of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) (Figure 1). China and Korea, on their part, have signed Free Trade Agreements with ASEAN and some countries in the region, but not with Japan. Therefore, RCEP – a preferential trade agreement that brings together all these countries – is expected to have a significant impact on trade and GDP in the region, as well as a differentiated impact among its members. Of the 15 countries that are part of RCEP, 5 are still pending ratification, namely Malaysia, Indonesia, Philippines, Myanmar, and outside ASEAN, Korea.⁴

³ See Park et al. (2021), Petri & Plummer (2020), and Maliszewska et al. (2018).

⁴ See <https://www.bakermckenzie.com/en/insight/publications/2021/12/rcep-coming-into-force>.

Figure 1. RCEP, ASEAN and CPTPP conformation

ASEAN	RCEP	CPTPP
	Brunei	
	Malaysia	
	Singapore	
	Vietnam	
Cambodia		
Indonesia		
Lao PDR		
Myanmar		
Philippines		
Thailand		
	Australia	
	Japan	
	New Zealand	
		Canada
		Chile
		Mexico
		Peru
	China	
	Korea, Rep.	

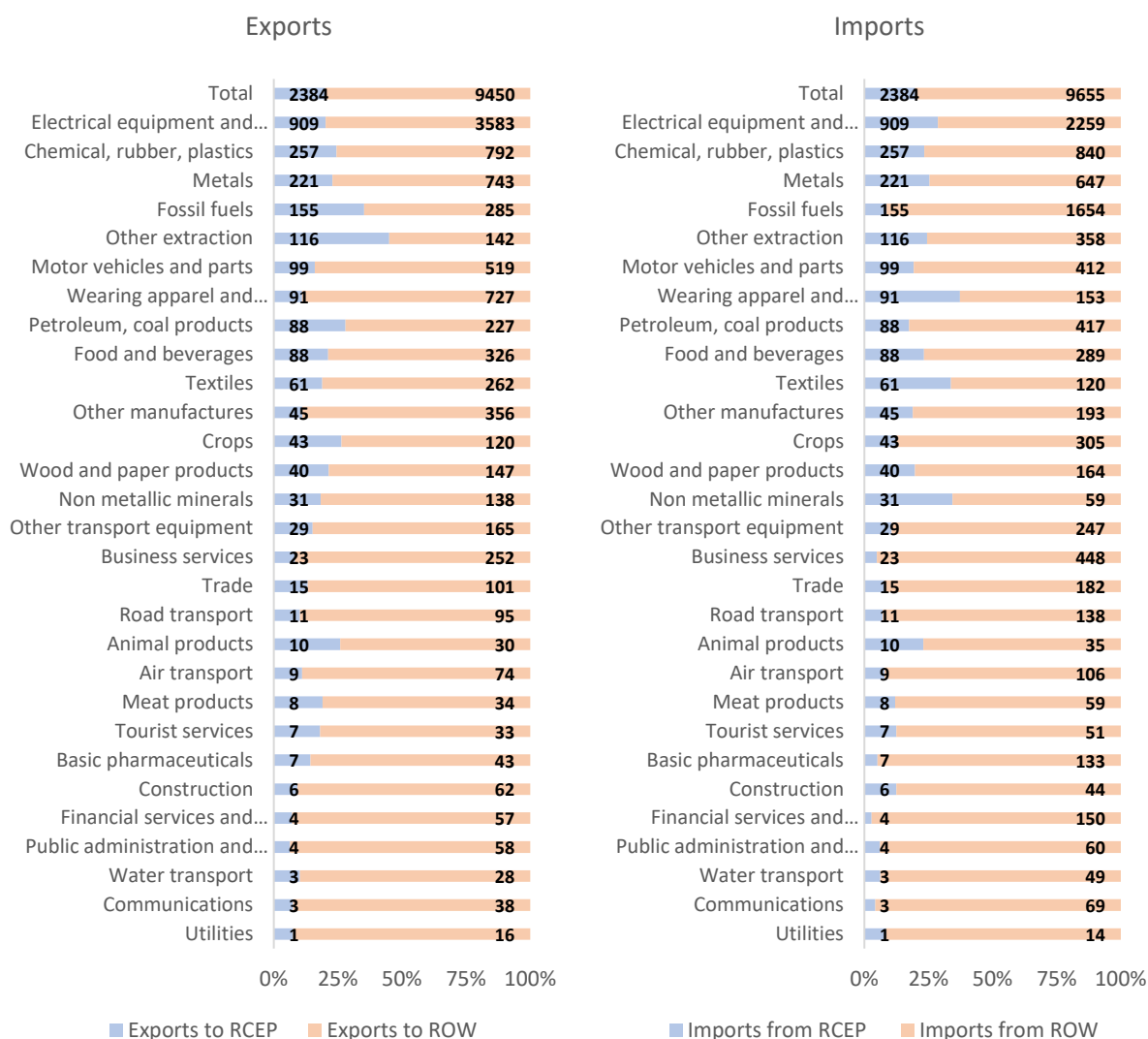
Source: own elaboration.

This regional grouping has a sizable global presence. The countries that comprise RCEP account for almost one-third of world GDP and world population, and one-quarter of world exports and imports. As a successful economic bloc, therefore, it can have a considerable impact on the world stage.

The extent to which the RCEP agreement can be expected to bring economic gains to members will depend on the breadth and depth of liberalization undertaken, as well as how liberal or open these economies were in the first place. It will also depend on the interest in – and scope of – intra-RCEP trade, and the sectors that will be most affected.

Currently, trade within RCEP countries represents only 20 percent of the total trade of RCEP member states, so there is considerable potential for increasing trade flows within the region (Figure 2). Intra RCEP trade takes place mostly in manufactures and minerals: Electrical equipment and machinery; Chemicals, rubber and plastic; Metals; Fossil Fuels, and Other extraction products. These four sectors represent the highest share of trade in the region. Between 30 and 40 percent of total RCEP trade in fossil fuels and extraction products is traded within the region. On the other hand, agriculture and services trade take place mostly outside RCEP. Less than 10 percent of services trade in the region takes place between RCEP countries.

Figure 2. Trade in RCEP by sectors. In percentage and billion dollars



Source: own elaboration with data from Comtrade and GTAP.

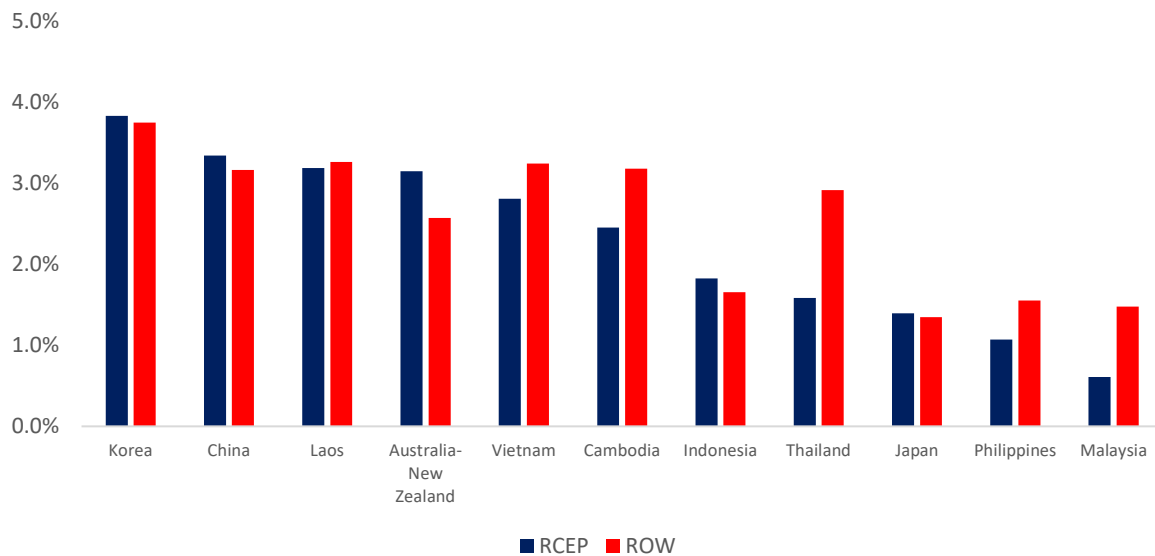
The RCEP agreement was signed in November 2020.⁵ The agreement includes 20 chapters, which cover a wide variety of provisions: trade in goods, trade in services, rules of origin, government procurement, intellectual property, sanitary measures, technical standards, and investment, among others. It does not include any provisions on the environment or labor. Tariffs are expected to be reduced over 20 years, with a large drop upfront for some products, and most tariffs being eliminated over the next 20 years. The agreement includes more agricultural trade liberalization than originally anticipated, with modest sensitive lists, mainly by Japan in key products such as rice, wheat, dairy, meat and sugar, and Indonesia in rice and alcoholic beverages. Some members, namely Australia,

⁵ The full details of the agreement are available at <https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text-and-associated-documents>.

Brunei, Cambodia, Malaysia, Myanmar, New Zealand, Singapore, and Thailand, have just one tariff schedule that is on offer for all other members, while others have variations by partners.⁶

The level of protection applied by RCEP members in intra-RCEP trade differs, due to the different previous agreements in place. For some countries, such as Korea, China, Lao PDR, and Japan, the average tariff applied to RCEP partners is around the same as the tariff applied to countries outside RCEP (Figure 3). In a few cases, the average tariff applied to RCEP countries is even higher than the tariff applied to non-members. This is the case of Australia, New Zealand, and Indonesia. Cambodia, Thailand, Philippines and Malaysia apply a significantly lower protection to RCEP imports than to non-members. Implementation of chapter 2 (trade in goods) in the RCEP agreement is expected to level out these differences.

Figure 3. Average tariff applied by RCEP countries. Trade weighted average



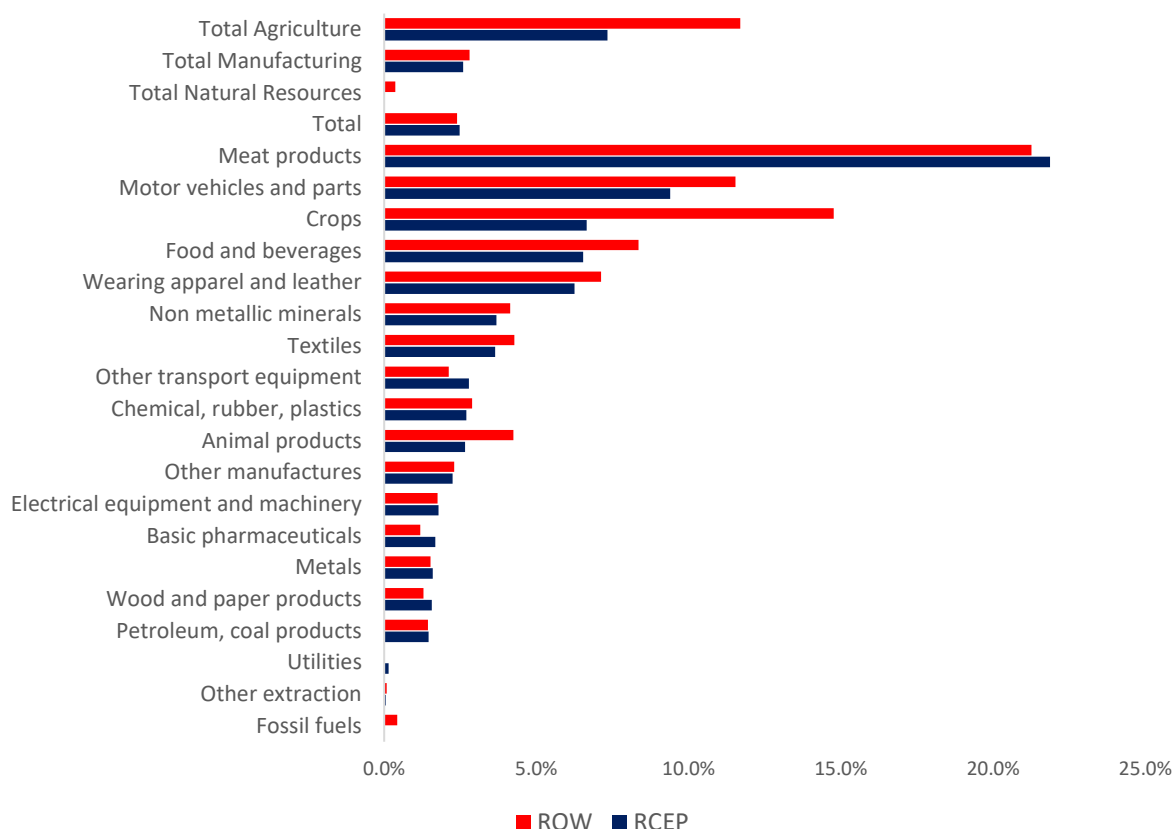
Source: Own elaboration with data from MacMap and Comtrade.

Note: Brunei, Myanmar and Singapore are aggregated into the Rest of Southeast Asia region.

The highest level of protection in RCEP is found in the agriculture and food sectors, considering tariffs applied to both RCEP countries and to the rest of the world (Figure 4). The trade-weighted average tariff applied to imports of agricultural and food products from the rest of the world is 11.7 percent, and 7.3 percent to imports from RCEP countries. In the agriculture and food sectors, Meat products and Crops have the highest protection levels: 21.9 percent and 6.6 percent respectively to imports from RCEP. The most protected manufacturing sectors within RCEP are Motor vehicles and parts (9.4 percent trade weighted tariff); Wearing apparel and leather (7.1 percent); Non-metallic minerals (3.7 percent); and Textiles (3.6 percent). Trade in Extractive products face zero or near-zero tariff rates in the region.

⁶ A more detailed discussion of the agreement can be found at <http://asiantradecentre.org/talkingtrade/rcep-a-first-look-at-the-texts> and the full text of the agreement, together with the tariff commitment schedules, can be retrieved from <https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text>.

Figure 4 Average tariff applied in RCEP countries by sector, to RCEP and to the rest of the world Trade weighted average

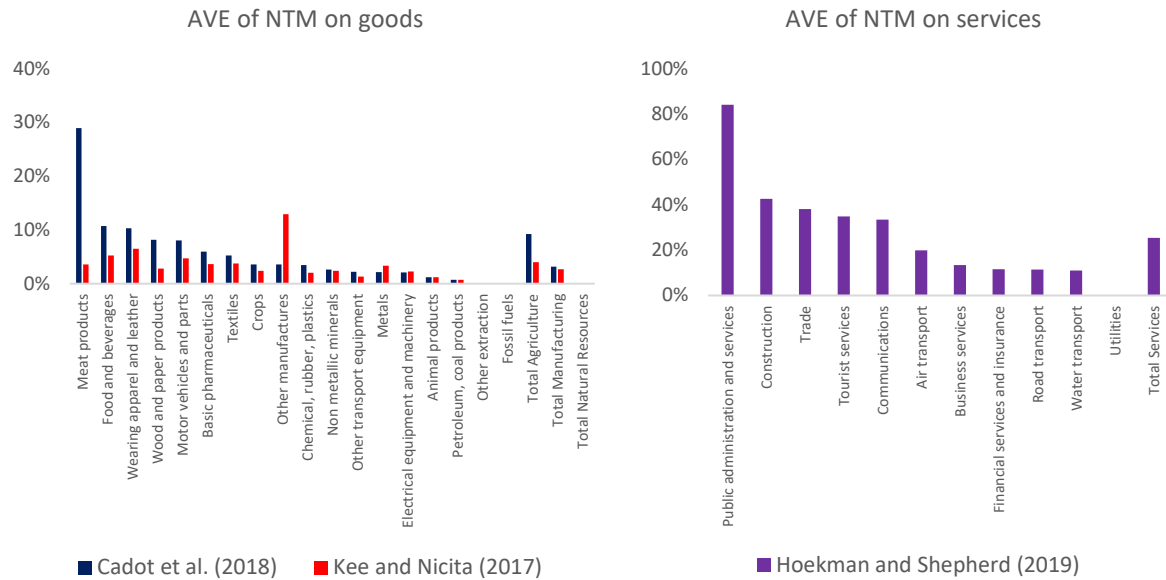


Source: own elaboration with data from MacMap and Comtrade

Barriers to imports may also take the form of NTMs, which range from restrictions on foreign providers of services, to sanitary, phytosanitary, technical, or price control measures, among others. In order to assess the level of protection from NTMs, estimations of ad valorem equivalents (AVE) are found in the literature (Tables AI.1 and AI.2 in Appendix I compare the different estimates available). Recently, two studies estimate AVEs of NTMs for a wide range of countries: Cadot et al. (2018) and Kee and Nicita (2017) (see Appendix I). For services, there are recent estimations by Hoekman and Shepherd (2019). The estimated AVEs of NTMs on services are much higher than on goods (Figure 5). This might be related to the techniques used to estimate the AVE, but also to the fact that as tariffs are not imposed on services, protection through NTMs is higher. The most protected services sectors in RCEP are Public administration and defense, Construction, Trade, Tourist services, and Communications.

In the comparison of AVEs of NTMs on goods estimated by Cadot et al. (2018) and Kee and Nicita (2017), we find significant differences. In most sectors, the estimations by Cadot et al. are higher, except for two specific sectors, i.e., Other manufactures and Metals, where estimates by Kee and Nicita are higher. Both studies find a higher protection level on agriculture and food sectors, especially in Meat products and Food and beverages. In this study, we use the estimates by Cadot et al. (2018), which we found to have a more comprehensive coverage of the countries of interest and more intuitive estimates at the sectoral level, but we run a sensitivity analysis with the estimates by Kee and Nicita, presented in Appendix II. Using the database by Kee and Nicita results in slightly higher impacts on real income for RCEP as a whole, with heterogeneity of country and sectoral results. However, the results are broadly consistent across the two NTM data sets.

Figure 5. Ad valorem equivalents of non-tariff barriers applied in RCEP countries by sector. Trade weighted average



Source: own elaboration

An important part of the agreement relates to a common rule of origin for all goods trade (RoO). In order to get the preferential treatment, a product needs to either reach an RCEP regional value content (RVC) level of 40 percent or undergo a change in tariff heading (CTH) at the four-digit HS code level. Several analysts point out that the RoO regime in RCEP is expected to boost regional trade significantly. Among them, Dib et al. (2020) estimate that the common rule of origin among RCEP countries could substantially reduce trade costs among its members, by facilitating trade and creating a more stable environment for trade, which could help consolidate global value chains in the region. Park, Petri and Plummer (2020) also assume that the new RoO regime in RCEP would reduce trade costs among its members. In a global CGE model, they simulate a reduction in iceberg trade costs associated with the implementation of the RoO regime and find that 16% of the gains in the whole region are associated with the trade cost reductions. Using econometric estimations, the Monetary Authority of Singapore (2021) finds that the implementation of RoO regimes in different trade agreements in the Asia region boosts trade and that the effects are not associated directly to tariff reductions, thus, RoO regimes reduce total trade costs. Finally, in a recent paper Chung, Park and Park (2022) estimate econometrically the trade cost reduction associated with RoO provisions in the Asia region, using a gravity model. They find that trade cost reductions could range between 7.8% and 25.9%, depending on how restrictive the RoO are. Fully cumulative RoO, such as the RoO regime under RCEP, would have a significant impact on trade costs. Thus, the authors conclude that the success of the trade agreement would rely to a large extent on an appropriate cumulative RoO regime. For trade in services commitments, a divided approach was taken: some countries have positive lists, namely Cambodia, China, Lao PDR, Myanmar, New Zealand, Philippines, Thailand and Vietnam, while the rest follow a negative list approach (Australia, Brunei, Indonesia, Japan, Korea, Malaysia, and Singapore). This divided approach might pose a challenge to manage the agreement, hindering the comparison of schedules and reservation lists among members.

2 Methodology and data

The potential impact of the Regional Comprehensive Economic Partnership (RCEP) has been estimated using the dynamic global Computable General Equilibrium (CGE) ENVISAGE model which includes most RCEP countries and

simulates the main policy changes expected under the agreement. This analysis builds on an earlier study by Ferrantino et. al. (2019),⁷ and the full details of the CGE model are presented in van der Mensbrugghe (2019).

The model was calibrated with the latest available information, using the GTAP database v.10 (Aguiar et. al., 2019). The aggregation of regions and sectors for the model is presented in tables A1.3 and A1.4 in Appendix I. We included most RCEP members and their relevant partners outside the region, i.e., Europe, the United States and India. Tariffs are from the MacMap⁸ database and are reduced over time in the baseline considering all agreements in force. It includes agreements in force in the region, such as CPTPP, China-Korea FTA, and ASEAN. Finally, tariffs were also adjusted in order to include the tariff increases implemented between China and the US starting in 2018 (Li, 2018). The information was taken from Li (2018). The model was calibrated with ad valorem equivalents of non-tariff measures from Cadot, Gourdon, and van Tongeren (2018) for goods and Hoekman and Shepherd (2019) for services. However, we also run the model with AVEs of non-tariff measures for goods from Kee and Nicita (2018) in a sensitivity analysis.

The baseline, or Business-as-Usual (BaU) scenario, runs from 2014 through 2035. The baseline targets real GDP growth and calibrates labor productivity, which is then fixed in the simulation scenarios. GDP projections are taken from the World Economic Outlook database, November 2019 (IMF 2019). Thus, the BaU does not consider the contraction in GDP due to the COVID-19 pandemic. While for most countries the GDP per capita growth rates are quite stable in the long run, some quickly aging economies or those with slowing population growth rates are expected to experience lower GDP growth rates after 2030. Also, higher income is associated with an increased share of services in household demand and since productivity growth in services is usually lower than in manufacturing, some economies experience slower GDP per capita growth rates due to slower productivity growth.⁹

The baseline also targets population growth following the latest UN population projections (UN 2020), as well as the GIDD projections, available by broad age group (we use the 15-64 age cohort for labor force), gender, and education (primary, secondary and tertiary). Growth of skilled labor is equated with the growth of specific education categories. For low- and lower-middle income countries, skilled workers are equated with secondary and tertiary levels. For upper-middle and high-income countries, skilled workers are equated with tertiary levels only.

We simulated different scenarios that reflect the depth of the RCEP agreement. The first scenario simulates the expected tariff reduction among RCEP members as scheduled in the agreement.¹⁰ A second scenario also includes non-tariff measure reductions among goods and services. We follow Petri and Plummer's (2020) assumptions and simulate a 35 percentage reduction of ad valorem equivalents of non-tariff measures on agricultural goods, a 25 percentage reduction on manufacturing goods, and a 25 percentage on services among RCEP members countries, and a 10 percentage of non-tariff measures applied by RCEP members to imports from countries outside RCEP, as it is assumed that some of the reforms carried out in the agreement are applied on a non-preferential basis. Third, we also assume that the Rules of Origin (ROO) regime in RCEP reduces trade costs among its members by 1% over the period of implementation (2022-2035). The resulting trade cost reduction is modeled as a lowering of iceberg trade costs (ad valorem tax equivalent of costs associated with trade), using the lower bound of Dib, Huang and Poulou's (2020) estimates, who find that a common rule of origin could reduce export transaction costs between 1.4% and 5.9%.¹¹ In other words, we believe that when tariff reductions are combined with lower NTBs, only then exporters are able to take full advantage of the preferential rates under liberal RoO. In our simulations, implementation of

⁷ See Appendix III for a Comparison of CGE assessments of RCEP.

⁸ The information on tariff reduction schemes bilaterally and by GTAP product is available at: <https://www.macmap.org/>.

⁹ See China 2030: Building a Modern, Harmonious, and Creative Society (2013).

¹⁰ For the tariff reduction schedules for RCEP members, see <https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text-and-associated-documents>.

¹¹ Park, Petri and Plummer (2022) also model the benefits associated with a more liberal RoO regime and increased utilization rates as iceberg trade cost reductions, but also allow for the RoO to impose a small administrative cost on intra-regional exports.

these policies is costless, resulting in upper bound estimates of potential gains. Fourth, as found in previous studies, trade liberalization leads to an increase in productivity, and thus we simulated an increase in productivity associated with the falling trade costs (the “productivity kick”).¹²

Table 1. Simulation scenarios

Scenario	Policy instrument	Shock
<i>RCEP_tar</i> Tariffs alone	Tariffs	RCEP Tariff reduction schedule
<i>RCEP</i> Full scenario	Tariffs and NTM	RCEP Tariff reduction schedule Preferential NTM reduction: -35% agricultural goods -25% manufacturing goods -25% on services 10% non-preferential NTM reduction
<i>RCEP_roo</i> ROO liberalization	Tariffs, NTM, and trade costs	RCEP Tariff reduction schedule NTM reduction as in RCEP 1% reduction in trade costs among RCEP members
<i>RCEP_prod</i> Productivity kick	Tariffs, NTM, and trade costs	RCEP_roo with productivity increase

Source: own elaboration

As sensitivity scenarios, we simulated the same shocks, calibrating the model with the ad valorem equivalents of non-tariff measures on goods from Kee and Nicita (2018), and we run an alternative scenario in which we assume that the trade cost reduction due to the common rule of origin regime only affects trade in manufacturing goods (see Appendix II). Manufacturing relies heavily on intermediate goods and other inputs, making it a sector susceptible to changes due to the implementation of rules of origin.

We complement the general equilibrium analysis with a simple global microeconomic model to obtain impacts on poverty and income distribution. The initial global distribution of per capita consumption/income was constructed with household-based data. Country-specific growth rates in real per capita household consumption from the CGE are fully transmitted to households assuming distribution-neutrality. To calculate the number of poor, the total population in each country is adjusted using United Nations population projections. There are 163 countries represented in the microeconomic model with 146 harmonized, nationally representative household surveys obtained from the World Bank’s Global Micro Database. Additional per capita consumption/income distributions for 17 countries were obtained from the PovcalNet website. The analysis on poverty omits Brunei Darussalam, Cambodia, and Singapore due to lack of data.¹³

¹² There is extensive empirical evidence that finds that trade liberalization leads to an increase in productivity, mainly in developing countries, as reviewed by Shu and Steinwender (2018). CGE models with constant returns to scale usually underestimate the gains from liberalization (USITC 1997; Tarr 2012), and for that reason, including a productivity shifter is empirically valid (Partdrige and Rickman 2010). The elasticities of productivity to trade liberalization vary. Following Topalova & Khandelwal (2011), we assume that a 10 percentage fall in tariffs leads to a 4.8 percentage increase in labor productivity in the economy. Similar results are found by Fernandes (2007) for Colombia.

¹³ For further details, see <http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx>.

3 Macroeconomic impacts

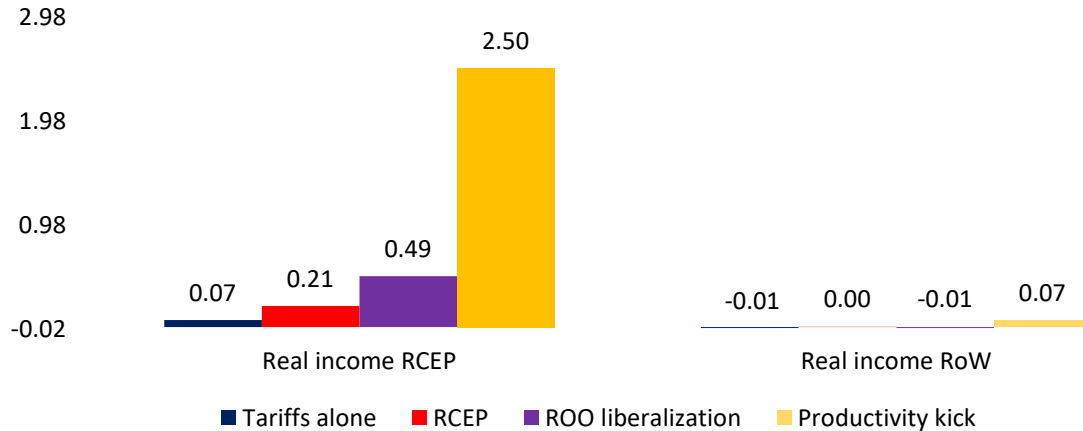
The trade liberalization reforms covering reductions of tariffs, non-tariff measures, and harmonization of rules of origin all lead to the reduction of trade costs. With lower trade costs, the price of a unit of imports is less expensive, thereby increasing the competitiveness of local production (using imported inputs) either sold on the domestic market or exported. As a result, production shifts to the most competitive sectors, leading to productivity gains and expansion of trade and faster economic growth in the RCEP region. The trade cost reductions also apply to trade with non-RCEP countries, leading to somewhat faster growth in trade with those countries as well.

Better access to regional markets allows countries to benefit from the faster growth of exports, whereas reduction of a country's own barriers coupled with a reduction of barriers in regional markets leads to lower prices of imports. The differences in gains across countries are linked to the initial level of tariffs, non-tariff barriers, and border costs, and their reductions under the RCEP agreement, and to the initial level of intra-RCEP trade. The overall welfare implications are also linked to the sectors of comparative advantage. If sectors benefiting under the RCEP have higher productivity than those that would be expanding in the baseline scenario, the reallocation of production leads to faster economywide productivity gains and income growth.

Our results suggest that the RCEP will have a positive impact on the trade and income in its member countries (Figure 6). Only assuming reductions in tariffs and non-tariff measures (RCEP scenario), real income is expected to increase by 0.21 percent and real GDP by 0.17 percent in 2035, compared to the business-as-usual or baseline scenario for RCEP member countries (this translates to an average annual boost to growth of 0.012 percent over 2022-2035). The estimated impact is higher if the reduction in trade costs due to the implementation of a common set of rules of origin is considered ("ROO liberalization," with a 0.5 percent and 0.3 percent impact respectively for RCEP member countries), and even higher if an increase in productivity is assumed as well ("productivity kick," with a 2.5 percent and 1.9 percent increase respectively). The impact on the rest of the world is negative although very slight due to trade diversion, except when the productivity kick is assumed. In that case, real income in the rest of the world increases by 0.07 percent.

To put our simulations in perspective, we compare our results in 2030 with earlier studies (see Appendix III). Our findings indicate that in 2030, RCEP members benefit from an increase of 0.41% in real income, when reductions of tariffs, NTMs and consolidated rules of origin are considered, and 0.15% with tariffs reductions alone. These results are aligned with Petri and Plummer (2020) where reductions of tariffs and non-tariff barriers result in an increase of real income of 0.38% by 2030 for RCEP members. When taking FDI liberalization into account, Petri and Plummer (2018) see higher gains, with real income going up to 0.53%. When trade costs are reduced due to implementation of rules of origin, Park, Petri and Plummer (2021) show that real income can increase up to 0.6% by 2030. Ferrantino et al. (2019) see gains up to 2.1% in 2030 with a standard implementation of RCEP (including India) and up to 4.5% with productivity gains. This is comparable to the 2.1% found by Petri, Plummer and Zhai (2012), whose "Asian track" scenario covers gains from FDI, but excludes India. There are data, assumption and methodological differences across all these studies, but the macro results are broadly consistent and Vietnam and Malaysia tend to benefit the most among the RCEP members.

Figure 6. Macroeconomic impacts: Percentage change relative to the business-as-usual scenario, 2035

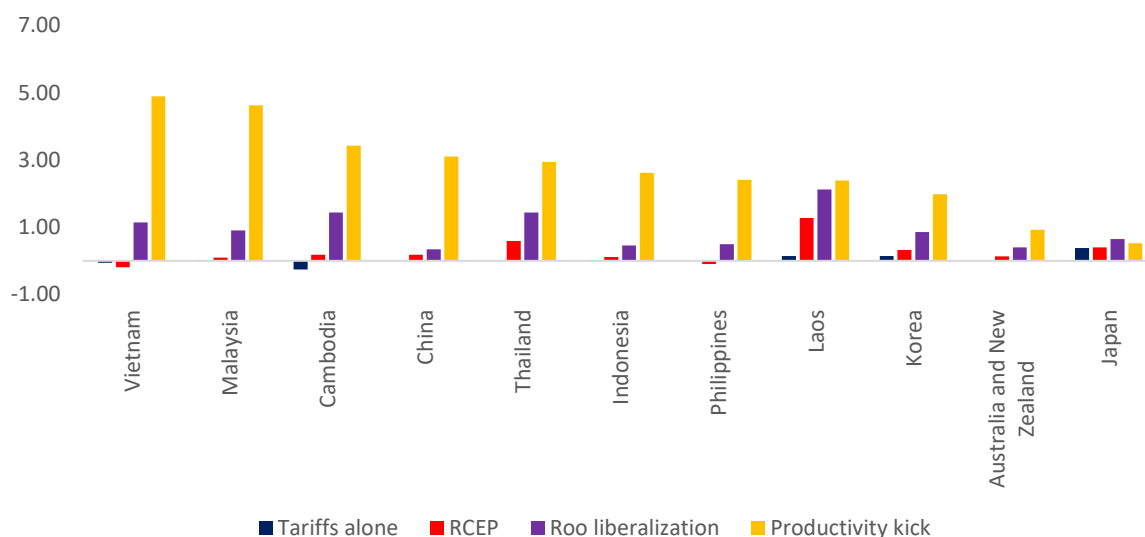


Source: World Bank staff calculations using ENVISAGE model.

Note: Real income is measured as equivalent variation i.e. the expenditure to attain utility in year t in any given simulation using base year prices.

All participating countries benefit from the RCEP, although the gains are not distributed equally and depend on the trade policy changes (Figure 7). Considering the full scenario, with reductions in tariffs, non-tariff measures, and trade costs, Lao PDR, Thailand, Cambodia, Vietnam, and Malaysia benefit the most. These positive gains are magnified when a productivity kick is assumed. Under this scenario, the real income in Vietnam and Malaysia increases almost 5 percent. In Japan, the country that gains less under this scenario, the real income increases by 0.5 percent. Interestingly for Japan, the impact of the four RCEP scenarios is similar, which suggests that most gains are associated with a fall in tariffs, in contrast to the rest of the countries, where the fall in tariffs leads to very small impacts, or even a negative impact as in Cambodia and Vietnam. The negative impact in those countries is associated to a fall in tariff revenue and negative terms of trade with prices of exports dropping faster than import prices. In most countries, there is a significant welfare gain when trade costs are reduced. In Lao PDR, significant gains result from a fall in non-tariff measures.

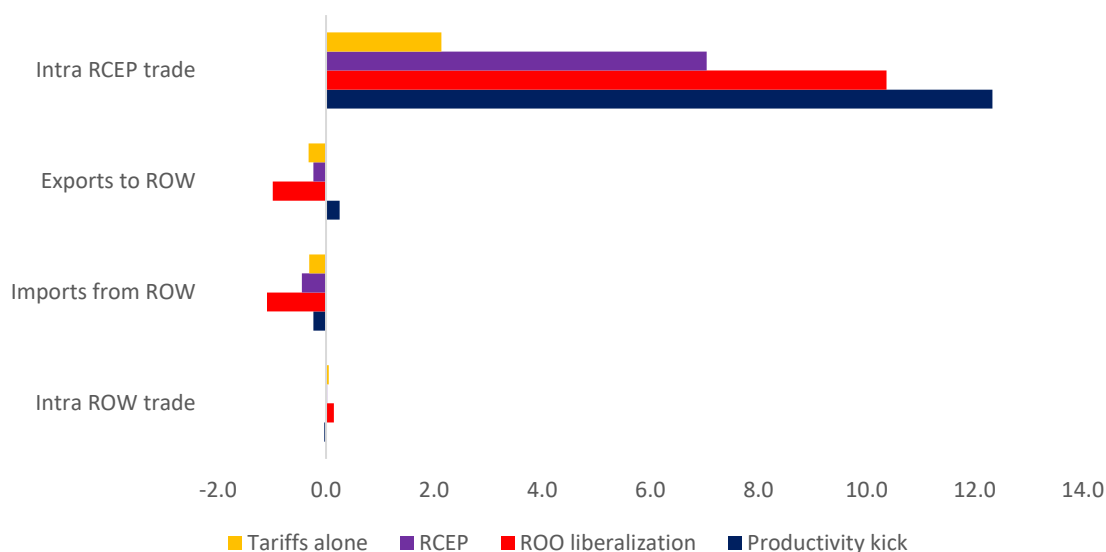
Figure 7. Real income gains by country in RCEP: Percentage change relative to business-as-usual scenario, 2035



Source: World Bank staff calculations using ENVISAGE model.

Intra-RCEP trade increases significantly, even when only tariff reductions are considered (see Figure 8). When trade cost reductions and productivity increases are assumed, intra-RCEP trade increases by 12.3 percent in 2035 compared to BaU. Trade of RCEP member countries with the rest of the world falls, since trade from RCEP countries is now being redirected to RCEP members, especially under the scenario with a common set of rules of origin. A full RCEP scenario with productivity kick, however, would also increase exports to the rest of the world.

Figure 8. Impact on trade: Percentage change relative to 'Business-as-Usual' scenario, 2035



Source: World Bank staff calculations using ENVISAGE model

Exports and imports increase for all RCEP member countries under all RCEP scenarios. The increase in trade is higher when the full scenario with productivity kick is assumed. Under this scenario, the countries that experience a

higher increase in exports are Vietnam (11.4 percent), Japan (8.9 percent) and Cambodia (6.5 percent), while imports increase significantly in Vietnam (9.2 percent), Philippines (7.2 percent), and Japan (6.4 percent).

In terms of total exports, the sectors that expand the most for Vietnam are motor vehicles (18.6 percent), textiles (16.2 percent), and wearing apparel (14.9 percent), mainly due to reductions of non-tariff measures: motor vehicles go down 3.5 percentage points; wearing apparel is reduced by 3.7 percentage points; and textiles by 1.4 percentage points. For Japan, the sectors that are growing the most are wearing apparel (58.7 percent), textiles (30.4 percent), tourism services (22.8 percent), which corresponds to the sectors with the highest reductions of faced tariffs by Japan as result of RCEP (wearing apparel tariffs decrease 12.7 percentage points between 2035 and 2020 - the highest reduction, and textiles decreases 5.9 percentage points). Finally, for Cambodia, wood and paper products (34.8 percent), chemical, rubber, and plastics (25.3 percent), and electrical equipment, and machinery (24.2 percent) expand the most, as the result of tariff reduction in the case of chemical, and plastics (2 percentage point reduction, between 2035 and 2020), and due to non-tariff measure reduction for wood and paper (14.8 percentage points decrease between 2035 and 2020).

The countries that experience a decline in trade are the partners in the rest of Southeast Asia and Europe as a result of trade diversion. Under the full scenario with productivity kick, exports of the United States to RCEP member countries increase, and imports of different regions outside RCEP increase, as exports from RCEP become competitive in markets outside the bloc.

Table 2. Impact on trade by economy. Percentage change relative to 'Business-as-Usual' scenario, 2035

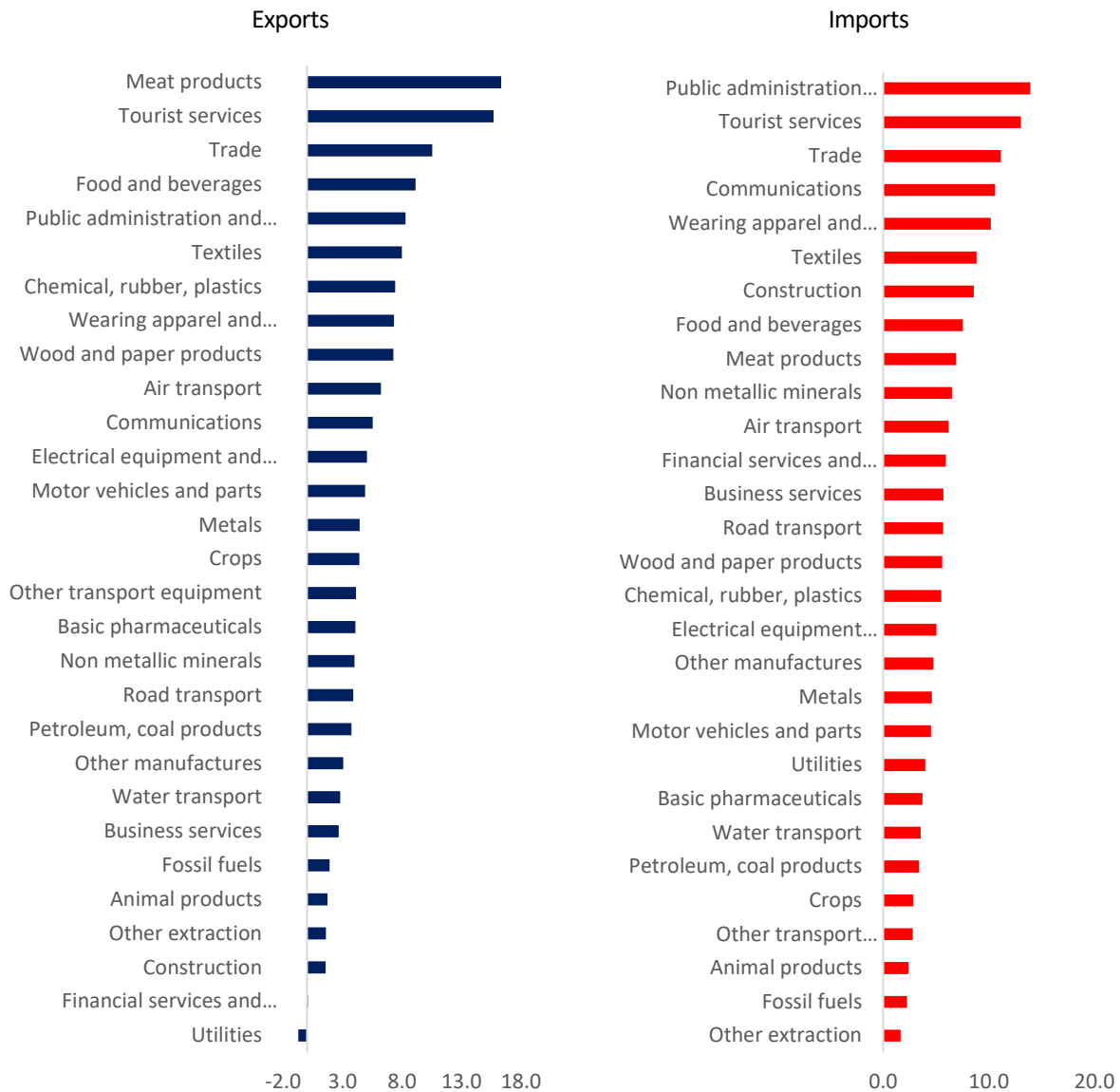
Region	Exports				Imports			
	Tariffs alone	RCEP	ROO liberalization	Productivity kick	Tariffs alone	RCEP	ROO liberalization	Productivity kick
Australia-New Zealand	0.2	3.6	4.3	4.7	0.2	3.2	4.1	4.6
China	0.7	1.7	2.4	4.0	0.6	1.8	2.5	3.9
Indonesia	0.3	3.0	3.7	5.5	0.2	2.6	3.6	5.0
Japan	3.0	7.6	9.0	8.9	2.6	5.2	6.2	6.4
Cambodia	0.4	3.6	4.7	6.5	0.1	2.7	3.6	5.2
Korea, Rep.	0.9	2.0	3.2	4.1	0.9	2.0	3.3	4.2
Lao PDR	0.2	3.9	4.3	4.5	0.1	3.1	3.8	4.3
Malaysia	0.1	1.6	2.7	5.6	0.1	1.7	3.0	5.5
Philippines	0.3	5.6	7.1	8.5	0.2	4.6	6.0	7.2
Thailand	0.4	1.9	3.1	4.2	0.3	2.2	3.5	4.4
Vietnam	-0.3	6.2	7.6	11.4	-0.3	4.7	6.2	9.2
RCEP	0.7	2.8	3.7	5.2	0.7	2.6	3.6	4.9
Canada	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0	0.1
Chile	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.1
Europe	0.0	-0.1	-0.2	-0.3	0.0	-0.1	-0.1	0.0
Hong Kong SAR, China	-0.1	-0.1	-0.2	-0.3	0.0	0.1	0.0	0.3
India	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.3	-0.2
Mexico	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Peru	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1	0.2
Sub-Saharan Africa	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2
United States	0.0	0.0	0.0	0.4	-0.2	-0.2	-0.5	-0.5
Rest of Southeast Asia	-0.2	-0.4	-0.8	-0.6	-0.2	-0.4	-0.8	-0.5
Rest of Europe and Central Asia	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.3
Rest of Latin America	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2
Rest of the World	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	0.0

Source: World Bank staff calculations using ENVISAGE model.

Agricultural and manufacturing exports from RCEP countries are expected to increase substantially. Among them, meat products, food and beverages, textiles, chemicals, and wearing apparel are the sectors registering the fastest growth rates of exports (Figure 9 LHS). This is linked to both the reduction of tariffs, which takes place mainly in meat products, motor vehicles, food and beverages, wearing apparel, crops, nonmetallic minerals and textiles, and reductions of non-tariff measures. Exports of some services are also boosted: tourist services, trade, and public

administration increase exports, linked to the fall in non-tariff measures. Imports of all commodities show a big boost, largely explained by the fall in non-tariff measures (Figure 9 RHS). However, these results should be taken with caution, as they are sensitive to the assumptions on the fall in non-tariff measures expected from the agreement.

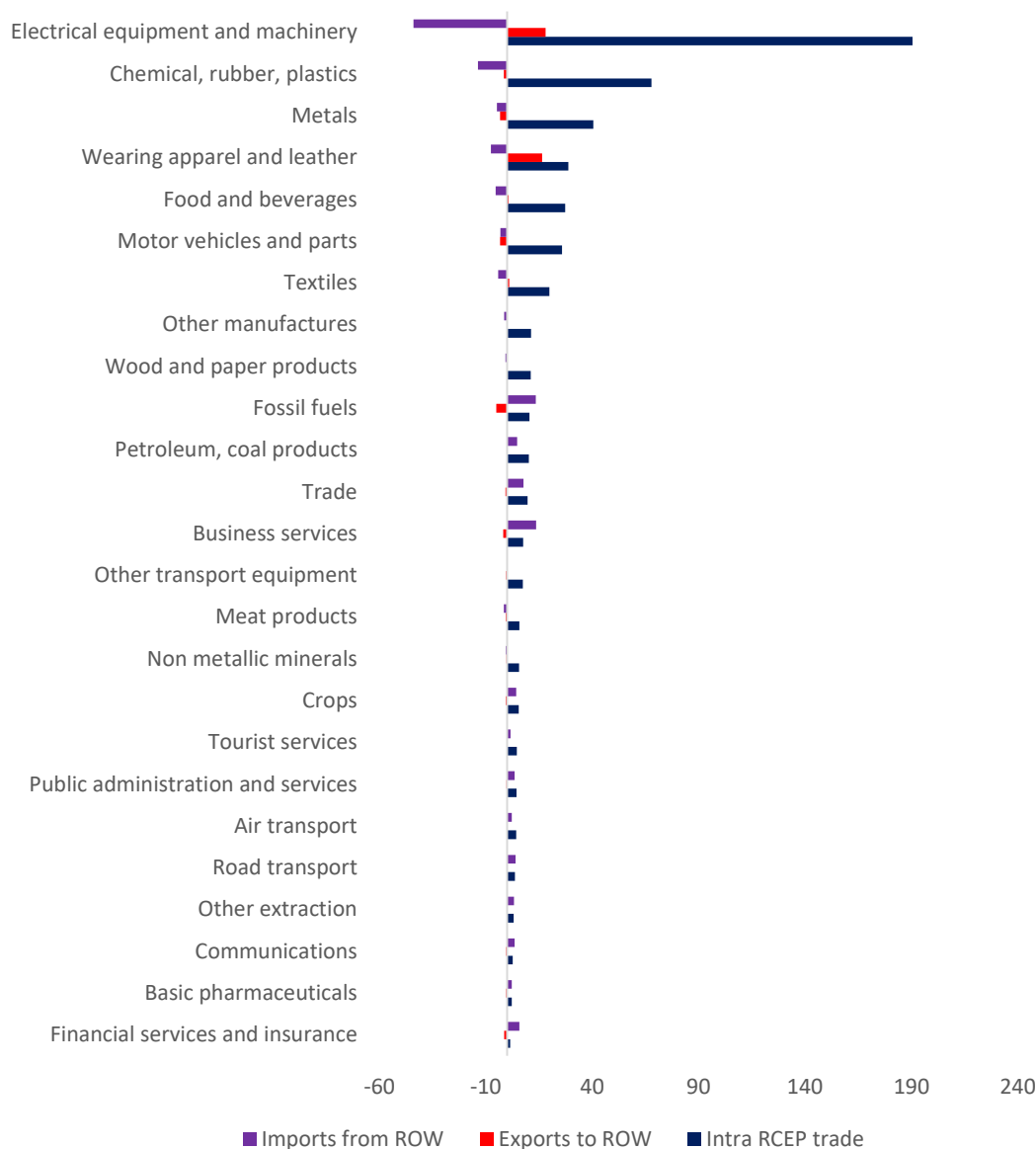
Figure 9. Total RCEP exports and imports in volume, percentage change of productivity kick scenario relative to business-as-usual scenario, 2035



Source: World Bank staff calculations using ENVISAGE model.

In value terms, the sectors that expand the most are mainly manufacturing products: Trade in Electrical equipment and machinery; Chemicals, rubber and plastics; Motor vehicles and parts; Metals; and wearing apparel expands significantly among RCEP member countries (see Figure 10). Trade creation in the region largely exceeds trade diversion away from the rest of the world, which takes place in the manufacturing sectors.

Figure 10. Trade. Productivity kick scenario relative to baseline (in billion USD dollars, 2035)

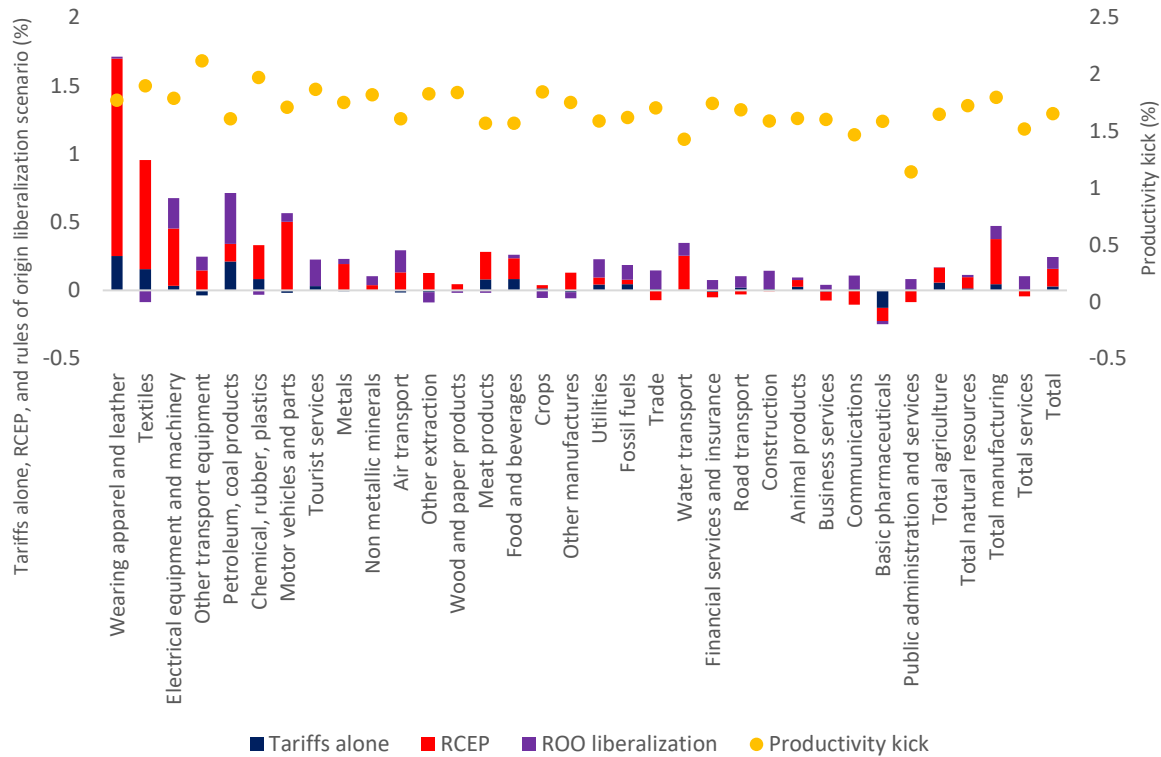


Source: World Bank staff calculations using the ENVISAGE model.

Under all RCEP scenarios, sectors that expand the most are the manufacturing products such as wearing apparel; textiles; electrical equipment; and transport equipment (Figure 11). Those sectors show the highest increase in output in percentage change and might benefit substantially from an increase in productivity related to a lower protection level on industrial inputs. Tourist services and petroleum and coal are the non-manufacturing sectors that also expand significantly.

The productivity kick assumption affects the impact on output by sectors. Under a full RCEP scenario without productivity increase, the main sectors expanding remain the same, but the increase in output is much smaller. Wearing apparel and leather, textiles, electrical equipment and machinery and petroleum and coal products are the sectors that expand the most. Without productivity increases, some sectors contract, mainly basic pharmaceuticals, business services, and crops, but the fall in output is very slight.

Figure 11. Output in volume, percentage change relative to business-as-usual scenario, 2035



Source: World Bank staff calculations using ENVISAGE model

The top expanding sectors by countries differ, as well as the most negatively impacted sectors (see Table 3). In some countries such as Japan, Australia and New Zealand, Korea, and Lao PDR, the increase in output in some sectors drives resources from other sectors, which contract. Also, in some countries the contraction in output is related to the expansion of the sectors in other countries. This is for example the case of textiles, which expand significantly in China, Japan, and Korea, and contract in Australia and New Zealand, Lao PDR, Philippines, and Thailand. In Australia and New Zealand and Thailand, agriculture and food products are among the sectors that expand the most, while in Malaysia and Philippines, some services sectors are among the top expanding sectors. In the rest of the countries, the sectors that expand the most are manufacturing sectors. These results are found in the full scenario with the productivity kick. In the other scenarios, the impact on output by sector is smaller, and the ranking of most affected sectors by country differs.

Table 3. Top expanding and contracting sectors by country, productivity kick scenario. In percentage variation compared to business-as-usual, 2035

Country	Top expanding sectors	Less expanding/top contracting sectors
Australia and New Zealand	Meat products (5.4%)	Wearing apparel and leather (-11.5%)
	Fossil fuels (2.1%)	Textiles (-5.8%)
	Animal products (1.8%)	Electrical equipment and machinery (-5.2%)
China	Wearing apparel and leather (2.9%)	Basic pharmaceuticals (1.8%)
	Other transport equipment (2.8%)	Public administration (1.6%)
	Textiles (2.7%)	Air transport (1.2%)
Indonesia	Electrical equipment and machinery (4.1%)	Petroleum and coal products (1.4%)
	Wood and paper products (3.9%)	Wearing apparel and leather (0.9%)
	Other manufactures (3.1%)	Fossil fuels (0.9%)
Japan	Textiles (4.9%)	Animal products (-3.9%)
	Chemicals, rubber and plastics (4.8%)	Meat products (-7.2%)
	Petroleum and coal (1.6%)	Wearing apparel and leather (-9%)
Cambodia	Other transport equipment (17.6%)	Animal products (0.9%)
	Chemicals, rubber and plastics (14.3%)	Petroleum and coal products (0.1%)
	Wood and paper products (13.8%)	Food and beverages (-1.8%)
Korea, Rep.	Textiles (6%)	Wearing apparel and leather (-0.8%)
	Chemicals, rubber and plastics (3.1%)	Fossil fuels (-1%)
	Petroleum and coal (3%)	Other transport equipment (-1.5%)
Lao PDR	Chemicals, rubber and plastics (35.1%)	Meat products (-3.9%)
	Fossil fuels (20.2%)	Textiles (-12.3%)
	Wood and paper products (10.4%)	Wearing apparel and leather (-16.3%)
Malaysia	Wood and paper products (5.2%)	Public administration (1.8%)
	Air transport (5%)	Basic pharmaceuticals (1.3%)
	Tourist services (4.8%)	Wearing apparel and leather (-0.8%)
Philippines	Electrical equipment and machinery (6.3%)	Non-metallic minerals (-0.9%)
	Tourist services (2.9%)	Textiles (-2.3%)
	Air transport (2.7%)	Motor vehicles and parts (-3.5%)
Thailand	Motor vehicles and parts (5.4%)	Basic pharmaceuticals (1.2%)
	Meat products (4.5%)	Fossil fuels (-1.4%)
	Animal products (3.2%)	Textiles (-1.6%)
Vietnam	Wearing apparel and leather (14.7%)	Fossil fuels (0.31%)
	Electrical equipment and machinery (12.1%)	Wood and paper products (-0.5%)
	Textiles (9%)	Basic pharmaceuticals (-1.6%)

Source: World Bank Staff calculations using ENVISAGE model.

The CGE analysis should be seen as a scenario analysis helping us understand the relative impacts of trade policy changes at the country and sectoral levels, not as a tool generating projections. It comes with several caveats. On the one hand, the results may underestimate the impacts of RCEP because they do not capture (1) new trade flows in sectors and countries that are not trading in the baseline; (2) most dynamic gains from trade (such as economies of scale, and learning by doing); and (3) foreign direct investment (FDI)—improving market conditions, competitiveness, and business sentiment will likely stimulate FDI in the member countries, thereby leading to higher investment and accelerating imports of higher-technology intermediate and capital goods and improved management practices. On the other hand, the results may overestimate the impacts of RCEP because the analysis does not capture (1) the costs of lowering non-tariff barriers; and (2) the transitional costs associated with trade-related structural change such as employment shifts and potentially stranded assets such as capital. RCEP offers big opportunities for boosting trade and growth, but implementation will be a significant challenge. This analysis identifies key priorities for the member countries' policy makers. Lowering tariffs and especially eliminating tariff peaks will be relatively straightforward. The hard part will be reducing the non-tariff measures and creating an environment where exporters can take full advantage of the common rules of origin without incurring high administrative costs. RCEP's full potential depends on agreeing to ratifying the agreement and implementing it in full. Partial reforms would lead to smaller effects.

4 Distributional impacts on poverty and gender

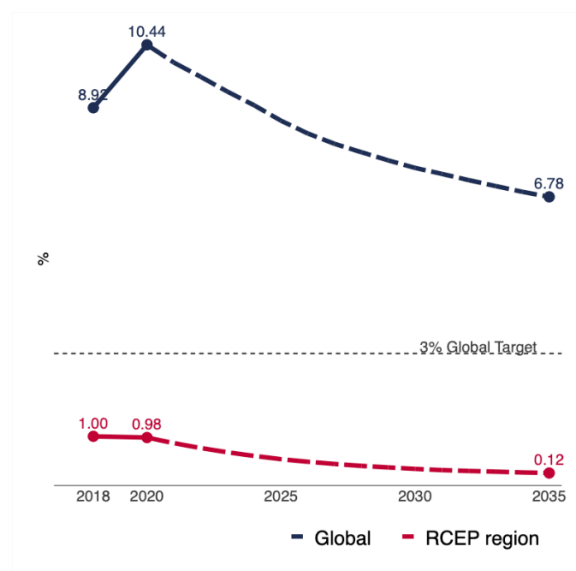
The World Bank estimates that in 2018, the global incidence of extreme poverty was 8.9 percent (as measured by the headcount ratio at 2001 purchasing power parity [PPP] US\$1.90/day), while the incidence in the RCEP region was 1.0 percent.¹⁴ Simulation results project that in 2020 and as a result of the COVID-19-induced economic depression, global extreme poverty is expected to rise for the first time in three decades, reaching 10.4 percent, and, under baseline conditions, it is expected to decline to 6.8 percent by 2035 (Figure 12). Driven by strong economic resilience and sustained growth in the RCEP region, particularly in Vietnam and China, extreme poverty under the baseline scenario is expected to decline from 0.98 percent in 2020 to 0.12 percent by 2035.

Since the RCEP member country region is formed by six high-income countries, four upper-middle-income countries and five lower-middle-income countries,¹⁵ and many of these countries are expected to graduate to a higher income status by 2035, a higher-value poverty-line is more adequate to measure standards of living in these countries, such as a national line of global middle-class status at 2011 PPP of US\$10.00 a day. Figure 13 shows the percentage of population that falls below middle-class status under baseline conditions. Globally, 61.7 percent of the population falls below that threshold, and the share is projected to decline to 52.8 percent by 2035. In contrast, the RCEP region would experience a more rapid decline, from 50 percent to 25.2 percent, during the same period.

¹⁴ World Bank (2020).

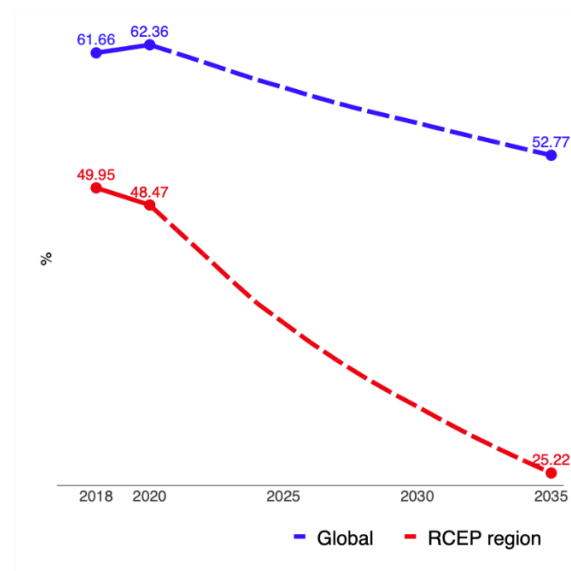
¹⁵ The World Bank classifies countries based on gross national income per capita using the Atlas method. For 2021, the RCEP member countries are classified as follows: high-income: Australia, Brunei Darussalam, Japan, Republic of Korea, New Zealand, and Singapore; upper-middle income: China, Indonesia, Malaysia and Thailand; lower-middle income: Cambodia, Lao PDR, Myanmar, Philippines and Vietnam. For further details, see: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>.

Figure 12. Poverty headcount ratio at 2011 PPP of US\$1.90 a day – Extreme poverty



Sources: World Bank (2020) and World Bank staff projections.

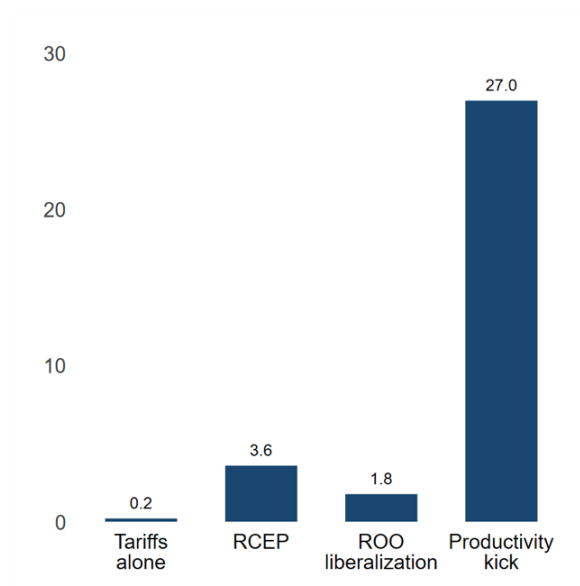
Figure 13. Poverty headcount ratio at 2011 PPP of US\$10.00 a day – Middle class



Source: World Bank (2020) and World Bank staff projections

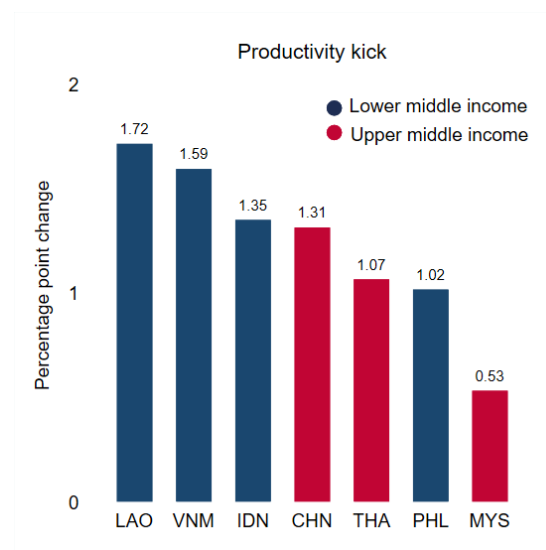
Under the scenario with productivity assumptions, the agreement will accelerate the decline in the percent of population below global middle-class status in 2035 by 1.15 percentage points, which in absolute terms corresponds to lifting up an additional 27 million people into middle-class status (Figure 14). In contrast, lower gains occur under the RCEP and ROO liberalization scenarios, with 3.6 million and 1.8 million lifted to middle-class status, respectively (Figure 14). Under the most optimistic scenario, and as a proportion of the population in 2035, the largest gains in the middle class would be seen in Laos (1.72%), Vietnam (1.59%), Indonesia (1.35%), and China (1.31%) (Figure 15).

Figure 14. Additional people with middle-class status in 2035, by country and scenario



Sources: World Bank (2020) and World Bank staff projections

Figure 15. New entrants into global middle class, % of population by 2035

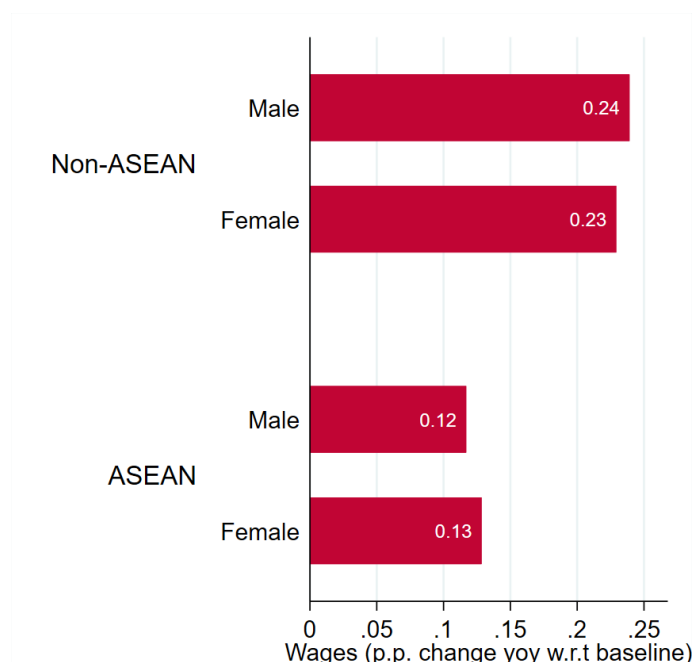


Sources: World Bank (2020) and World Bank staff projections.

Note: LAO – Lao PDR; VNM – Vietnam; IDN – Indonesia; CHN – China; THA – Thailand; PHL – Philippines; MYS – Malaysia.

By creating job opportunities in sectors of the economy that employ larger shares of women, such as textiles, wearing apparel, electronics, and several service sectors, wages for women will be rising faster than wages for male workers, particularly in ASEAN countries. Under the scenario with productivity gains, where wages grow the fastest, in RCEP member countries that also belong to ASEAN, wages for female workers would grow annually at 0.13 percentage points above the baseline, from 2021 to 2035, while wages for male workers would grow 0.12 percentage points (Figure 16). This trend is largely driven by Vietnam, where wages would grow annually by 0.76 and 0.67 percentage points above the baseline for females and males, respectively. Second in importance is the Philippines, where wages would grow annually by 0.13 and 0.11 percentage points above the baseline for females and males, respectively. In Thailand, wages for males would grow faster than for females, at 0.25 percentage points compared to 0.22 percentage points with reference to the baseline (annually), driven by a large dominance of male employment in expanding sectors such as motor vehicles, meat products, and animal products.

Figure 16. Wages under productivity kick scenario, by gender and ASEAN membership (annual growth rate with reference to the baseline by 2035)



Note: ASEAN members: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Non-ASEAN members: Australia, China, Japan, South Korea, New Zealand. Weighted averages

Source: Authors' estimates

5 Illustrating the country-specific impacts: The case of Vietnam

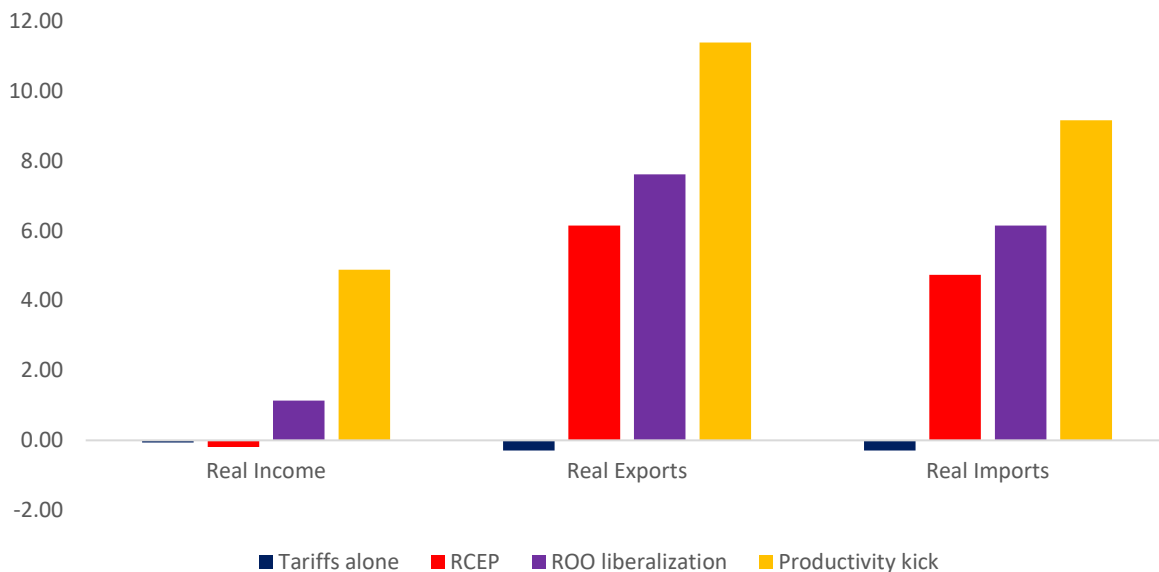
This section goes into greater detail on the economic and distributional impacts of RCEP in Vietnam. To estimate the impact of the trade agreement, we constructed a baseline and four alternative scenarios. The baseline reflects the business-as-usual conditions, where the tariff schedules of previous agreements, including the most recent CPTPP, have been implemented, in parallel with the US-China trade war. In the baseline, between 2020 and 2035, the average trade weighted tariff imposed by Vietnam declines from 0.8 percent to 0.2 percent, while the tariffs faced by Vietnam are reduced from 0.6 percent to 0.1 percent. To measure the effects of RCEP, the policy scenario will be compared against this baseline. The four policy scenarios will measure the RCEP implementation incrementally. The first scenario, the Tariffs scenario, is exclusively the implementation of tariffs according with the RCEP tariffs' reduction schedules. The second scenario, the RCEP scenario, we implemented reductions of tariffs and of non-tariff measures (-35 percent on agricultural goods; -25 percent on manufacturing goods; and -25 percent on services). Since only when tariff reductions are combined with lower NTBs, are exporters able to take full advantage of the preferential rates under liberal ROO, we assumed that with the ROO regime, the third scenario, trade costs among its members are reduced by 1 percent over the implementation period (2022-2035). However, in our simulations, implementation of ROO policy is costless, resulting in upper bound estimates of potential gains. For the final shock, the productivity kick scenario, an increase of productivity, as the result of a higher degree of openness and falling trade costs, is implemented.

In the baseline, which incorporates long-term trends and accounts for all the current tariff liberalization commitments within the region (except RCEP) in line with the ITC MacMap database, real income in Vietnam is expected to grow 112.7 percent between 2020 and 2035, with exports and imports increasing by 155.5 percent and 134.8 percent, respectively. With implementation of RCEP, when rules of origin and productivity are included on top of tariffs and non-tariff measures reductions, real income grows faster, with an increase of 123.1 percent between 2020 and 2035. The benefits of the implementation of these measures are also reflected on trade, with exports and imports growing 182.5 percent and 155.5 percent, respectively, and between the same period.

Vietnam's real income and trade expand faster than the baseline in the scenarios with tariffs, non-tariff measure reductions and rules of origin, and in the productivity kick scenario (see Figure 17). In the productivity kick scenario, where a productivity shock is included, Vietnam has the highest gains of all RCEP member countries. Real income¹⁶ increases by 4.9 percent relative to the baseline, higher than the gains for the bloc as a whole, where real income increases by 2.5 percent (Figure 8). Trade also increases the most in this scenario, with exports expanding by 11.4 percent and imports by 9.2 percent, relative to the baseline.

In the scenario where only the tariff reduction is implemented, the impact on Vietnam's economy is negligible, with real income close to zero. Trade too sees a small reduction relative to the baseline, with both exports and imports declining by 0.3 percent. Vietnam is already deeply integrated into the region; therefore, any additional tariff reductions yield only negligible impacts. Like many other RCEP member countries, Vietnam is also part of the CPTPP and ASEAN. Vietnam has had an FTA with Korea, the Vietnam-Korea Free Trade Agreement, since 2015. China is the only country within the RCEP that Vietnam does not have a trade agreement with. All these treaties are accounted for in the baseline; thus, the difference of tariffs between the respective shock and baseline, in 2035, are small, resulting in a meager impact.

Figure 17. Macroeconomic impacts: Percentage change relative to business-as-usual scenario, 2035



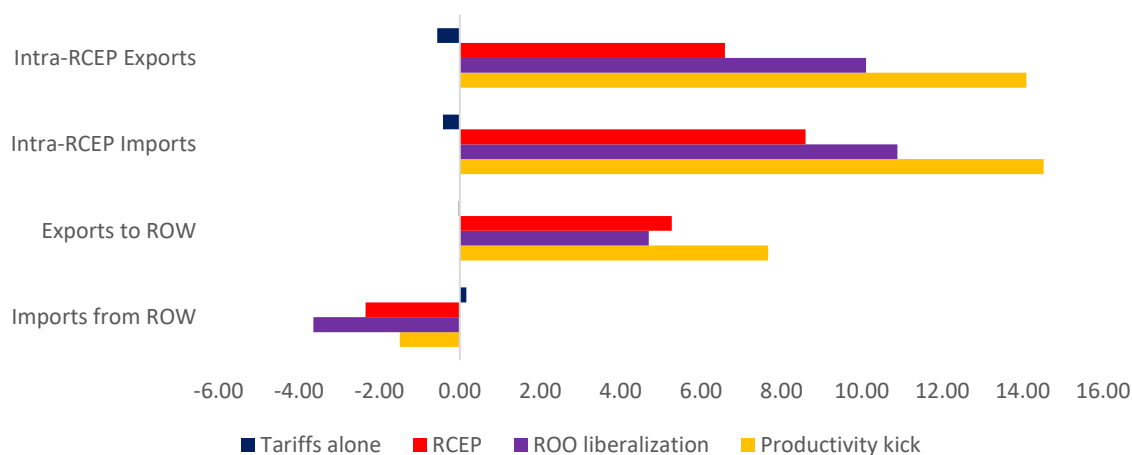
Source: World Bank staff calculations using ENVISAGE model

A progressive liberalization increases trade with RCEP member countries, sometimes at the expense of trade with non-members. As a direct consequence of the implementation of the RCEP, trade with RCEP member countries expands faster than trade with non-member countries in most scenarios (Figure 18). In the productivity kick

¹⁶ Real income is the expenditure to attain utility in year t in any given simulation using base year prices. It is similar in magnitude to real private consumption.

scenario, while exports and imports within RCEP increase around 14.1 percent, and 14.5 percent, respectively, exports for the rest of the world grow by only 7.7 percent, and imports decrease by 1.5 percent, indicating a small trade diversion. Intra-RCEP trade is higher when a common set of rules of origin are implemented, while trade with the rest of the world is lower. Exports to the rest of the world increase 7.7 percent under the productivity kick scenario. In imports from the rest of the world, the impact is negative in most scenarios, with the productivity kick scenario having a reduction of imports of 1.5 percent, relative to baseline.

Figure 18. Impact on Vietnam trade (volume): Percentage change relative to business-as-usual scenario, 2035



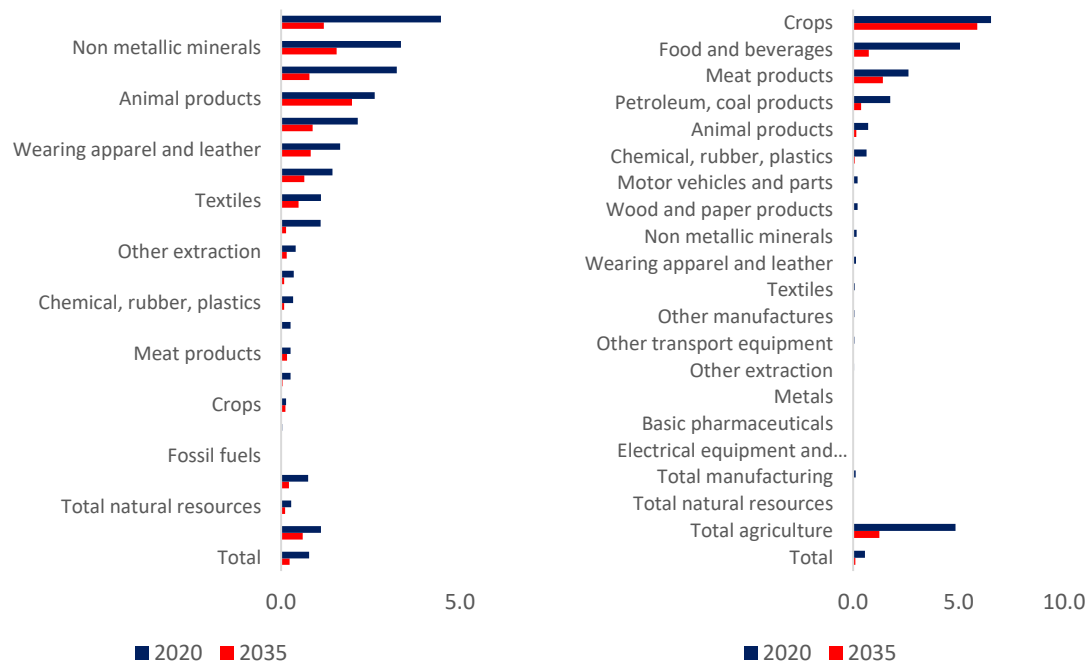
Note: ROW = rest of world.

Source: World Bank staff calculations using ENVISAGE model

Most of the tariffs imposed and faced by Vietnam within the RCEP bloc have relatively low initial levels due to the high level of integration that already exists in the region (Figure 19). Vietnam imposes the highest tariffs on motor vehicles and parts (4.5 percent), non-metallic minerals (3.3 percent), and other transport equipment (3.2 percent), and the sectors where its exports face higher levels of tariffs are crops (6.5 percent), food and beverages (5.1 percent), and meat products (2.6 percent).

The tariff reductions applied here follow the official RCEP tariff reduction schedules which consist of specific schedules, that vary depending on the source and destination of trade flows. Vietnam has imposed tariffs against other RCEP member countries, with the highest reductions in motor vehicles and parts (-3.3 percent between 2020 and 2035), other transport equipment (-2.4 percent), and petroleum and food (-13 percent), sectors that had high initial levels of tariffs in 2020. For the tariffs faced by Vietnam, the sectors with the highest reductions are food and beverages (-4.3 percent), petroleum, and coal products (-1.4 percent), and meat products (-1.2 percent).

Figure 19. Tariffs Imposed by Vietnam (LHS) and faced by Vietnam (RHS) in trade with RCEP members in 2020 and 2035



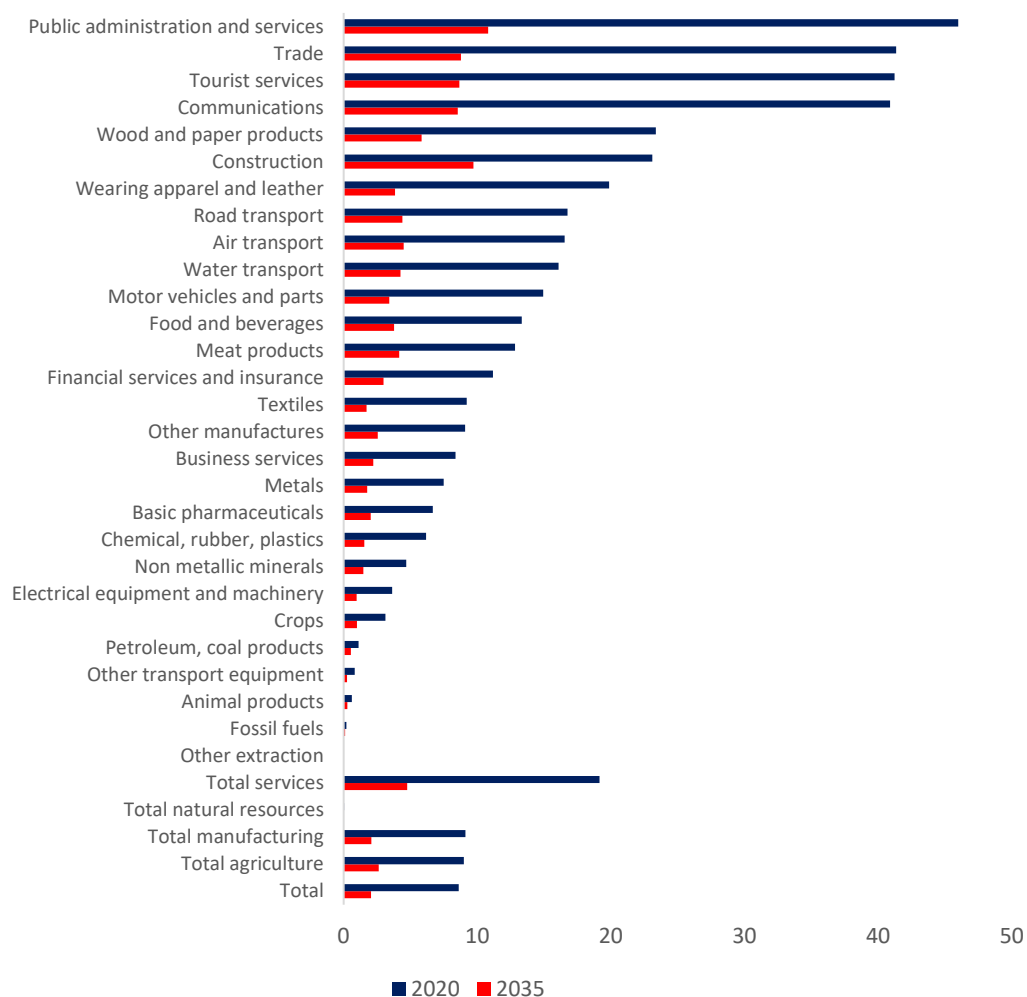
Note: LHS = left-hand side; NTBs = non-tariff barriers; RHS = right-hand side. Source: RCEP Official schedule (<https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text>) trade weighted tariffs. Trade from WITS (2020).

Source: World Bank staff calculations using ENVISAGE model

The service sectors have the highest level of initial non-tariff measures (NTMs), both as imposed and faced by Vietnam within the RCEP, as shown in Figure 20 and Figure 21 (according to the data from Cadot et al. (2018) for goods and Hoekman and Shepherd (2019) for services). Among service sectors, public administration and services (with Vietnam imposing an initial level of NTM of 46 percent and facing an initial level of 73 percent) is highest, followed by trade, tourist services and communication, which had the highest NTMs in 2020. In the goods sector, the highest level of NTMs imposed by Vietnam is recorded in wood and paper products (23 percent in 2020), while the highest NTMs faced by Vietnam are in meat products (17 percent). Under the shock of NTM reduction, the RCEP scenario, we assumed a reduction of 35 percent in agricultural goods, and 25 percent in manufacturing, and services goods, between RCEP member countries, and a 10 percent reduction in NTMs between RCEP members and the rest

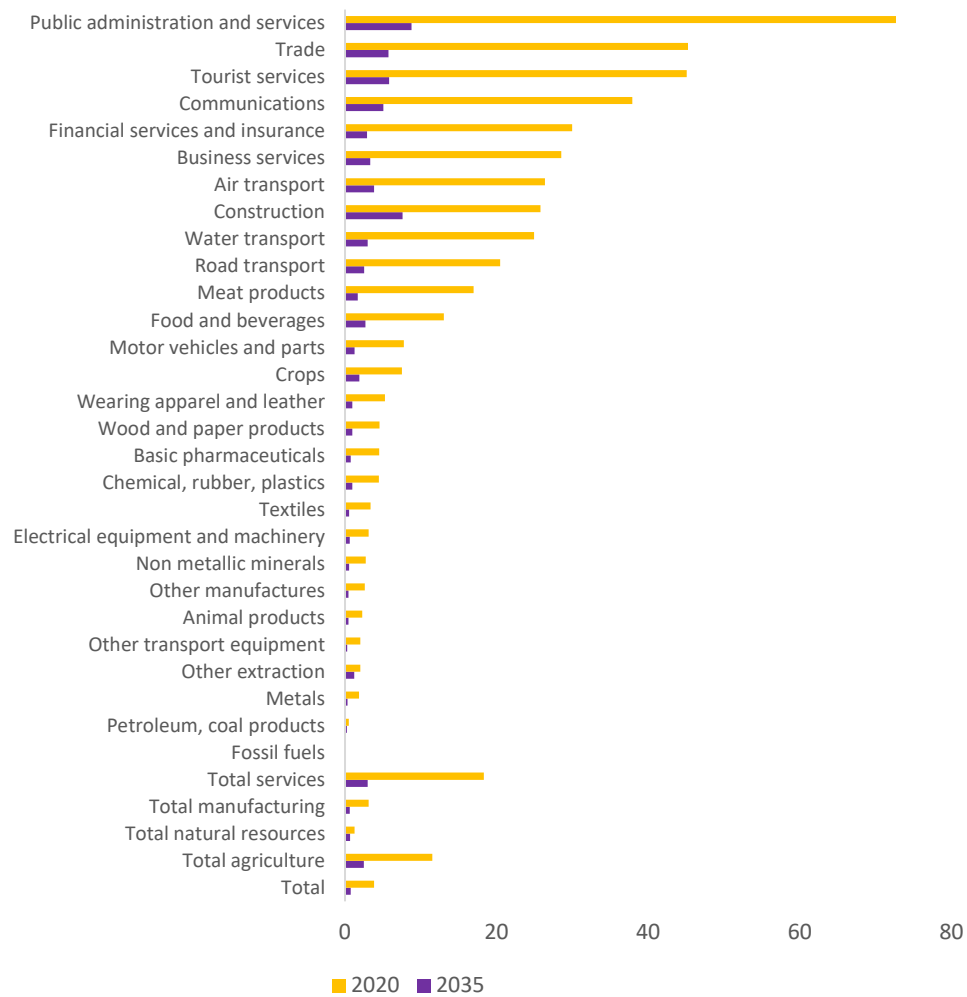
of the world. Therefore, the highest reductions of imposed and faced NTMs by Vietnam are in sectors with initial high levels, that is, public administration and services, trade, and tourist services.

Figure 20. NTMs imposed by Vietnam vis-à-vis RCEP members in 2020 and 2035



Source: NTMs in goods by Cadot et al. (2018) for NTMs in goods. For services, Hoekman and Shepherd (2019).

Figure 21. NTMs faced by Vietnam vis-à-vis RCEP members in 2020 and 2035

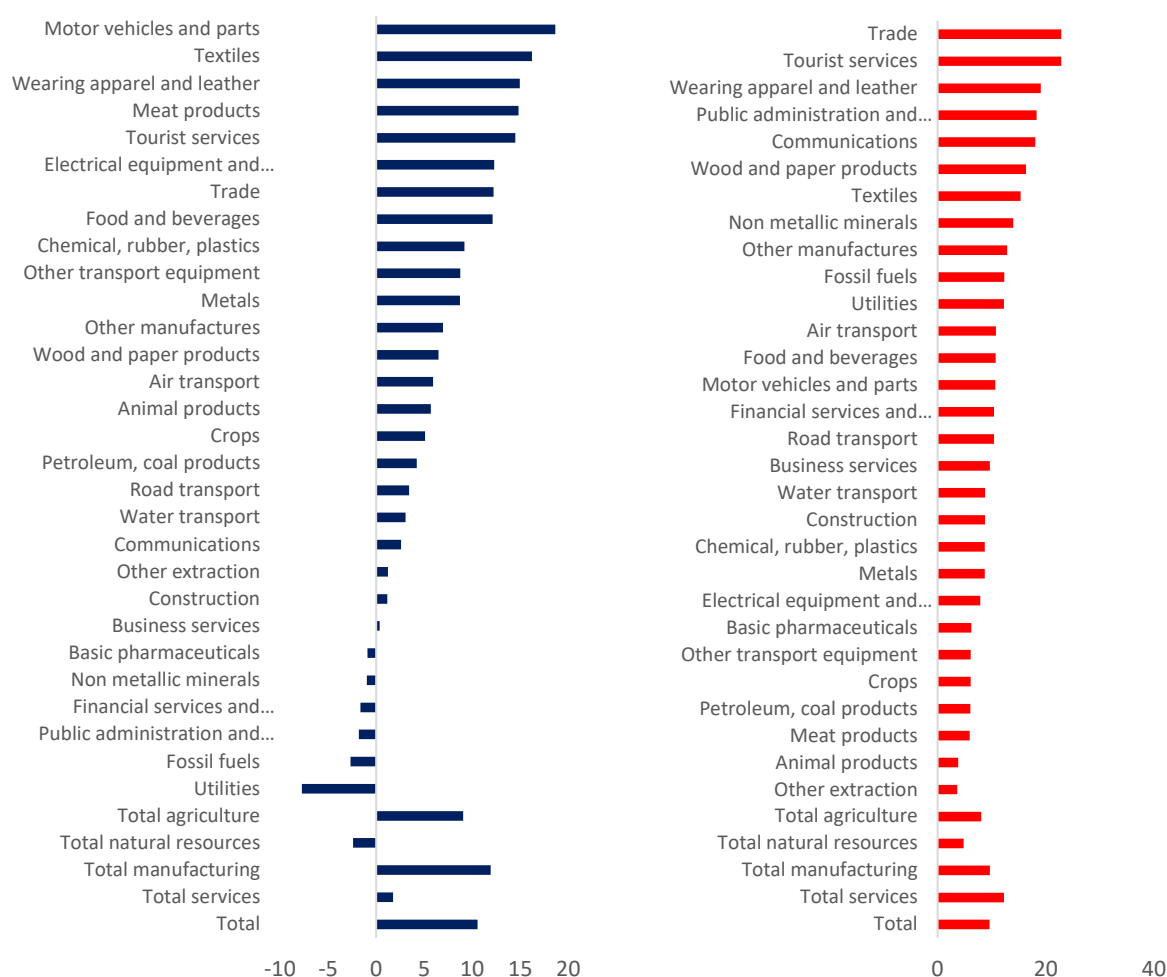


Source: NTMs in goods by Cadot et al. (2018) for NTMs in goods. For services, Hoekman and Shepherd (2019).

In the productivity kick scenario, manufacturing total exports (exports both for RCEP member countries and non-RCEP countries) expand the most (11.9 percent), mainly due to a faster expansion in the sectors of motor vehicles and parts, with an 18.6 percent increase relative to the baseline in 2035; textiles with a 16.2 percent increase relative to the baseline in 2035; and wearing apparel, with a 14.9 percent increase relative to the baseline in 2035, as can be seen in Figure 22 (LHS). Total agriculture increases by 9.1 percent, with meat products expanding by 14.8 percent. The higher increase of exports in these sectors is mainly the result of their high initial levels of faced NTMs and consequently, of experiencing the higher reductions of NTMs. The share of trade in meat products within RCEP member countries increases by 4 percent, while the share for motor vehicles and textiles increases by 2 percent compared with the baseline. The exports of some sectors decrease, mainly in the services and natural resources sector, with utilities (-7.7 percent), fossil fuels (-2.7 percent), and public administration and services (-1.8 percent) contracting the most.

In terms of imports, services expand the most, mainly due to their high level of initial NTMs, and thus having the highest reductions of NTMs (see Figure 22 RHS). Within the services sectors, trade and tourist services, in 2035, increase the most, by 22.9 percent and 22.8 percent, respectively, and relative to the baseline. Imports of wearing apparel and leather also increase significantly at 19 percent relative to the baseline. All sectors see an increase in imports (Figure 22, RHS).

Figure 22. Total volume Vietnam exports (LHS) and imports (RHS), percentage change of productivity kick scenario relative to baseline, 2035

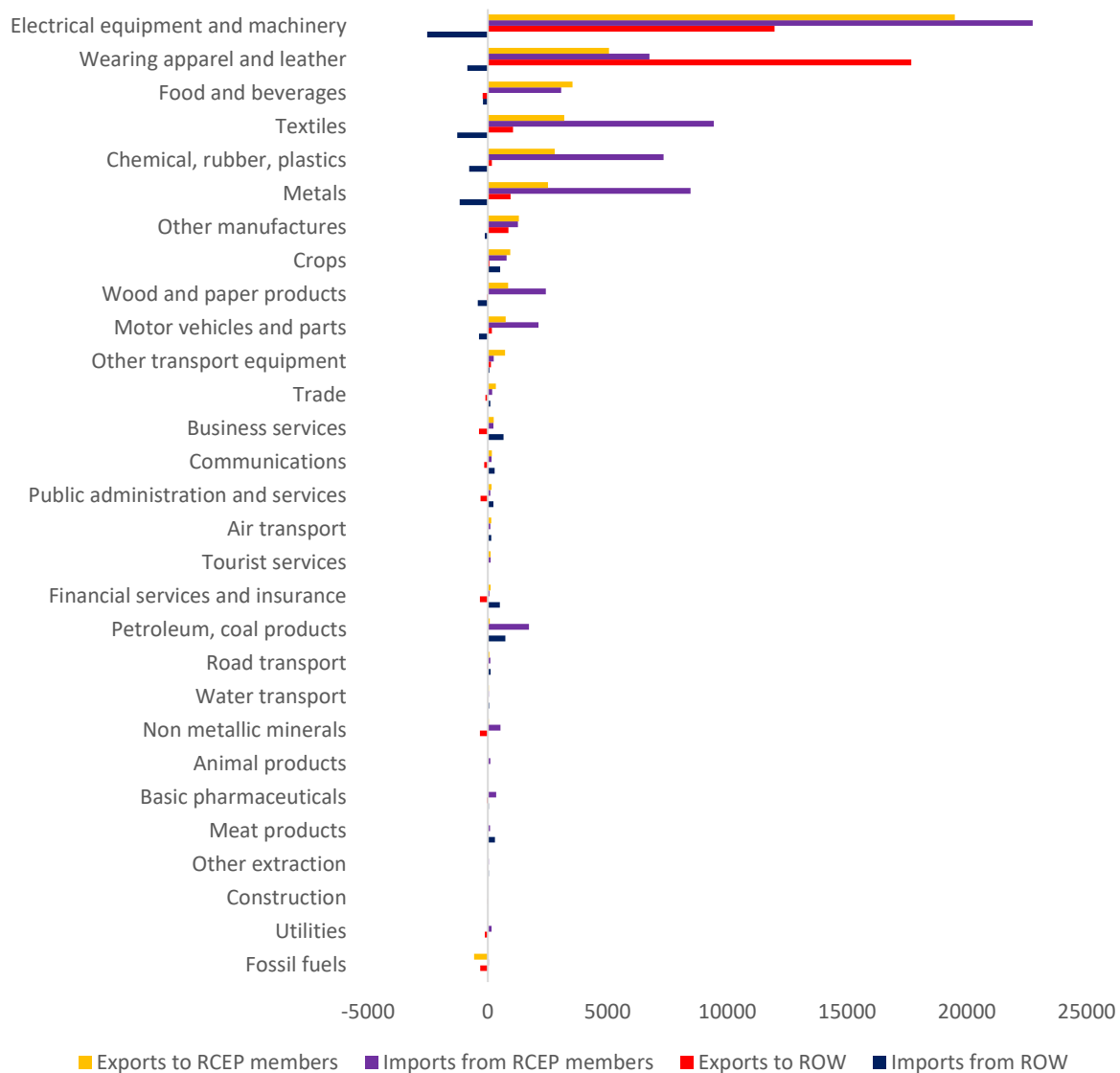


Source: World Bank staff calculations using ENVISAGE model

In most sectors, intra-RCEP exports grow faster than exports to rest of the world. Figure 23 shows the value change in trade between the productivity kick scenario and the baseline, by sector, in 2035. The exception is wearing apparel and leather, where exports to the rest of the world increase by US\$18 billion (the highest exports increase for the rest of the world), while exports to RCEP members increase by US\$5 billion. The sector expanding the most in terms of exports within RCEP member countries is electrical equipment and machinery, with an increase of US\$19.5 billion compared to the baseline.

All imports from RCEP member countries register a faster growth, with wood and paper products (US\$22 billion), utilities (US\$9 billion), tourist services (US\$8.5 billion) and trade (US\$7 billion) expanding the most. Imports from the rest of the world see a contraction in some sectors, namely electrical equipment (US\$2.5 billion), textiles (US\$1.2 billions), and metals (US\$1.1 billion), which are now being replaced by imports from sources within RCEP member countries due to a more liberalized market.

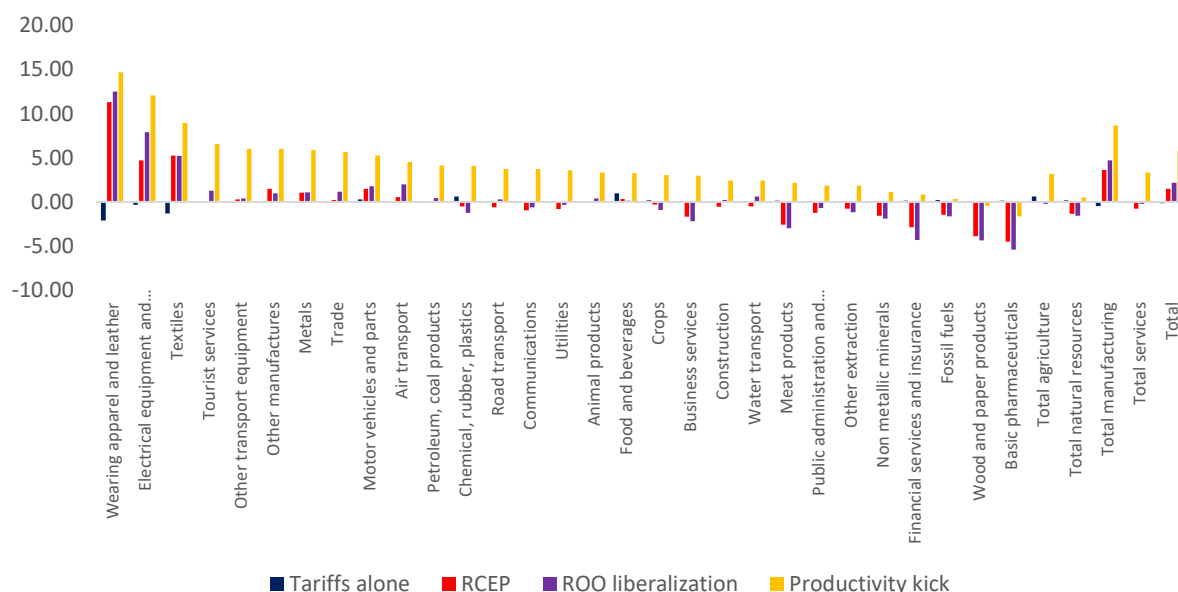
Figure 23 Trade: Difference change of productivity kick scenario relative to business-as-usual (in million US dollars, 2035)



Source: World Bank staff calculations using ENVISAGE model

The RCEP induces faster structural change within Vietnam. While most of the sectors expand their production, some will contract compared to the baseline, as a consequence of a reallocation of resources away from less competitive sectors. In the productivity kick scenario (Figure 24), it is manufacturing (8.7 percent), namely wearing apparel (14.7 percent), electrical equipment (12 percent), and textiles (9 percent) that see the most gains. This increase in production is the result of a higher demand for exports from those sectors, where in the case of electrical equipment and textiles, the increase comes mostly within RCEP member countries. For wearing apparel, the increase is due to the rest of the world. Production contracts in basic pharmaceuticals (-1.6 percent) and wood products (-0.5 percent). In the scenario where only tariffs are reduced, the impact of the RCEP in total production is negligible, with sectors such as wearing apparel and textiles declining (-2.1 percent and -1.3 percent, respectively) relative to the baseline scenario, suggesting that small gains from improved market access in member markets outweigh potential losses from declining protection of select domestic industries.

Figure 24. Output in volume, percentage change relative to business-as-usual scenario, 2035



Source: World Bank Staff calculations using Envisage model

The results of this paper show that the implementation of RCEP can boost Vietnam's income. Vietnam was already well-integrated in the region prior to RCEP, and therefore most of the gains do not come from reduction of already low levels of tariffs. Most gains will occur from deeper participation, namely with the boost to intra-RCEP trade related to the common rules of origin and productivity gains related to greater openness in goods and services. This underlines the importance of considering deeper RCEP commitments. With the implementation of RCEP, the market for Vietnam will expand, particularly to China, where Vietnam does not currently possess any trade agreement. Gains in the productivity kick scenario are concentrated mostly in the manufacturing sectors, in particular wearing apparel, electrical equipment, and textiles. Some sectors will suffer losses with the implementation of the agreement, due to a redistribution of resources to more productive sectors. In terms of distributional impact, Vietnam sees 1.7 million more people entering the middle class, and wages growing the fastest of all RCEP members, both for male and female workers.

6 Conclusions

The COVID-19 pandemic has taken a high toll in human and economic terms. RCEP could help cushion the negative effects of COVID-19 on economic growth by supporting regional trade and value chains. In the medium/long run, RCEP would increase the resilience of its members, it would make them better prepared in the face of future shocks by: (i) enhancing regional collaboration, (ii) reducing trade costs, and (iii) further diversifying their economies.

RCEP offers an opportunity to boost growth and support recovery from the COVID-19 pandemic. The gains are significant, with real income gains in the region between 0.21 percent (reduction of tariffs and NTMs) and 2.5 percent (accounting for potential productivity improvements). Countries that stand to gain the most in terms of real income growth include Vietnam (4.9 percent) and Malaysia (4.6 percent) (in 2035, in the productivity kick scenario). With this deeper implementation of RCEP, its members have the potential to become a hub in attracting foreign investment, particularly from within the region, leading to potentially even higher trade and income gains. RCEP has the potential to lift up to an additional 27 million people into middle-class status. Overall, wages within the region

grow faster under RCEP. In addition, by creating jobs in sectors with high shares of female workers, wages for female workers grow faster than wages of male workers.

Rules of origin may encourage investments in upstream industries and make exports less dependent on imported goods, but more on regional supply chains. With the implementation of rules of origin on top of reductions of tariffs and NTMs, total exports from RCEP members could grow by 5.2 percent on average, with the sectors of meat products (16.3 percent), tourism services (15.7 percent), and trade (10.5 percent) enjoying the fastest expansion relative to the baseline in 2035. RCEP members would also benefit from less expensive imported goods, leading to further integration into regional value chains. RCEP boosts imports in sectors such as wearing apparel (10.17 percent), textiles (8.84 percent), and food and beverages (7.53 percent) relative to the baseline in 2035.

RCEP offers big opportunities for boosting growth and poverty reduction in member countries, but implementation will be a significant challenge. This analysis identifies key priorities for policy makers. Lowering and eliminating tariffs will be the relatively easy part—even if it comes, in some cases, with the challenge of how to replace tariff revenues. The hard part will be enacting the non-tariff measures in goods and services, which is where the potential economic gains are largest. Partial implementation of the agreement would lead to smaller effects. To keep trade costs low and to boost integration into global value chains, it is necessary to implement also trade facilitation reforms, to invest in good physical and institutional infrastructure allowing goods and services to cross borders cost-effectively and reliably.

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Appendix I Data on non-tariff barriers

Table AI. 1 Comparison of estimates of Ad Valorem Equivalents (AVE) of Non-Tariff Barriers on goods

Item	Kee, Nicita, Olarreaga (2008)	Nicita and Kee (2018)	Cadot, O., J. Gourdon and F. van Tongeren (2018)
Estimation method	First stage estimates the impact of NTB on quantities, and then translate the quantity impact into price effect	Gravity equation	
Coverage of importing countries	83	40 + EU	86
Coverage of exporting countries	Na	151 + EU	na
Coverage of non OECD countries	49	33	55
Coverage of GTAP sectors	43 (v9)	42 (v9)	37 (v9)
Bilateral estimations	No	Yes	No
Observations		Include separate estimations of technical and non-technical measures	Include separate estimations of TBT and SPS measures on one side, and other NTMs on the other side
Reference	https://openknowledge.worldbank.org/handle/10986/8787	https://datacatalog.worldbank.org/dataset/ad-valorem-equivalent-non-tariff-measures	https://www.oecd-ilibrary.org/trade/estimating-ad-valorem-equivalents-of-non-tariff-measures_f3cd5bdc-en
Year of estimation	199s (NTM) 2001-2003 (trade)	2015	2015

Source: own elaboration

Table A1. 2 Comparison of estimates of Ad valorem Equivalents (AVE) of Non-Tariff Barriers (NTB)

Item	Jafari and Tarr (2015)	CEPII (2016)	Hoekman and Shepherd (2019)	Benz and Jaax (2020)
Estimation method	Apply different estimations methods for the different services sectors, using price impact, cost impact and margins estimates from different studies	Gravity approach not based on STRI	Construct OECD STRI for developing countries, and use this indicator (named Service policy index) to estimate in a gravity framework the elasticity of trade to service trade policy. The elasticity is used to estimate AVE	Gravity equation to estimate the elasticity of trade to service restrictions (STRI)
Coverage of total countries	103	119	69	46
Coverage of non OECD countries	75	83	32	10
Coverage of GTAP sectors	8	9	7	5
Year of estimation	2008/2010	2011	2016	2019

Source: own elaboration

Table A1. 3 Regional aggregation

GTAP region	Model region	Description
AUS, NZL, XOC	ANZ	Australia, New Zealand and rest of Oceania
CHN	CHN	China
HKG	HKG	Hong Kong SAR, China
JPN	JPN	Japan
KOR	KOR	Korea, Rep.
KHM	KHM	Cambodia
IDN	IDN	Indonesia
LAO	LAO	Lao PDR
MYS	MYS	Malaysia
PHL	PHL	Philippines
THA	THA	Thailand
VNM	VNM	Vietnam
IND	IND	India
XSE, BGD, MNG, TWN, XEA, BRN, SGP, NPL, PAK, LKA, XSA	XEA	Rest of Southeast Asia
CAN	CAN	Canada
USA	USA	United States
MEX	MEX	Mexico
CHL	CHL	Chile
PER	PER	Peru
XNA, ARG, BOL, BRA, COL, ECU, PRY, URY, VEN, XSM, CRI, GTM, HND, NIC, PAN, SLV, XCA, DOM, JAM, PRI, TTO, XCB	XLC	Rest of Latin America and Caribbean
AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU, LUX, MLT, NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR, CHE, NOR, XEF	EUR	Europe
ALB, BGR, BLR, HRV, ROU, RUS, UKR, XEE, XER, KAZ, KGZ, TJK, XSU, ARM, AZE, GEO, BHR, IRN, ISR, JOR, KWT, OMN, QAT, SAU, TUR, ARE, XWS, EGY, MAR, TUN, XNF	XEC	Rest of East Europe and Central Asia
BEN, BFA, CMR, CIV, GHA, GIN, NGA, SEN, TGO, XWF, XCF, COD, ETH, KEN, MDG, MWI, MUS, MOZ, RWA, TZA, UGA, ZMB, ZWE, XEC, BWA, NAM, ZAF, XSC	SSA	Africa

Source: own elaboration

Table A1. 4 Sectoral aggregation

GTAP sector	Model sector	Description
PDR, WHT, GRO, V_F, OSD, C_B, PFB, OCR, FRS	CRO	Crops
CTL, OAP, RMK, WOL	APR	Animal products
COA, OIL, GAS	FFL	Fossil fuels
OXT	OXT	Other extraction
CMT, OMT	MEA	Meat products
FSH, VOL, MIL, PCR, SGR, OFD, B_T	PFD	Food and beverages
TEX	TEX	Textiles
WAP, LEA	WAL	Wearing apparel and leather
LUM, PPP	WDP	Wood and paper products
P_C	P_C	Petroleum, coal products
CHM, RPP	CRP	Chemical, rubber, plastics
BPH	BPH	Basic pharmaceuticals
NMM	NMM	Non metallic minerals
I_S, NFM, FMP	MET	Metals
ELE, EEQ, OME	ELM	Electrical equipment and machinery
MVH	MVH	Motor vehicles and parts
OTN	OTN	Other transport equipment
OMF	OMF	Other manufactures
ELY, GDT, WTR	UTL	Utilities
CNS	CNS	Construction
TRD	TRD	Trade
AFS	AFS	Tourist services
OTP	OTP	Road transport
WTP	WTP	Water transport
ATP	ATP	Air transport
WHS	OBS	Business services
CMN	CMN	Communications
OFI, INS	FIS	Financial services and insurance
RSA, OBS, ROS	OBS	Business services
OSG, EDU, HHT, DWE	PUB	Public administration and services

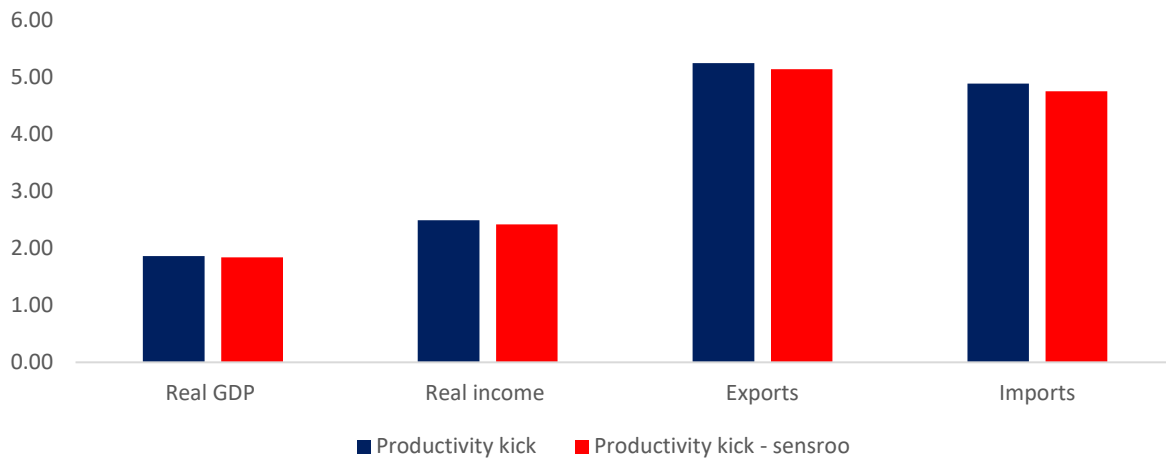
Source: own elaboration

Appendix II: Sensitivity analysis

All.1. Rules of origin applying to the manufacturing sector

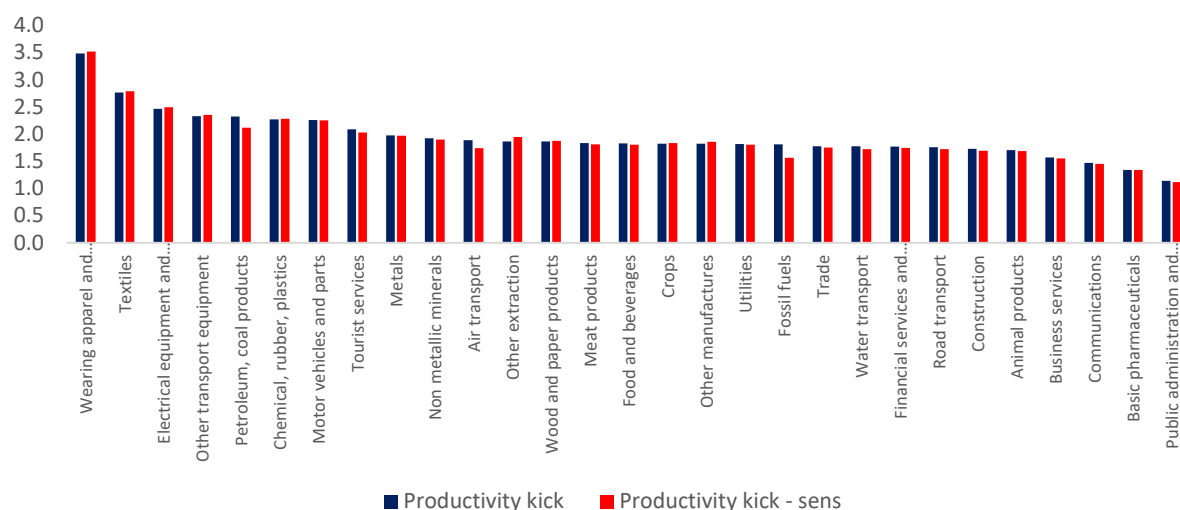
Figures All.1 and All.2 compare the macroeconomic impact and the sectoral impact of the productivity kick scenario, considering that the rule of origin regime applies to all sectors (productivity kick scenario) or only to the manufacturing sector (productivity kick - sens). Results change very slightly when we assume that trade costs are only reduced among the manufacturing sectors. The macroeconomic impact is slightly less pronounced, but the difference is not significant. The sectoral impact is smaller among non-manufacturing sectors (Petroleum, Air transport, Fossil Fuels), although for the majority of sectors, results are consistent among both scenarios.

Figure All. 1. Macroeconomic impacts. percentage change relative to 'Business-as-Usual' scenario, 2035



Source: World Bank Staff calculations using Envisage model

Figure All. 2. Sectoral impacts, RCEP. Percentage change in output relative to 'Business-as-Usual' scenario, 2035



Source: World Bank Staff calculations using Envisage model

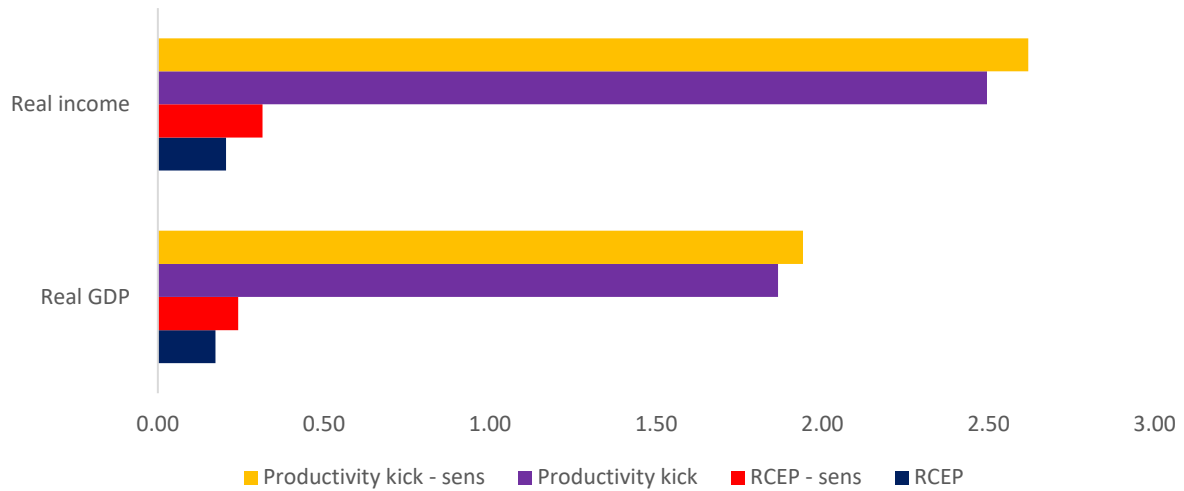
All.2. Sensitivity to NTM database

Figures All.3 to All.5 compare results obtained using two different AVE of NTMs estimates. The main scenarios use the database by Cadot et al. (2018), and the sensitivity analysis is with the database by Kee and Nicita (2018). Both databases use a gravity equation to estimate the AVE of NTM and data from the same year (2015), and the main difference is that Kee and Nicita differentiate among origins, while Cadot et al. report the same AVE of NTM for all origins.

Using the database by Kee and Nicita reports slightly higher impacts on real GDP and real income for RCEP as a whole. The difference is not significant: in the productivity kick scenario, the impact on real income with the Kee and Nicita database is 0.12 percentage points higher, and the difference for real GDP is even smaller. There are larger differences among some of the countries when we compare results for real income under productivity kick scenario. The largest difference is found for Vietnam. In this country, the Kee and Nicita database includes very high AVE of NTM for specific products from specific origins, which drive the results. Other countries with big differences are Japan, Philippines, and Australia and New Zealand. Even though on average the Cadot et al. database has larger estimates by sector (see Figure 6 above), the Kee and Nicita database has NTM peaks, which results in higher real income gains for almost all countries.

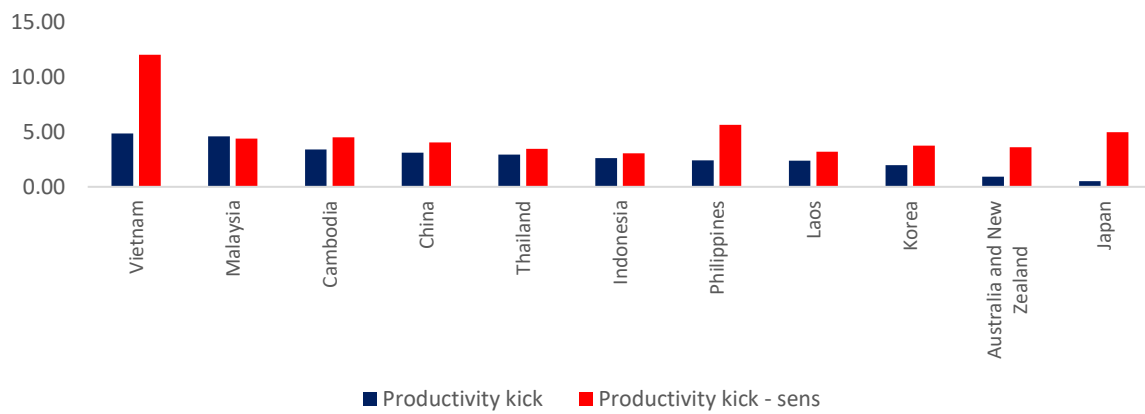
The sectoral impact also shows some differences, although the relative impact by sector is about the same. Meat products, Food and beverages, Motor vehicles and parts, Other manufactures, and Petroleum and Coal show a higher increase in exports when the Kee and Nicita database is used.

Figure All. 3. Macroeconomic impacts in RCP. Percentage change relative to 'Business-as-Usual' scenario, 2035. Scenarios RCEP and Productivity kick scenario



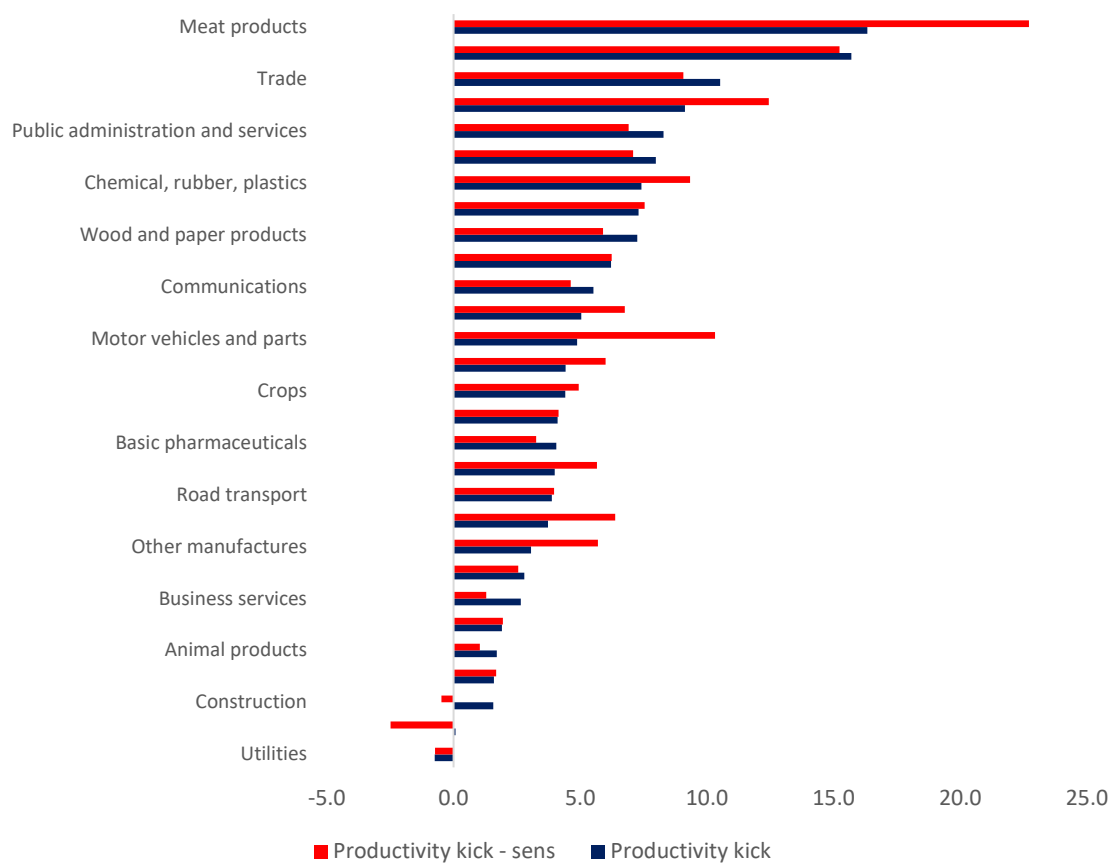
Source: World Bank Staff calculations using Envisage model

Figure All. 4. Real income impact by country. Percentage change relative to 'Business-as-Usual' scenario, 2035. Scenario Productivity kick scenario



Source: World Bank Staff calculations using Envisage model

Figure All. 5. Exports by sectors. Percentage change relative to 'Business-as-Usual' scenario, 2035. Productivity kick scenario



Source: World Bank Staff calculations using Envisage model

Appendix III. Comparison of CGE assessments of RCEP

		Launch date	Tariff Liberalization	Preferential NTBs reductions	MFN NTBs reductions	Trade costs reduction	Productivity increase
Park, Petri and Plummer (2021)	CPTPP	2018	As negotiated for TPP agreement	As negotiated for TPP agreement expect for suspended provisions	10%		
	RCEP15	2020	90% eliminated	Average of recent ASEAN+1 agreement	10%		
Petri and Plummer (2020)	CPTPP	2018	As negotiated for TPP Agreement	As negotiated for TPP agreement	10%		
	RCEP15	2020	90% eliminated	ASEAN reductions	10%		
Petri and Plummer (2018)	CPTPP	2018	99% eliminated (as negotiated)	Same as TPP 12	10%		
	RCEP16	2018	85% eliminated	¾ concessions of ASEAN+1 Agreement	10%	FDI Liberalization	
Petri, Plummer and Zhai (2012)	ASIAN Track	2020	Similar to prior agreements among China, Japan and Republic of Korea			FDI Liberalization	
Ferrantino et al (2019)	CPTPP	2018	As negotiated for TPP agreement	Petri et al. (2016)	Petri et al. (2016)		
	RCEP	2018	Petri et. al. (2011) and ITC (2016)	Petri et. al. (2011) and ITC (2016).	Petri et. al. (2011 and ITC (2016).		

(cont.)

		Launch date	Tariff Liberalization	Preferential NTBs reductions	MFN NTBs reductions	Trade costs reduction	Productivity increase
This study	CPTPP Tariffs	2018	As negotiated for TPP agreement	35-46%	10%		
	CPTPP	2018					
	RCEP tariffs	2021					
	RCEP	2021	As negotiated for RCEP agreement	25-35%	10%	1%	
	RCEP ROO liberalization	2021					
	RCEP Productivity kick	2021					
					10%	1%	Yes

Note: Scenarios employed in this study: RCEP – core RCEP scenario with the reduction of tariffs and NTMs, RCEP- Tariffs alone– only tariff reduction shock, RCEP – ROO liberalization a 1% reduction in trade costs among RCEP members in addition to tariff and NTM reductions, RCEP – Productivity kick - an increase in productivity associated to the fall in applied tariffs in addition to tariff and NTM reductions. CPTPP-tariffs alone – tariff shock only, CPTPP – reduction of tariffs and NTMs.

Source: own elaboration

Table AIII.2. Real income effects in 2030 (percent deviations from the baseline)

CGE analysis	Scenario	CPTPP members	RCEP members	ASEAN	China	World	
Park, Petri and Plummer (2021)	CPTPP		0.3		-0.05	0.14	
	RCEP		0.6		0.46	0.2	
Petri and Plummer (2020)	CPTPP		0.20	0.62	-0.03	0.11	
	RCEP		0.38	0.22	0.30	0.14	
Petri and Plummer (2018)	CPTPP	1.15	0.2	1.19	0	0.1	
	RCEP***	0.53	0.5	0.43	0.4	0.2	
Petri, Plummer and Zhai (2012)**	Asian Track**	0	1.8**		1.4	0.5	
Ferrantino et al. (2019)	CPTPP	Standard	0.9	0.32	0.63	-0.02	0.11
		Prod. Kick	1.4				
	RCEP ***	Standard	1.96	2.1	0.96	2.07	0.62
		Prod. Kick		4.5			
This study	RCEP_tar	0.1	0.06*	0	0	0.01	
	RCEP	0.13	0.15*	0.07	0.12	0.04	
	RCEP_roo	0.34	0.41*	0.68	0.27	0.11	
	RCEP_prod	0.55	1.75*	1.99	2.31	0.52	

Note:

*Does not include Brunei Darussalam and Myanmar

** Results for 2025. Asian track includes ASEAN10 + China, Japan and Republic of Korea.

***Includes India

Source: own elaboration

Appendix IV. Details of the Envisage Model

Production in the model is implemented as a series of nested constant-elasticity-of-substitution (CES) functions aiming to capture the substitutability and complementarity across all inputs. Crops and livestock have a differentiated production structure from the rest of the production goods, as fertilizers and feed are incorporated into the value-added bundle respectively. The model incorporates five types of production factors: labor (differentiated by skill and by gender); capital; land; a sector-specific natural resource (such as fossil fuel energy reserves); and water.

Domestic production is allocated in the domestic market or exported, following a constant elasticity of transformation (CET) function. There are three domestic final demand agents: households (h), a government sector (gov) and an aggregate investment sector (inv). Income comes from payments to factors of production and is allocated to households (after taxes). The government sector accrues all net tax payments and purchases goods and services. Investment income is equated to the sum of domestic and foreign savings. A portion of capital income flows to a 'global' holder of equity that then portions out profits from the global fund. Remittances are also incorporated and are fully bilateral.

The model incorporates multiple utility functions for determining household demand. In this specification, a constant differences in elasticities (CDE) utility function is assumed. This function allows for more flexibility in terms of substitution effects across goods and for non-homotheticity.

The capital market assumes vintage capital. New capital is allocated across sectors to equalize rates of returns. Installed capital is imperfectly mobile across sectors. If all sectors are expanding, old (installed) capital is assumed to receive the economy-wide rate of return. In contracting sectors, old capital is sold on secondary markets using an upward-sloping supply curve. This implies that capital is only partially mobile across sectors. Land and water are allocated across activities using a nested CET specification. Natural resources are supplied to each sector using an iso-elastic supply function with the possibility of differentiated elasticities depending on market conditions.

Trade is modeled using the so-called Armington specification that assumes that demand for goods is differentiated by region of origin. The model allows for domestic/import sourcing at the aggregate level (after aggregating domestic absorption across all agents), as well as at the agent level. Thus, a second Armington nest allocates aggregate import demand across all exporting regions using a representative agent specification. Exports are modeled in an analogous fashion using a nested constant-elasticity-of-transformation (CET) specification. The domestic supply of each commodity is supplied to the domestic market and an aggregate export bundle using a top-level CET function. The latter is allocated across regions of destination using a second-level CET function.

Dynamics in Envisage involve three elements. Labor supply (by skill level) grows at an exogenously determined rate. The aggregate capital supply evolves according to the standard stock/flow motion equation, i.e., the capital stock at the beginning of each period is equal to the previous period's capital stock, less depreciation, plus the previous period's level of investment. The third element is technological change. The standard version of the model assumes labor augmenting technical change—calibrated to given assumptions about GDP growth and inter-sectoral productivity differences. In policy simulations, technology is typically assumed to be fixed at the calibrated levels.