

Economic and social effects of a possible trade agreement between Latin America and Asia Pacific

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Summary

In sum, the work presented here calibrates a computable general equilibrium model for 41 economies and 39 sectors, disaggregating in the first place Latin American and Asian Pacific member countries of the Asia Pacific Cooperation Forum (FOCALAE), in order to simulate the possible effects of a bi-regional agreement between Latin America and Asia Pacific. In this regard, the possible economic and social impacts at the level of economic sectors and winning and/or losing countries will be identified.

The underlying study is based on bilateral trade in the year 2017, the effective tariff protection for the nearest available year (2018) and considers the state of trade policy as of December 2018. Based on that, bilateral tariff cuts between Latin American and Asia Pacific countries are modeled. Furthermore, additional analyses are conducted to evaluate derivative effects on economic agents, mainly on small and medium-sized exporting companies.

Overall, the results indicate a positive impact on output, trade and welfare. The signing of a large bi-regional agreement yields an expected change in GDP between 0.35 and 0.6% for Latin America and the Caribbean, and a change between 0.46% and 1% for Asia Pacific, whereby increases in consumer welfare depend on the assumption of full employment or unemployment. The agreement is also expected to lead to welfare gains in all the countries considered, and a reduction in unemployment of 1.7% on average among Latin American and Caribbean countries, and 3% in Asia Pacific. If the RCEP mega-agreement is signed without Latin America signing any agreement with Asia Pacific, welfare losses and trade detour in Latin America and the Caribbean are to be expected. These are likely to primarily target exports of natural resources and low- and medium-technology manufacturers based in Latin America and the Caribbean. Simulations of productivity improvements associated with the reduction of non-tariff measures generate large positive increases in output, trade and employment.

Keywords: general equilibrium model; input-output; regional integration; RCEP; NTM.

I. Introduction

The underlying study aims at filling the research gap on the assessment of possible effects of a bi-regional agreement between Latin America and Asia Pacific. In this respect, impacts at the level of economic sectors and winning and/or losing countries are identified. For this end, an agreement is simulated in this study, which calibrates a computable general equilibrium model for 41 economies and 39 sectors, mainly disaggregating the Latin American and Asian Pacific member countries of the FOCALAE. Therefore, this analysis is based largely on Input-Output Tables (IOTs).

Between 2019 and 2020, the Trade and Integration Division of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), together with the United Nations Economic and Social Commission for East Asia (ESCAP) and the Asian Development Bank, developed a set of IOTs for the Asia Pacific Cooperation Forum (FOCALAE) countries as part of the bi-regional Value Chains Project (Latin America - Asia Pacific). Based on these IOTs, a global input-output matrix was assembled for 2017, which has been used to analyze potential value chains at the intra-regional level in each region, as well as between both regions. These IOTs also allow us to analyze the opportunities of a productive integration between the two regions. For this purpose, a structural analysis was conducted, including further data sources, mainly the Global Trade Project of Purdue University, and the database of multi-country IOTs of the Organization for Economic Cooperation and Development (OECD). The goal of these analyses is, besides validating the consistency of the methodology and the calculation of value-added input-output indicators, evaluating possible effects of the deepening of trade relations at the intra- and bi-regional level, considering the recent evolution of trade policy in both regions.

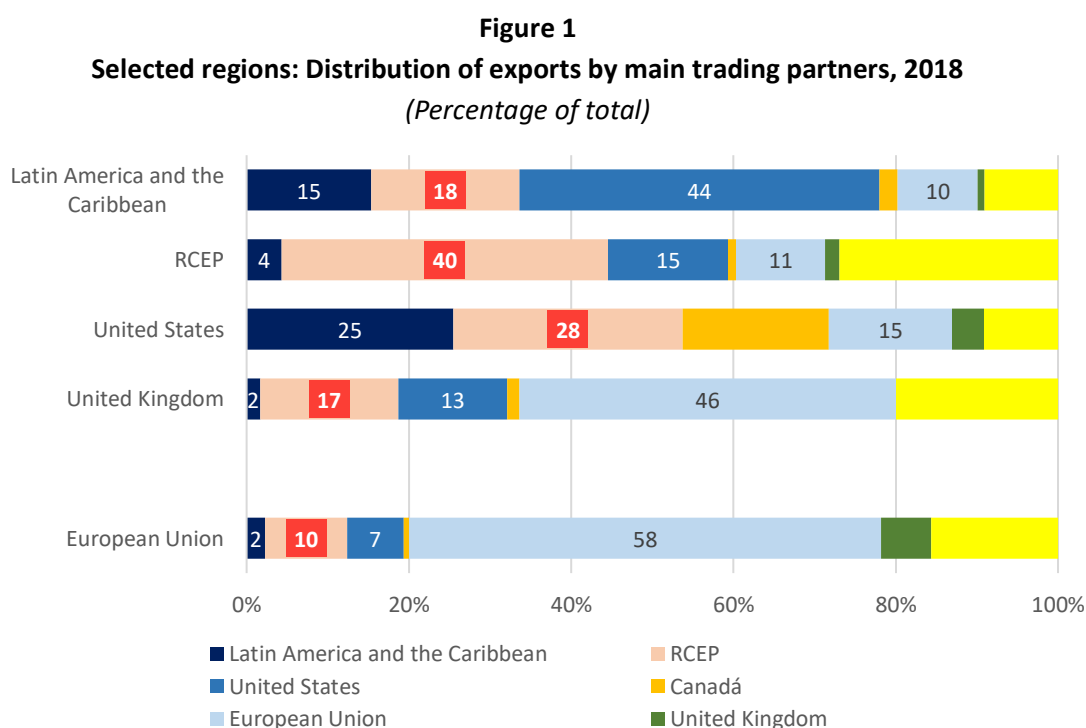
The second section provides the general context of the intra- and extra-regional relationship between Latin America and the Caribbean and Asia Pacific, considering first the existing body of trade agreements in each region, and the levels of bi-regional preferences between both regions after the full implementation of the existing free trade agreements. Section 3 presents a brief review of existing literature on impact assessments in both regions Latin America and the Caribbean and Asia Pacific. This section also presents the methodology used to derive the potential economic effects on Latin American economies on the one hand, and on Asian Pacific economies on the other, if trade agreements are signed, which imply the reduction of the effective levels of protection (as of December 2018) between the countries of both regions. We use the GTAP framework, due to its wide coverage of countries and sectors. GTAP is the primary database for most, if not all, global computable general equilibrium models. Balanced, bilateral trade flows connect the world's economies. Tariffs and agricultural subsidies are the policy instruments that affect trade flows. Additionally, simulations of a reduction of non-tariff measures (NTMs) derived from a technology shock of over 2% in trade facilitation in transit between origin and destination will be presented.

The fourth section presents the main results of this study derived from the simulations for a set of three different scenarios defined in the methodological section. It mainly highlights the possible effects on output, trade and welfare as well as on employment levels in the two regions examined.

The fifth section synthesizes the main conclusions drawn from the analysis of the results obtained from the computable general equilibrium model simulations.

II. General Context Regional and Bi-regional Integration

As a starting point, in this section we present the intra- and bi-regional relations in Latin America and Asia, which in the commercial sphere are characterized by increased trade flows towards the interior of each of the sub-regions, with the particularity that intra-regional trade among the RCEP member countries is higher than in Latin America and the Caribbean (40% and 15%, respectively). This is only surpassed by intra-regional exports of the European Union (excluding the United Kingdom), which reached 58% in 2018. The reciprocal relations of both groups of countries account for about 35% of world exports. In this respect, the RCEP represents the second main destination of Latin American exports, constituting the destination for 18% of total exports. This is only surpassed by the United States, the main destination market for Latin American exports. In turn, Latin America accounts for only 4% of the exports from RCEP countries (see Figure 1).

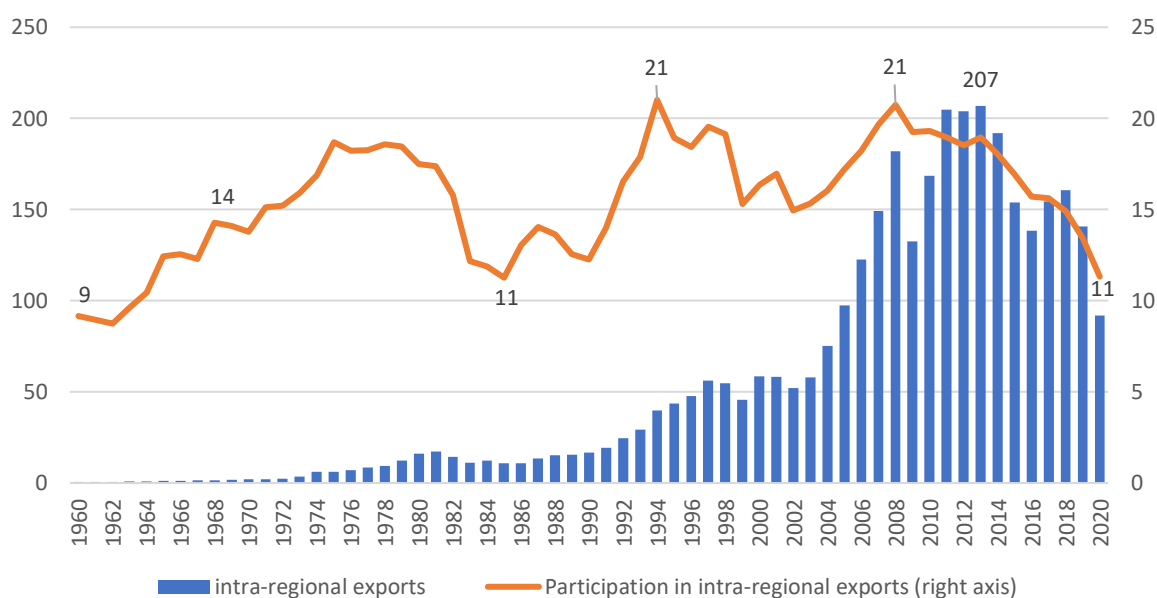


Source: Authors, based on information from the United Nations COMTRADE database.

After the COVID-19 crisis, intra-regional trade measured by exports in Latin America fell to 11%, after having accounted for 21% in the mid-1990s and 2008 (see Figure 2). In order to have a general overview of the current state of bilateral relations between the various groups of integration in Latin America and Asia Pacific, while taking into account the evolution of trade flows on the one hand, and the current state of preferential agreements in regional integration agreements and bilateral trade agreements on

the other, the following subsections review the state of the art of bi-regional relations, mainly taking into account the levels of tariff protection that still persist in intra- and inter-regional relations.

Figure 2
Latin America and the Caribbean: intra-regional exports, 1960-2020^a
(Billions of dollars and percentages of total exports of goods)



Source: Authors, based on COMTRADE data and information from the series “Panorama de la Inserción Internacional de América Latina y el Caribe”, various years.

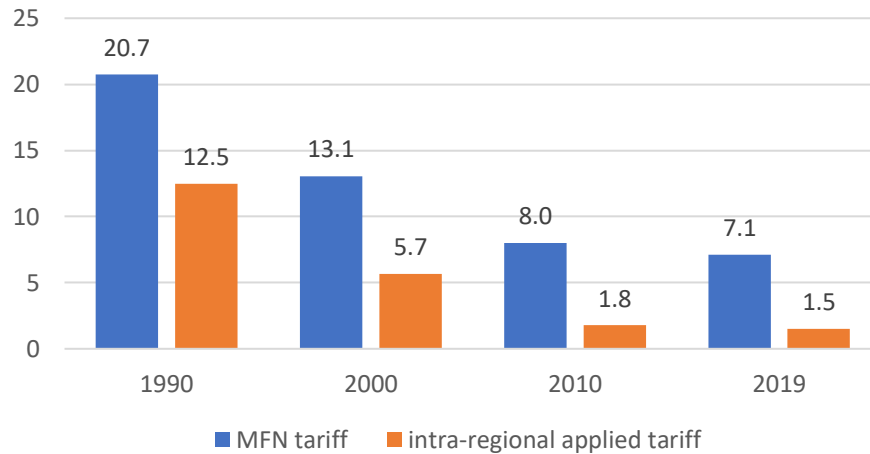
^a Figures for 2020 are preliminary ECLAC projections.

The main focus of this paper is to deepen the analysis of trade relations between Latin America and Asia Pacific, considering the current state of intra- and extra-regional relations.

A. Latin America and the Caribbean

Generally, intra-regional tariff relations in Latin America are quite advanced, as at least 70% of trade is carried out under preferential agreements covered by regional integration agreements (Andean Community, MERCOSUR, Central American Common Market, Pacific Alliance), as well as multiple bilateral free trade agreements such as those signed by Chile and Mexico with the remaining countries in the region, and those existing between the different integration blocs. The evolution of applied tariffs in intra-regional trade in Latin America shows a significant reduction in applied tariffs in the intra-regional space, characterized by a fall from just over 12% in 1990 to less than 2% in 2018. In the same period, the weighted average MFN tariff rate for the region fell from 20% to 7% (see Figure 3). This evolution shows a clear trend towards greater trade openness in intra-regional trade circuits. However, there still remain economic sectors with applied tariffs above average, and additionally, equivalent tariffs higher than the applied tariffs for non-tariff measures (Dolabella and Durán, 2021).

Figure 3
Latin America and the Caribbean: average MFN tariffs and applied tariffs in intra-regional trade,
1990, 2000, 2010 and 2018
(Ad valorem percentages)



Source: Authors' calculation based on Dolabella and Durán (2021), and information from the World Bank Databank Indicator Database. <https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.AR.ZS>

In Latin America, the regional economic landscape primarily divided between Mexico, Central America and the Caribbean, on the one hand, and South America, on the other. The first group of countries maintains a close link with the U.S. economy, not only through trade but also through flows of foreign direct investment (FDI), migration, tourism and remittances (ECLAC, 2014). In particular, the Mesoamerican sub-region and some Caribbean countries such as the Dominican Republic are an integral part of U.S.-centered manufacturing value chains (the "North American Factory").

At the same time, South America is economically less dependent on the United States and keeps on building a link with China (which since 2015 has been its main trading partner) and Asia (Durán and Pellandra, 2017). Another difference between the Mesoamerican sub-region and South America is marked by lower levels of intra-regional trade and productive integration among its economies in South America. This is the result of several factors, such as its export specialization in natural resources (mainly destined for markets outside the region), its large territorial extension, its deficient transport infrastructure and the fragmentation of its economic integration schemes.

At the time this study was completed, Latin America's intra-regional relations in terms of trade negotiations were highly fragmented because of the coexistence of multiple integration groups. A large free trade area had not yet come into place, as was once planned in the 1960s, when the goal was to set up a large free trade area between South America and Mexico within the framework of the Latin American Free Trade Association (LAFTA). The project did not find sufficient political support due to a large range of different visions, and, as in practice, each subregional integration mechanism has evolved differently. The map of interrelations of agreements signed between the five main integration schemes in the region shows the existence of many gray areas, for which tariff preferences do not apply, and if there are links, they are partial and account only for selected groups of products, or for selected sectors,

as for example agreements for the automotive sector between Mexico, Brazil and Argentina. When deeper linkages exist, these are more at the bilateral level, such as the free trade agreement signed between Uruguay and Mexico, for example (see Table 2).

Table 1
Status of interrelations between Latin American and Caribbean countries, as of April 2021

Regions/Countries	MERCOSUR (5)	Andean Community (4)	Pacific Alliance (4)	MCCA (6)	CARICOM (15)
MERCOSUR (5)	With Protocol	With Agreement	No Agreement	No Agreement	Partial Agreement
Andean Community (4)	FTA	With Agreement	FTA	No Agreement	Partial Agreement
Pacific Alliance (4)	FTA	FTA	With Protocol	No Agreement	No Agreement
Chile	With Agreement	Various FTA	Full Member	Various FTA	Partial Agreement
México	Partial Agreement	Partial Agreement	Full Member	FTA	Partial Agreement
MCCA (6)	Partial Agreement	Partial Agreement	Partial Agreement	With Protocol	FTA
CARICOM (15)	No Agreement	Partial Agreement	No Agreement	FTA	With Protocol
Cuba	Partial Agreement	Partial Agreement	No Agreement	No Agreement	No Agreement
Dominican Republic	Partial Agreement	Partial Agreement	No Agreement	FTA	No Agreement

Source: Authors' own elaboration, based on existing Trade Protocols, Free Trade Agreements and partial trade agreements and those under negotiation.

As for inter-regional relations, there are some countries in the region which exhibit greater intensity and preferential trade with Asian Pacific countries. In this regard, mainly Chile, Colombia, Mexico, Peru and Costa Rica are to be mentioned here as they have signed the largest number of trade agreements with Asian Pacific partners, as further elaborated from sub-section C on.

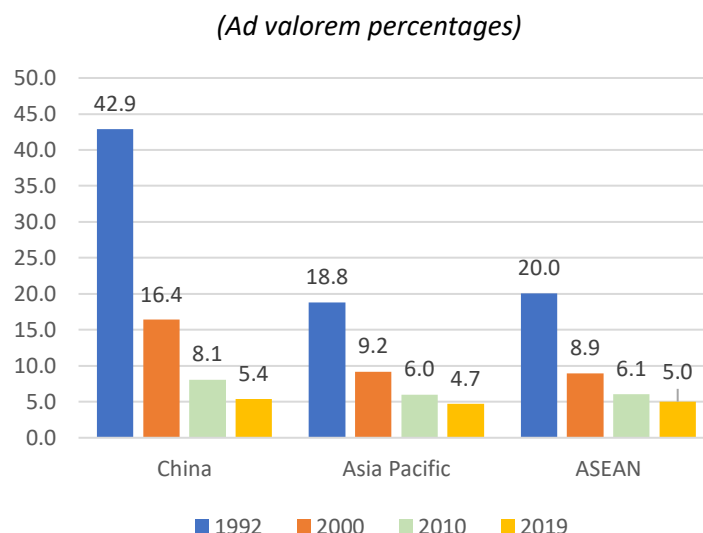
B. Asia Pacific

On the Asian Pacific side, intra-Asian trade relations show the existence of a close relationship between the ten economies that make up the Association of Southeast Asian Nations (ASEAN)¹, which since 1992 have maintained a free trade zone. The latter has managed to expand intra-regional trade from less than 10% in 1990 to 24% in 2018, whereby 90% of the goods are imported with tariffs equal to zero in intra-regional trade. The creation of a free trade zone has led to a significant drop in the subregion's tariff, which is estimated to have fallen on average from more than 20% in 1990 to around 4,7% in 2019.

A similar trend has been followed by the Asian Pacific countries as a whole and China in particular, which reduced its tariffs considerably from levels close to 43% in 1992 to 16.4% in 2020, mainly as part of the negotiations for its full access to the World Trade Organization, which became effective in 2001. From then on, it continued to reduce its tariffs until reaching an MFN of 5% in 2019 (see Figure 4).

¹ Brunei, Cambodia, Indonesia, Laos (DPR), Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

Figure 4
Asia Pacific, China and ASEAN, evolution of most-favored-nation tariff: 1990, 2000, 2010 and 2019



Source: Authors' calculation based on Dolabella and Durán (2021), and information from the World Bank Data Bank Indicator Database. <https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.AR.ZS>. In cases where information for 2019 was not available, the average tariff was considered to be the closest year available.

Since 2012, the ASEAN member countries have been negotiating the expansion of their sub-regional integration towards a broad trade and investment agreement with Australia, China, Japan, New Zealand, and the Republic of Korea, which after 8 years of multiple negotiations and meetings concluded with the signing of the Regional Comprehensive Economic Partnership (RCEP). It represents a major trade and investment agreement that includes 15 countries: the 5 countries mentioned above, and the 10 ASEAN members. It should be noted that, although India participated in the RCEP negotiations, it did not sign the agreement, mainly due to the sensitivity of multiple economic sectors being exposed to competition with Chinese products in its domestic market. Between 2018 and 2020, India was running trade deficits with 11 of the 15 RCEP members (Raghavan, 2020).

It is important to note that the RCEP is an agreement that includes highly developed countries such as Japan and the Republic of Korea, for example, and also less developed ones in the Asian region, such as Cambodia, Laos and Brunei. The signing of the agreement in November 2020 ended a period of tensions and enforcement of high tariff protection (Wolfers, Ferretter and Hoang, 2020).

The agreement is comprehensive in terms of its thematic coverage, including not only provisions on the liberalization of trade in goods, but also on trade in services, foreign investment, intellectual property, e-commerce and SMEs, among other topics. In total, there are 20 chapters and 510 pages of text, plus thousands of pages of tariff reduction schedules for each country².

² See the agreement on <https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text-and-associated-documents>.

RCEP members account for about 32% of the world's population, 27% of world GDP and just over one third of world exports of goods. Once in force, the RCEP will be the world's largest free trade area in terms of population, output and trade, surpassing the European Union with just over one third of world trade (see Table 2). The RCEP will mark the consolidation of the *Asian Factory* as a highly integrated trade and production region. Compared to the two largest Latin American blocs, MERCOSUR and the Pacific Alliance, this mega-bloc is a highly relevant market for Latin America, with a population of more than 2.2 billion people (World Population Reference, 2021).

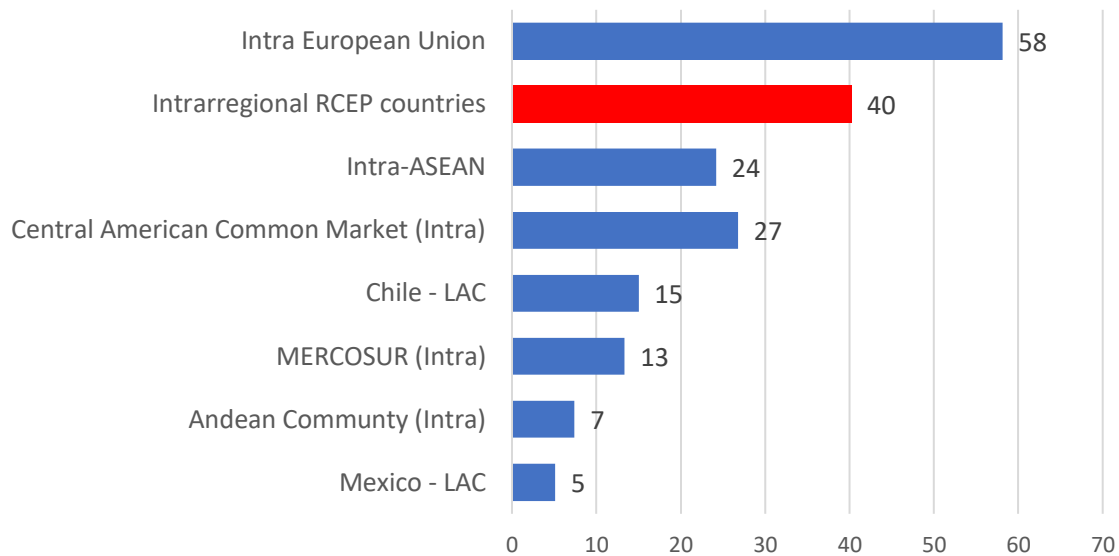
Table 2
RCEP, CPTPP, TMEC, EU, MERCOSUR and AP: Population, output and trade, 2019 and 2020
(In millions of people, billions of current dollars and percentage of world total)

Mega-region	Population 2020	%	GDP 2017	%	Exports 2019	%	Imports 2019	%
RCEP (15)	2248	31.7	21	27	6.0	35	5.5	32
CPTPP (11)	510	7.2	11	14	2.9	17	2.8	16
TMEC (3)	499	7.0	21	26	2.6	15	3.5	20
EU (28)	357	5.0	16	20	5.1	29	4.7	27
MERCOSUR (5)	297	4.2	4	5	0.3	2	0.3	1
AP (4)	230	3.2	2	3	0.6	4	0.6	4

Source: Authors, based on data from GTAP Project, COMTRADE and World Population Reference.

Comparatively, the intra-regional trade intensity of the group of countries that make up the RCEP would be equal to 40%, implying that the group of countries that make up the RCEP would become consolidated as a key region in the current process of regionalization and reconfiguration of global value chains, highly demanded by the adverse effects of COVID19 (see Figure 5). The sub-regions of Latin America and the Caribbean, on the other hand, maintain levels of intra-regional trade well below the level of the RCEP group. Only the Central American Common Market depicts a higher intra-regional export ratio than ASEAN.

Figure 5
Selected Regions and Subregions: Intra-regional Export Ratio, 2018
(Percentage of total)



Source: Authors, based on data from United Nations, COMTRADE.

The map of trade relations including trade agreements or protocols in force among the 15 Asian countries that are members of the RCEP, shows a broad interrelation and convergence, which is widely manifested in the results of the negotiations of the mega-agreement among the 15 members mentioned above. A key part of the outcome of the agreement is the deepening of bilateral relations between China and Japan on the one hand, and between Japan and the Republic of Korea on the other, whose negotiations had been on hold. Progress in the negotiations between these three countries was only possible after specific concessions were made by other partners in the group. For example, 39% of exports from ASEAN countries will still face high tariffs in the Japanese market (Wolfers et al., 2020), although the terms of the RCEP are better than those of the preceding set of agreements (see Table 3). This could certainly generate some trade diversion for Latin American suppliers competing with Asian Pacific suppliers in the larger economies, mainly China, Japan, and the Republic of Korea.

Table 3
Status of intra-regional relations between RCEP member countries, as of April 2021

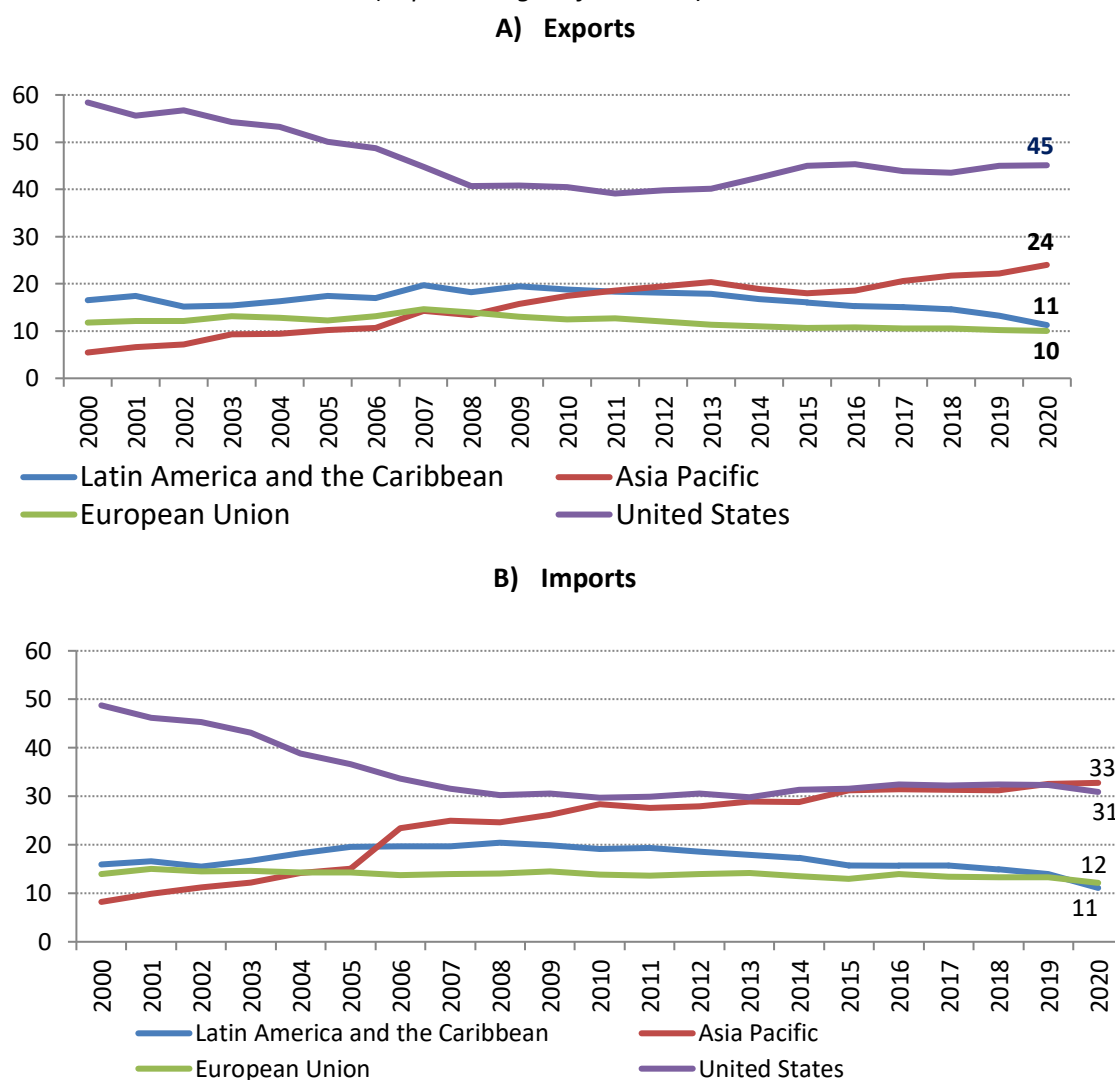
	ASEAN	Australia	China	Japan	Republic of Korea	New Zealand
ASEAN		FTA	FTA	FTA	FTA	FTA
Australia	FTA		FTA	FTA	FTA	FTA
China	FTA	FTA			FTA	FTA
Japan	FTA	FTA				
Republic of Korea	FTA	FTA	FTA	detained		FTA
New Zealand	FTA	FTA	FTA		FTA	

Source: Authors' own elaboration, based on existing trade agreements and those under negotiation.

C. Bi-regional Relations

Bilateral relations between Latin America and Asia Pacific have been very close, to the point that, since the middle of the last decade, the Asian Pacific region has surpassed the European Union and Latin America and the Caribbean as a proportion of total exports. Asia Pacific is the second largest destination for exported goods after the United States, and the largest source of imported goods, having overtaken the United States as the largest supplier. In 2020, Asia Pacific accounted for a third of the region's imports (see Figure 6). By country, export figures show that China is one of the main trading partners, to which the main natural resources from agriculture and mining move, mainly soybeans, soybean oil, meat among food products, as well as iron ore, copper, zinc, bauxite and tin among mining products. In turn, Asia Pacific is the origin of most of the capital and intermediate goods required by Latin American industry, mainly for manufacturing products of iron and steel, minerals and metals, vehicles, as well as other parts and pieces required in industry production.

Figure 6
Latin America and the Caribbean: Evolution of trade with main partners and regions, 2000-2020.
(In percentages of the total)



Source: Authors, based on data from the United Nations, COMTRADE and official bilateral trade information obtained from Central Banks, Customs and Statistical Institutes of the countries in the region. Information for 2020 are preliminary figures.

Add a page with results from microdata for a set of countries in the region, preferably the main ones (Colombia, Peru, Chile, Mexico, Ecuador, Argentina), highlighting the need to promote a change in the export structure, promoting as far as possible an increase in the export network that exports to the RCEP countries. (under development)

A greater dependence and productive links with the "Asian Factory" require coordinated efforts to articulate a leap towards increasing the number of companies and value exported to China, the Republic of Korea, and other ASEAN economies.

II. Literature review and methodology

The use of computable general equilibrium models for the analysis of trade policy changes is widely recognized in the international trade literature. Since the 1990s, following the strong momentum of international negotiations of free trade agreements around the world, more and more technical teams of negotiators are using this methodology, either through the application of country or multi-country models, either partial or general.

The central axis of the general equilibrium approach is rooted in the fact that they allow to fully capture sectoral interrelations, both the direct and indirect effects of exogenous changes in policy, in this case trade policy.

As background to the methodological description, a description of the model, tariff baseline and scenarios to be simulated, some of the reference works developed in the literature are reviewed, including impact assessment studies with multi-country models in Asia and Latin America, mainly on regional integration and/or global impacts of trade policy changes.

A. Literature review

An example of the application of the computable general equilibrium methodology at the global level can be found in the study conducted by Martin (2001) which evaluates the economic reforms in Asian economies during the 2000s, besides the studies carried out by the United States International Trade Commission (USITC, 1999), and Martin and Ianchovichina (2001) assessing the impacts of China's accession to the World Trade Organization in 2001.

Ando and Urata (2007) also use the computable general equilibrium approach to evaluate the ex ante effects of a trade agreement signed between ASEAN and China, as well as Japan and the Republic of Korea (ASEAN+3). More specifically, they simulated eight complementary scenarios, including additional simulations with tariff cuts, two other scenarios that alternatively allowed for capital accumulation, and higher technical efficiency (1% as exogenous change). This way, their scenarios considered the possible convergence effect of trade facilitation programs between economies. Their main conclusions were that a broader agreement with fewer restrictions is more desirable than agreements with fewer countries. Likewise, their analysis shows the relevance of favoring trade facilitation programs aimed at reducing transaction costs. In their study they identified some sectors that could be affected by competition from more competitive countries. In such cases, Ando and Urata (2007) recommend the implementation of financial aid, technical assistance and safety nets to avoid adverse effects after liberalization.

In another study, Wignaraja, Morgan, Plummer and Zhai (2014) model the potential gains from increased trade integration between South Asian and Southeast Asian economies using a computable general equilibrium model. The authors assume full elimination of bilateral tariffs and a 50% reduction in non-tariff barriers estimated to be 15%. The results estimated increases in GDP for Southeast Asia of about 2.1%, and in exports of up to 25% for exports by 2030. Unlike the work presented here, this study considers only the deepening integration between ASEAN countries with Bangladesh, India, Nepal,

Pakistan, and Sri Lanka, among others, and does not include agreements with China, Japan, Australia, New Zealand and the Republic of Korea, nor with Latin America.

Furthermore, Li, Scollay and Gilbert (2017) developed a computable general equilibrium model that incorporates heterogeneity in economic agents and includes FDI. Simulations of an agreement between the countries that negotiated the RCEP, allowed them to capture the direct and indirect effects on FDI following the conclusion of the agreement. According to the authors, firms respond by increasing their FDI. Also, the potential for increased trade in intermediate goods boosted vertical integration. Through this very innovative mechanism, Li et al. (2017) estimated potential gains of around 1.1% and 2.2% in China's GDP.

Ferrantino, Maliszewska, and Taran (2019), conduct an assessment of multiple scenarios of agreements negotiated and in the process of implementation: The Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPP), also called TPP- 11, the original Trans-Pacific Partnership Agreement (TPP-12) which would include the United States; the RCEP agreement, and the Free Trade Area of Asia Pacific (FTAAP), and finally an agreement, which includes the 21 economies of Asia and the Pacific (APEC). The simulated scenarios consider a liberalization path starting in 2017 and concluding in 2027 with successive tariff cuts of 24%, reaching 89% in the last year. The results of all simulations showed positive changes over the modeled baseline (year 2030) both in production, exports and imports. In particular, the effects of the implementation of the CPTPP would result in positive output changes of 0.4%, and if the United States is included, 0.7%. In the case of the mega-agreement that makes up the RCEP, the change in GDP reaches 1.5%, a figure that increases to 1.6% if the 21 APEC economies are considered. The effects on exports and imports resulting from the implementation of the RCEP would reach 4.9%, respectively. All impacts are tripled when factor productivity shocks occur. One difference between the simulations developed by Ferrantino et al. (2019), and those conducted in this study is that they assume that India also subscribes to the RCEP, which will not take place. Because of China's size, and the great importance of its market for China, Japan, and the Republic of Korea, as well as for the ASEAN countries... The main sectors that benefited both on the product and export sides were food, beverages and tobacco, chemicals, metals, and machinery and equipment, among others.

No studies were found that evaluate a possible agreement between Latin American countries and Asian one, which subscribed to the RCEP. However, there are studies available, which simulate the effects derived from the implementation of the CPTPP, including Chile, Peru and Mexico. In these cases, the effects are rather modest, since these countries already have extensive links with the Asia Pacific economies³.

In a recent study, Dolabella and Durán, (2021), evaluated the effects of the removal of tariffs and non-tariff barriers in Latin America and the Caribbean, simulating three successive scenarios: One of tariff elimination; another of reduction of bilateral ad valorem equivalents derived from non-tariff measures, mainly trade defense measures (countervailing measures, antidumping and non-automatic licenses, among others); and a third, which combined the two previous ones. Results indicate that, at the macroeconomic level, a free trade agreement among all Latin American and Caribbean countries could

³ For further reading see for example Ken and Lee (2019).

generate an increase of 0.41% of GDP from the baseline, while regulatory convergence plus the elimination of trade defense measures would impulse GDP by 0.31%. If both scenarios happen simultaneously, the change of GDP would be higher and would reach 0.73%.

No studies were found that simultaneously evaluated the implementation of a trade agreement between Latin America and Asia Pacific while deepening intra-regional relations in both regions.

B. Methodology used, groupings, baseline and scenarios considered

The methodology used to derive the impacts associated with changes in trade policy on the member countries of both regions is the GTAP (Global Trade Project) multi-country general equilibrium model, version 11.0, which considers in its baseline the productive and trade relations of 141 countries/regions and 65 economic sectors. Unlike previous versions of the database, this one considers more disaggregated information on the chemical and pharmaceutical sector, which is broken down into basic chemical products, primary chemical products and pharmaceutical products. Equivalently, the electronics sector is broken down into computers and equipment, and other electronic equipment.

As the focus of the research conducted is on Latin American and Caribbean and Asian Pacific countries, the calibrated model was collapsed for a set of 41 countries and 39 economic sectors. Table A1 in the annex shows the correspondence of the sectors and model partners considered. In order to verify the consistency of the baseline GTAP model obtained, the main variables of the model (GDP, trade, bilateral tariffs, population) were validated. Complementary sources used for this purpose were the IOT of the FEALAC project built with the joint effort of the Asian Development Bank, the ESCAP and ECLAC, the United Nations *commodities* database (COMTRADE), the tariff databases of the United Nations Conference for Development (UNCTAD) and the World Bank System (WITS), as well as the population information at the country level from the Word Population Reference database. In order to be able to compare the levels and structures of the GTAP 11.0 database and the set of databases listed, the tariff and trade databases were mapped to the same group of sectors identified in the model to be used in the development of the policy simulations in this paper.

Applied Computable General Equilibrium (CGE) models are numerical representations based on the neoclassical General Equilibrium Theory. The central idea behind the CGE models is turning the abstract representation of the Walrasian economic theory into a practical tool for policy analysis and applied economic research. Frequently, CGE models are multisectoral, and in the particular case of this paper, the model is a multiregional one with 39 sectors and 41 regions. The behavior of economic agents is modeled explicitly throughout utility and profit maximizing behavior assumptions that capture the most important interdependences among different sectors of the economy and also with other related economies or countries. Economy-wide resources and budget constraints are rigorously enforced and, as a consequence, alterations in the economic systems will often have impacts beyond the sector in which they occur. This is the key difference between CGE representations and the traditional partial equilibrium models. Thus, simulations of CGE models are effective to capture the relevant direct and indirect effects of changes in trade policy as well as other type of shocks, because the outcomes of the

policy interventions can be quantitatively examined within a consistent framework that takes into account the overall relevant market interrelationships.

Given that trade interdependence relationships are well captured by IOTs, which are the heart of the model, and consider cost structures and tariff protection, a key variable in the exercises presented, the simulations carried out are anchored in the modification of bilateral tariffs of both groups of countries, considering baseline tariff cuts, i.e. the reduction of applied tariff protection for imports from partners with which a country in the model agrees to zero in the case of a comprehensive liberalization agreement. The results of the simulations will depend crucially on three key elements: Firstly, the production structure of each country; secondly, the pattern of trade; and thirdly, the level of tariff protection existing before the simulations were carried out.

The initial equilibrium is given by GTAP version 11 for 2017. This version includes 6 new countries, relative to GTAP 10A, for a total of 147 countries. In addition, ten updates of the input-output matrices are considered, including those for Bolivia and Brazil. Another feature of this version is that it considers IO tables that were supplemented with agricultural production data from FAO (as described by Chepeliev, 2020).

For the simulations, we focus on the agricultural and manufacturing sectors as these are the sectors that are most deeply rooted in available data. Thus, the simulations are based on 39 sectors and 41 consists on the regional representation of the Latin American and Caribbean countries available in GTAP, as well as the East Asian countries, in addition to other countries of interest such as China, the US and the EU. The rest of the countries such as MENA and SSA are added to the rest of the world (ROW). In addition to the definition of sectors and countries, the calibration of the database considers 5 factors, among them are: skilled and unskilled labor, as well as capital, land, and natural resources.

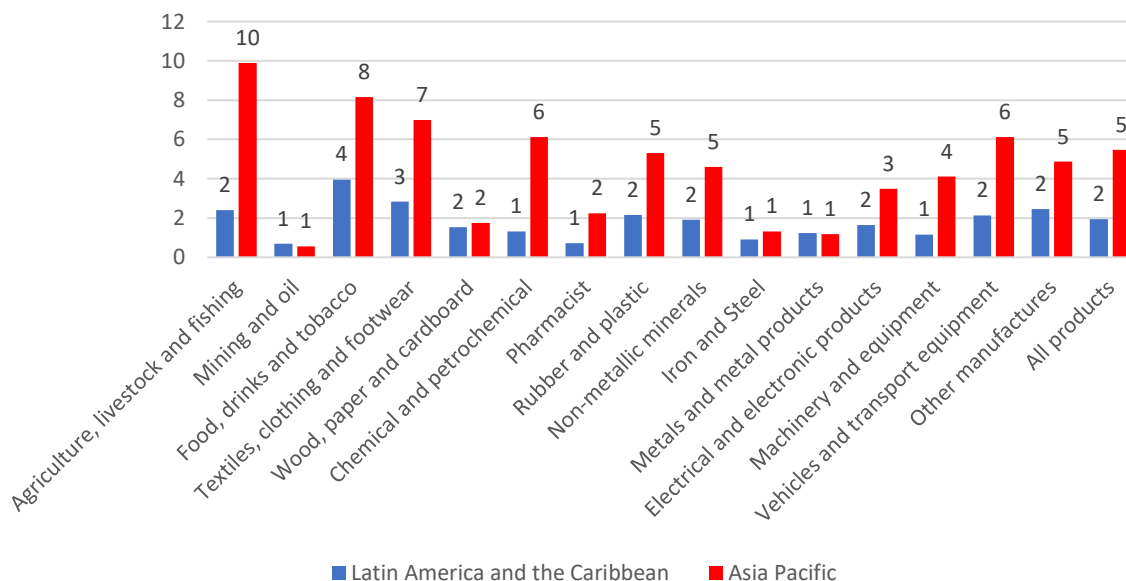
In order to have a first assessment of the state of intra-regional relations in Latin America and Asia Pacific, as well as of the bi-regional relationship between both groups of countries, average applied tariffs were calculated for the set of countries in both regions for an aggregation of 15 economic sectors, which are presented in Figure 7. It becomes clear at first glance that the tariffs applied by Latin America to its intra-regional imports are on average lower than the tariffs applied to its Asia Pacific partners (2% versus 5%), i.e. they are on average twice as high, and 5 times higher for products belonging to the agriculture, hunting and fishing sector, where the average intra-regional tariff is 2%, versus 10% for Asia Pacific. Another group of products with 5 times higher protection is chemicals and pharmaceuticals, where regional products pay 1%, versus 6% for Asian products. Other products with high protection in Latin America are agro-industrial products and textiles, clothing and footwear, as well as vehicles and transportation equipment. These high levels of protection are found especially in the MERCOSUR countries, where Argentina and Brazil, in addition to Mexico, have subregional production that competes with products of Asian origin. This is clearly not the case for trade with countries with which some Asian Pacific countries have trade agreements in force, such as Japan, China, and others with Chile and Peru, for example.

Analyzing the levels of protection for Asian Pacific imports, a clear pattern of lower tariffs for intra-Asian Pacific trade than for imports from Latin America (2% versus 5%) emerges. It could be said that the difference surprisingly takes the form of "mirror protection", although the highest tariffs are applied to textiles, clothing and footwear, other manufactures and rubber and plastics, among others.

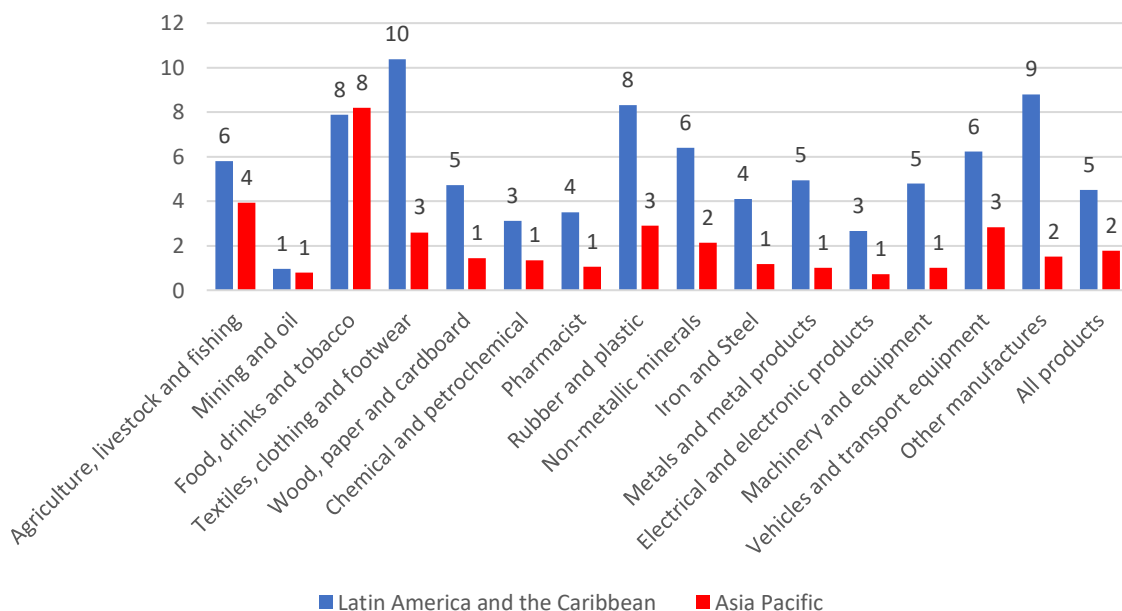
Furthermore, it can be observed that in both regions, intra-regional tariffs are highest in agriculture and agro-industry, which both represent sectors with sensitive products (rice, wheat, vegetable seeds, sugar, meat, beverages and tobacco, sugar). The only sector that is mainly open is mining and petroleum, which in both regions has ad valorem equivalents of 1% (see Figure 7 and Table 4).

Figure 7
Latin America and the Caribbean and Asia Pacific (RCEP countries): Bilateral applied tariffs
between the two regions, 2018.
(ad valorem equivalents in percentages)

A) Implemented by Latin America and the Caribbean (18 countries)



B) Implemented by Asia Pacific (15 RCEP member countries)



Source: Authors' own elaboration, based on GTAP 11.0 model protection.

Table 4
Latin America and Asia, applied tariffs^a in bilateral trade, Model baseline
(ad valorem equivalents in percentages)

	Apply Latin America		Apply Asia Pacific		Sensitive products
	Latin America	Asia Pacific	Latin America	Asia Pacific	
Paddy Rice	3,0	0,0	0,6	6,2	X
Wheat	0,3	4,4	1,0	0,9	X
Other cereals	1,5	10,5	0,9	3,1	X
Fruits and vegetables	2,5	7,6	10,6	5,3	X
Oil seeds	0,9	14,2	0,8	16,2	X
Vegetal fibers	1,1	1,2	2,3	0,8	X
Other crops	3,9	5,0	5,4	5,5	X
Cattle raising	0,7	2,7	3,1	1,6	X
Forestry	1,0	2,0	1,2	3,0	X
Fishing	2,1	4,3	4,7	2,3	X
Oil and gas	0,3	0,4	0,1	0,2	
Mining	0,5	0,8	1,7	0,8	
Meat and derivatives	2,6	6,8	3,2	5,0	
Oils and fats	1,7	5,0	5,3	7,2	
Dairy products	3,5	3,5	4,3	5,4	
Sugar	7,7	6,6	7,4	6,2	
Processed rice	1,9	1,2	2,8	9,0	
Prepared foods	2,1	6,5	9,5	5,3	
Beverages and tobacco	8,8	13,1	28,7	9,6	
Textiles	1,9	8,2	10,1	3,3	
Wearing apparel	3,8	8,3	20,2	3,2	
Footwear	2,5	4,9	13,9	3,4	
Wood manufactures	1,7	1,6	6,3	1,5	
Paper and paperboard	1,7	1,8	5,9	1,6	
Petroleum derivatives	1,4	1,0	1,1	1,4	
Chemical	1,1	8,3	3,8	3,6	
Basic pharmaceutical products	0,7	2,2	3,5	1,0	
Rubber and plastic	2,2	5,3	8,3	2,9	
Non-metallic minerals	1,9	4,6	6,4	2,1	
Iron and Steel	0,9	1,3	4,1	1,2	
Metals	0,9	0,9	3,2	0,8	
Metal products	1,9	5,1	7,2	2,0	
Computer, electronics and products	1,4	3,1	3,5	0,6	
Electrical equipment	1,8	4,5	7,9	1,3	
Machinery and equipment	1,2	4,1	4,8	1,0	
Vehicles	2,4	7,3	9,1	3,3	
Other transport equipment	1,9	4,2	8,0	1,4	
Other manufactures	2,5	4,9	8,8	1,5	
All products	1,9	5,5	4,5	1,8	

Source: Authors' own elaboration, based on GTAP 11.0 model protection.

^a Weighed average

In order to estimate the possible effects derived from a process of intra-regional convergence in Latin America and the Caribbean, as well as in Asia Pacific, and the implementation of the "hypothetical" deepening of a trade agreement between both regions, simulations of three consecutive scenarios were applied:

- 1) Scenario 1: Free Trade in Asia. Putting into force of the RCEP. The bilateral tariffs of the 15 members included in the agreement are set to zero;
- 2) Scenario 2: Free trade in Latin America and the Caribbean. Bilateral tariffs of the countries in the region are set to zero;
- 3) Scenario 3: Bi-regional free trade with zero tariffs.

Additionally, non-tariff measures (NTM) reduction scenarios were simulated. These reductions are modeled as the application of trade facilitation programs under an iceberg cost assumption, according to which the cost of exporting to partner countries is reduced through the application of a technology shock in the *ams GTAP* variable, resulting in a 2% increase during the transit of goods from origin to destination. Many studies recognize the need to estimate and remove the tariff barriers that reduce trade (quotas, licenses, contingency), and promote facilitation programs aimed at harmonizing and standardizing rules (technical standards, sanitary and phytosanitary measures). Non-tariff barriers can be double the applied tariffs (ESCAP, 2019)

The three scenarios to be simulated were run under two alternative assumptions. One assumes full employment, and the other assumes unemployment, taking into account that many countries in Asia Pacific, as well as in Latin America have high levels of unemployment. In the application of the unemployment assumption, the wage of unskilled labor is fixed, thus leading to worker mobility.

For sensitive products (agricultural sectors), in the first instance they are excluded from the reduction of tariffs, then they are taken into account like the rest of the sectors, but trade facilitation is not considered.

For these four scenarios, perfect competition is considered, with and without unemployment of unskilled labor. In total 10 simulations are run. In all simulations, it is considered that the capital account does not change, the investment level remains at the original level given by the database. The results are distinguished by defining additional sets in the *CMFSTART* file and subtotals for each shock in the relevant variables.

Although assuming unemployment in a computable general equilibrium model is not a relevant limitation, in the case where the unemployment rate is relatively low and stable, given that in some Latin American and Caribbean countries, and also in Asia Pacific, unemployment rates have been increasing well above values that could be considered equilibrium and close to the natural unemployment rate, i.e. values around 4%, it is considered that the most plausible results are those that consider the assumption of unemployment, because in practice in both regions there are people of working age who do not manage to find employment. Nevertheless, in the results section, we present the outputs considering full employment and unemployment. In this way it is possible to obtain a lower bound of the measure of expected change, and an upper bound, which would be the one assumed under the assumption of unemployment.

The simulations are further complemented by microdata, containing information about the export behavior of economic agents of selected Latin American countries. In this respect, economic agents are classified by their total annual domestic sales according to pre-defined ranges (see Table 5). If domestic sales were not available, annual export by agent were used as a proxy to classify each economic agent. Agents with annual sales (or exports) below US\$ 5,000 were excluded from the analysis as these may refer to the export of samples, or occasional exports of minimal value.

Table 5
Ranges for the typification of economic agents
(millions of dollars)

País	Año	Type of economic agent				
		Large	Medium	Small	Micro	Tiny amount
Argentina	2017	≥33	≥4	≥0,6	≥0,005	<0,005
Brazil	2009	≥23	≥2	≥0,3	≥0,005	<0,005
Chile	2015	≥4	≥1	≥0,1	≥0,005	<0,005
Colombia	2018	≥5	≥1	≥0,1	≥0,005	<0,005
Ecuador ^a	2018	≥5	≥1	≥0,1	≥0,005	<0,005
Mexico	2015	≥25	≥4	≥0,6	≥0,005	<0,005
Peru	2017	≥5	≥1	≥0,1	≥0,005	<0,005

Source: Authors.

^a Microdata for Ecuador exclude exportations of hydrocarbons.

III. Analyses of the results

This section presents the results of the simulations based on the scenarios defined in the previous section. In the first instance, the case of the effect on production, welfare and employment when the unemployment is assumed, will be analyzed. The outputs are presented considering the impacts for the two regions included in the study, as well as for the various integration schemes that comprise them. In the annexes at the end of the document, all the results by country are presented in an extensive manner.

A. Production, welfare and employment

Macroeconomic changes in Gross Domestic Product are expressed in real terms (percentage change). In turn, the change in calculated welfare (measured in millions of US dollars) is presented as the variation equivalent (EV), while the level of employment is estimated for the cases in which it is assumed.

The macroeconomic results show a rate of change of output in Latin America and the Caribbean of between 0.35% and 0.61% percentage points in the case of the simultaneous implementation of trade deepening in Latin America and the Caribbean and the implementation of a free trade agreement with Asia Pacific. The impact is greater in the Central American Common Market and the Pacific Alliance with variation rates of 1.18% and 0.65% under the simulations with unemployment while a minor impact can be observed in the Caribbean countries. In case of the RCEP member countries, the variation in GDP is 1%, with a higher impact in ASEAN, indicated by a variation of 1.38%.

In terms of welfare, captured by the equivalent change, Latin America faces an increase in the overall welfare of its consumers estimated at US\$37.897 billion, or its equivalent of 0.60% of regional output. Following a regional and bi-regional trade agreement, Latin American consumers would be better off than in a status quo situation where trade policy remains unchanged. In relative terms, the Central American Common Market achieves an aggregate welfare of US\$ 2,048 million, which would be equivalent to about 1% of the regional product (see Table 6).

In the case of the effects on welfare in Asia Pacific, the application of the RCEP, together with the signing of a trade agreement with Latin America, would result in a welfare increase of just over 237 billion dollars, or its equivalent in 1.11% for Asia Pacific, with the Republic of Korea being the economy that would receive the greatest welfare impact, which exceeds 3% of the country's product.

Table 6
Latin America and the Caribbean and Asia Pacific, effects of a bi-regional agreement on welfare and employment. Scenarios of a free trade agreement under the assumption of full employment and unemployment.

(Changes from baseline = 2017)

Selected Regions/subregions/countries	Gross Domestic Product (GDP)		Welfare (Equivalent variation)			
	full employment	with unemployment	Full employment		Without unemployment	
	%	%	millions of US\$	share in total (%)	millions of US\$	share in total (%)
Latin America and the Caribbean	0,35	0,61	20 840	0,33	37 897	0,60
MERCOSUR	0,31	0,59	10 031	0,28	20 209	0,57
Pacific Alliance	0,43	0,65	9 196	0,	13 971	0,65
Central American Common Market	0,55	1,18	931	0,44	2 048	0,96
Caribbean countries	0,09	0,17	-18	-0,01	480	0,20
Asia Pacific (RCEP countries)	0,46	1,00	127 216	0,60	237 364	1,11
ASEAN	0,81	1,38	16 023	0,65	31 009	1,26
Australia	0,24	0,56	8 228	0,57	13 556	0,93
China	0,41	0,85	49 008	0,44	94 892	0,85
Japan	0,35	0,78	34 780	0,76	53 016	1,15
New Zealand	0,32	0,57	1 530	0,76	2 058	1,03
Republic of Korea	0,84	2,82	17 648	1,25	42 832	3,03

Source: Authors based on model simulations.

The magnitude of the impacts of the variation in output based on the simulations of a bi-regional agreement, is determined by the productive structure of a country. At the country level, in Latin America, the highest percentage variations in output (above 1%), together with a positive impact on welfare, emerge in Paraguay and Uruguay (see Table 7). In particular for Paraguay, the EV represents 3.9% of the country's product. The greatest positive impacts in terms of output among the Central American countries would occur in Nicaragua, Panama and Guatemala, with relative increases in welfare above regional average. It should be noted that, in absolute terms, the largest welfare gains occur in Mexico and Brazil, the two largest economies in Latin America and the Caribbean, with 21%

and 38% of GDP, respectively. The smallest impacts occur in Venezuela, E.P., Colombia and Peru, which is explained in part by the greater concentration of products in these countries, represented primarily by mining products (oil, coal, copper, zinc, among others), as well as the importance of light industries that would receive negative impacts, mainly in textiles, clothing and footwear. These are important national industries in the cases of Colombia and Peru. In addition, these three countries have less competitive sectors or have a lower relative share of sectors that would receive the greatest impacts (agriculture and livestock⁴, with above-average increases in rice, wheat, soybeans and livestock products; agribusiness, with positive variations in meat, fats and oils, sugar, and beverages)

Regarding these products, the Southern Cone countries, especially Argentina, Uruguay and Paraguay, are estimated to feel positive impacts due to the opportunities arising from a positive increase in terms of trade and better prices in Asian markets. An example is the case of fruits and vegetables, which faced an average tariff of 10% before the tariff shock. After a bi-regional agreement, the tariff is reduced to zero, and thus exporters face better conditions accessing the Asian market.

Table 7
Latin America and the Caribbean, effects of a bi-regional agreement on GDP and Welfare
(percentage changes and millions of dollars)

Countries	Gross Domestic Product (GDP)	Welfare	Share in total GDP in percentages
Argentina	0,35	1 759	0,32
Brazil	0,69	15 319	0,63
Paraguay	1,63	1 193	3,86
Uruguay	1,30	768	1,34
Venezuela, E.P.	0,21	1 170	0,23
Chile	0,56	2 108	0,81
Bolivia	0,68	450	1,36
Colombia	0,28	974	0,26
Ecuador	0,70	739	0,73
Peru	0,38	614	0,30
Mexico	0,81	10 275	0,79
Costa Rica	0,81	434	0,87
El Salvador	0,76	133	0,53
Guatemala	0,73	503	0,86
Honduras	1,45	181	0,93
Nicaragua	2,15	246	2,09
Panama	1,98	551	1,12
Dominican Republic	0,70	325	0,51
Latin American and the Caribbean	0,61	37 742	0,34

Source: Authors base on model simulations

⁴ An example of this can be seen in Colombia, where the Colombian livestock sector have not been competitive, which is evidenced in the low levels of productivity and quality of their products compared to other countries. "External and endogenous structural factors have not allowed the development of the sector, being among them the extensive production system continues to be the predominance of the 21st century". (Martinez and Caro, 2019)

Among the Asian Pacific countries, the largest increases in output are to occur in Vietnam and Cambodia, with 4.75% and 3.79%, respectively (see Table 8). In Vietnam, the largest increases in output are likely to emerge in the light industry, mainly in the textile, apparel and footwear sectors, with very large increases in apparel (33%) and footwear (26%), as well as in the electrical equipment sector (13%). Production in the beforementioned sector as well as the computer equipment sector is expected to increase by more than 10% in Cambodia. In Laos and the Republic of Korea, metals, electronics and chemicals are driving output growth. It is important to note that in most of the RCEP member countries, despite negative output variations in agro-industrial sectors, the expected increases in heavy manufactures, mainly chemicals, electronics, computer equipment, manufactures and equipment, outweigh these declines, generating positive variations on average. The only cases, where smaller increases of around 0.6% occur, are Australia and New Zealand. In these countries the largest negative variations after the simulations are observed in heavy manufactures, while their agricultural and agro-industrial sectors perceive positive variations. Similarly, in Brunei the positive impacts on output are concentrated in agro-industry, especially in food products (dairy, sugar and processed rice) (see Annex 3).

Table 8
Asia Pacific, effects of a bi-regional agreement on GDP and Welfare
(percentage changes and millions of dollars)

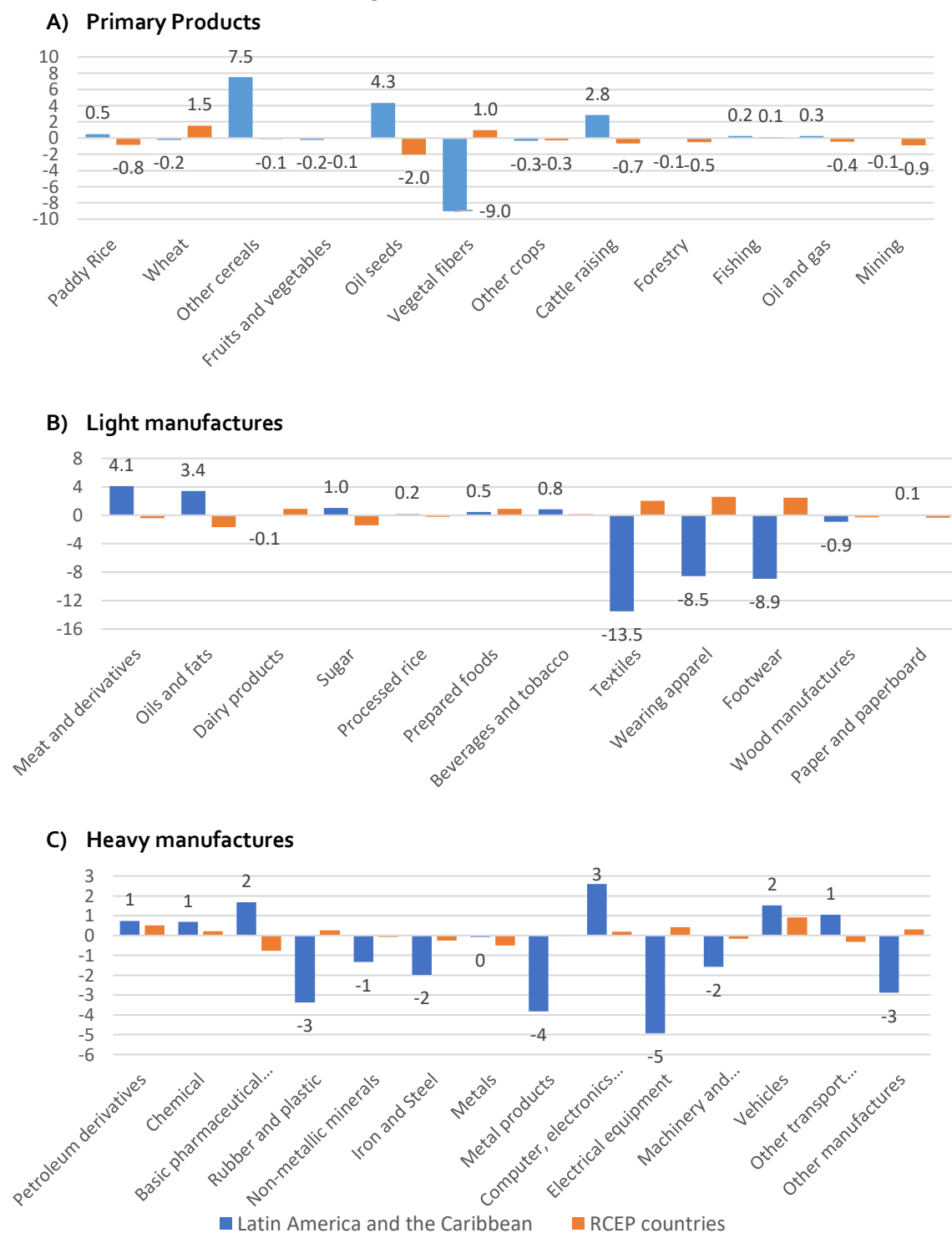
Countries	Gross Domestic Product (GDP)	Welfare	Share in total GDP in percentages
Japan	0.78	53 016	1.15
China	0.85	94 892	0.85
Republic of Korea	2.82	42 832	3.03
Australia	0.56	13 556	0.93
New Zealand	0.57	2 058	1.03
Thailand	1.66	5 715	1.41
Malaysia	1.67	5 789	1.71
Indonesia	0.70	6 708	0.75
Philippines	0.79	1 544	0.54
Singapore	1.05	4 086	1.33
Brunei	0.73	273	1.60
Cambodia	3.79	446	2.66
Laos	2.39	187	1.60
Vietnam	4.75	6 262	3.36
RCEP countries	1.00	237 364	1.11

Source: Authors base on model simulations

Comparing the GDP variations in the major primary sectors and light and heavy manufacturing shows a sort of offset in the expected effects, with more pronounced increases in agriculture and agro-industry in favor of Latin American countries, on the one hand, and more pronounced increases in heavy manufacturing among Asia-Pacific countries, on the other hand (see Figure 8). The net balance in terms of economic expansion is positive, with generalized welfare gains. It could be said that a sectoral rearrangement is taking place in which productive specialization and the export pattern are enhanced in favor of the comparative advantages existing in both regions.

Figure 8
Latin America and the Caribbean and Asia Pacific (LAC), average change in GDP at the sector level.

(Changes over the baseline = 2017)



Source: Authors base on model simulations

A. Foreign Trade

In terms of the effect of the scenarios on the export and import variables (see Table 9), a generally positive effect for Latin American and the Caribbean and Asian-Pacific (RCEP) countries can be observed, however, at the expense of the rest of the world. At the same time, the aggregate balance is expected to be positive. Clearly, if only the implementation of the RCEP is considered, without Latin America being able to negotiate a bi-regional agreement with the region, if liberalization includes bilateral tariff reduction in Asia (line 2 of Table 9), or if trade facilitation only includes the partners of the RCEP area (line 3 of Table 9), benefits produced by such an agreement would generate increases in Asian Pacific exports of between 2.77% and 1.39%, respectively, and import rise of 3.17% and 1.47%, respectively. In such scenarios, the expected effect on Latin America and the Caribbean is a fall in the variation of trade (both exports and imports). The same effect takes place, but in the opposite direction, when Latin America agrees to the implementation of a Free Trade Area, and the RCEP does not take place (lines 3 and 4 of Table 9 depending on whether liberalization takes place with tariffs or only with trade facilitation). Then, foreign trade in Asia suffers, on average, negative variations.

A bi-regional agreement between Latin America and RCEP is of greater importance for Latin America than for RCEP, as can be derived from lines 5 and 6 in Table 9. For Latin American exports, tariff reductions in the agricultural sectors allow for a greater expansion of trade. Imports into LAC are affected by the reduction of agricultural tariffs in Asia Pacific (line 8). The application of trade facilitation processes, understood as harmonization of technical standards, standardization of sanitary and phytosanitary requirements, among other mechanisms, included in the iceberg cost assumption, is much more favorable if it occurs simultaneously in both regions, rather than only in one, so that by additivity, the benefits are more substantial than if the facilitation improvements occurred only in one direction. Finally, the aggregate results for exports and imports in both regions are maximized when tariffs are reduced, including the opening of sensitive sectors, and in intra- and inter-regional circuits, with ambitious trade facilitation processes. In this case, the increase in exports and imports for Latin America are estimated to reach around 5% and 4.35%, and in Asia Pacific between 4.55% and 5.22% for exports and imports, respectively (see Table 9). The impacts on exports and imports by country are available in Annexes A3 and A4.

Table xxx
Latin America and the Caribbean and Asia Pacific (LAC), average change in foreign trade under various simulated scenarios under unemployment assumption.
(Changes over the baseline = 2017)

	Latin American and the Caribbean		RCEP Asian countries	
	exports	imports	exports	imports
Full impact	5.01	4.35	4.55	5.22
RCEP tariff reduction	-0.10	-0.19	2.77	3.17
Trade facilitation among RCEP countries	-0.20	-0.11	1.39	1.47
LAC tariff reduction	0.96	1.00	-0.01	-0.02
Trade facilitation among LAC countries	0.42	0.45	-0.01	-0.01
LAC-RCEP with sensitive sectors (exclude agriculture products)	3.40	2.61	0.34	0.53
Trade facilitation among RCEP and LAC	0.13	0.28	0.02	0.00
Trade facilitation among LAC and RCEP	0.39	0.17	0.04	0.09
LAC-RCEP tariff reduction in agriculture	0.01	0.15	0.01	-0.001

Source: Authors based on model simulations.

Conclusion

This article is founded on the implementation of ten different CGE simulated scenarios based on the GTAP model/database referred to a benchmark scenario for the year 2017 and with tariff protection for the year 2018. In order to estimate the possible effects derived from a process of intra-regional convergence in Latin America and the Caribbean, as well as in Asia Pacific, and the implementation of the "hypothetical" deepening of a trade agreement between both regions, simulations of three consecutive scenarios were applied: 1) Scenario 1: Free Trade in Asia. Putting into force of the RCEP; 2) Scenario 2: Free trade in Latin America and the Caribbean. Bilateral tariffs of the countries in the region; and 3) Scenario 3: Bi-regional free trade with zero tariffs. Additionally, non-tariff measures (NTM) reduction scenarios were simulated in each three cases. These reductions are modeled as the application of trade facilitation programs under an iceberg cost assumption, that is, an increase of 2% during transit from origin to destination.

The macroeconomic results show a rate of change of output in Latin America and the Caribbean of between 0.61 percentage points in the case of the simultaneous implementation of trade deepening in Latin America and the Caribbean and the implementation of a free trade agreement with Asia Pacific, under unemployment assumption. The impact is greater in the Central American Common Market and the Pacific Alliance with variation rates of 1.18% and 0.65% under the simulations with unemployment while a minor impact can be observed in the Caribbean countries. In case of the RCEP member countries, the variation in GDP is 1%, with a higher impact in ASEAN, indicated by a variation of 1.38%.

The bi-regional agreement between LAC and RCEP is positive for the world, for the two regions in particular to the detriment of the rest of the world. It is clear that the unemployment assumption amplifies the effect of the trade agreement. This is because the reduction of tariffs and the increase in productivity make use of available labor that was not previously being used.

The effect on the welfare measure is due to the increase in the greater availability of workers in addition to the greater efficiency of the use of imports in the absence of tariffs. The range of the increase in employment for Latin America is from 0.30 percent in Venezuela to 5.12 percent in Paraguay.

For RCEP, the increase in employment is greater with a wider range. In terms of the effect of the scenarios on the export and import variables, it is found that in general it is positive for LAC and RCEP at the expense of the rest of the world, but that in the aggregate the balance is positive. Clearly, the RCEP (tariff reduction and trade facilitation) treaty negatively affects trade variables in LAC. Likewise, the LAC treaty negatively affects RCEP although in a lesser way. The bi-regional agreement between LAC and RCEP is of greater importance to LAC than to RCEP. The reduction of tariffs in the agricultural sectors for LAC exports. Imports in LAC are affected by the reduction in agricultural tariffs.

The sectors most negatively affected by the trade agreement are in agriculture and among the benefited sectors we find more manufactures. The same sector can be a winner or a loser depending on the country. Thus, for example, other cereals is the sector that is reducing the most in Korea, but it is the sector that is growing the most in Argentina.

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Annex

Annex A.1

65 GTAP sectors and concordances with ECLAC-FEALAC model

Number	GTAP code	GTAP Description	FEALAC model sectors
1	Pdr	Paddy rice	agric
2	wht	Wheat	agric
3	gro	Cereal grains nec	agric
4	v_f	Vegetables, fruit, nuts	agric
5	osd	Oil seeds	agric
6	c_b	Sugar cane, sugar beet	agric
7	pfb	Plant-based fibers	agric
8	ocr	Crops nec	agric
9	ctl	Bovine cattle, sheep and goats, horses	agric
10	oap	Animal products nec	agric
11	rmk	Raw milk	agric
12	wol	Wool, silk-worm cocoons	agric
13	frs	Forestry	agric
14	fsh	Fishing	fish
15	coa	Coal	mine
16	oil	Oil	mine
17	gas	Gas	mine
18	oxt	Other Extraction (formerly omn Minerals nec)	oxt
19	cmt	Bovine meat products	meats
20	omt	Meat products nec	meats
21	vol	Vegetable oils and fats	ofd
22	mil	Dairy products	meats
23	pcr	Processed rice	ofd
24	sgr	Sugar	sgr
25	ofd	Food products nec	ofd
26	b_t	Beverages and tobacco products	b_t
27	tex	Textiles	tex
28	wap	Wearing apparel	wap
29	lea	Leather products	lea
30	lum	Wood products	lum
31	ppp	Paper products, publishing	ppp
32	p_c	Petroleum, coal products	p_c
33	chm	Chemical products	chm
34	bph	Basic pharmaceutical products	bph
35	rpp	Rubber and plastic products	rpp
36	nmm	Mineral products nec	nmm
37	i_s	Ferrous metals	i_s
38	nfm	Metals nec	nfm
39	fmp	Metal products	fmp
40	ele	Computer, electronic and optical products	ele
41	eeq	Electrical equipment	eeq
42	ome	Machinery and equipment nec	ome
43	mvh	Motor vehicles and parts	mvh
44	otn	Transport equipment nec	otn
45	omf	Manufactures nec	omf
46	ely	Electricity	ely_gdt
47	gdt	Gas manufacture, distribution	ely_gdt

Number	GTAP code	GTAP Description	FEALAC model sectors
48	wtr	Water	ely_gdt
49	cns	Construction	cns
50	trd	Trade	p_Serv
51	afs	Accommodation, Food and service activities	p_Serv
52	otp	Transport nec	otp
53	wtp	Water transport	otp
54	atp	Air transport	otp
55	whs	Warehousing and support activities	otp
56	cmn	Communication	cmn
57	ofi	Financial services nec	ofi_ins
58	ins	Insurance (formerly isr)	ofi_ins
59	rsa	Real estate activities	p_Serv
60	obs	Business services nec	p_Serv
61	ros	Recreational and other services	p_Serv
62	osg	Public Administration and defense	g_serv
63	edu	Education	g_serv
64	hht	Human health and social work activities	g_serv
65	dwe	Dwellings	p_Serv

Source: Authors.