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ALADI
Asociación Latinoamericana de Integración
Associação Latino-Americana de Integração

CAF BANCO DE DESARROLLO DE AMÉRICA LATINA

NACIONES UNIDAS
CEPAL

Presentation

Within the frame of the activities realized by the Latin America-Asia-Pacific Observatory, ALADI, CAF and ECLAC organized the Observatory's fourth edition of the Academic Seminar under the title: "Latin America and Asia-Pacific: Between the digital revolution and a questioned globalization", which took off on November 12th 2019.

As usual, the seminar offered a forum to analyze and discuss topics affecting the economic relations between both regions in the short run such as consequences of the on-going tensions between the United States and China related to investment, production and trade. At the same time, the forum is also concerned with aspects that rather have a long-run impact such as the scientific-technological cooperation, the creation of value chains and advances made in the Belt and Road Imitative as well as the relative impact of the digital revolution.

This publication represents a selection of papers that were submitted before the seminar took place such that the specially invited experts enriched the discussion in different aspects of the field.

The forum also provided an opportunity to transcribe the dialogue between the ALADI's secretary general, Alejandro de la Peña and the professors Gerardo Caetano and Juan José Ramírez Bonilla about the conditions of the economic integration between Latin America and Asia-Pacific and North American foreign policy.

We consider this publication to be an input in the diffusion of valuable knowledge produced by the exports of different countries with the objective to further enlighten the different aspects entailed in the complex structure of the economic relations between Latin America and Asia-Pacific.

Latin American Integration Association (ALADI)
CAF-Latin American Development Bank
Economic Commission for Latin America and the Caribbean (ECLAC)

The productive integration of Latin America – Asia-Pacific and its challenges

José E. Durán Lima[1]

This underlying paper presents the results of a project that investigated the role of value chains in developing a profound integration between the two regions, Latin America and Asia-Pacific. The project has been realized for the Forum for East Asia-Latin America Cooperation (FOCALAE).

The paper firstly summarizes the project, its methodology and thereafter, some of the general results of the two main indicators: On the one hand, the composition of the domestically aggregated value of exports and, on the other hand, the composition of the imported inputs included in the exports, under the consideration of intra- and extra-regional trade links, especially with Asia-Pacific. Afterwards, some conclusions will be derived and some of the challenges Latin America currently faces, which may impede its further productive integration with East-Asian countries, will be pointed out.

The project's overall objective in the first place, was to develop an adequate tool to analyze the productive integration at a regional and inter-regional level, while taking into account the links between both regions, Latin America and Asia-Pacific. The main idea was to improve the quality and technical capacity of the national institutions of the member countries of this forum, in this case, Latin America and Asia-Pacific, such that they can develop trade and industrial policies based on empirical evidence.

In the past, many studies investigating value chains have been conducted and usually, they have been based on trade data, meaning data of flows of origin and destination for products, based on the harmonized system. In contrast, the idea of the underlying study is to relate trade data of production with the production function, being implicitly included in the input-output matrix of every country.

This methodology captures what productive sectors of an economy demand from other sectors and from the rest of the world, like intermediate inputs, in order to be able to transform these into outputs, which are then exported. This can be illustrated by taking Uruguay as an example: The input-output matrix takes into account that for an Uruguayan industry to be able to export products to Asia, it requires inputs, which do not only come from Uruguay, but also from Brazil, Argentina or East-Asian countries. The final products incorporating these inputs are later again exported to East-Asia. Put differently, the methodology captures the productive integration at the level of countries, regions or both regions when aggregated by countries.

Persons and institutions benefiting of this project will be technicians, politicians, government officials of central banks, statistical institutes, ministries of commerce, production, agriculture, industry, so generally everyone, who is in charge of analyzing statistics of trade, investment and production data. Beyond this, also academics and students as well as members of the civil society can benefit from this project.

[1] José Elías Durán Lima graduated as lawyer from the University Laica Vicente Rocafuerte de Guayaquil, as economist from the University de Guayaquil and obtained a PhD from the University de Barcelona. Currently, he works as Chief of the Regional Integration Unit, International Trade and Integration Unit of the Economic Commission of Latin America and the Caribbean (ECLAC).

The idea is to allow that every time an analysis related to productive integration is conducted, this tool is applied, as it allows to find empirical evidence in the link between production and trade, which had not been analyzed in depth before. Until now, this is only possible for a limited range of countries, namely: Argentina, Brazil, Colombia, Chile, Costa Rica, Peru and Mexico. These are the only countries that are included in the input-output matrix of the Organization of Economic Cooperation and Development (OECD). Conducting such analyses with similar matrices for other countries of the region, such as Ecuador, Bolivia, the Dominican Republic or other Central American countries is still not possible. Similarly, investigating the value chains between Mexico and the rest of the countries of the regions remains also restricted. Only further including these new countries in a new regional matrix would allow for such analyses.

In total, the project has five distinct steps, as indicated in detail in Diagram 1.

In a first step, *the collection of data and the construction of the methodological tool* stood in the foreground. In this regard, it was essential to consider that the overall goal of the tool was to realize economic analyses of value chains in Latin America, East-Asia and both regions.

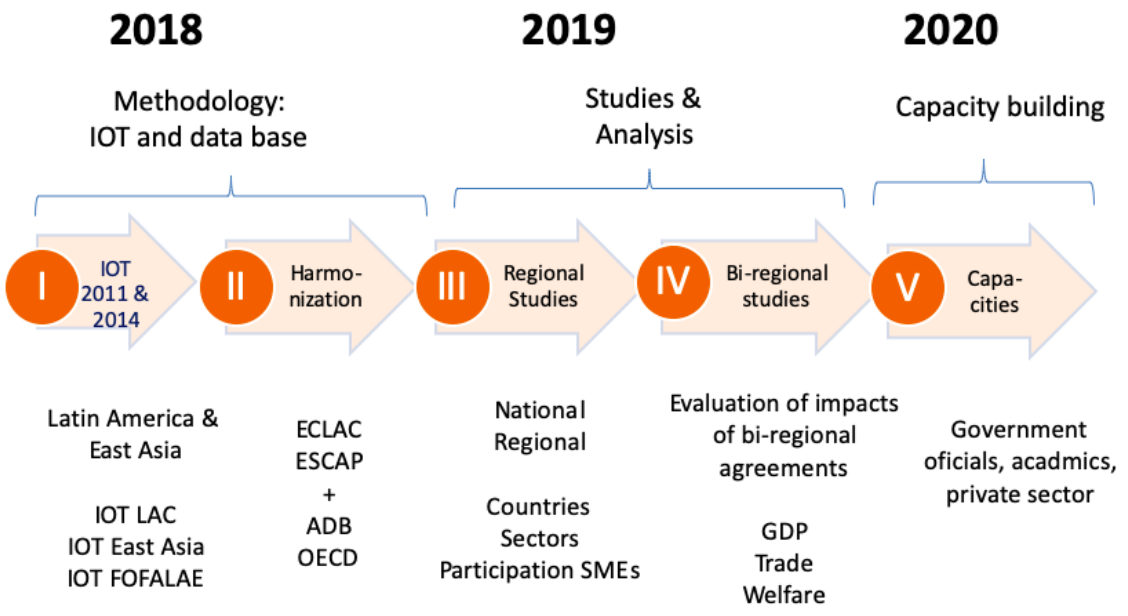
In a second step, *harmonization of data of the countries in the two regions*, Latin America and East-Asia was conducted, with the goal to align the sector classification in both regions. The data base was then made accessible, as it was already done in the Dominican Republic, such that analyses particularly aiming at analyzing the interrelatedness of productive values chains could be conducted, at the regional and inter-regional level, considering both of the beforementioned regions.

The project concludes with *regional as well as bi-regional studies* in the third and fourth step. In particular, the bi-regional study will have as an objective the evaluation of the impact of a great bi-regional agreement between Latin America and Asia-Pacific. It is expected that the two regions agree on deepening their commercial integration with reduced tariffs. Considering this potential bi-regional agreement, a suggestion would be to base such a decision on results from an exercise of the beforementioned manner, including the variable production, trade and welfare. Put differently, it would be essential to identify sectors, which represent winners in case of a large trade harmonization between both regions, while also investigating, which sectors are more sensible or may even be negatively impacted. The overall objective should be to be able to present policy makers a tool, which allows them to get an idea of the potentially gaining sectors as well as sectors with certain weaknesses such that investments or commercial negotiations are directed in a certain way.

The fifth step of the project is related to *capacity building*. In this respect, necessary capacities have to be built up targeting government officials, academics and also actors of the private sector. A few months ago, we have given our first seminar in capacity building in order to promote the use of the beforementioned methodology. The seminar was carried out for the Andean Community and another seminar, taking place a month ago, was organized for the Pacific Alliance in Chile, where officials of all member countries were introduced to the methodology. Beyond the introduction to the methodology, the officials were asked to perform first analyses investigating the productive ties of their respective country with neighboring countries or with Asian countries. In 2020, we expect to give further seminars in Latin America as well as in East-

Asia. Colleagues form the Economic and Social Commission of the United Nations for Asia and Pacific (ESCAP) will be in charge in this respect.

Diagram 1
Projected Evolution: Project Value Chains between Latin America and the Caribbean and Asia-Pacific



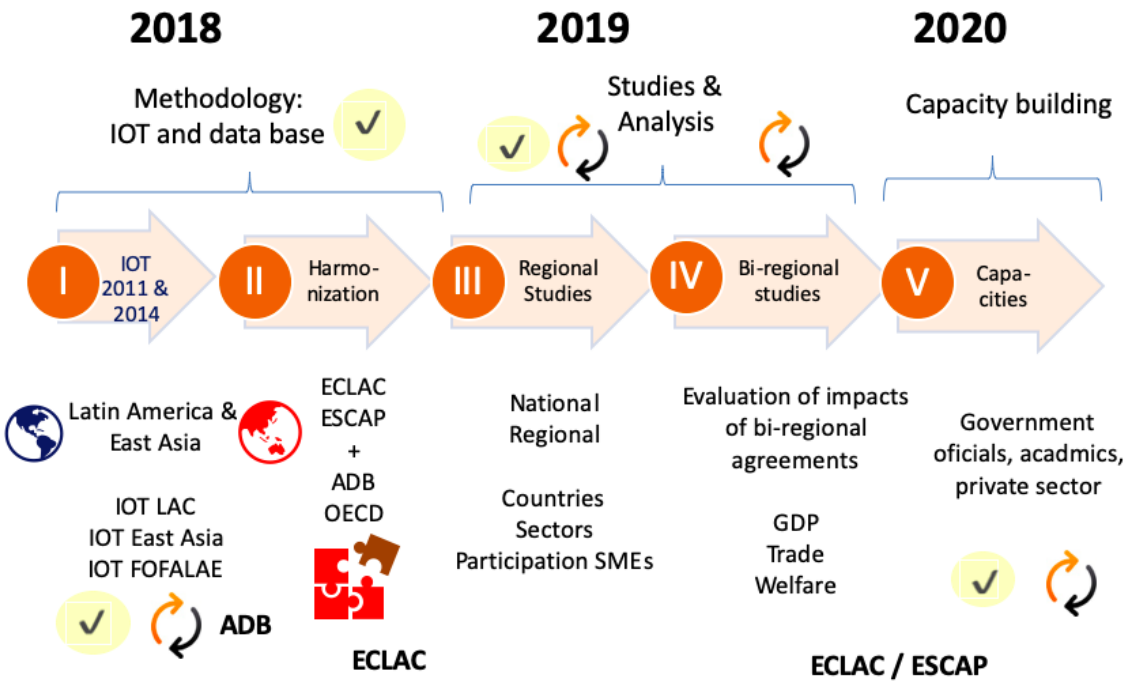
Source: Own elaboration on the base of the project's document.

When we observe the degree of the progress of this project (see Diagram 2), a yellow tick mark indicates that this project step has been completed. The circle with the two arrows implies that this project steps has just started or that it is still under progress. Furthermore, we already set up a matrix including 18 Latin American countries (Argentina, Bolivia, E.P., Brazil, Colombia, Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Dominican Republic, Paraguay, Peru, Uruguay and Venezuela, R. Bol.), while the matrix for East-Asia remains under progress. Fortunately, these matrices include trade and production data of Latin America as well as Asia-Pacific and the bi-regional ties. Therefore, the streams incorporated in the matrices allow us to analyze the productive and trade linkages between Latin America and Asia-Pacific, while taking into consideration the respective bilateral ties between the countries and/or sub-regions. For example, between Uruguay and the Korean Republic or as well between the member countries of the Pacific Alliance (AP) and the member countries of the Association of Southeast Asian Nations (ASEAN).

We expect to set up a global matrix in the near future, which also includes the European Union, the United States, Russia and other countries of interest from Asia as well as from Latin America. Our objective is to have a complete product by the middle of next year in order to be able to advance from there to bi-regional studies and new capacities, first of all, in the countries of the Pacific Alliance, Central America and Asia-Pacific, where our sister commission the United Nations Economic and Social Commission for Asia and the

Pacific (ESCAP) will also execute further additional seminars, similar to the ones that we have realized in the past in Latin American countries[2].

Diagram 2
State of Progress: Project Value Chains between Latin America and the Caribbean and Asia-Pacific



Source: Own elaboration based on the project document and information on the advancements provided to the secretary of FOCALAE.

Box 1 below summarizes some of the activities that we have set up in Latin America as well as in East Asia. The input-output matrix of the region and its linkages with Asia is accessible online. The Asian Development Bank will upload its own in the first semester of the upcoming year and, as I said, we expect to upload a global matrix by the second half of the upcoming year (2020). Apart from this, Box 1 also provides links for the seminars executed in the Andean Community, MERCOSUR and the Pacific Alliance, in case some readers are interested in obtaining more detailed information, especially with regard to the working material. The methodology of the regional matrix will be provided on request by the ECLAC (2016). The document includes detailed information on the construction of the first matrix for South America for 2005. The updated matrix of 2011, whose results are presented today, is based on the same method.

[2] During 2019, capacity building seminars were executed for the countries of the Andean Community and the MERCOSUR.

Box 1: Activities developed as part of the FOCALAE project about value chains between Latin America and Asia-Pacific

The ECLAC, through its Trade and International Integration Unit in collaboration with the Unit of Commerce, Investment and Innovation of the ESCAP as well as various governments and institutions for regional integration, has developed a construct of activities, which are listed in the following with their respective links to access the documents presented in the different seminars:

1.- In June 2019, ECLAC took part in a meeting of the regional-global initiatives of TiVA as organized by the OECD during which it has been decided, that the project will include information of the OECD's TiVA data base. https://www.cepal.org/es/eventos/taller-regional-global-iniciativas-tiva; https://www.cepal.org/sites/default/files/events/files/mio_southamerica_2005-2011_paris_2018_7-06-2018.pdf

2.- Between the 26th and 28th of March 2019 the seminar "Use of the Subregional Andean and South American Input-Output Tables for the analysis of Value Chains" took place in Bogotá, with the Comunidad Andina and the Ministry of Commerce, Industry and Tourism (MINCIT) being present. Officials from different areas of MINCIT, the National Administrative Department of Statistics (DANE), and the National Planning Department (DNP) participated in the training, as well as delegates from other countries of the Andean Community and the Pacific Alliance. https://www.cepal.org/es/cursos/taller-uso-la-mip-subregional-andina-la-mip-america-sur-analisis-cadenas-valor

3.- The workshop "Use of the MERCOSUR and South American Input-Output Tables for the Analysis of Value Chains" was hold in the city of Montevideo between May 13 and 15th, 2019. The workshop, which was taught by economists from the International Trade and Integration Division of ECLAC, is sponsored by the MERCOSUR Secretariat. Officials from various public institutions of MERCOSUR member countries, mainly Ministries of Industry and Foreign Trade, Production, and Foreign Affairs, among others, as well as officials and technicians of the MERCOSUR Secretariat participated in the training. https://www.cepal.org/es/cursos/taller-uso-la-mip-mercado-comun-sur-la-mip-america-sur-analisis-cadenas-valor

4.- In July 2019, ECLAC presented the project in the third meeting of the regional-global initiatives of the TiVA in Paris, thereby representing the ESCAP and the Asian Development Bank. The conference was a step towards the harmonization of the different initiatives of TiVA (OECD, ECLAC, ESCAP, ADB, EUROSTAT and OMC), which allowed the integration of a new global matrix. http://webpro.cepal.org/es/eventos/tercer-taller-regional-global-iniciativas-tiva

5.- The ESCAP organized a technical Workshop from 10 to 11 July 2019, UNCC, Bangkok, Thailand. The workshop was part of the collaborative project between ESCAP, ECLAC and ADB in a project aiming to enhance value chain integration between Asia and Latin America. The workshop gathered policy analysts, researchers and policymakers working in Asia-Pacific member states of FEALAC. The purposes of the workshop were to review the study in intraregional value chains development and to identify emerging opportunities and challenges facing Asia-Pacific countries in deepening their integration. https://www.unescap.org/events/technical-workshop-value-chain-development-deeper-integration-fealac-asian-perspectives.

6.- ECLAC, through its International Trade and Integration Division and in collaboration with the Ministry of Foreign Affairs of the Dominican Republic, organized the International Seminar "Input-Output Tables as a Tool for Trade and Industrial Policies in Latin America and the Caribbean and Relations with Asia-Pacific," and the roundtable "Dynamics of the Intra and Inter Regional Value Chains and Integration in Latin America and Asia." These activities were taking place under the projects "Input-Output Tables for Industrial PolicyAsia in Latin America and the Caribbean" and "Development of Value Chains for Deeper Integration between Latin America and Asia-Pacific." The meetings took place in the city of Santo Domingo between September 11 and 13 2019. During the Seminar, ECLAC presented the Input-Output Table for Latin America and the Caribbean for a group of 18 countries. Likewise, the results of various studies that have been developed from the table were presented in order to identify value chains in Latin America, as well as trade links between the region and Asia-Pacific. https://www.cepal.org/en/events/input-output-tables-tool-trade-and-industrial-policy-latin-america-and-relations-asia-pacific

7.- In the framework of the annual FEALAC Working Group Meeting on "Trade, Investment, Tourism and Micro, Small and Medium Enterprises" on 18th September 2019 in Seoul, South Korea, the Ministry of Foreign Affairs of the Republic of Korea and the Ministry of Foreign Affairs and Worship of Argentina co-organized the seminar "FEALAC's Trade Facilitation in the context of the Digital Economy". The seminar aimed to find ways to improve regional connectivity among FEALAC member states and to nurture business capabilities of micro, small and medium enterprises (MSMEs) in a digital economy. The meeting focused on the analysis of value chains and the participation of MSMEs in the context of the digital economy. Case studies of the use of digital media in finance (Mexico), the promotion of innovation (Chile), exports and digitalization of MSMEs (Argentina), and the promotion of digital technologies to boost microenterprises (Thailand) were presented. https://www.cepal.org/es/eventos/facilitacion-comercio-focalae-contexto-la-economia-digital

8.- On 19th September 2019 in the city of Seoul, ECLAC presented the main results of the project "Value Chain Development for the Deeper Integration of East Asia and Latin America". The meeting, which took place at the embassy of Peru and was attended by representatives of the Group of Ambassadors of Latin America and the Caribbean (GRULAC), was convened by Raúl Silverio Silvagni, Ambassador of the Republic of Paraguay in the Republic of Korea and Dean of GRULAC in Seoul. https://www.cepal.org/es/eventos/cadenas-valor-intra-interregionales-america-latina-caribe-asia-pacifico

9.- In Santiago de Chile, ECLAC organized the seminar "Use of the Input Output Matrix of Latin America and the Caribbean: Application for the Pacific Alliance" with the Sub-secretary of External Relations of Chile participating. Also officials from the four member countries of the Pacific Alliance, Colombia, Chile, Peru and Mexico, took part.

10.- In the city of Santa Domingo, on the 9th of November of 2019, ECLAC and ESCAP presented their advancements and main results of the project "Developing value chains for deepening integration between Latin America and Asia-Pacific in the IX Meeting of the Ministries of External Relations of the FOCALAE.

Find below, a selection of photos from participants in the seminars and activities introduced previously:

• Workshop "Input Output Tables as a tool for Trade and Industrial Policies in LACs and its linkages with Asia Pacific"

• In Seoul TITM Seminar on Trade and SMEs • GRULAC: Regional and Inter-regional Value Chain between LAC and Asia Pacific

Source: Author, based on information of the project FOCALAE about value chains between Asia and Latin America.

Before moving on to the results, a sample of countries is presented, whose countries are strongly related to each other in their trade policies. These are basically Chile, Colombia, Mexico and Peru in Latin America and, on the other hand, in Asia, Korea, being the country with the strongest trade linkages with the beforementioned countries. In order to give you an idea of these bi-regional trade linkages, Table I also includes TPP 11.

Table I
State of the Trade Agreements between Latin American and Caribbean Countries and Asia-Pacific

	Australia	Brunei Darussalam	China	Korean Republic	Hong Kong, China	India	Japan	Malaysia	New Zealand	Singapore	Thailand	Taiwan Province of China	Vietnam
Argentina				In negotiation		PSA (2004)							
Brazil				In negotiation		PSA (2004)							
Chile	FTA (2009)	FTA (2006)	FTA (2006)	FTA (2004)	FTA (2014)	PSA (2007)	AA (2007)	FTA (2012)	FTA (2006)	FTA (2006)	FTA (2013)*		FTA (2014)
Colombia	In negotiation		FS	FTA (2014)			TN		In negotiation	In negotiation			
Costa Rica			FTA (2011)	FTA (2018)						TLC (2013)			
El Salvador				FTA (2018)								FTA (2008)	
Guatemala				Cooperation Agreement (2019)								FTA (2006)	
Honduras				FTA (2018)								FTA (2008)	
Mexico	TPP	TPP					AA (2005)	TPP	TPP	TPP			TPP
Nicaragua				FTA (2018)								FTA (2008)	
Panama				FTA (2018)						FTA (2006)		FTA (2004)	
Paraguay				In negotiation		PSA (2004)							
Peru	TPP	TPP	FTA (2010)	FTA (2011)			AA (2012)	TPP	TPP	FTA (2009)	FTA (2011)		TPP
Uruguay				In negotiation		PSA (2004)							

Source: Own elaboration based on the project document and information on the advancements provided to the secretary of FOCALAE.

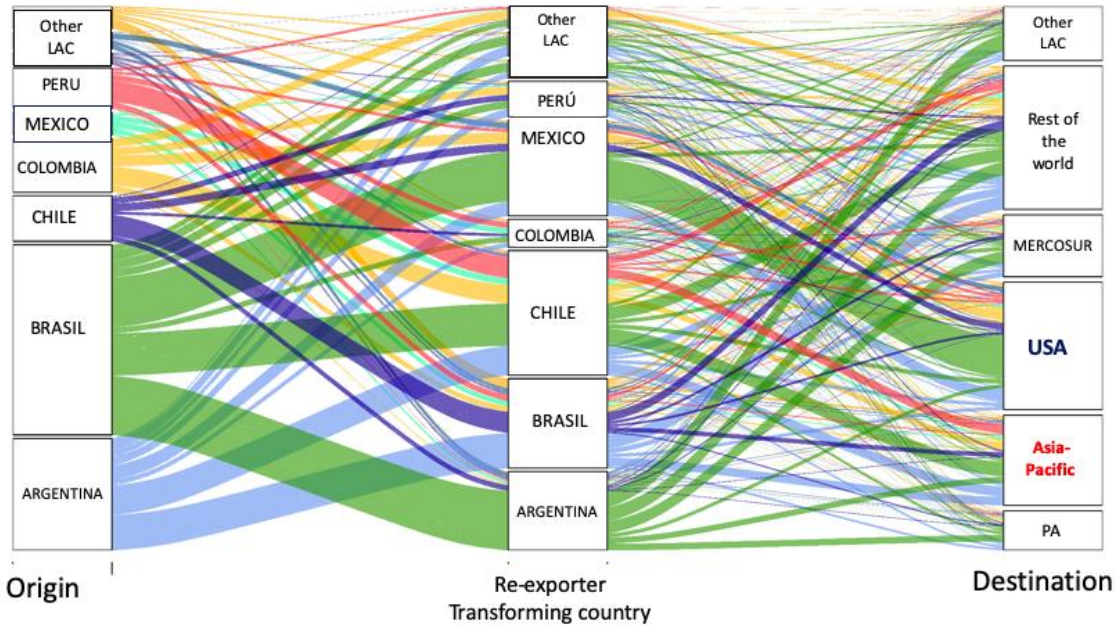
The methodology used for this analysis to investigate productive integration is based on the multi-national input-output-matrix of Latin America and the Caribbean, which has been set up for this project. By applying this method, it is ensured that the linkages between trade and production between Latin America and Asia-Pacific are well defined. It is the best tool for bi-regional aggregated analyses and as well may be used for studying the linkages between countries in both regions on the level of large economic sectors, which may help to identify possibilities for new sectors to open up. To be more precise, the multi-national input-output matrix allows to trace the interdependencies between countries, as the multi-national matrix captures the amount of required intermediate inputs for the production in a given country of a region, while also accounting for its domestic economic sectors and the economic sectors of other countries in the region (partners in Latin America) and also outside its region (rest of the world, including Asian-Pacific countries). This way, the intensity of the intra- and extra-regionally value added incorporated in the total production of a given country can be determined.

These particular analyses, applying the presented methodology, illustrate the intensity of the intra-industrial trade between pairs of countries belonging to both regions, and may be complemented with information derived from micro-data provided by the customs and/or production at the firm-level. This would further allow to identify the size of the economic actors, which are taking part in the production processes of a country as well as of partners, which supply the intermediate products. This is especially important to determine the extent of medium- and small-sized exporters. Therefore, the input-output

method is a powerful tool for the analysis of value chains at the regional, country and sectorial level.

In the following, the results from analyzing the input-output matrix of Latin America regarding exports of intermediate inputs, which are then again re-exported, will be presented. Figure 1 below illustrates the traceability of the flows of the aggregated value that has been exported. The first column indicates the origin of the aggregated value of the exports of every country of the region and its destination in other countries of the region (as indicated by the second column), where the products are further transformed into new products, incorporating these inputs. The new products are then exported to further destinations, as given by the third column. In this first two columns, Latin American countries with a high intensity of trade between each other are listed, while the third column displays the principal destinations classified under the United States, Asia-Pacific, MERCOSUR, Pacific Alliance and other Latin American Countries and the rest of the world.

Figure 1
Latin America (18): Traceability of Trade Flows of Exported Aggregated Value, 2011



Source: Own elaboration based on information derived from the input-output matrix of Latin America and the Caribbean.

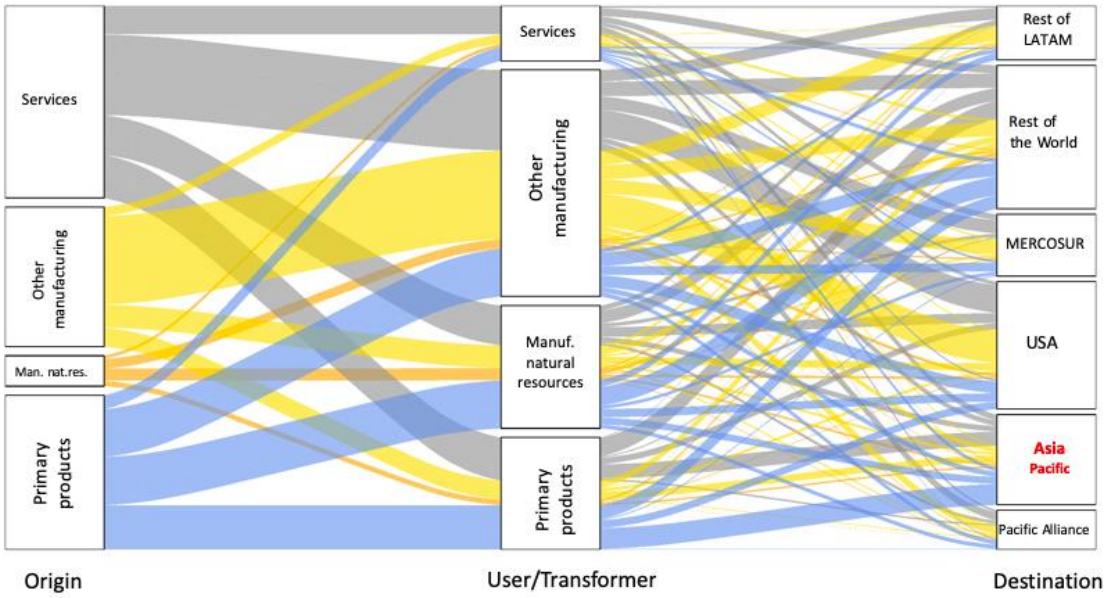
The differently colored wires in Figure 1 connecting the columns provide an idea of the traceability of the flows of exports. For example, the second column shows that Chile imports the majority of its products from Argentina, Brazil, Colombia and Peru, while less is imported from Mexico or other countries in the region. From Figure 1 it can also be derived, that Chilean products have various destinations across the world and are primarily exported to Asia-Pacific, MERCOSUR and the United States. In the case of Mexico, the country with the second highest export density, most of its intermediate inputs originate in Argentina and Brazil even though there exist important interdependencies with the countries from the Pacific Alliance. Regarding Mexico's

exported aggregated value added, the United States represent its most important trading partner, as indicated by the thick green wire, which is larger than any of the others.

Overall, what does Figure 1 tell us? First of all, it tells us that the core of the regional productive integration is made up of six countries of that region: The four of the Pacific Alliance (Colombia, Chile, Mexico, Peru), and Argentina as well as Brazil. Between these countries the majority of export flows in regionally value added takes place. Therefore, it may be derived that here the interdependencies and intra-industrial relations inside Latin America take place. Apart from that, specifically these countries have a fairly diversified trade network in Asia-Pacific and are also well connected with China. Figure 1 further indicates, that for the remaining countries depicted in the figure, there also exist important trade interdependencies with the beforementioned destinations and their products are also exported to the countries in the rest of the world.

Considering the relation between Latin America and Asia-Pacific by economic sectors, and in this respect, especially the relation between South America and the region Asia-Pacific, we can see that the primary sectors represent the prime origin of the Latin American value chains. Primary products are reprocessed and natural resources are manufactured and further processed in the rest of the world. Services are also important at the beginning of the value chains (as providers of intermediate products, value added) and are required as kind of stabilizer across all exporting sectors (see Figure 2).

Figure 2
Latin America (18): Trade Flows of Exported Aggregated Value by Sector of Origin and Re-export Sector By Destination, 2011



Source: Own elaboration based on information derived from the input-output matrix of Latin America and the Caribbean.

If we add Mexico to the picture, we can see that the relation between Latin America and the Caribbean and Asia-Pacific overall is dominated by manufacturing and services. When also accounting for Mexico, the productive exporting network becomes slightly more complex, with a more sectorial structure. This analysis can also be repeated at the level of a pair of countries or one country with the rest of the world. What I have presented

here gives us an idea of the type of analysis that would be possible when applying the input-output methodology.

A more detailed analysis on the country-level reveals the intensity of the domestic value added incorporated in the total exports and its decomposition in five large groups by destination: Latin America, United States, Asia-Pacific, European Union and the rest of the world. A closer look on the origin of the value added according to the sector reveals the dominance of primary products and natural resources, which make up the two predominating categories that are exported to Asia-Pacific. This differs from the intra-regional trade, where the majority of exports of aggregated value stems from the manufacturing sector (see Figure 5).

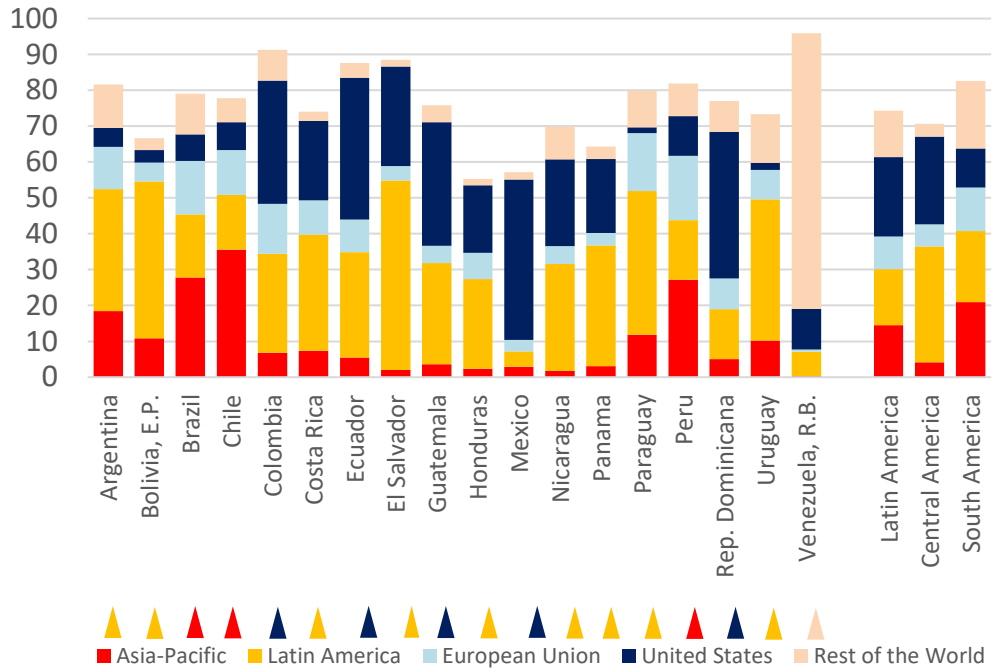
This is followed by an analysis indicating the content of the domestically value added that is exported to each of the countries of the region. In this respect, the value added is divided into five principal destinations: Latin America, Asia-Pacific, United States, European Union and the rest of the world.

The group of countries for which the main destination is their own region are: Argentina, Bolivia, Costa Rica, Colombia, Ecuador, Nicaragua, Panama, Paraguay, El Salvador and Uruguay. In these cases, it becomes visible which scheme of integration a country can be assigned to. For example, in the cases of Argentina, Paraguay and Uruguay, a major productive integration of trade flows in intra-MERCOSUR countries becomes visible. This is also true for Costa Rica, Nicaragua, Panama and El Salvador, which represent countries for which trade links in the common Central American market are very important.

Among the countries of the region with major proportions of domestically value added exported to the United States, Mexico leads. To be precise, of the 57% of value added in Mexico, 45% is exported to the United States. Other countries for which the United States represent a major export destination for domestically value added are Colombia, Ecuador and the Dominican Republic. In these three cases, there exist important traditions of trade and investment relations that have persisted for a long time. While Costa Rica, El Salvador and Nicaragua export a large proportion of their domestically value added to countries within Central America, the United States make up the second most important destinations of their exports.

A third group is made up of countries, which are productively relatively well-integrated in Asia-Pacific: Chile, Brazil, Peru and, to a lesser extent, Argentina. These countries export a large proportion of their value added to Asia-Pacific. Dividing Latin America into its two main regions, South America and Central America, the regions differ quite extensively in their degree of productive integration in Asia-Pacific. More precisely, South America exports 22% of its domestically value added to Asia-Pacific, while Central America only exports on average 4% of its 71% value added to the beforementioned destination. Larger shares are exported intra-regionally or to the United States (see Figure 3).

Figure 3
Latin America (18): Domestically Value Added Included in the Exports by Main Destinations, 2011
(In percent of the total)

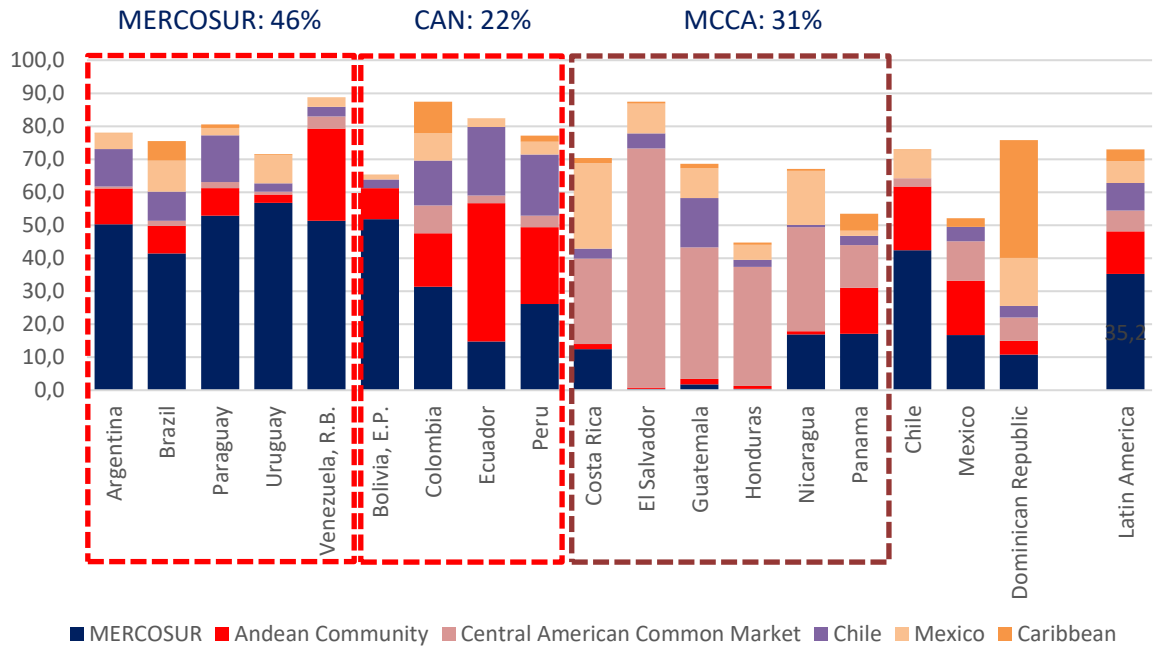


Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

When only considering Latin America as final destination of exports in 2011 in the analysis, we can see that for example, for the countries belonging to MERCOSUR, 77% of the domestically value added that is exported to the region (Latin America and the Caribbean), the majority is exported to MERCOSUR itself, making up for 46% of the exported domestically value added. Similarly, in case of the Andean Community and the Common Market of Central America, 22% and 31%, respectively, of the total intra-regionally value added remain in the respective sub-regions.

In the case of Chile, its exported value added in the region is mainly targeted at MERCOSUR and the Andean Community. In Central America, an important intra-regional linkage between the countries of this sub-region can be observed, whereby especially the productive integration of the countries belonging to the Northern Trade Triangle (El Salvador, Guatemala and Honduras) stand out. In these countries, the domestically aggregated value for every country exported to the sub-regional market exceeds the regional average (31%).

Figure 4
Latin America: Domestically Value Added Included in Exports With Destination Latin America by Sub-region, 2011
(In percent of the total)



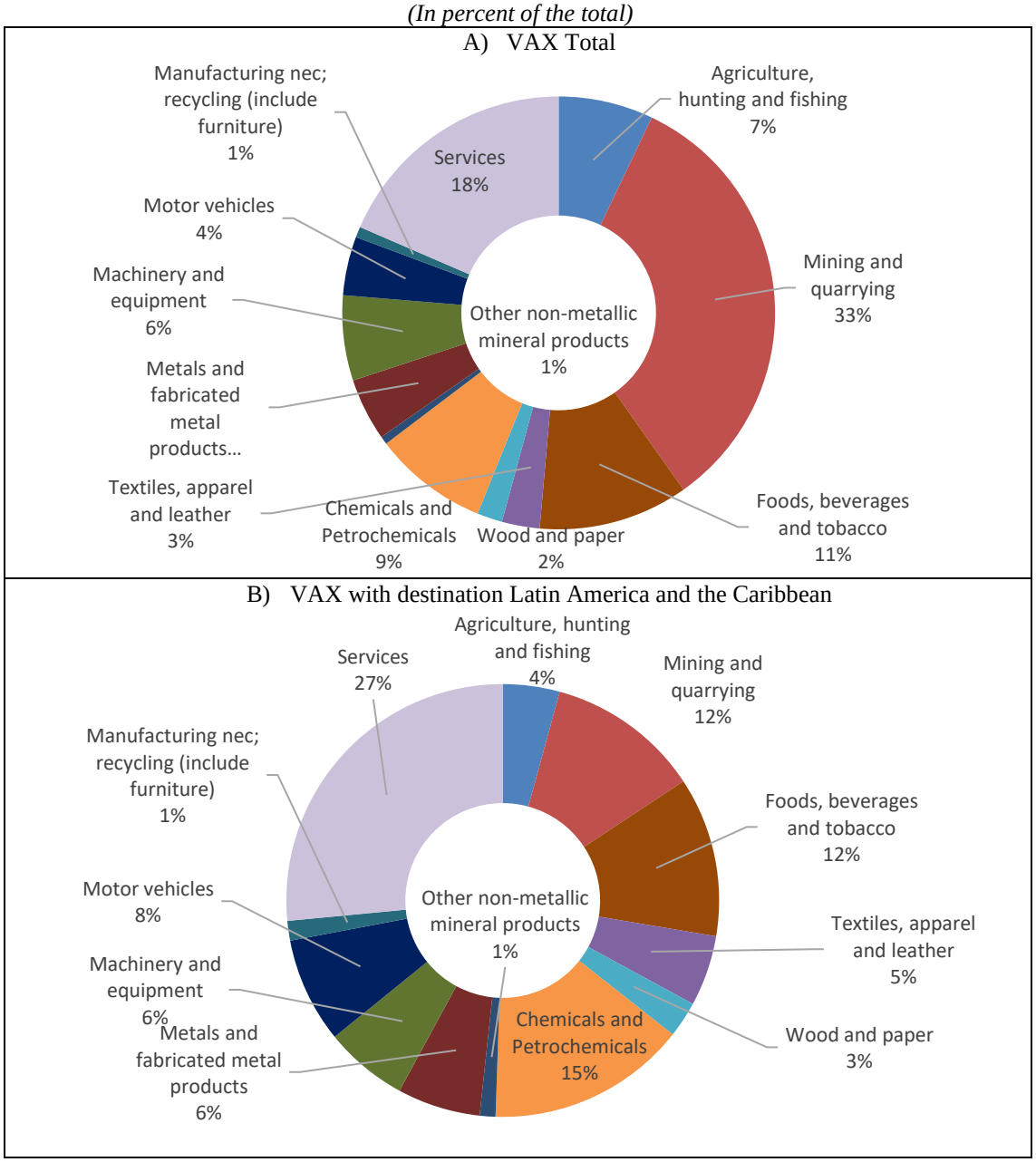
Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

With the methodology explained previously, it is possible to carry out such analyses and empirical evidence on what has been investigated in previous studies may be obtained. But for sure this method makes it possible to identify the linkages between trade and value added.

At the level of large sectors, the total exported value added in Latin America is primarily made up of mining and quarrying as well as services. Both sectors represent a bit more than 50% of the total. Among the remaining sectors, the food, beverage and tobacco sector represents 11% of the domestically value added exported. These sectors are followed by the chemical and petrochemical industry (9%), agriculture, fishing and hunting (7%) and machinery and equipment (6%). The remaining manufacturing sectors have a weight of less than 5% (see Figure 5a).

If we compare the composition of the total value added with the composition of the intra-regionally value added, it can be observed that a minor proportion of the sectors are made up of primary sectors. For example, agriculture, fishing and hunting represent less than 4% of the total, while petrol and mining reach 12%. In contrast, services (27%) and other manufacturing sectors have a relatively large share, whereby especially the chemical and petrochemical industry (15%) stacks out, underlining the importance of these sectors. Similarly, products belonging to the agro-industrial sector (12%) and the automobile industry take a relatively large share (see Figure 5).

Figure 5
Latin America: Composition of the Exported Value Added (VAX) Included in the Total and Intra-regional Exports, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

The previous analysis confirms one of the characteristics of intra-regional trade, being primarily made up of manufacturing, while the composition of the extra-regional trade is dominated by primary products. Durán and Lo Turco (2019) investigated the composition of trade in relation to the technological intensity and observed that between 2005-2008 on average, 80% of the intra-regional trade flows refer to industrialized products with a high degree of elaboration and increased diversification.

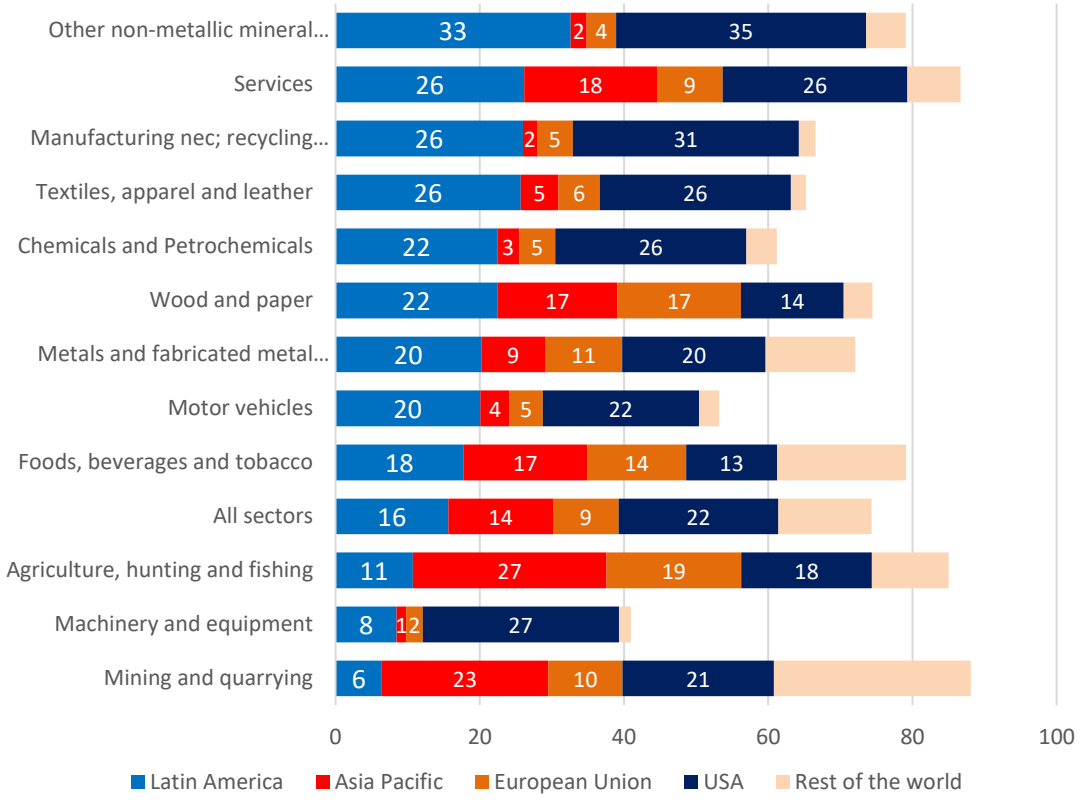
Previously, Durán and Zaclicever (2013) conducted a study on the pattern of intra-regional trade and identified that there exist more intra-industrial trade relations in bilateral commerce between member countries of the schemes of integration than in bilateral commerce between third parties outside the region (Mexico, United States, Asia-

Pacific and the European Union). The only countries that do not belong to this pattern are Mexico and Costa Rica, for which between 2011-2012 the intra-industrial trade relation with the United States appeared more important, especially for medium-sized and minor technological devices. Furthermore, the automotive and electronic industries stand out, in this respect, together with machineries and also products of the category medical devices dominated the bilateral commerce between Costa Rica and the United States (ECLAC, 2013).

Moreover, Zaclicever (2017) investigated the regional trade and its participation in regional and global value chains, using the input-output matrix on the base of trade in value added, provided by the Organization of Economic Development and Co-Operation (OECD) for six countries (Argentina, Brazil, Chile, Costa Rica, Mexico and Peru).

In order to further deepen this evidence at the regional level, the exported value added in Latin America can be decomposed at the level of major sectors according to principal destinations. From the decomposition it can be derived that, on average, the manufacturing sectors and the exports of services have a major effect on the value added designated for intra-regional circuits. On the other hand, value added in products to be exported to extra-regional destinations usually belong to the following sectors: Food, beverage and tobacco, wood and paper, textiles, clothing and leather (see Figure 6).

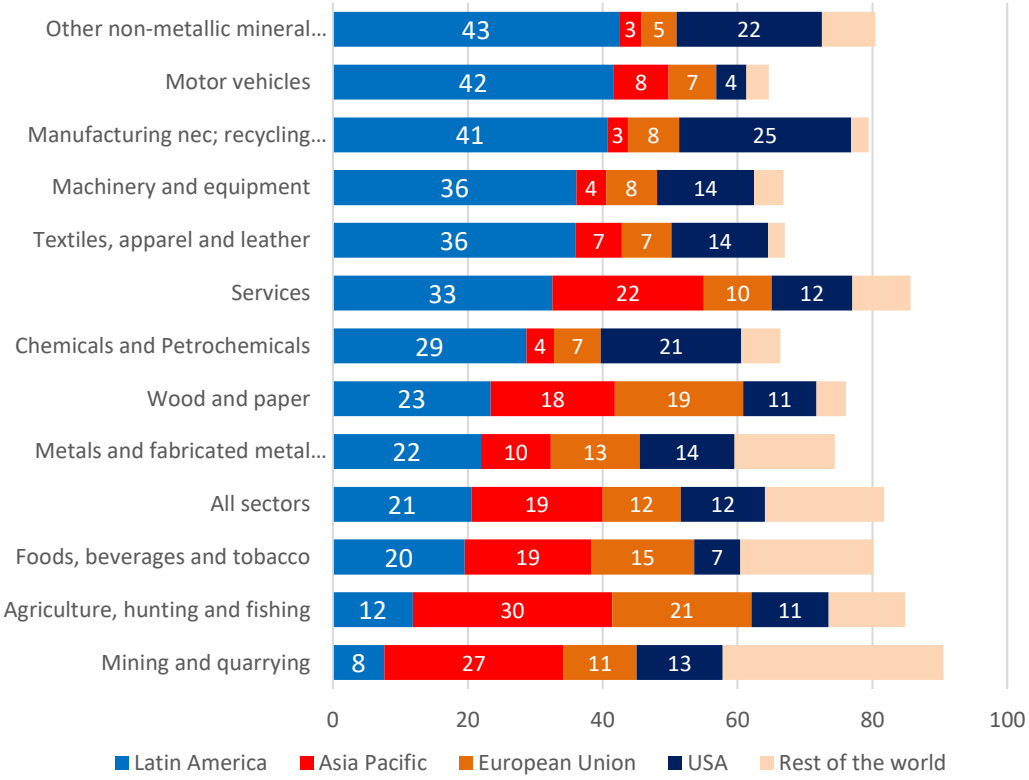
Figure 6
Latin America (including Mexico): Decomposition of the Exported Value Added Included in the Total Exports by Sector and Prime Destination, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

The previously discussed analysis regarding the decomposition of exported value added by destination for the entire region can be repeated under the exclusion of Mexico. In this case, it can be derived, that the degree of intensity of the value added designated to the intra-regional market is roughly twice as high as exported value added designated to the United States and the European Union as well as to other extra-regional destinations, whereby especially manufacturing products are elevated (see Figure 7).

Figure 7
Latin America (excluding Mexico): Decomposition of the Exported Value Added Included in the Total Exports by Sector and Prime Destination, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

When ECLAC (2018) analyzed the exports of minerals and metals from Latin America, it became clear that 72% of the raw materials belonging to the category minerals and metals are exported to Asia-Pacific, whereby China accounts for more than half of the exports. Similarly, a major proportion of agricultural raw materials is exported to Asia-Pacific (ECLAC, 2017b). When investigating the value added of the exports of the region at hand, using the input-output methodology shows that, when considering in particular the linkage with Asia-Pacific, the majority of the value added exported has its origin in the primary sector, especially agriculture, fishing and hunting and petrol and mining. In both of these sectors, Asia-Pacific represents the destination for 30% and 27% of the total value added exported, respectively. Another sector, which also takes a large share of exported value added to Asia-Pacific, is the service sector[3] (see Figure 6 and 7). These results draw attention to the rising specialization of Latin America and the Caribbean,

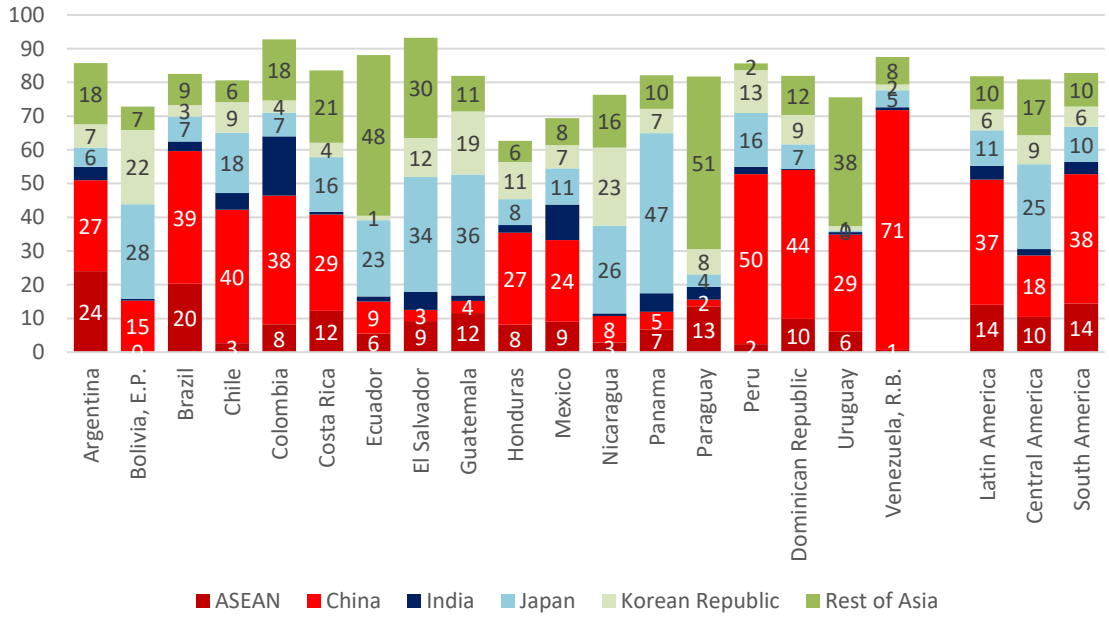
[3] Within the category of traded services, the categories incorporating a high value added designated to Asia-Pacific are transport, finance, business services, among others. In all cases, primary sectors represent a kind of impulse for these services exporting.

above all of South America as provider of a range of primary commodities like agricultural and farming as well as mining and metal commodities. In the first group of commodities are products such as: Soy protein, cane sugar, unroasted coffee, crude vegetable oils, maize, wheat, shrimps, beef and pork, can be found. In case of the second group, minerals and metals, the following goods among others are included: Bauxite, lithium carbonate, copper, tin, iron minerals, molybdenum, nickel, gold, silver, zinc and other non-metallic minerals.

A more profound analysis of the bilateral ties between Latin America and Asia-Pacific considering the major players of the region reveals that, on average, at least 82% of the total exports correspond to Latin American value added. This basically implies that for every 10 Dollars exported to Asia-Pacific, 8 Dollars represent nationally value added and 2 Dollars stand for imported value added.

In 11 of the 18 countries in the region, China is the main buyer of Latin American value added in Asia, followed by Japan, the Korean Republic or the members of the Association of Southeast Asian Countries (ASEAN) (see Figure 8). Also note that there exists a group of small countries, which export a major portion of their domestically value added to Japan (Bolivia, El Salvador, Guatemala, Nicaragua and Panama). As a considerable proportion of valued added exported by these countries leads to conclude that Central America is rather linked to Japan than to China. A similar observation can be made for the countries Ecuador, Paraguay and Uruguay, for whom exporting destinations in Asia other than China are of greater importance (grouped under rest of Asia) (see Figure 8).

Figure 8
Latin America (18): Domestically Value Added Included in Exports With Destination Asia-Pacific by Prime Trading Partner, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

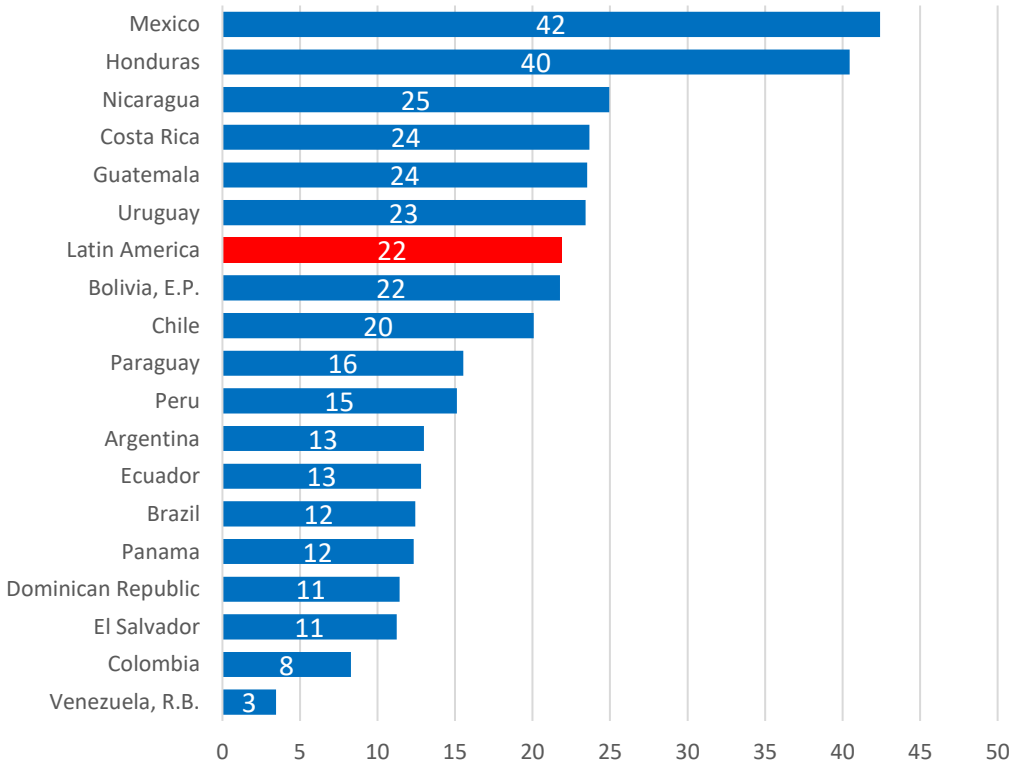
Regarding the analysis of the amount of domestically value added included in exports, an alternative method is to elaborate on the share of imported products and services among

exports. This would allow to identify an indicator that measures the degree of productive integration of every country in relation to its total exports or in its shortcomings with a given trading partner. The higher the value of the indicator, the better a given country's or region's value chains are linked. Using the measure of origin of the intermediate inputs allows us to identify the region and or country with which a profound integration exists by decomposing the index by the principal destinations.

Between the countries of the region, Mexico is the country with the most profound integration with the rest of the world, as 42% of its inputs are imported, which means in relative terms two times of what the entire region imports as inputs. Mexico is followed by four Central American countries (Honduras, Nicaragua, Costa Rica and Guatemala). The countries with minor average vertical integration are Venezuela and Colombia (see Figure 9).

The main reason for the large share of imported inputs in the Mexican economy can be traced back to its major integration in the international economy, especially with respect to productive activities which consist of assembling final goods that incorporate only a minor proportion of domestically value added. Among others, Mexican sectors with a major external dependency are: Telecommunication equipment (80%), office equipment (77%), electronic devices (64%), medical equipment (62%) and motorized vehicles (56%).

Figure 9
Latin America (18): Intermediate Inputs Included in the Total Exports, 2011
(In percent of the total)

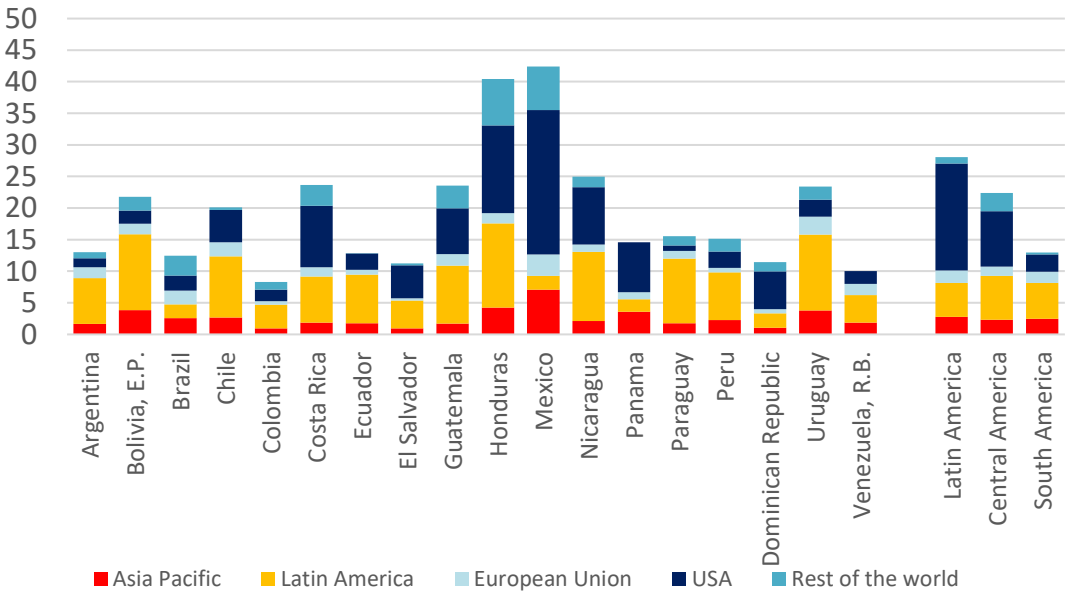


Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

The decomposition of the imported content by origin of its inputs sheds lights on the relative importance of intra-regional inputs as source of productive integration in Latin America and the Caribbean, as for 12 of the 18 countries for which information was

available, the intensity of the intra-regional intermediate inputs exceeded the requirement of inputs from other regions. Only in the case of six countries the share of intermediate inputs from other destinations exceeded the share of intra-regional inputs. For Costa Rica, Honduras, Mexico, Panama and the Dominican Republic, the amount of intermediate inputs from the United States exceeded the amount of intra-regional intermediate inputs. It is also interesting to note that Brazil consumes more intermediate inputs from Asia-Pacific than from its own region (see Figure 10).

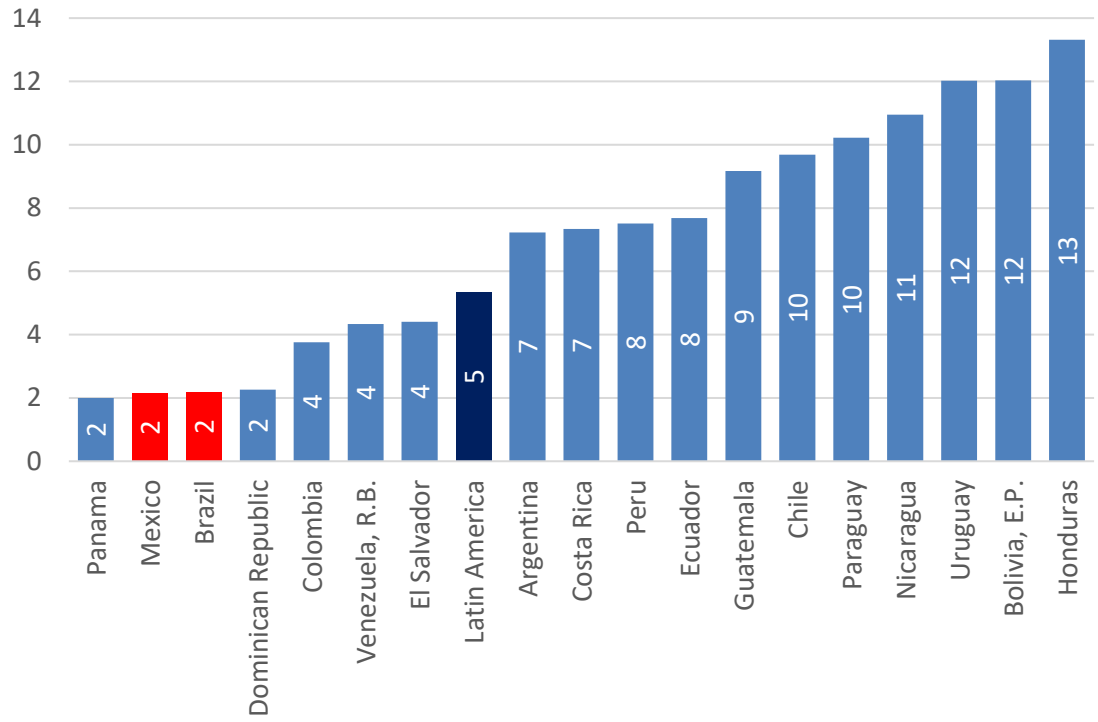
Figure 10
Latin America (18): Intermediate Inputs Included in the Total Exports by Geographic Region, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

In order to measure the degree of intensity of the productive integration within Latin America and the Caribbean, the amount of imported inputs as share of intra-regional exports were computed. This represents the relative weight of imported Latin American inputs in the intra-Latin American exports. The result is fairly surprising as it shows that the largest countries in the region, namely Brazil, Mexico, together with Panama reflect a relatively low level of integration in the region, taking a share of less than 2% for intra-regional intermediate inputs. On the other hand, for small and medium-sized countries the inputs with an intra-regional origin are more important (see Figure 11).

Figure 11
Latin America (18): Intermediate Inputs with Latin American Origin Included in the Intra-regional Exports, 2011
(In percent of the total)



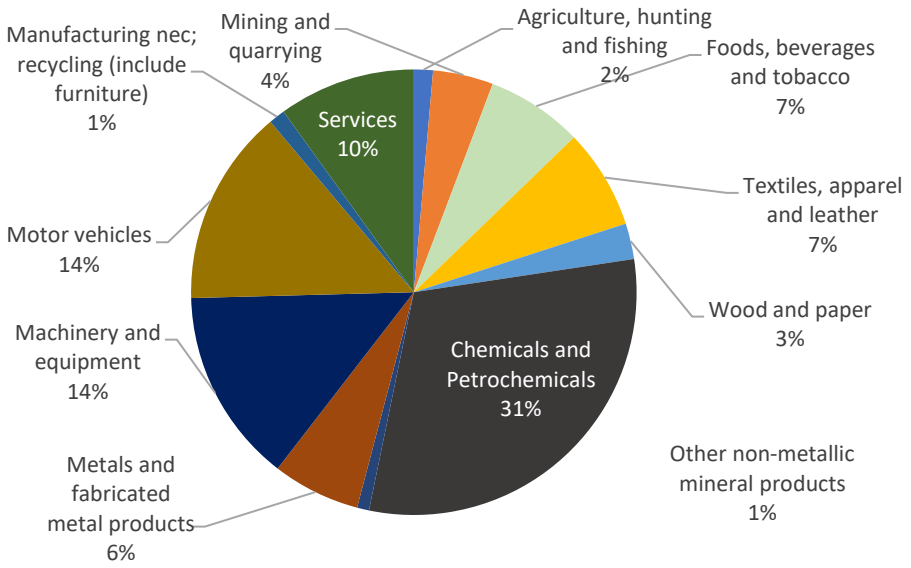
Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

When overlapping the sectorial composition of the required regional intermediate inputs entering the production to be re-exported to the world with the composition of intermediate inputs in intra-regional exports, it can be observed that there is a larger share of services, chemicals and petrochemicals, food, beverages and tobacco and motor vehicles among the intra-regional imports to the region than for intermediate inputs imported from outside the region designated for the region. As for the latter, sectors that account for a large share of the total intermediate inputs (almost 70%) are related to heavy manufacturing, predominantly in the chemical and petrochemical industry, vehicles and parts, machinery and equipment (see Figure 12).

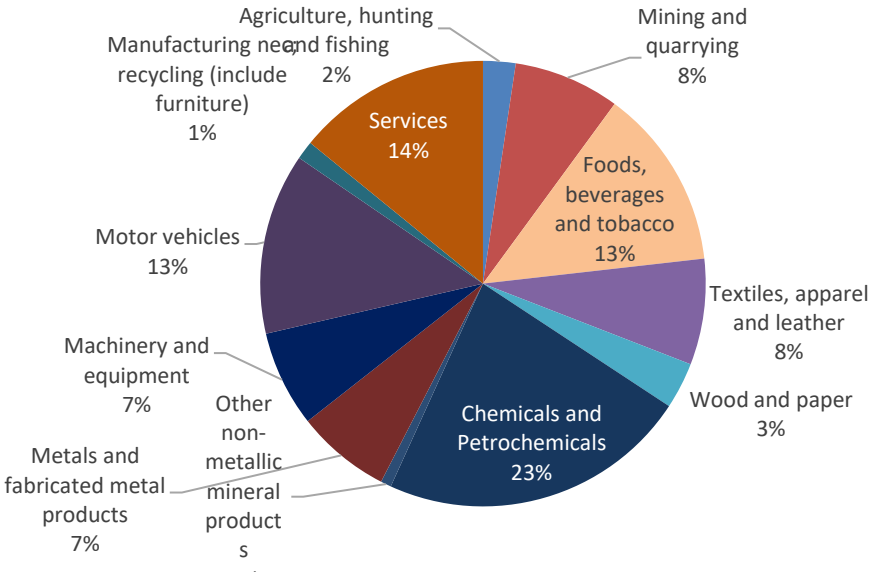
This result shows that especially the heavy manufacturing sector has a major potential for a productive integration at the regional level, as the sector offers the opportunity to use the advantage of being able to use required inputs for the production that are not provided by the region. It goes without saying that this is not an automatic process, but a process that requires to be directed with the help of certain impulses and important trade linkages and investments, which reinforce the productive ties between large countries with the remaining neighboring countries. In this process, there are two main players: Brazil and Mexico. The evidence shows that these two countries are not very well integrated within the region, but rather within the world. To be more precise, they are primarily integrated within the United States and Asia-Pacific.

Figure 12
Latin America: Sectorial Structure of the Imports of Inputs Imported Extra- and Intra-regionally As Share of Intra-regional Exports, 2011
(In percent of the total)

C) Contenido importado Extrarregional (US$ 40 014)



D) Contenido importado de origen Latinoamericano (US$ 13 550)

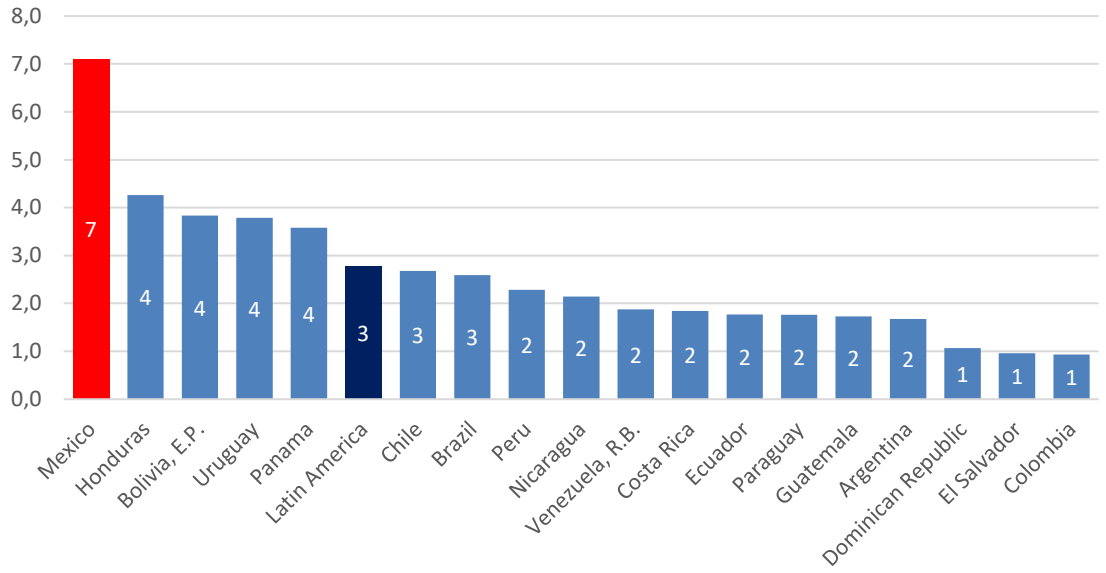


Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

The inter-regional integration between Latin America and Asia-Pacific could be measured through the index of vertical integration of intermediate inputs from Asia incorporated in the exports to Asia-Pacific. Put differently, the products with an Asian origin are returned to their country of origin in the form of new products. Considering the inter-regional integration at the country-level for Latin America shows that Mexico is the country with the most advanced vertical integration within Asia-Pacific. In this respect, inputs exported to Asia-Pacific that return to Mexico are made up of inputs with an Asian

origin rather than from any country of the region. The entire region returns only 3% of the exported total value to Asia-Pacific.

Figure 13
Latin America (18): Intermediate Inputs With Asian Origin Included in the Exports to Asia-Pacific, 2011
(In percent of the total)



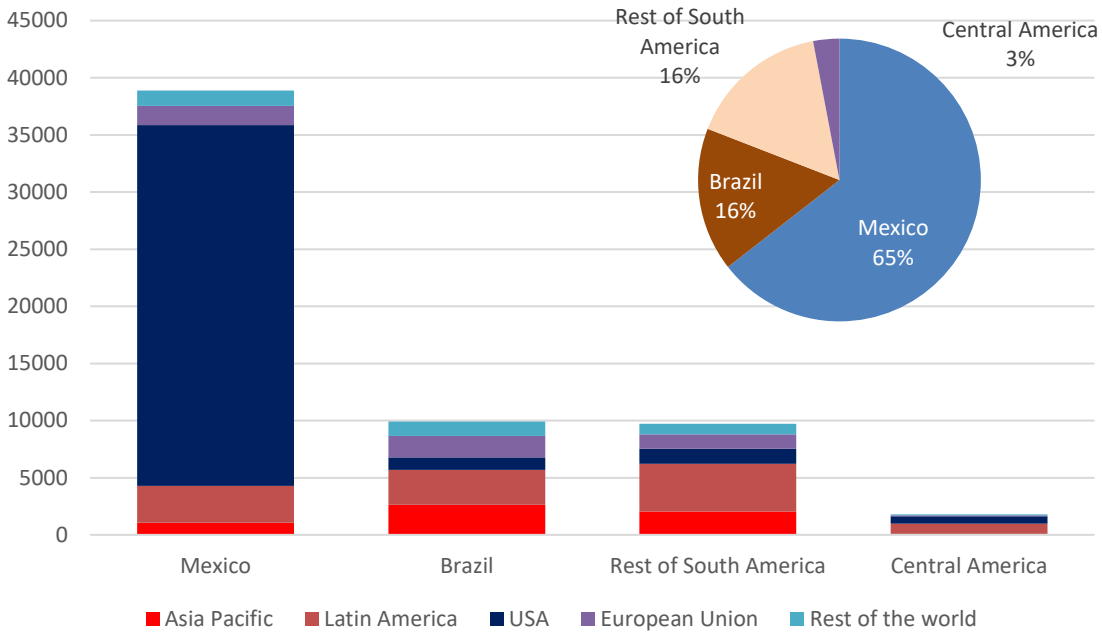
Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

On the other hand, looking at re-exports of Asian products from Mexico to the world exhibits that even though Mexico is located relatively far away from Asia, it re-exports products from Asia-Pacific, mainly to the United States and to its own region. The amount of Asian re-exported products passing through Mexico reaches USD 38,900 million. This is four times of the amount that is re-exported to Brazil or to any other South American country with the same origin. Generally, the links between Central America and Asia-Pacific appear thin as implied by the reduced amount of exports returning to the beforementioned region (see Figure 14).

What is interesting is that even though Colombia, Chile and Peru have important trade relations with Asia-Pacific countries, they maintain minor backward productive ties with Asia-Pacific. The ties are rather limited to one direction and are related to the exports of their primary products such as agricultural products or minerals as mentioned before. In this respect, China appears as the main destination in this sub-region.

Among the Central American countries, the ties to Asia-Pacific are even thinner, as the destination of the exported value added is primarily the own sub-region Central America and also the United States. For their domestic exports intermediate inputs from Latin America and the United States are used (see Figure 3 and 10).

Figure 14
Latin America (18): Intermediate Inputs of Asian Origin Included in the Total Exports by Destination, 2011
(In percent of the total)



Source: Author, based on the input-output-matrix of Latin America set up by ECLAC.

Basically, these are the main results regarding the productive integration of Latin America and the bi-regional integration between Latin America and Asia-Pacific.

The main conclusion does not largely differ from what we already know from analyzing gross trade flows. It may be said that it is more robust and vigorous in confirming that the vague intra-industrial relation between the countries of Latin America and of Asia-Pacific are sustained. The value chains are relatively scarce even though they seem to have great potential.

The question that arises now is the following: What could be done to promote value chains and the productive integration in a region, which clearly remains to be dependent on natural resources and where a link with Asia-Pacific seems that clear with regard to these products?

In this case we are talking about iron, soy and a range of primary products, which could certainly become part of a value chain. This would represent a value chain into one direction with products of a low aggregated value and one that only few countries would consider as an opportunity.

Clearly, in order to be able to increase the productive integration between both regions, it is crucial to overcome the regional deficits related to infrastructure and to resolve difficulties in transport, telecommunication and energy. All these areas have to be urgently improved in the region. In this respect, the region invests only about 3% of its GDP to boost digital technology and in some of the countries this investment is even lower.

In terms of investments in infrastructure, in the past years less than 2% have been invested in the region. In our general report, we indicated that for the region to be able to overcome its infrastructural gap, an investment of more than 6% per year would be required. Put differently, at least 4 additional percentage points had to be invested. Another pending topic to be addressed is to tackle regulatory issues. It would be necessary to set up networks of inter-regional providers. And, in order to achieve this, mechanisms to foster harmonization are urgently needed. For example, technical, sanitarian as well as phytosanitary norms are needed besides advancing in regulatory convergence.

As suggested by the Pacific Alliance for example, it seems highly beneficial to use the regional aggregation of the origin. Additionally, it is vital that countries make progress in facilitating trade. For example, identifying unique windows as unique authorized operator and later on, politics that comprise more than one country. This calls for joint programs that aim at supporting the internationalization of small and medium-sized companies. In this respect, the use of digital environments is one of the keys here because it clearly represents a mechanism for companies to establish themselves internationally, reaching new markets. While the region accounts for less than 1% in the global market for e-commerce, Asia-Pacific holds a share of more than 50%. Consequently, there clearly is a need for the region to catch up in this respect.

As kind of general conclusion: At the regional level there is a need for leadership among the large countries in the region to encourage networks of production in Latin America. Brazil and Mexico should be countries in charge of this leadership position. We have seen that the productive links of both countries are until now deficient. The share of imports of intermediate inputs used in industrial exports barely reaches 2%, while the imports of intermediate inputs from Asia-Pacific exceed 25% or 30%, depending on the country.
Finally, the public policies should be directed in the first place to provide incentives to encourage productive integration rather than only promoting trade relations. It would be necessary to focus on trade relations that add value and that represent complements for the countries.

The largest countries in the region should continue in the process of promoting their productive integration in East Asia. Here I have shown you some elements linked to what has kept us busy in this Fourth Academic Seminar Latin America – Asia-Pacific: Promote intra-regional productive investments; support developing regional infrastructure; and, as we have said this morning, increase the connectivity by using digital media in order to strengthen above all the facilitation of trade.

To point out again the necessity of normative convergence among the use of digital payments, ensuring the security and improved logistics as well as a facilitation of trade, remain important points to be addressed. Fortunately, there exist a range of initiatives in the region, where progress can be seen, for example, in the customs union between Guatemala and Honduras. The two countries hold a customs union which is more profound than any other in Central America. Guatemala and Honduras aim at facilitating trade in a way that permits goods to pass through the boarder in a more agile fashion (ECLAC, 2017a). The truck gets to the boarder and passes without a halt as a QR code is digitally scanned, identifying the truck. As there is already a data transfer established between the customs offices, the truck can pass without any major controls. El Salvador is about to join this customs union and expects to reduce the traffic of goods between the three countries, which will generate increased trade flows.

After all, the topic of trade facilitation and the promotion of a digital market in the Pacific Alliance are topics that will demand reinforcement. In MERCOSUR also exists a working group pushing the digital market forward, while the ALADI promotes the use of digital certification in the intra-regional trade.

In conclusion, there is a necessity to promote the productive integration in the light of adequate information, which illustrates the requirements and the sectors, where such policies may be implemented. I have already presented a powerful tool, the input-output matrix, which allows the identification of such sectors in order to effectively design public policies based on a stable information base. From the side of ECLAC, we will continue to promote this process.

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