Nearshoring of US manufacturing corporates' supply chains: exploring administrative and economic issues for their potential expansion across the Americas

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Abstract

This article explores the main issues in relation to the current trend towards the deglobalization of supply chains. Specifically, it investigates the nearshoring from China of manufacture activities, mostly intermediate industrial goods, by US corporates, and how the Americas can best take advantage of this trend. This relocation into the region represents an important opportunity to speed up its economic development. For this purpose, the regional economic and administrative readiness for this trend will be explored based on the CAGE model proposed by Ghemawat (2007) to identify key areas for further improvements to enhance the regional nearshoring potential.

Keywords: Nearshoring – CAGE model – manufacturing industry – special economic zones – Americas.

JEL Classification: F10, F23, F55, F63, O14, O51, O54.

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Resumen

Este artículo explora los temas principales en relación con la tendencia actual hacia la desglobalización de las cadenas de suministro. En particular, analiza el proceso de *nearshoring* desde China de la manufactura de bienes industriales, principalmente intermedios, por corporaciones norteamericanas y cómo las Américas pueden tomar ventaja de esta tendencia de la mejor manera. Esta reubicación hacia la región representa una importante oportunidad para acelerar su crecimiento económico. Para este propósito, la adecuación económica y administrativa regional a esta tendencia será explorada basada en el modelo CAGE propuesto por Ghemawat (2007) para identificar áreas clave a mejorar con el fin de incrementar el potencial regional para el *nearshoring*.

Palabras claves: Nearshoring – modelo CAGE – industria manufacturera – zonas económicas especiales – las Américas.

Introduction

After the end of the 20th century, different companies worldwide massively procured to outsource several operating activities to third parties in an attempt to control their costs within a context of trade barrier reductions for foreign trade (Varma et al., 2006). This trend led many of them, as outsourcers, to transfer these activities to third parties, known as outsourcees, operating in countries with relatively much lower operating costs, in a process known as "offshore outsourcing". This foster a new trade pattern known as "trade in tasks" that was intended to be easily coordinated through improvements in transport and telecommunication technologies (Elia et al., 2014; Lewin et al., 2009; Manning et

al., 2008). Other companies preferred to keep full ownership of their displaced operations through "captive offshoring" (Gray et al., 2013). Within this trend, China and India emerged as leading destinations for these activities, with specialization trends in manufacturing activities in China and in business support services in India. However, these countries started to lose competitiveness with the rise in the cost of their human resources, lack of legal protection for sensitive issues such as intellectual property, transport and inventory costs, cultural and language barriers as well as coordination problems with outsourcers from Europe and North America due to time differences leading to delays in critical decisions as well as for concerns about excessive concentration of outsourcees in few jurisdictions (Minder, 2008).

In order to cope with what has been deemed as a high reliance on manufacturing suppliers from China, the United States (US) authorities have enacted legislation to bring back manufacturing activities, including a recent proposal for an initiative known as "Back to The Americas", mostly aimed at returning manufacturing activities from China and relocating some of them across the Americas (Cortiñas & Schechter, 2021). This trend represents a promising opportunity for developing countries across the Caribbean and Latin America to create new trade flows through knowledge transfers from North American corporates that are in the quest for outsourcing alternatives at lower costs, high efficiency, lower cultural barriers, shorter physical distances and time differences, in comparison to their traditional offshoring destinations. This is aimed at reducing coordination problems as well as supply chain waiting times and trade disruptions as it was evidenced in 2020 with international transport restrictions due to the COVID-19 pandemic crisis.

Furthermore, a traditional large outsourcing destination such as China has been able to establish entry barriers to players from

other markets willing to enter into the international outsourcing market. These barriers, based on administrative and economic factors, have been achieved through the benefits that the country has accumulated in terms of know-how reflected by the substantial rise in the number of local patent fillings, the settling of large industrial parks, modernization of its ports to improve their logistics for foreign trade as well as the massive training of their labor force. These strengths in China represent important challenges for Caribbean and Latin American countries that lag behind in those areas, with more limited infrastructure, financial and human resources to match the demands of massive nearshoring into the region.

From this perspective, the first section of this article is aimed at identifying different factors that may confer competitiveness to regional exports linked to US supply chains. For this purpose, the framework to assess the nearshoring potential proposed by Ghemawat (2007) under the CAGE (cultural, administrative, geographical, and economic factors) model is used. This model allows to further identify administrative and economic factors that may impact on the regional nearshoring capabilities. Taking this model into consideration, the second section assesses different strategies aimed at improving the regional positioning to take advantage of this new trend in nearshoring manufacturing by US corporates. Finally, conclusions and recommendations are included to remark the key policies that should be considered to foster a competitive nearshoring strategy in the Americas.

Nearshoring as an outsourcing trend

The increasing inclusion of risks in the offshoring decision-making process arises from concerns related to growing complexities facing supply chains in offshoring practices, reputational risks, production quality standards, loss of productive skills and core

capabilities in the outsourcers' home countries, delays in critical decisions due to significant time differences, cultural barriers in communications, larger inventories to save in transport costs, among other factors (Ashby, 2016). Ghemawat (2007) clustered these factors into the CAGE model, as detailed in Table 1, to explain nearshoring decisions.

Table 1. CAGE Model for nearshoring decisions

Factor	Cultural	Administrative	Geographical	Economic
Attributes of distance between outsourcers and outsourcees	- Languages - Religions - Social norms	- Colonial links - Economic unions - Political situation - Institutional weakness	- Physical distance / time zones - Common borders - Sea access - Infrastructure links	- Differences in consumer purchasing power. - Differences in cost/quality of: -Natural resources -Financial resources -Human resources -Infrastructure
Main drivers for the decision	Hidden costs related to language barriers, diverging cultural values, etc.	Corruption, custom tariffs and other trade barriers.	Logistical costs comprising transport, inventories, etc.	Production cost advantages (closer to traditional trade specialization theories by Ricardo and Heckscher-Ohlin).

Source: Ghemawat (2007)

Under the CAGE model, cultural distance includes cross-country differences in languages, religions, and social norms, which involve the costs of understanding communications and the acceptance of social behavioral patterns in the interactions among their nationals. The category of administrative distances correspond to factors such as historical colonial linkages among countries, for which they share common administrative practices as result of the metropole's rule under current or former colonies, shared practices across tied countries through economic unions, the intensity of local political conflicts related to political turmoil, wars and the alike that may affect the normal business operations, the political or ideological affinity between governments favoring mutual business deals between their respective nationals, among others. This may result in different degrees of cross-country perceived corruption as well as trade and investment barriers. Geographical distance category is related to physical distances, time differences, infrastructure linkages and transport connections impacting on logistical costs related to the handling of inventories. Finally, the economic factors, mainly involved in nearshoring decisions, comprise cross-country differences in their factor endowments (labor, natural resources, etc.) impacting on the cost structure of different economic sectors according to their factor intensities.

The factors expressed in the CAGE model are evidenced in the increasing international spread of corporates' supply chains, since their coordination has become more difficult, reducing their flexibility, and increasing waiting times in the production process, whereas demands for closer contacts with customers for their timely assistance contribute to reconsider nearer locations for previously offshored operations (Tate et al., 2014). Mears (2005) observes that companies can best tackle operating problems in their supply chains by sending staff to nearer locations to tighten their control, especially for those activities that are riskier or more sensitive.

Recently, US outsourcers have faced problems with the timely supply from outsourcees in China. Many Chinese outsourcees have decided to prioritize outsourcers from other jurisdictions whose governments keep a friendlier stance towards the current Chinese authorities, delaying orders from US outsourcers. This has been coupled with temporary transport disruptions under the COVID-19 pandemic, which has been handled by the Chinese authorities with highly restrictive measures, including recurrent lockdowns in large cities in a context of rising labor costs in the country (Disis, 2022; Donahue, 2021). The arising combative relationship between US and Chinese authorities is related to claims of US intellectual property misappropriation by Chinese corporates and authorities as well as unfair trade protective practices kept by Chinese authorities with their foreign exchange policies, among other practices leading to a trade war between both countries by raising bilateral trade tariffs among other practices (Laufman et al., 2021). In addition, concerns for a potential war conflict with China over Chinese claims on Taiwan may dissuade US outsourcers in keeping a high reliance on Chinese suppliers. A war scenario may abruptly disrupt trade flows from China and expose those flows to economic sanctions as currently evidenced with Russia after launching an invasion campaign in Ukraine in 2022 (Gabrielsen, 2022).

There is also an increasing concern for reputational risks related to corporate social responsibility policies mostly undertaken by outsourcers based in developed countries. This concern demands a nearer monitoring of outsourcers' operating activities as well as those of their outsourcees to meet growing demands for environmental sustainability, more business transparency and respect for human rights, which are costlier to oversee across more distant providers under jurisdictions with less strict legal controls and higher cultural distances (Kinkel, 2014).

Another area of concern relates to production quality. This can be compromised whenever quality standards differs across countries. In connection with this concern, the transportation of goods from distant locations through countries with weaker quality controls for their handling contributes to increase the incidence of defective items (Gray et al, 2013). A focus on closer engagements with providers for their development, training and monitoring might contribute to improve their quality controls to reduce this incidence (Gualandris et al., 2014).

In addition, the supply flows from distant offshore locations might require the maintenance of larger inventories to reduce the impact of transportation costs and waiting times within supply chains, however, the maintenance of low inventory levels is key to reduce losses related to product obsolesce in a context of increasing disruptive innovations in different economic sectors (Cagliano et al., 2008). From this perspective, nearer locations tend to be favored for the outsourcing of manufacturing activities to reduce transport costs and other handling complexities, taking advantage of more available distribution channels by air, land and sea with the outsourcer's country. In the case of services such as accounting, data entry, telemarketing, among others that can be delivered through telecommunication channels, they might be more feasible to be provided from more distant places since their transport costs, mostly through Internet, are relatively much lower, reducing their attractiveness for nearshoring (Salvador & Rungtusanatham, 2002).

The significant time differences between outsourcers and outsourcees might further expose outsourcers to delays in the implementation of critical time sensitive decisions to face increasing changes in their business context (Fratocchi et al., 2014). As an example, the COVID-19 pandemic crisis in 2020 took many corporates by surprise when different governments around the

world decided to lockdown their countries, causing transport disruptions in supply chains as well as in business travels in general, exposing outsourcers to large losses related to business interruption risks (Kearney, 2021). Furthermore, the massive offshoring over recent years has led to losses of human resources' productive skills in outsourcers' home countries, weakening their local know-how development (Martinez-Mora & Merino, 2014). This fact becomes an important political issue in the affected countries, as many local politicians claim that losses of these skills make their countries more dependent and vulnerable to other competing countries, generating significant local job losses that might encourage civil unrest.

In general, outsourcers prefer to be engaged with suppliers from low-risk countries for the provision of core activities or high-skill services that are more intensive in high-skilled human resources under better legal systems to protect intellectual property in comparison to low-skill activities for which the procurement of low labor costs is a key competitive factor (Dekkers, 2010; Dunning, 1998; Minder, 2008). Under this paradigm, Grossman and Rossi-Hansberg (2006) consider that the offshore outsourcing process is leading to a new pattern of foreign trade specialization in tasks rather than in goods and services.

Considering the shorter geographical distance and the relative closer cultural affinity between the US and countries across the Americas in terms of language and religion in comparison to more distant locations in Asia, it is important to explore how the administrative and economic factors under the CAGE model have been key determinants for the higher competitiveness of China. Hence, how this resulted in China as a preferred offshoring manufacturing destination for US corporates and how the Americas can explore these factors to improve their positioning

to attract nearshoring manufacturing opportunities from China (Towards Data Science, 2020).

The Latin American administrative and economic outlook for nearshoring manufacturing

Administrative factors

The region can exploit its capabilities to attract nearshoring manufacturing opportunities for the provision of intermediate goods for US corporate through two strategies previously identified. First, through exports by independent local outsourcees of items such as the ones stated in Annex I, and second, through captive offshoring by US corporates. The suitability of each country for these strategies relies on policies enacted to protect foreign investments as well as to encourage local exports.

As per the promotion of local exports by independent local outsourcers, the main aspects to consider involve the existence of preferential trade agreements with the US. Other relevant factors include trade finance facilities and policies in the US and in the exporting country to encourage trade flows related to nearshoring decisions in the region by US corporates. For the attraction of foreign investment into the region from the US to exploit a captive offshoring strategy, it is important to overview legal factors. Among these factor it becomes relevant the existence of bilateral or multilateral investment protection agreements with the US and the tax treatment of these investments, through agreements to avoid double taxation and other aspects related to their tax burden, the relative bureaucratic easiness to start and run businesses in each country as well as political risk insurance availability to cover investment engagements in those countries. To illustrate this point, Table 2, below, shows different administrative incentives for nearshoring opportunities of US corporates in the Americas.

Table 2. List of different administrative incentives to promote nearshoring opportunities by US corporates across different jurisdictions in the Americas.

Country	Bilateral Treaty with the US	Multilateral Treaty with the US	Double Taxation Treaty with the US	Ease of Doing Business World rank (2020)	Insurance Coverage by the DFC
Anguila	-	-	-	-	-
Antigua and Barbuda	-	CARICOM TIFA	-	113	-
Argentina	In force and TIFA	-	-	126	Available
Aruba	In force	-	-		-
Bahamas	-	CARICOM TIFA	-	119	-
Barbados	-	CARICOM TIFA	In force	128	-
Belize	-	CARICOM TIFA	-	135	Available
Bermuda	-	-	In force (only for the insurance sector)	-	-
Bolivia	-	-	-	150	-
Brazil	In force (ATEC)	-	-	124	-
British Virgin Islands	-	-	-	-	-
Canada	-	USMCA	In force	23	-
Caribbean Netherlands	In force (Bonaire, Saint Eustatius, Saba)	-	-	-	-

Cayman Islands	-	-	-	-	-
Chile	In force (FTA)	-	-	59	-
Colombia	In force (TPA)	-	-	67	Available
Costa Rica	-	CACM	-	74	Available
Cuba	-	-	-	-	-
Curacao	In force	-	-	-	-
Dominica	-	CARICOM TIFA	-	111	Available
Dominican Republic	-	-	-	115	Available
Ecuador	-	-	-	129	Available
El Salvador	-	CACM	-	91	Available
Falkland Islands	-	-	-	-	-
French Guiana	In force	-	-	-	-
Greenland	-	-	-	-	-
Grenada	In force	CARICOM TIFA	-	146	Available
Guadeloupe	In force	-	-	-	-
Guatemala	-	CACM	-	96	Available
Guyana	-	CARICOM TIFA	-	134	Available
Haiti	-	CARICOM TIFA	-	179	Available
Honduras	In force	CACM	-	133	Available
Jamaica	In force	CARICOM TIFA	In force	71	Available
Martinique	In force	-	-	-	-
Mexico	-	USMCA	In force	60	Available
Montserrat	-	CARICOM TIFA	-	-	-

Nicaragua	-	CACM	-	142	Available
Panama	In force and FTA	-	-	86	-
Paraguay	-	-	-	125	Available
Peru	FTA	-	-	76	Available
Puerto Rico	-	-	US low taxation	65	-
Saint Barthelemy	-	-	-	-	-
Saint Kitts and Nevis	-	CARICOM TIFA	-	139	-
Saint Lucia	-	CARICOM TIFA	-	93	Available
Saint Martin	-	-	-	-	-
Saint Pierre et Miquelon	-	-	-	-	-
Saint Vincent and the Grenadines	-	CARICOM TIFA	-	130	Available
Sint Marteen	In force	-	-	-	-
Suriname		CARICOM TIFA	-	162	Available
Trinidad and Tobago	In force	CARICOM TIFA	-	105	-
Turks and Caicos	-	-	-	-	-
US Virgin Islands	-	-	-	-	-
Uruguay	BIT In force and TIFA	-	-	101	-
Venezuela	-	-	In force	188	-

Source: IRS (2021), UNCTAD (2021), The World Bank (2020).

On the one hand, regarding the protection of US investment in the Americas, these investments can be protected under different bilateral and multilateral investment agreements subscribed by these countries, with the exception of the cases of Bolivia, Cuba, Dominican Republic, Paraguay, and Venezuela. For those territories in the region that remain controlled by European countries (such as France, Denmark, The Netherlands and the United Kingdom), investment protection is granted under provisions included in different Friendship, Navigation and Commerce Treaties with the US (Chang and Boos' Canada – US Immigration Law Center, 2021). On the other hand, with respect to the conditions to conduct businesses, most jurisdictions in the region should improve their conditions to ease the incorporation of new businesses and remain competitive for them. This suggestion is raised after observing that only nine countries (Canada, Chile, Colombia, Costa Rica, Panama, Mexico, Panama, Peru, and Puerto Rico) in the region are placed in the first half of 190 assessed countries in the World Bank's Ease of Doing Business rankings.

In relation to treaties to avoid double taxation, few jurisdictions across the Americas maintain these kinds of treaties with the US. It may be highlighted the cases of Canada and Mexico as the largest regional economies that report this kind of treaty with the US. Even though US investments across the Americas are covered against political risks such as confiscation, expropriation and other property depriving measures under different treaties and political risk insurance programs such the ones run by the U.S. International Development Finance Corporation (DFC), there is a relatively low number of treaties to avoid double taxation on profits and other rent distributions, raising the tax burden in a context of increasing use of arm's length transaction pricing

between related parties, decreasing the attractiveness of captive nearshoring under the current regional tax context[1].

A further incentive for foreign direct investments into the Americas for nearshoring purposes consists in the promotion of Special Economic Zones (SEZs) and Free Points providing total or partial tax and duty waivers for companies that establish operations in some jurisdictions. These zones can be aimed at promoting exports and substituting imports and are fostered by around 30 American nations and territories, generating more than one million direct jobs by approximately 10,200 companies. Table 3 shows the distribution of SEZs and Free Points in the Americas.

Table 3. Special economic zones and free points in the Americas, 2018

Country	SEZs by law	SEZs in process	SEZs by functionality				Free Points	SEZs in plans
			Logistics	Multi-function	Specia-lized	Inno-vation Driven		
Antigua and Barbuda	2	1	0	1	1	0	..	..
Argen-tina	14	..	12	1	0	1	0	..
Aruba	2	1	0	2	0	0	..	..
Bahamas	6	0	1	0	5	0	..	..
Barbados	0	0	0	0	0	0	..	0
Belize	4	..	1	3	0	0	..	..
Bolivia	7	..	0	7	0	0	0	..
Brazil	32	6	1	25	6	0	0	..
Cayman Islands	6	..	0	0	6	0	0	..
Chile	4	1	2	2	0	0	0	..

1 Insurance coverage available with priority for low and lower-middle income countries and may consider specific projects in upper-middle countries. In all cases, these countries are not subject to economic sanctions by the US government.

Colombia	39	2	1	36	2	0	72	..
Costa Rica	49	..	0	47	1	1	82	..
Cuba	1	..	0	1	0	0	0	..
Curaçao	2	..	1	1	0	0	0	..
Dominica	..	..	..	..	..	..	..	..
Dominican Republic	73	..	0	52	21	0	144	..
Ecuador	12	3	2	6	3	1	0	..
El Salvador	17	..	0	16	1	0	0	..
Grenada	0	0	0	0	0	0	..	..
Guatemala	18	1	0	18	0	0	1 396	..
Guyana	0	0	..	..	..	..	..	1
Haiti	13	6	0	9	4	0	0	2
Honduras	39	..	0	39	0	0	0	..
Jamaica	17	6	0	17	0	0	38	3
Mexico	17	..	12	5	0	0	6 188	3
Nicaragua	52	..	0	51	1	0	0	..
Panama	15	..	0	13	1	1	0	5
Paraguay	2	..	0	2	0	0	108	..
Peru	4	..	0	4	0	0	0	3
Saint Kitts and Nevis	..	..	..	..	..	..	..	..
Saint Lucia	1	..	0	1	0	0	2	..
Saint Vincent and the Grenadines	0	0	0	0	0	0	..	..
Suriname	..	..	..	..	..	..	..	..

Trinidad and Tobago	1	..	0	0	1	0	17	..
Uruguay	23	..	8	7	6	2	0	6
Venezuela, Bolivarian Republic of	14	1	2	9	3	0	0	1

Source: UNCTAD (2019).

The setting of SEZs can be used as an initial step to liberalize economic activities in countries with weak governance where the launching of economic reforms covering whole countries might be difficult. The number of SEZs in Latin America and the Caribbean has grown over the last years, reaching 486 by 2018, but well behind the number reported by other competing offshoring regions such as China, India and South-East Asia with 2,543; 373 and 737 SEZs respectively (UNCTAD, 2019). Most SEZs in Latin America and the Caribbean were initially intended to provide logistics and warehousing, evolving to manufacturing and services as the political and economic conditions of most countries in the region have tended to stabilize. The system of Free Points is relatively more popular in the region in countries such as Colombia, Dominican Republic, Guatemala, and Mexico, which involves the granting of SEZ incentives to companies regardless their geographical location in the country to encourage their operations in many economically depressed areas. By contrast, the model adopted in Asia has been more focused on the clustering of companies in specific geographical areas to take advantage of agglomeration economies by sharing services and resources.

In order to assess a strategy of manufacturing outsourcing with local producers, the US report free trade agreements with 20 countries in the Americas, including agreements with Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador,

Guatemala, Honduras, Mexico, Nicaragua, Panama, and Peru. Other countries that have subscribed preferential trade agreements with the US comprise Australia, Bahrain, Israel, Jordan, Morocco, Oman, Singapore, and South Korea. As it can be evidenced, most agreements subscribed by the US have been with neighboring countries, contributing to diversify nearshoring jurisdictions for US corporations and enhancing their bargaining power with local authorities rather than focusing on a specific jurisdiction at risk of being progressively dependent on any particular local authority. It must be noticed that many preferential trade agreements are not bilateral, but include various trade partners, such as the USMCA (United States, Mexico and Canada Agreement) which include Canada and Mexico, and the CAFTA-DR (Dominican Republic - Central America Free Trade Agreement) that since 2006 established a framework for relations with Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras and Nicaragua. The use of regional agreements may contribute to increase the bargaining power of small countries with the US.

In addition to free trade agreements, most countries in the Americas report special temporary import regimes for those items that are used to be transformed for their further export, providing their re-exporters with duty drawbacks among other incentives. This regime is of key importance for nearshoring decisions related to manufacturing as it contributes to save on custom tariffs and other charges levied on semi-final products within outsourcers' supply chains. US outsourcers can take advantage of this trade incentive for both nearshoring strategies in Antigua and Barbuda, Argentina, Bahamas, Barbados, Brazil, Belize, Bolivia, Canada, Colombia, Costa Rica, Chile, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Saint Kitts and Nevis, Surinam, Trinidad and Tobago, Uruguay, and Venezuela (ITA, 2021).

After this review, the nearshoring with local independent outsourcees, as producers, can be seen as the most competitive nearshoring strategy for US corporates. Under this strategy, outsourcers limit their exposure to potential political and other risks in the region to only trade flows, whereas local outsourcees could take advantage of incentives related to tax and duty drawbacks. At the same time, local outsourcees are expected to be more acknowledgeable of local administrative practices and enjoy easier access to local social capital to protect their trade deals with US outsourcers through lobby practices, among others. Regional economies can improve their bargaining power for their foreign trade frameworks with the US through regional rather bilateral free trade agreements, since regional treaties allow them to gather their economic strengths to ask for the reduction of trade barriers in their exchanges with US partners, improving their perspectives for more export flows to the US arising from nearshoring processes.

Economic factors

For the assessment of the relative competitiveness of different Latin American countries in the trade of intermediate products within US corporates' supply chains, their Revealed Comparative Advantage index (Balassa, 1965) will be used. The RCA is determined considering the trade flow between the US and Latin American countries for the period 2010 – 2019 as expressed in (1) below:

(1)

Where:

$$RCA_{Ai} = \frac{\frac{X_{Ai}}{\sum_{j \in P} X_{Aj}}}{\frac{X_{Wi}}{\sum_{j \in P} X_{Wj}}}$$

P: Set of all intermediate goods *j* considered for nearshoring purposes in country A.
X_{Ai}: Export of intermediate good *i* from country A to the US.
$\sum_{j \in P} X_{Aj}$: Total exports of intermediate goods considered for nearshoring purposes from country A to the US.
X_{Wi}: Export of intermediate good *i* from the rest of the world, W[2], to the US.
$\sum_{j \in P} X_{Wj}$: Total exports of intermediate goods considered for nearshoring purposes from W to the US.

According to this index, a country A has a revealed comparative advantage in product *i* if the ratio of its exports of intermediate good *i* towards the US in relation to its total exports of intermediate goods towards the US is higher than the same ratio for the rest of world, W. In this case $RCA_{Ai} > 1$.

The extent of offshoring practices by the US industry can be more easily identified through imports of intermediate goods rather than final goods, whose level of offshored manufacturing cannot be easily tracked by official statistics (Geishecker, 2006; Cadarso et al., 2008; Michel & Rycx, 2012). Given this limitation, this analysis will be focused on the RCA_{Ai} as reported by exports of these goods towards the US from near countries in the Americas as the target region for nearshoring relocations as goals under the Back to The Americas initiative and currently pursued by development institutions such as the Inter-American Development Bank. After processing official data corresponding to US imports for the period 2010 to 2019 from the Americas, specific competitive exports of manufactured intermediate goods into the US have been identified through their RCA_{Ai} (Table 4).

2 Rest of the world (W): excluding the US.

Table 4. Intermediate manufactured exports to the US from American countries reporting $RCA_{Ai} > 1$ for the period 2010 to 2019

Export	Countries of origin
Automotive tires and tubes	Brazil, Chile, Costa Rica
Bodies and chassis for passenger cars	N.D
Bodies and chassis for trucks and buses	Canada
Engines and machine parts (carburetors, pistons, rings, and valves)	Brazil, Canada, Mexico,
Generators, accessories	Brazil, Mexico, Saint Kitts and Nevis
Marine engines, parts	N.D.
Military aircraft and parts	Canada
Motorcycles and parts	N.D.
Nonfarm tractors and parts	Brazil
Other parts and accessories of vehicles	Canada, Honduras, Mexico, Nicaragua
Parts – civilian aircrafts	Canada
Synthetic rubber – Primary	Argentina, Brazil, Canada

Sources: Author's own elaboration from statistics reported by ITA (2021).

As it is shown in Table 4, 12 intermediate manufactured items have been clearly identified within the import trade flows from the rest of the world to the US. Countries from the Americas revealed comparative advantages in nine out of twelve of these items in their exports towards the US. Only three of these countries report comparative advantages in more than one item, namely, Brazil, Canada and Mexico. Most intermediate items are related to the automotive sector (cars, buses, motorcycles, nonfarm tractors) totaling eight items.

These patterns can be explained, for the cases of Canada and Mexico, since both countries have entered into a regional free trade agreement with the US, easing trade barriers such as tariffs, etc. and have advantages in transport costs to the US due

to their physical proximity. Brazil reports a highly diversified and sophisticated set of exports in comparison to other countries in the Americas according to its Economic Complexity Index (ECI) for 2019, which scored 0.10, being overpassed by Mexico (1.31), Canada (0.69), Costa Rica (0.38), Panama (0.24) and Trinidad & Tobago (0.13)[3]. From these results, Canada emerges as the main competitor for developing countries in the Americas as nearshoring location for US outsourcers of intermediate manufactured goods. By contrast, China did not reveal a permanent comparative advantage in the items stated in Table 4 for 2019, as this country has been transitioning from exports of intermediate goods to final goods, at the same time that the offshoring manufacturing of parts has been progressively migrating from this country.

In order to assess the potential for new nearshoring opportunities in the region, it is also important to identify whether the capabilities employed in the production of current exports can be deployed in the production of new sophisticated intermediate items that are not exported to the US. This measurement can be tracked by exploring the Complexity Outlook Index (COI) as a proxy index to this potential[4]. Table 5 reports the ECI and COI across the Americas.

Table 5. Economic Complexity Index and Complexity Outlook Index for countries in the Americas and China in 2019

Country	ECI world ranking	ECI	COI world ranking	COI
China	16	1.35	43	0.6
Mexico	17	1.31	42	0.6

3 Economic Complexity Index (ECI): is an index that indirectly infers the productive capabilities required to produce its competitive exports. Least complex countries are placed at the bottom of the ECI since these countries export fewer products that are produced in more countries in comparison to more sophisticated exports.

4 Complexity Outlook Index (COI): is an index that quantifies the 'opportunity value' for a country considering the level of complexity of products that are not being produced weighted by how close these products are to the country's current exports in terms of complexity. A higher value for the COI means that current exports are closer to more products as well as to more complex ones.

Canada	36	0.69	12	1.41
Costa Rica	44	0.38	51	0.29
Panama	48	0.24	68	-0.17
Trinidad and Tobago	51	0.13	99	-0.84
Brazil	53	0.1	31	0.85
El Salvador	54	0.09	54	0.17
Colombia	55	0.09	66	-0.07
Uruguay	62	0.01	76	-0.33
Dominican Republic	69	-0.18	75	-0.32
Chile	71	-0.21	77	-0.34
Argentina	73	-0.24	53	0.26
Jamaica	74	-0.24	91	-0.74
Guatemala	79	-0.32	38	0.72
Paraguay	85	-0.45	95	-0.79
Honduras	90	-0.57	74	-0.32
Cuba	94	-0.69	113	-1.1
Peru	100	-0.8	69	-0.23
Bolivia	102	-0.83	101	-0.86
Nicaragua	104	-0.88	89	-0.65
Ecuador	117	-1.11	110	-1.09
Venezuela	128	-1.49	130	-1.28

Source: The Growth Lab and Harvard University (2021).

After reviewing the ECI and COI rankings, most countries in the Americas perform in the second half of 133 assessed countries worldwide, below place 67th for both indexes. As per the ECI, nine countries are included in the first half comprising Mexico, Canada, Costa Rica, Panama, Trinidad & Tobago, Brazil, El Salvador, Colombia, and Uruguay. In relation to the regional potential to produce and export new sophisticated items based on local capabilities, eight countries are reported as promising destinations at the top first half of assessed countries worldwide according to their COI, including Canada, Brazil, Guatemala,

Mexico, Costa Rica, Argentina, El Salvador, and Colombia. For the ECI, countries in the region scored below China, however Mexico reports complexity levels very close to those reported by China, whereas four counties performed better than China in their COI, namely, Brazil, Canada, Mexico, and Guatemala. Based on the complexity of current exports from the top regional countries according to their ECI and COI, several opportunities for new nearby goods to their current export capabilities with the highest likelihood of success in their production are displayed in Annex I[5]. The different items displayed in Annex I require productive capabilities that match the ones used to produce items reported in Table 4, mostly related to the automotive sector such as glasses, paintings, parts of iron or steel, etc., across Latin American countries, such as Argentina, Brazil and Mexico.

A strategic approach for nearshoring in the Americas

The most distinctive approach across the Americas to attract FDI into the manufacturing sector, particularly in Latin America, has been through the promotion of Free Points. By contrast, in China, as well as in other Asian countries, the main strategy to attract FDI for the same purpose has been through SEZs.

The main competitive advantage of SEZs for manufacturing offshoring is focused on the presence of agglomeration economies in these zones, where clusters of enterprises with forward and backward linkages manage to gather pools of suppliers, human resources, social networks, shared infrastructures, reduction in transportation costs, among other elements that contribute to reduce their average costs as explained under the new economic

5 Considering nearby products with a complexity higher than 3 (in the scale of 0 as less complex to 5 as most complex) with a closeness to the use of current productive capabilities equal or higher than 3 (in the scale of 0 as more distant to 5 as less distant).

geography models (Krugman, 1991; Marshall, 1890). However, there are limits for the potential growth within SEZs, including the emergence of environmental externalities and inflationary pressures related to congestion levels in these zones (Grazi et al., 2016). From this perspective, Free Points contribute to dispersion economies by reducing pressures on local resources such as labor and land, leading to relatively lower inflationary levels, easing their competitiveness cost (Polenske, 2005).

Some researchers have also found that industrial concentrations in specific locations, as proposed under the SEZs model, may cause disadvantages to their member firms. This occurs when these companies have to face fast technological changes, especially when these concentrations are sector-specialized, since these specialized firms tend to be excessively information-focused and less exposed to information flows and social capital related to sectors where these changes might emerge. This has been evidenced with the economic decline of places like Detroit in the US, strongly associated with changes in the automobile industry worldwide. These deficiencies may make them less innovative and more resistant to these changes (Glasmeier & Sugiura, 1991; Harrison, 1994).

In order to attract FDI under a nearshoring strategy, it is important to analyze the usefulness of SEZs as Export Processing Zones (EPZs) and Free Points under the assumption that US outsourcers are expected to consider the use of both to produce intermediate goods within their supply chains. This type of use typically reports backward linkages in local economies but more limited or almost inexistent local forward linkages, being characterized as economic enclaves.

The effectiveness of EPZs within a context of SEZs has been generally assessed under the framework of the 'enclave model'

proposed by Warr (1989) that uses cost/benefit analysis for this purpose. For Warr, the key element to determine the effectiveness of EPZs in terms of local social welfare is based on the surplus of actual payments at market prices over the opportunity costs of the respective local resources that are used. As an example, there will be a net benefit if actual paid market wages exceed the social opportunity cost of employees (shadow wages) in EPZs. On the contrary, if governments subsidize the use of local resources by firms operating in EPZs to pay market prices below their opportunity costs, then, there would be a net loss.

Following the analysis proposed by Warr, Jayanthakumaran and Weiss (1997) the economic net benefit/cost (NBC) in any year t for an EPZ may be express as:

$$NBC_t = (MW_t - SW_t)L + (DP_t - MSC_t)Q + T_t + NP_t - K_t - A_t \quad (2)$$

Where:
MW_t : Market wage.
SW_t : Shadow wage.
L : Number of employed local workers.
Q : Number of purchased local inputs.
DP_t : Domestic price of local purchased inputs.
MSC_t : Opportunity cost of local purchased inputs.
T_t : Tax payments to local and national authorities.
NP_t : Net profits to local shareholders.
K_t : infrastructure cost of the EPZ.
A_t : Administrative cost of the EPZ.

In the case of an EPZ, their promoting authorities face an annualized infrastructure cost of K_t equivalent to their investment in infrastructure to develop the zone as well as annual administrative costs, A_t, to keep it running. These costs are due to be recovered through the imposition of annual taxes equivalent to T_t,

levied on the users of the EPZ. It is expected that the developed infrastructure within the EPZ contributes to the achievement of agglomeration and scale economies by firms located within the zone, increasing their net profits before taxes, hence, T_t should be higher than their levels without the achievement of these economies, T_t^*:

$$T_t > T_t^* \quad (3)$$

The same pattern related to higher corporate profits through these economies should yield levels of NP_t higher than those without the exploitation of these economies, NP_t^*:

$$NP_t > NP_t^* \quad (4)$$

In addition, for a positive impact in local welfare, the following relationships should hold:

$$MW_t - SW_t > 0 \quad (5)$$

$$DP_t - MSC_t > 0 \quad (6)$$

The net present value of these annual NBC_t should be positive for the EPZ project to be viable.

By contrast, the promotion of Free Points[6] does not require the undertaking of investments in infrastructure and their related administrative costs to be further recovered through taxes levied by governments. These points can be promoted to reduce congestion levels in big cities as well as for exports promotion, job opportunities in areas of high unemployment, among others. Firms operating under a Free Points scheme are unable to achie-

6 Free Points also known as 'Single Company Free Zones'.

ve the same levels of agglomeration economies, as compared to those operating in EPZs, reducing their relative operating profits. Governments with limited access to resources to finance EPZs' infrastructure might prefer the promotion of Free Points in exchange for lower tax burdens on firms operating as Free Points. For simplicity, assuming that the level of taxation in a EPZ is just enough to yield revenues to cover infrastructure and administrative costs $T_t = K_t + A_t$ and a total waiver of taxes might be granted to firms operating as Free Points, then, the government will end up with no revenues under both strategies. Moreover, the higher dispersion of firms as Free Points might reduce demand pressures on local workers and inputs in comparison to EPZs, leading to surplus levels $MW_t^* - SW_t$ and $DP_t^* - MSC_t$ such as:

$$MW_t^* - SW_t < MW_t - SW_t \quad (7)$$

$$DP_t^* - MSC_t < DP_t - MSC_t \quad (8)$$

The only way for Free Points to be as attractive as EPZ in terms of general welfare levels implies that the reduction in taxes and inflationary pressures leads to NP_t^* levels much higher than NP_t such as:

$$(MW_t^* - SW_t)L + (DP_t^* - MSC_t)Q + NP_t^* > (MW_t - SW_t)L + (DP_t - MSC_t)Q + NP_t \quad (9)$$

From the previous relation:

$$NP_t^* - NP_t \geq (MW_t - MW_t^*)L + (DP_t - DP_t^*)Q \quad (10)$$

Expression (10) should hold to guarantee that Free Points are at least as attractive as EPZs. However, the granting of tax incentives to Free Points has to be compliant with regulations of the World Trade Organization (WTO). The incentives provided

for firms operating under both schemes should comply with the Agreement on Subsidies and Countervailing Measures (ASCM) limiting the use of exemptions on direct taxes and custom tariffs on imports of capital goods that are not re-exported as well as non-admitted exemptions to indirect taxes, waivers in social welfare payments, among others. Some countries in the Americas such as the members of the MERCOSUR bloc have provided some of those incentives that do not comply with the ASCM and must be adjusted (Gari, 2011).

The WTO agreements allow EPZs in Least Developed Countries[7] to exempt their member firms from indirect taxes on exports (sales taxes) and on imports by grating duty drawbacks from imports used to produce exports as well as exemptions on border taxes such as consular fees. These countries are also exempt from compliance with the ASCM unless these countries overpass a GNP per capita for USD 1,000 over a period of three consecutive years.

From this perspective, US outsourcers, willing to use a nearshoring strategy in Free Points across the Americas, should consider the availability of local resources and their bargaining power with their suppliers to achieve higher levels of profits in comparison to EPZs, which might have a higher local welfare impact whenever local shareholders are involved in nearshoring undertakings, so authorities might be more prone to promote Free Points schemes.

The nearshoring of more sensitive areas in supply chains requires the training of a high-skilled labor force and the encouragement of ventures as potential outsourcees to handle complex cognitive tasks. Some of the competencies required for these tasks are internationally assessed among students as future employees

7 As classified by the United Nations.

and entrepreneurs by the Programme for International Student Assessment Tests (PISA tests) applied in 79 countries, covering areas such as mathematics, reading and sciences. The results for the Americas (except for the US) and China in 2018, are reported in Table 6.

Table 6. PISA Test results for the Americas and China. 2018.

Country	Reading	Mathematics	COI world ranking
Argentina	63	71	65
Brazil	57	70	66
Canada	6	12	8
Chile	43	59	45
China	1	1	1
Colombia	58	69	62
Costa Rica	49	63	60
Dominican Republic	78	78	78
Mexico	53	61	57
Panama	71	76	76
Peru	64	64	64
Uruguay	48	58	54

Source: Schleicher (2019).

From Table 6, it can be evidenced that the results from the Americas lag behind the ones from China in 2018. Canada emerges as the best regional performer with scores for reading, mathematics and sciences ranking the country in the 6th, 12th and 8th places respectively, overpassing the Latin America with scores for reading ranging from Chile in the 43rd place to Dominican Republic in the 76th place, for sciences ranging from Chile in the 45th place to Dominican Republic in the 78th place and for mathematics ranging from Uruguay in the 58th place to Domini-

can Republic in the 78th place whereas scores from China rank the country in the 1st place in the three areas (Schleicher, 2019)[8]. In other to foster these skills to sustain a competitive advantage across the region, it is important to reform the educational system, particularly in Latin America and the Caribbean, to improve the performance of students in base competencies required for those tasks as well as to enhance the access of the regional population to an educational system of higher quality, more focused on these competencies, reducing the current cognitive overload in most educational programs in the region (Paul, 2019).

In comparative terms, it is important to stress out, from the previous PISA tests results, that the educational system across the region reveals a higher performance for sciences among students, which are useful in economic sectors such as the pharmaceuticals and medical equipment one. This sector's supply chain scores as the most sensitive according to the Supply Chain Sensitivity Index by Euromonitor International in 2019, requiring a closer clustering to reduce its sensitivity, which might be achieved through its nearshoring into the Americas by US corporates, whereas the automotive sector' supply chain scores as the third most sensitive one in which some countries in the region reveals a high competitiveness according to their revealed comparative advantages as previously discussed (Liuima, 2020). Table 7 reports the top ten selected manufacturing sectors according to their supply chain sensitivity indexes.

8 Ten countries from Latin America took part in the 2018 PISA Tests, including: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Mexico, Panama, Peru, and Uruguay.

Table 7. Selected top ten manufacturing industries according to their Supply Chain Sensitivity Index by Euromonitor International in 2019

Sector	Rank
Pharmaceuticals and Medical Equipment	1
Agriculture	2
Automotive	3
Hi-tech Goods	4
Machinery	5
Food Products	6
Aerospace	7
Textiles	8
Beverages	9
Chemical Products	10

Source: Liuima (2020).

In general, the improvement of the regional perspectives for nearshoring in these sectors requires that governments across the Americas address skills-jobs mismatches by developing systems to detect them. It is also important to encourage the involvement of employers in the detection of these mismatches as well as the upskilling and reskilling of the regional labor force, particularly through relevant technical training programs at the workplace as well as at training institutions by matching the employers' needs to compensate for the deficiencies of the traditional educational system. Some regional experiences to solve this mismatch have been evidenced in Brazil and Chile with the development of labor information systems run by sector skills councils such as the mining and wine councils in Chile to detect skill shortages. Other countries, such as Mexico and The Bahamas, are starting to run apprenticeships and dual education models backed by employers to address labor skills shortages (Pages-Serra, 2017).

Conclusions

The nearshoring by US Corporates into the Americas for manufacturing purposes requires a strategic international positioning of the region. For this purpose, the region needs to exploit its current regional productive capabilities mostly used in competitive exports, to encourage a wider basket of goods whose production involves the use of already developed regional capabilities in sectors such as automotive, food, tourism, among the most relevant ones. The sustainability of these capabilities demands a permanent training of the local labor force in the skills and capabilities required by these sectors, improving the access of the wider population to these training opportunities through more training institutions, more flexible training funding sources, permanent knowledge transfers initiatives with more developed markets, the encouragement of local innovative entrepreneurial initiatives linked to those sectors coupled with more availability of suitable funding for these initiatives such as venture capital, business accelerators and incubators, among others, improving the perspectives for captive offshoring as well as for dealings with local outsourcees.

Different jurisdictions across the region could also improve their perspectives for nearshoring by entering into more agreements with the US to reduce double taxation in order to enhance the feasibility of nearshoring dealings. Given the frequent political and economic instability in different underdeveloped jurisdictions in the Americas, US corporates should start their nearshoring into the region by limiting their exposure to only trade deals through the outsourcing with local producers, who are expected to be more acknowledgeable of local practices and with easier access to local social networks for lobby purposes to protect their business deals with their US partners. As the region tends to report a more stable outlook, then, US corporates could begin to use a captive

offshoring approach, which could be fostered though bilateral or multilateral treaties to protect the flow the US investments against political risks related to expropriation, confiscations, among other related risks.

Finally, the promotion of Free Points in the Americas complying with international trade agreements might contribute to speed up nearshoring processes, given the more constraint current regional resources to invest in the infrastructure required for EPZs, which should be later encouraged once more financial resources might be available for their development to foster agglomeration economies that contribute to enhance the regional competitiveness in international markets, which has been a key factor in the success of traditional nearshoring jurisdictions in Asia.

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Annex I. Opportunities for nearby products based on current country capabilities (from the country by highest ECI ranking)

Country	Current exports (2019)	Manufacturing opportunities (2019)
Mexico	Cars (9.11%), petroleum oil & crude (7.16%), parts of motor vehicles (5.68%), computers (5.59%), motor vehicles for transporting goods (5.23%), travel and tourism (4.80%), non-specified commodities (3.55%), insulated electrical wire (2.65%), monitors and projectors (2.23%), telephones (2.16%), medical instruments (2.05%), tractors (1.93), transmission apparatus for radio, telephone and TV (1.88%), seats (1.42%), electronic boards (1.14%), electronic integrated circuits (1.09%).	Based on its current exports, the country gathers capabilities to explore new manufacturing opportunities in items related to industrial machinery and apparatus (optical, medical, etc): platinum clad metals, pickling preparations for metal surfaces, grindstones, parts and accessories for office machines, amino-resins, drafting tables and machines, parts and accessories for metal working machines, instruments for physical or chemical analysis, screws and similar articles of iron or steel, electric soldering machines, machines n.e.c, chains of iron or steel, furnace burners, gaskets or similar joints of metal, transparent paper, machinery for making paper, measuring instruments.

Canada	Crude petroleum oils (12.50%), cars (7.41%), non-specified (7.06%), travel and tourism (5.13%), non-specified commodities (4.02%), gold (2.94%), transport (2.56%), ICT (2.55%), petroleum oil refined (2.26%), insurance and finance (1.93%), parts of motor vehicles (1.93%), petroleum gases (1.71%), packaged medicaments (1.30%), other aircraft and spacecraft (1.25%), gas turbines (1.22%), Wood sawn lengthwise (1.15%), wheat and meslin (1.01%).	Antifreezing preparation, electrical signal and traffic controls, whey, multiple-walled insulating glasses, newspapers/journals and periodicals, other plastics plates/sheets, glass fiber, railway track fixtures, photographic paper, parts of railways locomotives, tractors, other parts for machines and appliances, packed medicaments, vulcanized rubber plates, vehicle bodies, centrifuges, safety glass, other articles of iron or steel, machinery for making printing components, hydraulic fluids, central heating boilers, aluminum plates, orthopedic appliances, non-aqueous pigments, dish washing machines, lubricants, furnace burners, filter blocks of paper pulp, instruments for physical or chemical analysis, machinery for soldering, serums and vaccines, enzymes, prepared culture media for microorganisms, flat-rolled products for other alloy steel, automatic regulating instruments, amino-resins, thermometers/hydrometers, parts and accessories for metal working machines, pumps for liquids, knives and blades for machines, equipment for temperature change of materials, transmission shafts, acrylic polymers, instruments for measuring properties of liquids and gases, radar, pickling preparations for metal surfaces, machine tools for forging and molding metals, polyamides.

Costa Rica	Unspecified (20.68%), travel and tourism (17.47%), medical instruments (13.23%), bananas and plantains (5.92%), avocados, pineapples, mangos, etc. (5.44%), orthopedic appliances (3.50%), transport (2.16%), food preparations n.e.c. (1.75%), coffee (1.16%), ICT (1.13%), commodities not specified according to kind (1.07%).	The country reveals competitiveness in apparatuses (medical, optical, etc) and travel and tourism products. Among the related products: other printed matter, structures and their parts of iron and steel, books/brochures and related material, refrigerators, freezers, trailers and semi-trailers, finishing agents, newspapers/journals/periodicals, other uncoated papers and paperboard, packaged medicaments, baths/sinks, acyclic hydrocarbons, make-up preparations, anti-freezing preparations, machinery for soil preparations and cultivation, harvesting and agricultural machinery, mineral wools and insulating material, electric signals and traffic controls, pharmaceutical goods, parts for use with hoist and excavation machinery, wire used for welding, other articles of iron or steel, vulcanized rubber tubes, felt, work trucks, centrifuges, parts for electrical apparatus, wadding/gauze/bandages, railway track fixtures, flat-rolled iron, other engines and motors, central heating boilers, multiple-walled insulating glass, other breathing appliances and gas masks, other articles or copper, other agricultural machinery, other lifting machinery, radar, parts of motor vehicles, cars, dish washing machines, springs of iron or steel, sprays and powder dispensers, instruments for physical or chemical analysis, lubricants, equipment for temperature change of materials, parts and accessories for metal working machines, appliances for thermostatically controlled valves.

Panama	Transport (40.21%), travel and tourism (25.76%), insurance and finance (7.67%), refined petroleum oils (4.53%), copper ore (2.48%), bananas and plantains (1.67%), oils etc. from high temperature coal tar (1.60%), cargo ships and similar vessels (1.38%), packaged medicaments (1.37%), commodities not specified according to kind (1.08%).	Photographic cameras, other parts of machines and appliances, ink, polishes and creams, therapy appliances, non-aqueous paints and varnishes, electric sound and visual signaling apparatus, other plastic plates, sheets, etc, other printed matter, electric resistors, semiconductors devices, books/brochures, etc, make-up preparations, orthopedic appliances, newspapers/journals/periodicals, optical fibers, thermometers/hydrometers, etc., wadding/gauze/bandages, other breathing appliances and gas masks, electrical apparatus, work trucks, parts for use with hoists and excavation machinery, machinery for making printing components, parts and accessories for office machines, electronic integrated circuits, electrical capacitors, non-aqueous pigments, diagnostic or laboratory reagents, tube or pipe fitting of iron or steel, centrifuges, electrical machines with individual functions n.e.c., other articles of plastic, instruments for measuring electricity, radars, printers and copiers, other lifting machinery, unsaturated acyclic monocarboxylic acids, sprays and powder dispersers.

Trinidad and Tobago	Petroleum gases (29%), acyclic alcohols (12%), crude petroleum oils (10%), ammonia (9%), refined petroleum oils (7%), ferrous products from the reduction of iron ore (5%), travel and tourism (4.83%), nitrogenous fertilizers (3.37%), Parts for use with hoists and excavation machinery (2.25%), commodities not specified according to kind (1.83%), transport (1.78%), insurance and finance (1.10%).	Organic composite solvents and thinners, non-aqueous paints and varnishes, woods carpentry for construction, glaziers' puty, bobbins/spools/cops of papers, ferrocerium and other pyrophoric alloys, chocolates, other plates of plastic non-cellular not reinforced, structures and their parts of iron or steel, other plastic plates/sheets, other fermented beverages, other printed matter, acyclic hydrocarbons, books/brochures, glass fibers, machinery for soil cultivation and preparation, trailers and semi-trailers, antifreezing preparations, packaged medicaments, newspapers/journal/periodicals, mineral wools and insulating materials, other parts for machines and appliances, machines for making printing components, aluminum plates, harvesting or agricultural machinery, work trucks, electric signal and traffic controls, non-aqueous pigments, other agricultural machinery, railway track fixtures, flat-rolled iron, other articles of iron or steel, multiple-walled insulating glass, centrifuges, other lifting machinery, natural or abrasive powder, textile articles for technical use, springs of iron or steel, parts of motor vehicles, thermometers/hydrometers, machinery parts not containing electrical features n.e.c., machines, lubricants, prepared culture media for micro-organisms, parts and accessories for metal working machines.

Brazil	Soya beans (9.98%), Iron ores and concentrates (9.89%), crude petroleum oils (9.34%), unspecified (7.34%), corn (2.78%), chemical woodpulp, soda or sulfate (2.76%), poultry (2.45%), travel and tourism (2.39%), transport (2.21%), solid soybean residues (2.06%), frozen beef (2.05%), sugarcane & sucrose (1.99%), refined petroleum oil (1.96%), coffee (1.67%), commodities not specified according to kind (1.48%), cars (1.47%), gold (1.44%), other aircraft and spacecraft (1.30%), ferroalloys (1.21%), semifinished products of iron or non-alloy steel (1.03%).	Mechanical woodpulp, malt, oleum sulfiric acid, casein, hydrochloric acid, oats, other uncoated papers and paperboard, nickel unwrought, oils from high temperature coal tar, polymers of ethylene, bobbins, spools, cops of paper, propellant powders, coin, zinc powders, sulfonitric acids, other fermented beverages, antifreezing preparations, sodium hydroxide, whey, polymers of vinyl chloride, other animal fats and oils, parachutes, pharmaceutical goods, parts of railway locomotives, rye, mineral wools and insulating materials, aluminum oxide, flat-rolled iron, electrical insulators of any materials, polymers of styrene, other agricultural machinery, other coloring matter, newsprint, other engines and motors, multiple-walled insulated glass, compression-ignition internal combustion piston engines, enzymes, railway track fixtures, phenol alcohols, flat-rolled products of stainless steel, lubricants, textile articles for technical use, amino-resins, transmission shafts.

El Salvador	Travel and tourism (16%), ICT (11.92%), knit T-shirts (7.33%), transport (6.01%), knit sweaters, pullovers, sweatshirts etc. (5.58%), knit socks, stockings, etc., (2.54%), packaging lids (2.15%), sugarcane & sucrose (1.93%), electrical capacitors (1.93%), toilet paper (1.87%), knit men's undergarments (1.87%), packaged medicaments (1.69%), commodities not specified according to kind (1.54%), insurance and finance (1.46%), flavored or sweetened waters (1.41%), bakery products (1.36%), coffee (1.14%), brassieres (1.04%), other knitted fabrics (1.01%).	Packaging boxes, builders' plastic ware, aluminum containers, prefabricated buildings, glaziers' putty, wood carpentry for construction, other paints and varnishes, aluminum structures, other furniture and parts, ferrocerium and other pyrophoric alloys, particle board and similar board, refrigerators, freezers, baths, sinks, chocolates, polishes and creams, quilted textile products, new pneumatic tires of rubber, other uncoated paper and paperboard, other articles of iron and steel, stoves and similar non-electric appliances of iron or steel, glass fiber, electric heaters, books/brochures, other articles of aluminum, electric sound or visual signaling apparatus, wire used for welding, other articles of vulcanized rubber, parts for use with electric generators, synthetic monofilament, machinery for soil preparation or cultivation, vulcanized rubber tubes, trailers and semi-trailers, flat-rolled iron, machinery for making printing components, felt, parts for use with hoists and excavation machinery, safety glass, electrical transformers, electric signal and traffic controls, other articles of zinc, aluminum plates, central heating boilers, electric motors and generators, railway track fixtures, natural or abrasive powder, parts of motor vehicles, dish washing machines, other lifting machinery.

Colombia	Crude petroleum oils (26%), travel and tourism (14%), coal (9.86%), transport (5.14%), refined petroleum oils (4.80%), coffee (4.21%), gold (3.52%), cut flowers (2.26%), bananas and plantains (2.01%), ICT (1.45%), coke (1.42%), commodities not specified according to kind (1.22%).	Aluminum containers, packing boxes, organic composite solvents and thinners, sausages, non-cellular and not reinforced other plates of plastics, other printed matter, structures and their parts of iron or steel, non-aqueous paints and varnishes, glaziers' putty, tanks in iron or steel, acyclic hydrocarbons, trailers and semi-trailers, packaged medicaments, pharmaceutical goods, machinery for soil cultivation or preparation, antifreezing preparation, newspapers/journals/periodicals, motor vehicles for transporting goods, machinery for making printing components, other parts for machines and appliances, harvesting or agricultural machinery, aluminum plates, whey, non-aqueous pigments, other articles of iron or steel, mineral wools and insulating materials, electric signal and traffic controls, work trucks, flat-rolled iron, other articles of copper, other articles of plastic, other agricultural machinery, multiple-walled insulating glass, orthopedic appliances, railway track fixtures, central heating boilers, parts suitable for use with spark-ignition engines, cars, other lifting machinery, parts of motor vehicles, textile articles for technical use, amino-resins.

Uruguay	Travel and tourism (16.07%), ICT (11.92%), knit t-shirts (7.33%), transport (6.01%), knit sweaters, pullovers, sweatshirts etc., (5.58%), knit, Socks, stockings, etc. (2.54%), packing lids (2.15%), sugarcane & sucrose (1.93%), electrical capacitors (1.93%), toilet paper (1.87%), knit men's undergarments (1.87%), insulated electrical wire (1.72%), packaged medicaments (1.69%), commodities not specified according to kind (1.54%), insurance and finance (1.46%), waters, flavored or sweetened (1.41%), bakery products (1.36%), coffee (1.14%), brassieres (1.04%), other knitted fabrics (1.01%).	Malt extract, casein, packing boxes, aluminum containers, sausages, aqueous paints and vanishes, non-aqueous paints and vanishes, poultry, other fermented beverages, other printed matter, coin, rapeseed/colza/mustard oil, harvesting or agricultural machinery, acyclic hydrocarbons, other plastic plates/sheets, machinery for soil cultivation or preparation, book/brochures, antifreezing preparation, pork, peptones, newspapers/journals/periodicals, packaged medicaments, other parts for machines and appliances, pig and poultry fat, mineral wools and insulating materials, other agricultural machinery, other breathing appliances and gas mask, electric signal and traffic controls, diagnostic or laboratory reagents, work trucks, tractors, enzymes, lubricants, newsprint, textile articles for technical use, other lifting machinery, vehicle bodies, prepared culture media for micro-organisms, instruments for physical or chemical analysis, serums and vaccines, spark-ignition reciprocating internal combustion piston engines.

Argentina	Commodities not specified according to kind (11.44%), solid soybean residues (10.25%), unspecified (7.33%), corn (7.13%), travel and tourism (6.65%), soya beans (4.08%), motor vehicles for transporting goods (3.93%), soybean oil (3.88%), wheat and meslin (2.67%), gold (2.58%), frozen beef (2.48%), transport (2.34%), cars (1.55%), crude petroleum oils (1.45%), crustaceans (1.32%), ICT (1.31%), refined petroleum oils (1.01%).	Fuel wood, raw or processed flax, milk, food preparations n.e.c., rape or colza seeds, extracts and juices of meat or fish, particle board and similar board, cleaning products, polymers of propylene, hydrochloric acid, aqueous paints and varnishes, wooden railway ties, chocolates, other uncoated paper and paperboard, sausages, tall oil, other plates of plastic non-cellular and not reinforced, tar distilled from coal and lignite, flat-rolled iron, acyclic hydrocarbons, sodium hydroxide, special purpose motor vehicles, peptones, rapeseed/ colza/mustard oil, radiators for central heating of iron or steel, harvesting or agricultural machinery, antifreezing preparation, machinery for soil preparation and cultivation, non-aqueous paints and varnishes, pig and poultry fat, other animal fats and oils, other plastic plates and sheets, other printed matter, polyacetals, mineral wools and insulating materials, tractors, other agricultural machinery, rendered pig and poultry fat, newspapers/journals/ periodicals, railway track fixtures, electric signal and traffic controls, work trucks, non-aqueous pigments, vehicle bodies, lubricants, acrylic polymers, fork-lift trucks.

Guatemala	Bananas and plantains (8.40%), travel and tourism (8.22%), unspecified (7.11%), ICT (5.08%), coffee (4.38%), sugarcane & sucrose (4.23%), nutmeg (3.86%), knit, sweaters, pullovers, sweatshirts etc. (3.54%), transport (3.22%), knit T-shirts (2.49%), palm oil (2.33%), melons and papayas (1.57%), ferroalloys (1.55%), electrical energy (1.53%), packaged medicaments (1.40%), commodities not specified according to kind (1.21%), women's suits and pants (1.17%), insurance and finance (1.14%), legumes (1.08%), other knitted fabrics (1.05%).	Fermented milk products, milk, plaster articles, cheese, prefabricated buildings, strips and other pieces of wood, tanks in iron or steel, fowl, wadding of textile materials, fiberboard of wood, aluminum bars, other paints and varnishes, other plastic plates/sheets, wire of iron or non-alloy steel, seats, chocolates, aluminum structures (bridges, towers, etc.), other cast articles of iron or steel, chalk, other furniture and parts, articles of cement/concrete/artificial stones, asbestos-cement or cellulose-fiber cement, other uncoated paper or paperboard, baths/sinks, new pneumatic tires of rubber, books/brochures, other fermented beverages, glass fiber, other articles of vulcanized rubber, machinery for soil preparation or cultivation, packaged medicaments, newspapers/journals/periodicals, electric sound or visual signaling apparatus, other articles of iron or steel, trailers and semi-trailers, other articles of aluminum, parts for use with electric generators, vulcanized rubber tubes, machinery for making printing components, harvesting or agricultural machinery, parts for use with hoists and excavation machinery, non-aqueous pigments, other articles of plastic, railway track fixtures, central heating boilers, natural or artificial abrasive powder, parts of motor vehicles, other lifting machinery.

Source: The Growth Lab and Harvard University (2021).