

Economic Relations between Mexico and Republic of Korea: Trade, Investment and Value Chains. 2000-2022 Trajectory and Outlook

Las relaciones económicas entre México y República de Corea: comercio, inversión y cadenas de valor. Trayectoria 2000-2022 y perspectivas

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Abstract

This article analyzes the bilateral economic relations between Mexico and the Republic of Korea between 2000 and 2022, examining trade in goods, Korean direct investment and bilateral productive linkages, within the framework of global value chains, and reviews the prospects of the economic relationship and the potential of a free trade agreement, placing the reflection in both the regional and international context.



Resumen

En este artículo se analizan las relaciones económicas bilaterales de México y República de Corea entre los años 2000 y 2022, para ello se examina el comercio de bienes, la inversión directa coreana y los encadenamientos productivos bilaterales, en el marco de las cadenas globales de valor, y se revisan las perspectivas de la relación económica y el potencial de un tratado de libre comercio, ubicando la reflexión en el contexto regional e internacional.



Keywords

Trade in goods, global value chains, investment, Mexico, Republic of Korea



Palabras clave

Comercio de bienes, cadenas globales de valor, inversión, México, República de Corea

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Introduction

Throughout more than 60 years of bilateral relations, exchanges between the United Mexican States and the Republic of Korea (respectively Mexico and Korea hereinafter) have been enriched in all areas. In matters of culture, trade, investment, cooperation at the multilateral level and at the individual level, mutual interest has continued to grow.²

This text analyzes the bilateral economic relations between Mexico and Korea, an area that has been quite dynamic over the last twenty years and of growing relevance for both parties in terms of trade and direct investment (DI) from Korea in Mexico. In the last decade, the structural transformation of the relationship can only be fully understood in the context of the growth of global value chains (GVCs), oriented to the North American regional market and later to other markets (Latin America).

¹ I am grateful for the excellent support of Samantha Corona Zepeda, a student of the Bachelor's Degree in International Studies at the University of Guadalajara, in the research and preparation of charts and graphs.

² See Jung Jae-ho, "Significado e Importancia de un TLC entre Corea y México desde la perspectiva de la cadena de valor global," in Embajada de la República de Corea in México, *60° Aniversario de las relaciones Corea-México: evaluación y objetivos futuros*, México, Embajada de la República de Corea en México, 2021, pp. 204-215, at <https://overseas.mofa.go.kr/viewer/skin/doc.html?fn=20220111064022887.pdf&rs=/viewer/result/202305> (date of access: April 26, 2023).

However, unlike others, the Mexico-Korea economic relationship has developed in the absence of a far-reaching instrument such as a free trade agreement or an economic partnership agreement, despite the fact that both countries have developed an extensive network of free trade agreements and attempted to negotiate a bilateral agreement on several occasions.³ Despite the above, bilateral tariff reliefs are lower than with other partners and a series of specific bilateral agreements have established a framework for the arrival of Korean direct investment in Mexico, partially supplementing the “disciplines” required by the gvcs. These suboptimal conditions, in a favorable international environment, have been sufficient to allow for a dynamic bilateral economic relationship.

This article poses the following questions: How has the bilateral economic relationship developed in terms of trade and investment between 2000 and 2022? What productive linkages have been formed?, and could the signing of a Mexico-Korea free trade agreement improve the prospects of this economic relationship in the current challenging geopolitical environment? These questions are answered throughout the article; the first examines trade in goods; the second examines Korean DI and bilateral productive linkages; the third reflects on the prospects of the economic relationship and the potential of a free trade agreement, placing the discussion within the regional and international environment.

Background on the bilateral economic relationship, tariff relief and trade in goods

Economic relations between Mexico and Korea gained dynamism in the midst of unilateral economic liberalization in the 1980s, when both coun-

³ The discussion of the reasons for the failure of these attempts is beyond the scope of this article: it is taken as a matter of fact, see Carlos Uscanga, “Claroscuros de la política comercial de México: la negociación con Corea del Sur,” in *Comercio Exterior*, vol. 59, no. 8, August 2009, pp. 647-656, at <http://revistas.bancomext.gob.mx/rce/magazines/129/5/RCE5.pdf> (date of access: April 26, 2023); José Luis Bernal Rodríguez, “La asociación estratégica entre México y la República de Corea a diez años de iniciada,” in *Revista Mexicana de Política Exterior*, no. 108, September-December 2016, pp. 87-114, at <https://revistadigital.sre.gob.mx/index.php/rmpe/article/view/312/291> (date of access: April 26, 2023); and Jung Jae-ho, *op. cit.*

tries were emerging from a period of State-led industrialization. For Mexico, the trade and financial liberalization of the 1980s as well as industrialization programs aimed at taking advantage of its geographic proximity to the United States—the Border Industrialization Program (BIP) of 1964 and the subsequent expansion of *maquiladora* plants—helped transform the country into a manufacturing export platform.

Korea, in turn, became even more oriented towards international markets, especially the U.S. market. The strength and international competitiveness of its *chaebol*, the diversified conglomerates whose expansion has been closely associated with the country's economic growth, led them to join the GVCs⁴ early on and expand their DI. The *chaebol* now lead production chains in diversified activities: household appliances, electronics, automotive, cellular telephony, semiconductors, among others.

The entry into force of the North American Free Trade Agreement (NAFTA) in 1994 attracted both *chaebol* and other international companies to Mexico, with the main objective of exporting to the United States. U.S.-Mexico production links have evolved into more complex relationships that now include suppliers from various European and Asian and, more recently, South American nations.

Bilateral tariff relief

In the absence of a bilateral free trade agreement, the dynamics of bilateral tax relief, which is crucial for trade in goods,⁵ have depended on the unilateral liberalization measures of both countries and on the dynamics of multilateral tax relief, which was interrupted with the cessation of negotiations within the framework of the World Trade Organization (WTO).

⁴ Geographically fragmented manufacturing production, enabled by new information and communication technologies (ICTs), lower transportation costs and supported by preferential trade agreements, has been booming since the 1990s.

⁵ Due to insufficient bilateral statistics, we do not address trade in services in this text: Mexico does not publish statistics on bilateral trade in services, which can only be estimated through mirror data.

At the aggregate level, the tariff reduction, estimated through weighted average tariffs (WAT), has been faster and deeper in the case of Mexico, whose WAT charged to Korean imports have decreased from 13.7% of their value in 2000 to 2.7% in 2018 (latest available data). For Korea, a rise to 4.5% of WATs applied to Mexican products was observed in 2020 (see Table 1.) This puts Mexican products at a disadvantage, as they are subject to tariffs that far exceed those applied to products from other nations, such as Pacific Alliance partners with respective WATs of 0.21%, 0.39% and 0.78% in 2018, as well as China and East Asia. In fact, numerous products exported by these countries enter Korea with zero tariffs; between 81% and 93% of products exported by Chile, Colombia or Peru, 93% of goods from the United States and 49% of products exported by China, against less than 20% of Mexican products. When entering Mexico, Korean products are also at a certain disadvantage compared to goods from Japan (WAT of 0.21 and 94.8% enter with zero tariffs) and the United States (WAT of 0.05 and 96.9% with zero tariffs) and receive only slightly more favorable treatment than products from China.⁶

Table 1. Percentage of weighted average tariffs, 1992-2020

Mexico (2000-2018)					
Year		2000	2010	2018	
Percentage		13.7	3.01	2.76	
Republic of Korea (1992-2020)					
Year	1992	2000	2010	2018	2020
Percentage	8.02	5.42	3.74	4.49	4.54

Source: World Integrated Trade Solution (WITS).

⁶ World Integrated Trade Solution (WITS), “AHS Weighted Average by Country Product from World in % 1988-2021,” at <https://wits.worldbank.org/CountryProfile/en/country/by-country/startyear/LTST/endyear/LTST/tradeFlow/Import/indicator/AHS-WGHTD-AVRG/partner/WLD/product/Total> (date of access: April 26, 2023).

Long-term trajectory of trade relations

To what extent has this situation affected bilateral flows of goods? In the long term (1990-1992 to 2022), these relations have undergone deep structural changes (see Tables 2 and 3). First, the amount exchanged has grown very dynamically and has increased the relevance of the relationship for both partners.⁷ Now, this trend culminated in 2018, when Mexico's exports to Korea were equivalent to 36 times their 1990 level, and accounted for 0.83% of the country's total export value. Korea's exports to Mexico were a factor of 20 times their 1990 value, 1.9% of its total exports. In 2022, export values were even lower than these peaks; this placed Korea as Mexico's seventh largest export partner while the latter was Korea's eighth largest export destination. By contrast, on the import side, Korea's position as Mexico's third largest import source, behind the United States and China, is not replicated in a similar position of Mexico in Korean imports, where it occupied, in 2021, the seventeenth position. This implies a primary asymmetry in the relative importance that each partner represents for the other.

On the other hand, the products exchanged diversified significantly between 1990 and 2010, which was an expected effect of trade liberalization and considered beneficial for the partners. However, this trend was interrupted for Mexico in 2010, constituting a second substantial asymmetry in bilateral trade. Until 2019, Korean exports to Mexico diversified, while, for Mexico, the range of products sent to Korea was reduced, while the value exported continued to rise, implying a process of export concentration for the country.⁸

⁷ Among the main partners of each country, only bilateral trade relations with China expanded, but the exception is a rather significant one. WITS, "Trade Outcomes Indicators," at <http://wits.worldbank.org/WITS/WITS/AdvanceQuery/TradeOutcomes/IndicatorDefinition.aspx?Page=Indicator> (date of access: April 27, 2023).

⁸ WITS, "Mexico Exports by Country and Region 2021," at <https://wits.worldbank.org/CountryProfile/en/Country/MEX/Year/LTST/TradeFlow/Export/Partner/all/> (date of access: April 26, 2023); and WITS, "Korea, Rep. Exports by Country and Region 2020," at <https://wits.worldbank.org/CountryProfile/en/Country/KOR/Year/2020/TradeFlow/Export> (date of access: April 30, 2023).

Table 2. Mexico: Exports to the Republic of Korea, 1990-2020

Year	Number of products traded at the 6-digit HS level	Share of total products (percentage)	Trade value (thousands of USD)	Share of associates (percentage)
1990	75	1.81	101 961.37	0.39
1992	117	2.82	43 753	0.09
2000	473	10.8	293 972.37	0.18
2010	686	16.17	928 780.96	0.31
2018	255	8.39	3 726 320.8	0.83
2019	254	8.34	2 212 121.98	0.48
2020	245	8.09	3 429 895.47	0.82

Source: WITS.

Table 3. Republic of Korea: Exports to Mexico, 1990-2020

Year	Number of products traded at the 6-digit HS level	Share of total products (percentage)	Trade value (thousands of USD)	Share of associates (percentage)
1990	764	18.45	559 533.48	0.86
1992	838	20.09	905 350.27	1.18
2000	1524	34.87	2 391 359.86	1.39
2010	1579	37.23	8 845 549.44	1.9
2018	1775	41.16	11 458 232.6	1.89
2019	1843	42.86	10 927 015.7	2.02
2020	1829	42.59	8 243 954.98	1.61

Source: WITS.

At the product group level, the aforementioned structural changes implied for both countries a sweeping transformation in export lines, associated in turn with a smaller number of lines where the country has a comparative advantage (estimated through the normalized revealed com-

parative advantage, NRCA). Mexico concentrated its exports in a smaller number of product lines and, between 2000 and 2010, lost comparative advantage in food lines (03, 09), manufactures—processed foods— (16, 18, 20, 22), chemicals (29, 30, 33, 34), textiles (52, 54) and metal goods (72, 76, 78, 79). Subsequently, export lines of meat and animal and vegetable products (02, 05, 13, 17), materials and minerals (25, 26), rubber (40), copper and copper goods (74) and vehicles and auto parts (87) predominated (see Table 4).⁹

Table 4. Mexico: Product lines with positive normalized revealed comparative advantage, 2002, 2010, 2018, 2022

	2002	2010	2018	2022
No. of lines	66	73	58	51
Lines with RCAN >0	23	17	9	8
Percentage	34.8	23.3	15.5	15.7
Codes	03, 09, 13, 14, 16, 22, 25, 26, 29, 30, 33, 34, 37, 40, 52, 54, 55, 60, 68, 74, 87, 95, 96	02, 05, 13, 14, 17, 18, 20, 22, 25, 26, 41, 72, 74, 76, 78, 79, 87	02, 05, 13, 25, 26, 27, 74, 83, 87	02, 05, 13, 17, 26, 40, 74, 87

Source: Compiled by the author with data from WITS.

Between 2002 and 2010, Korea lost comparative advantage in manufactures such as chemicals (32, 38), textiles (43, 51), clothing and footwear (60, 63, 64, 65), glass (70) and optics and musical instruments (90, 92). This country has concentrated its NRCA in plastics and rubber (39, 40), certain man-made fibers (54, 55), vehicles and auto parts (87), iron, steel and instruments of these metals (72, 73), aluminum (76), base metal goods (82, 83), and machinery and electrical machinery (84, 85) (see Table 5).

⁹ WITS, “Trade Outcomes Indicators,” at <http://wits.worldbank.org/WITS/WITS/AdvanceQuery/TradeOutcomes/IndicatorDefinition.aspx?Page=Indicator> (date of access: April 27, 2023).

Table 5. Republic of Korea: Product lines with positive normalized revealed comparative advantage, 2002, 2010, 2018, 2021

	2002	2010	2018	2021
No. of lines	72	82	83	88
Lines with RCAN >0	20	7	12	12
Percentage	27.80	8.50	14.50	13.63
Codes	17, 32, 38, 39, 40, 43, 50, 51, 54, 55, 60, 63, 64, 65, 70, 72, 84, 85, 92, 96	50, 54, 55, 72, 82, 85, 87, 90	39, 40, 50, 54, 55, 72, 73, 82, 83, 85, 87, 90	39, 40, 54, 55, 72, 73, 76, 82, 83, 84, 85, 87

Source: Compiled by the author with data from wrrs.

The most recent data (2022 for Mexico, 2021 for Korea) show the permanence and deepening of this pattern. Few agricultural and agro-industrial products are among Mexico's main exports to Korea (02, 03, 05, 13, 22). From Korea to Mexico there are some diversified exports of chemical and pharmaceutical products, artificial fibers, furniture, and paper and cardboard.

The majority of bilateral trade is concentrated around a few lines: in 2022, Mexico exported minerals (45% of the total) and copper (7.6%), vehicles and machinery (87, 84) which account for 85% of the exported value. Korea's specialization was centered around machinery and vehicles (84, 85, 87) and iron and steel (72), occupying the second place in exports with 21% of the total value. Together they account for 71% of exports to Mexico (see Tables 6 and 7).

Table 6. 20 main products exported by Mexico to the Republic of Korea, 2022

Code	Description	Value in thousands of USD	Cumulative percentage
26	Ores, slag and ash	1 656 636.23	45.17
87	Vehicles other than railway or tramway rolling stock	803 459.73	67.08

84	Nuclear reactors, boilers, machinery and mechanical appliances	380 239.89	77.45
74	Copper and articles thereof	281 404.54	85.12
85	Electrical machinery and equipment and parts thereof	148 147.69	89.16
2	Meat and edible meat offal	82 861.89	91.42
90	Optical, photographic, cinematographic and measuring	47 067.18	92.70
3	Fish and crustaceans, molluscs and other aquatic invertebrates	39 087.09	93.77
76	Aluminium and articles thereof	30 921.98	94.61
40	Rubber and articles thereof	26 276.16	95.33
39	Plastics and articles thereof	25 710.26	96.03
29	Organic chemicals	15 502.51	96.45
32	Tanning or dyeing extracts	14 834.78	96.86
72	Iron and steel	14 169.71	97.24
38	Miscellaneous chemical products	9726.45	97.51
5	Products of animal origin; not elsewhere specified or included	8059.88	97.73
22	Beverages, spirits and vinegar	8040.84	97.95
73	Iron or steel articles	7172.04	98.14
13	Lac; gums, resins and other vegetable saps and extracts	6297.65	98.31
34	Soap, organic surface-active agents; washing, lubricating, polishing or scouring preparations	5870.20	98.47
	Total value exported (20 main products)	3 611 486.70	
	Total value exported (all products)	3 667 417.29	
	Total cumulative percentage		98.47

Note: Rev. 4 two-digit data (Nome code H4, product classification HS 2012).

Source: WITS.

Table 7. 20 main products exported by the Republic of Korea to Mexico, 2021

Code	Description	Value in thousands of USD	Cumulative percentage
85	Electrical machinery and equipment and parts thereof	2 396 741.85	21.23
72	Iron and steel	2 357 812.8	42.12
84	Nuclear reactors, boilers, machinery and mechanical appliances	1 963 596.48	59.52
87	Vehicles; other than railway or tramway rolling stock	1 316 280.86	71.18
39	Plastics and articles thereof	1 153 666.04	81.4
73	Iron or steel articles	373 488.31	84.71
90	Optical, photographic, cinematographic and measuring	350 607.88	87.82
76	Aluminium and articles thereof	209 794.34	89.68
40	Rubber and articles thereof	188 482.71	91.35
82	Tools, implements, cutlery, spoons and forks	118 616.19	92.4
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	99 971.05	93.28
83	Miscellaneous articles of base metal	91 581.29	94.09
29	Organic chemicals	78 230.13	94.79
30	Pharmaceutical products	74 141.49	95.44
38	Miscellaneous chemical products	69 935.38	96.06
94	Furniture; bedding, mattresses and mattress supports	61 406.67	96.61
54	Man-made filaments	46 630.64	97.02
32	Tanning or dyeing extracts	42 295.37	97.4
48	Paper and paperboard; articles of paper pulp, of paper or paperboard	39 140.58	97.74
28	Inorganic chemicals; organic and inorganic compounds of precious metals	27 421.63	97.99

	Total value exported (20 main products)	11 059 841.69	
	Total value exported (all products)	11 287 173.17	
	Total cumulative percentage	97.99	

Note: Rev. 4 two-digit data (Nome code H4, product classification HS 2012).

Source: WITS.

This specific dynamic of the bilateral relationship responds to several complementary explanations. First, the trajectory of bilateral export specialization corresponds, in large part, to the changes that economic theory forecasts: the competitiveness of the different productive sectors changes with economic growth and rising labor costs. This leads to the restructuring and disappearance of export sectors, as shown by the changes in the composition of Korea's direct exports, where textiles and clothing have given way to the automotive and semiconductor sectors.

Second, the “China Effect” has accelerated the loss of competitiveness of numerous product lines and the trend towards export concentration in Korea, particularly around the automotive industry, a trend that is not exclusive to the Korea-Mexico relationship, but is also observed in exports from Korea and Japan to other countries, such as the Pacific Alliance partners. This contrasts with the simultaneous and extraordinary expansion of Chinese export lines with positive NRCA.¹⁰

Third, recent bilateral trade shows that a new trade complementarity, non-existent 20 years ago, has been established around some manufacturing lines. In these crucial lines, there is a high level of two-way trade, predominantly in medium and high technology articles: 84, 85, 87, 72, 73, and lines 39 and 40 (plastics and rubber), linked to the electrical, electronics and automotive industries. These exchanges are directly related to Korean DI in Mexico and the functioning of the value chains headed by its companies.

Consequently, the growth in the value of Mexico's exports to Korea has relied simultaneously on primary or processed industrial products, and on

¹⁰ Finer company-level data are needed to conclude whether these exports come from Korean or Japanese companies producing in China.

the aforementioned manufacturing exports. This dual Mexican specialization has contrasting consequences: the first class of goods, whose price variability is high, tends to produce the well-known negative effects of export primarization, while the manufacturing lines are associated, in the most recent analyses of international trade, with a greater positive impact on the economic growth process.¹¹ Both cases concern operations related to the productive integration of these partners, clearly led by the Korean conglomerates.

This brings us directly to the highly controversial issue of the structural trade deficit shown by this bilateral trade, a third asymmetry that is not exclusive to this relationship, but is more severe than with Japan, for example. On the Mexican export side, the low level and declining diversification of Mexican exports can be attributed to the absence of a trade agreement that stimulates non-GVC exports. The disadvantage for Mexican exporters, particularly in the food lines of the agri-food industry and other manufacturing, has been growing as competing countries have signed free trade agreements that facilitate access to the Korean market for their products. However, the issue of the bilateral trade deficit can only be analyzed within the framework of GVCs and the Korea-Mexico-U.S. triangulation, as shown by the growing weight of parts and components (P&C), which is an indicator of international production linkages. This increased from 36% in 2000 to 66% in 2018 and 85% in 2020.¹²

Bilateral investment relationships 1990-2022 and value chains

The cross-border organization of production in GVCs poses a number of requirements for States: “21st century trade—or more precisely 21st century

¹¹ Sanjaya Lall, *The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-1998*, Oxford, Queen Elizabeth House-University of Oxford (QEH Working Paper Series, 44), June 2000, at <http://workingpapers.qeh.ox.ac.uk/RePEc/qeh/qehwps/qehwps44.pdf> (date of access: April 26, 2023).

¹² The Research Institute of Economy, Trade and Industry (RIETI) database is based on data from the United Nations Commodity Trade Statistics Database (COMTRADE-UN) and seeks to reflect the weight of trade associated with GVCs in the foreign trade of countries. RIETI, “About RIETI-TID,” at <https://www.rieti.go.jp/en/projects/rieti-tid/> (date of access: August 25, 2023).

international commerce—is a richer, more complex, more interconnected set of cross-border flows of goods, investment, technology, services, technicians, managers and capital”.¹³ The “disciplines” that enable these networks to function optimally include not only trade opening, facilitation of trade flows, harmonization of customs practices, opening and protection of financial flows, intangible capital (patents, technological know-how) and flows of people, but also the disciplines of the WTO+ (included in the WTO agreements, but extending beyond them) and WTOx (commitments extending beyond them) areas.

In the absence of a broader instrument, Mexico and Korea have signed agreements of limited scope that respond to the main needs of Korean companies (see Table 8). In force since the mid-1990s, following the signing of NAFTA, these agreements cover *ad minimum* the basic operating requirements of the growing Korean DI in Mexico. Of particular note are the tax agreement (1994), the Agreement for the Promotion and Reciprocal Protection of Investments (APRPI) (2000), the customs cooperation agreements (2005 and 2014), the intellectual property right agreement (2012) and the Patent Prosecution Agreement (2013).¹⁴

Table 8. Mexico-Republic of Korea. Bilateral agreements with relevance for trade, investment and GVCs.

Signed	Name
1966	Trade Agreement (MFN) (1969)
1989	Agreement on Trade, Economic and Technical Cooperation (1990)
1994	Convention for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion (1995)
2000	Agreement for the Promotion and Reciprocal Protection of Investments (APRPI) (2002)
2005	Strategic Partnership for Mutual Prosperity

¹³ Richard Baldwin, “Global Supply Chains: Why They Emerged, Why They Matter, and Where They Are Going,” in Deborah K. Elms y Patrick Low (eds.), *Global Value Chains in a Changing World*, Geneva, Fung Global Institute, Nanyang Technological University/WTO, 2013, p. 39.

¹⁴ Julen Berasaluce Iza, “El desarrollo bilateral de las relaciones de inversión,” in Embajada de la República de Corea en México, *op. cit.*, pp. 130-144.

2005	Agreement on Cooperation and Mutual Assistance in Customs Matters
2005	Memorandum of Understanding on Cooperation in Mineral Resources
2012	Memorandum of Understanding on Comprehensive Cooperation in Intellectual Property Rights
2013	Patent Prosecution Highway (PPH) Agreement
2014	Mutual Recognition Agreements for Authorized Economic Operators by Customs Authorities
2015	Memorandum of Understanding on Cooperation in Electronic Government
2016	Memorandums of Understanding: Information and Telecommunication Sciences, Industrial Technology and Energy

Note: Effective date in parentheses.

Source: Prepared by the author with data from the Embassy of the Republic of Korea and J. Berasaluce Iza, *op. cit.*

Korean direct investment in Mexico and global value chains¹⁵

The direct investment flows built by the Korean GVC segments operating in Mexico have been estimated by the Mexican Ministry of Economy (SE) at USD 8734.5 million from 1999 to 2022, which represents 1.3% of total foreign direct investment and places Korea as the thirteenth largest direct investor in the country,¹⁶ a relevant weight, but less than Korea's share in the country's foreign trade.

¹⁵ We do not address in this text Mexican direct investment in Korea, which is not nil, but quite small and is not related to the emphasis we place in this article on productive linkages within the framework of the North American market. This is another asymmetry that should be added to the panorama of Mexico-Korea economic relations.

¹⁶ Estimating investment flows is considerably more difficult than estimating trade flows. There are significant divergences between the data of the receiving and sending countries, particularly because the flows may transit through third countries, where their ultimate origin is "lost"—tax havens for Mexico, subsidiaries in the United States. The Korea Eximbank statistics differ from those of the SE as they estimate smaller amounts. However, they provide more detailed information on the characteristics and motivations of Korean DI in Mexico. See Kim Jin-oh, "Tendencia y características de la inversión directa de las empresas coreana en México," in Embajada de la República de Corea en México, *op. cit.* pp. 145-159; and SE, "Información estadística de la Inversión Extranjera Directa," in Datos Abiertos, at <https://datos.gob.mx/busca/dataset/informacion-estadistica-de-la-inversion-extranjera-directa> (date of access: April 27, 2023).

The first large Korean companies (Samsung Electronics, Lucky Goldstar, Donbu Daewoo Electronics, LG Electronics, etc.) belonged to the electronics and household appliance sectors, and were established in 1988 and 1989 on Mexico's northern border, in anticipation of the NAFTA negotiations. At the beginning of 2000, Korean DI ranked first in the production of electrical appliances, followed by electronics and computer equipment. These sectors led the first wave of Korean DI in the 2000s, which was interrupted by the global financial crisis (2008), and have continued investment in Mexico up to the present. There were smaller levels of Korean DI in the textile and apparel sector, plastics and rubber, chemicals and metal products (see Graph 1).¹⁷

The entry of Posco (2009), with productions destined for the automotive industry, anticipated the second moment of great dynamism of Korean DI, which started in 2012 and reached a peak annual level in 2016, followed by a "plateau" of relatively high inflows between 2018 and 2022. This "wave" has been led by the transportation equipment industry sectors, a more capital-intensive sector requiring massive investments, and culminated with the entry of KIA Motors and its auto parts suppliers in 2016. Subsequently, other companies belonging to conglomerates joined the automotive dynamics.¹⁸ In 2013, Korea Resources Corporation's investment in the Boleo copper mine was the largest entry by a Korean company in the mining sector and accounted for the rise in mineral exports to Korea.

Although there are more than 2000 Korean companies registered in Mexico, including many small and medium-sized enterprises (SMES), it is the 430 large companies¹⁹ that represent 87% of the Korean DI between 2010 and 2021,²⁰ with 51.6% destined for manufacturing and 31% for mining.²¹ As a result of these two moments of arrival of Korean companies,

¹⁷ SE, *op. cit.*

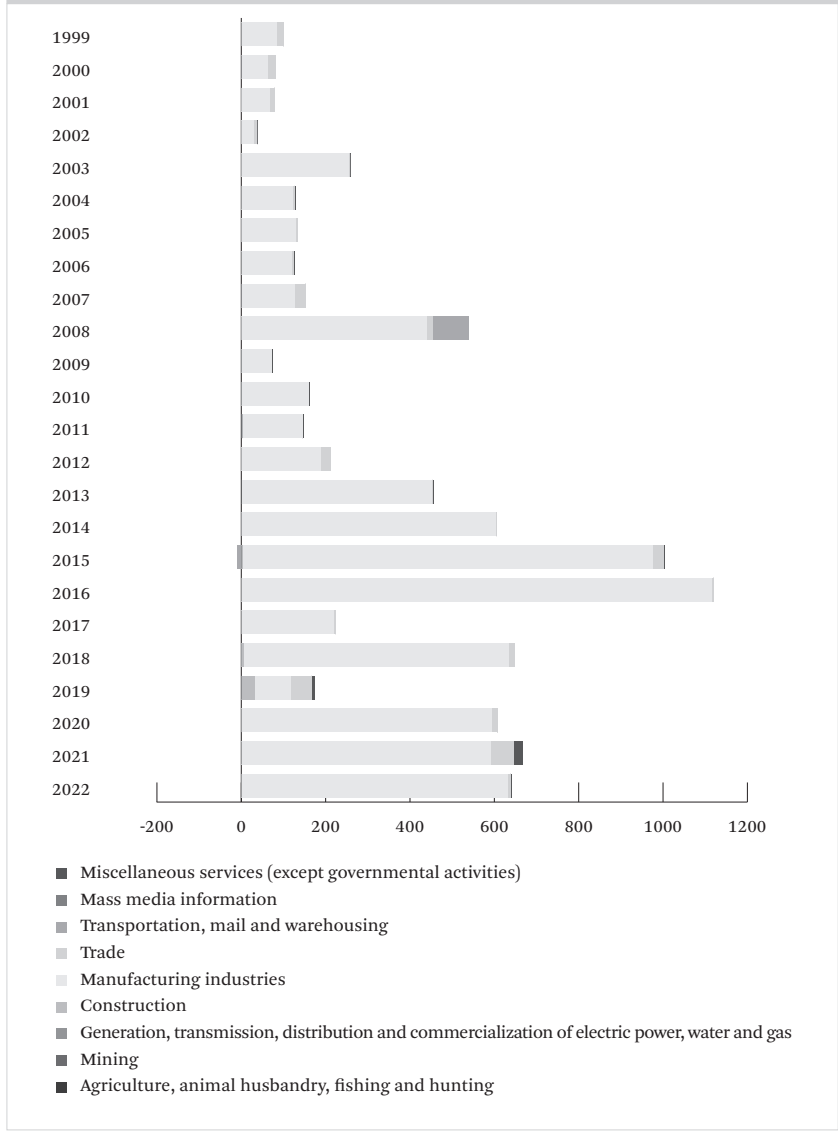
¹⁸ Kim Jin-oh, *op. cit.*

¹⁹ J. Berasaluce Iza, *op. cit.*

²⁰ Kim Jin-oh *op. cit.*

²¹ Investments in the electricity, gas and water (6.7% of the total), sales (4.4%) and finance and insurance (3.8%) sectors can in part be related to manufacturing investments.

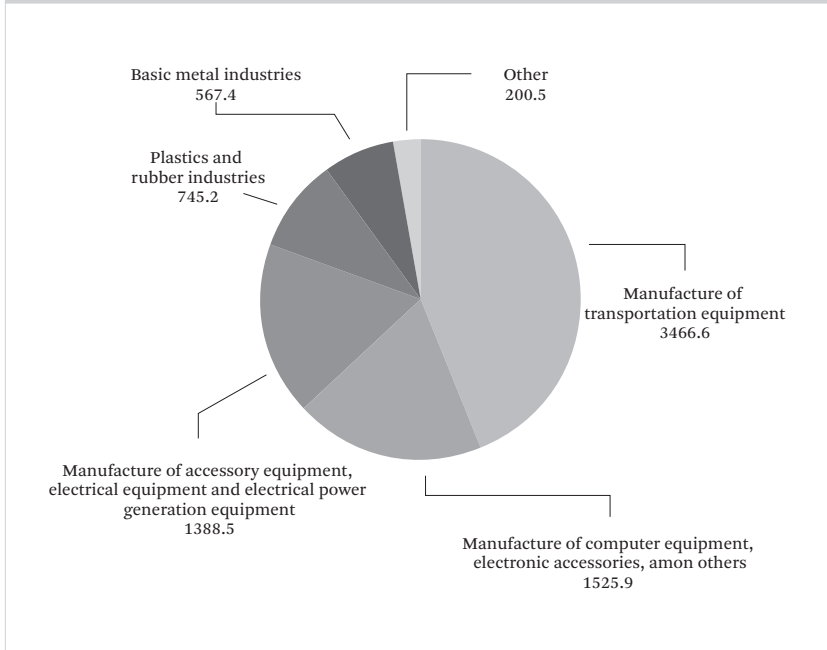
Graph 1. Korean investment in Mexico by sector, value, 1999-2022



Source: SE, "Información estadística de la Inversión Extranjera Directa," in Datos Abiertos, at <https://datos.gob.mx/busca/dataset/informacion-estadistica-de-la-inversion-extranjera-directa> (date of access: April 27, 2023).

the accumulated DI stock from 1999 to 2022 in the manufacturing sector has been centered around the transportation equipment sector (44%), followed by the computer and electronic equipment sector (19%), electrical accessories and appliances (18%), the plastics and rubber industry (9%) and basic metal industries (7%). The latter have been present in Mexico for a long time, but their importance has grown more recently due to their link with the automotive industry (see Graph 2).²²

Graph 2. Mexico, Korean investment in manufacturing industry, disaggregated by subsectors, cumulative value, 1999-2022



Source: SE, "Información estadística de la Inversión Extranjera Directa," in Datos Abiertos, at <https://datos.gob.mx/busca/dataset/informacion-estadistica-de-la-inversion-extranjera-directa> (date of access: April 27, 2023).

²² SE, *op. cit.*

Global value chains between Mexico and Korea: Growing significance

We have seen that the presence of gvcs between Korea and Mexico has been suggested by the characteristics of bilateral trade (high participation of P&C, two-way flows in certain lines associated with the productive sectors that in turn predominate in the Korean DI in Mexico). Now, how relevant are these linkages and where are they located? The two methods we have applied yield congruent results: the Mexico-Korea productive linkage has deepened and is centered on computer and telecommunications equipment, industrial machinery, electrical machinery and vehicles.

The Grubel-Lloyd index of the Mexico-Korea trade relationship²³ (calculated at 3 digits), which estimates the presence of gvcs through intra-industry trade,²⁴ has shown a sustained rise between 2008 and 2019. Although, at the aggregate level, the index is today barely at the threshold of potential intra-industry trade (0.10), following a similar trajectory to the Mexico-Japan bilateral relationship and implying that inter-industry trade predominates in the exchange, the analysis at the sectoral level provides interesting results.

In 2019, intra-industry trade and potential intra-industry trade between Mexico and Korea was found in the sectors of “office machines

²³ The Grubel-Lloyd index or GLI has been used since the 2010s to estimate the presence of production linkages through intra-industry connections between two countries, estimated from two-way trade in similar goods; see Herbert G. Grubel and Peter John Lloyd, *Intra Industry Trade: The Theory and Measurement of International Trade with Differentiated Products*, London, Macmillan, 1975. We have calculated the GLI based on the Standard International Trade Classification (SITC rev. 4 at 3 and 4 digits) for Mexico-Korea trade; see José Durán Lima and Daniel Craacu, *The Pacific Alliance and Its Economic Impact on Regional Trade Investment. Evaluation and Perspectives*, Santiago, Economic Commission for Latin America Latina and the Caribbean (ECLAC) (International Trade Series, 128), December 2016, at https://repositorio.cepal.org/bitstream/handle/11362/40860/S1601207_en.pdf (date of access: April 26, 2023).

²⁴ We follow the methodology of José E. Durán Lima and Mariano Álvarez, which establishes a threshold of 0.10 for potential intra-industry trade and 0.33 for intra-industry trade for Latin American countries that are not highly integrated in the gvcs. J. E. Durán Lima and M. Álvarez, *Indicadores de comercio exterior y política comercial: mediciones de posición y dinamismo comercial*, Santiago, ECLAC, November 2008, at https://repositorio.cepal.org/bitstream/handle/11362/3690/S2008794_es.pdf (date of access: April 26, 2023).

and automatic data processing machines” (4 subheadings), “apparatus and equipment for telecommunications and for sound recording and reproduction” (2 subheadings), “general industrial machinery and equipment not elsewhere specified (n.e.s.), and parts and components of machines” (12 subheadings), “electrical machinery, apparatus and appliances n.e.s., and parts thereof” (5 subheadings) and “Road vehicles” (2 subheadings). In sum, the sectors with the highest presence of intra-industry trade are those with longer-standing Korean DI, in which companies organized productive linkages over years present in the country, but the automotive sector, whose expansion in Mexico is more recent, already showed similar signs in 2019 for two subheadings.

Value-added analyses²⁵ corroborate these findings; between 1995 and 2018, Korean value added grew in both exports and aggregate demand in Mexico.²⁶ At the aggregate level, Mexico and Korea are economies deeply integrated into international GVCs, albeit in differing ways. The indicators, for both, were still rising in 2020, even though a supposed “de-globalization” had already begun (see Table 9).²⁷ For Mexico, the backward participation indicator is predominant and is linked to an increasing share of value added embodied in its exports of goods. In contrast, Korea has changed its position, as it incorporates less imported value added in its exports after 2015 and tends, rather, to raise its forward participation, which estimates the percentage of domestic value added incorporated in exports from other countries. This means that the country has offshored the production of its companies to third countries.

²⁵ This recent methodology estimates the presence of GVCs from national value added, based on domestic national accounts, and approximates the value added generated by countries or territories belonging to a value chain.

²⁶ These statistics, developed within the framework of the OECD and the WTO, are collected in new international databases, in particular the Trade in Value Added (TiVA) database. OECD, “Trade in Value Added (TiVA) 2021 ed: Principal Indicators,” in OECD Stats, at <https://stats.oecd.org/index.aspx?queryid=106160> (date of access: April 27, 2023).

²⁷ WTO, “Global Value Chains,” at https://www.wto.org/english/res_e/statis_e/miwi_e/miwi_e.htm (date of access: April 26, 2023).

Table 9. Mexico and the Republic of Korea: Indicators of participation in global value chains, 2000, 2010, 2015, 2020, 2021 (percentage)

Mexico	2000	2010	2015	2020	2021
Total participation in GVCs	39.8	42.5	41.7	45.5	49.3
Forward participation	7.8	8.6	9	7.5	8.8
Backward participation	32.1	33.9	32.6	38.1	40.4
Republic of Korea					
Total participation in GVCs	44.6	49.6	51.3	46.9	51.2
Forward participation	15.5	14.5	15.1	19.4	19.9
Backward participation	29	35.1	36.2	27.5	31.2

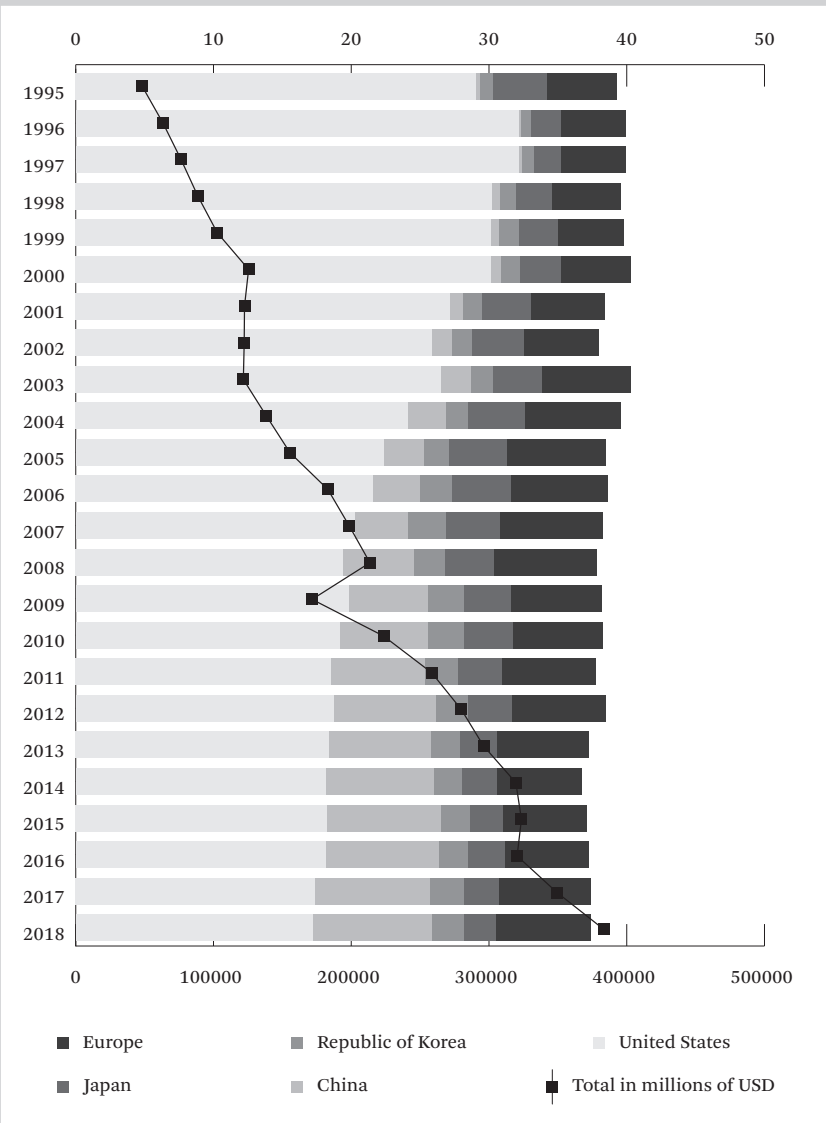
Source: Research Institute for Global Value Chains and UIBE GVC Laboratory, University of International Business and Economics.

It is crucial to ask why these changes impacted productive linkages and the origin of value added in Mexican exports. Value added originating in Korea increased particularly for exports in two sectors with a high presence of Korean DI, but also for aggregate manufacturing exports.²⁸ The trend is especially upward for exports of the computer, electronic and electrical equipment sector (rising from 1.47% in 1995 to 4.77% in 2018, but with a peak above 5% in 2007-2009), followed by the transportation equipment sector, which rose from 0.92 to 1.81% of the value exported by Mexico, up between 2016 and 2018. Korean value added rose from 0.96% to 2.31% for the manufacturing industry as a whole (see graphs 3, 4 and 5).²⁹

²⁸ Domestic value added is not explicitly shown in the graphs; it can be deduced from the percentage added by each country of origin. Domestic value added is higher in exports of the aggregate manufacturing industry—it has strengthened in the last decade, exceeding 60%—, is somewhat lower in the transportation equipment sector, but increases its relative share. The national value added is lower in exports of the computer, electronic and electrical equipment sector, but slightly exceeds 50% of the value exported in the 2010s.

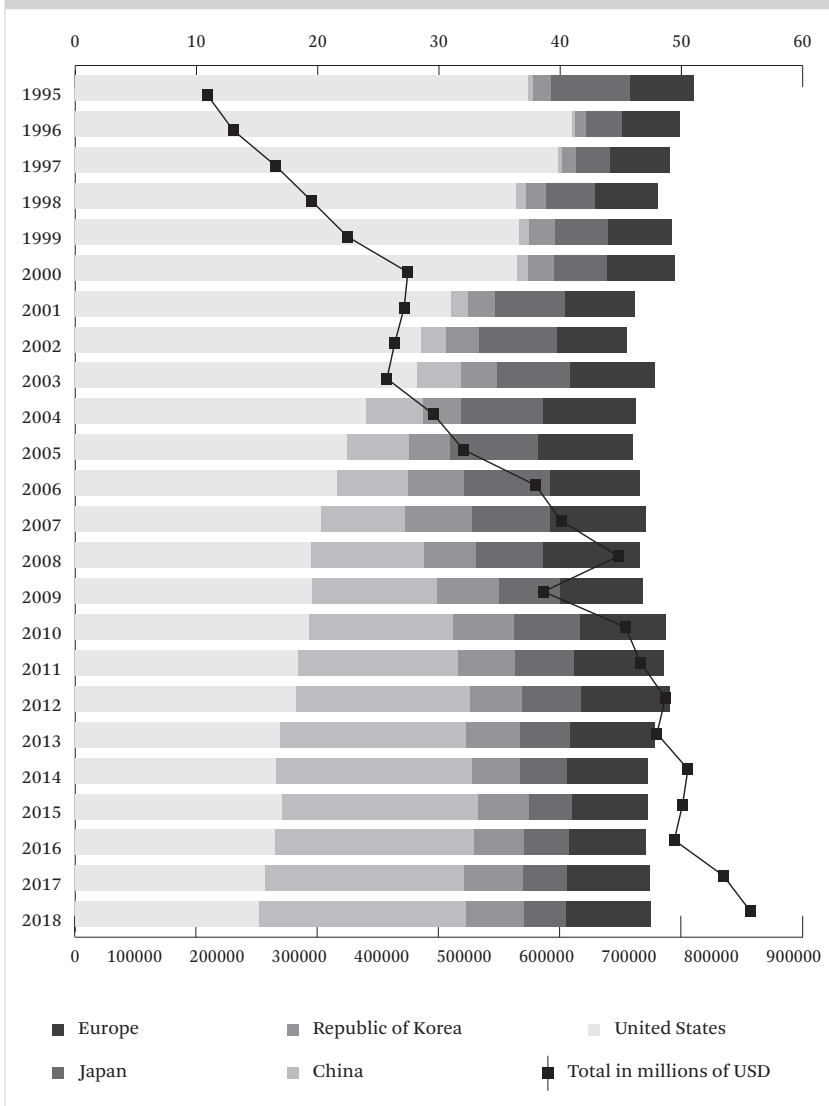
²⁹ For gross exports, the contribution of Korean value added rose from 0.65% to 1.74% of gross exported value in the same period. Mexico's value added in Korea's gross exports also rose from 0.03% in 1995 to 0.3% in 2018. In this year, the top country of origin of external value added of Korean exports was China (5.22%), followed by Europe as a whole (5.21%). OECD, *op. cit.*

Graph 3. Mexico: Origin of value added, manufacturing industry, in percentages, 1995-2018



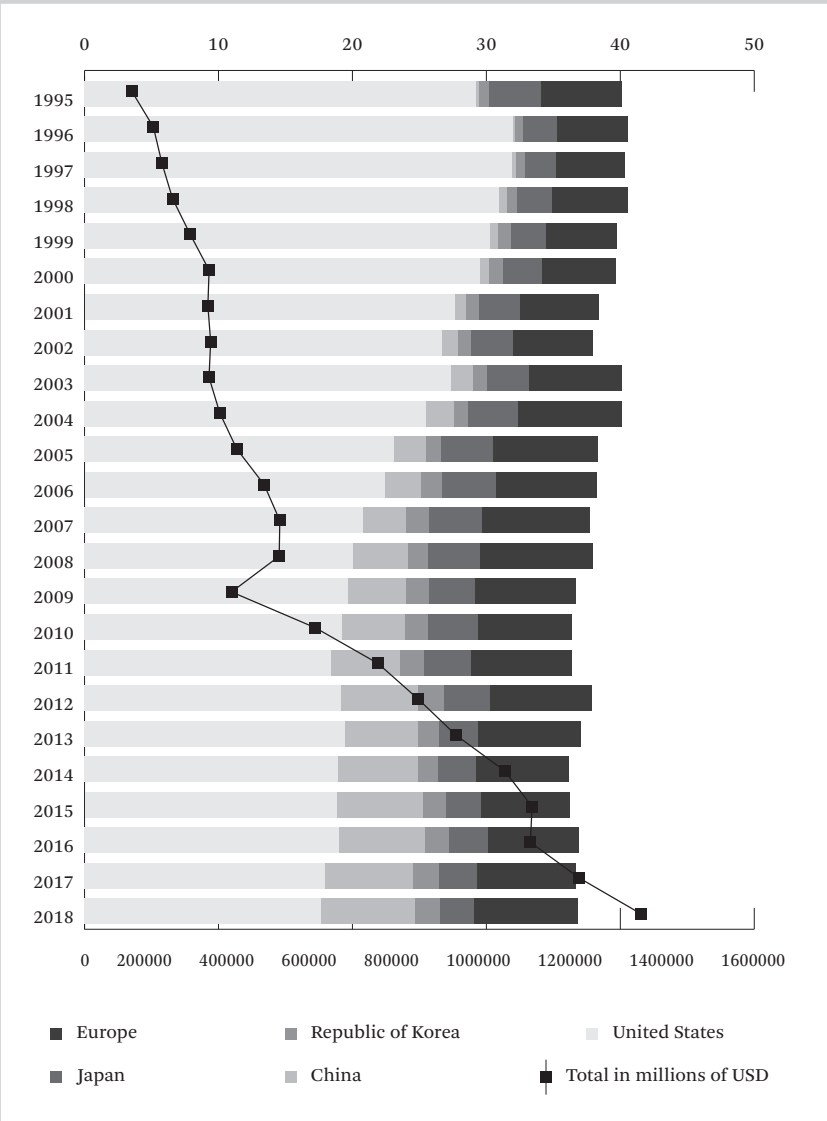
Source: TIVA-OECD.

Graph 4. Mexico: Origin of value added, computer, electronic and electrical equipment sector, in percentages, 1995-2018



Source: TIVA-OECD.

Graph 5. Mexico: Origin of value added, transportation equipment sector, in percentages, 1995-2018



Source: TIVA-OECD.

However, the main counterpart to the proportional decline of U.S. value added in Mexican exports came from the rise in value added originating in China, which in fact exceeds the aggregate share of Korean and Japanese value added, except, for the moment, in the transportation equipment sector. Thus, China's crucial role in the GVCs exporting from Mexico has been strengthened, with a probable participation of Korean conglomerates with subsidiaries established in the Asian country. In sum, the denser productive linkages of the Mexico-Korea relationship constitute an "asset" of this relationship, but in an international framework of intense competition between producing nations.

Prospects for the bilateral economic relationship

The Mexico-Korea link is relatively small but its dynamism means that, economically, both countries have benefited. These have resulted in greater trade exchanges, Korean DI in Mexico and productive linkages between various industrial sectors of the two countries, which are the main "assets" of the relationship. Certainly, there are aspects where better results can be obtained for both parties and the identified asymmetries can be resolved. It is considered that the absence of a trade agreement has hindered the development of certain aspects of the bilateral relationship, specifically with regard to Mexican exports to Korea and their low diversification. In the case of Korea, there has also been a loss of competitiveness in its exports of goods to Mexico, especially with respect to China and its concentration around a few lines.

The signing of a broader bilateral agreement, a new generation free trade agreement, could have beneficial effects for both economies. Firstly, it could remove the obstacles hindering the diversification and increase in value of Mexican exports to Korea, which could bring benefits to the country, as exemplified by the Mexico-Japan relationship, with its more varied exports and lower trade deficit. At the same time, it could stimulate greater investment by Mexican companies in Korea, thus resolving another of the characteristic asymmetries in the relationship.

However, the potential advantages of a comprehensive free trade agreement can only be understood in the general context of the GVCs, oriented

towards the North and South American markets. The North American market is undergoing profound changes (the new USMCA rules, reshoring and nearshoring, the regionalization of GVCs in the context of the China-U.S. rivalry, the U.S. Inflation Reduction Act and technological advances) that present both risks and opportunities for Mexico and for GVCs led by Korean companies. In this context, the existence of productive linkages between Mexico and Korea is a departure point that can be used to the benefit of both countries. This is an opportunity for Mexico to move up these value chains towards higher value-added production segments, associated with higher employment and better wages. Based on the identified linkages, it is possible to strengthen the competitiveness of existing sectors through the entry of Korean inputs at a better cost and the attraction of new investments that strengthen the value chain in Mexico and its linkage with national capital companies, especially SMES, thus complying with the new rules of the USMCA.

A free trade agreement could also be crucial to encourage investment and linkages with other up-and-coming sectors in the region: semiconductors, batteries, green hydrogen and everything related to the transition to a more “sustainable” economy. An example of this is the strengthening of the role of cooperation in scientific and technological research, an area in which Korea has become a global leader.

An additional benefit would be to reduce the degree of trade and investment concentration around a few sectors and the consequent risk it represents. The benefits of the automotive industry in the bilateral relationship³⁰ are associated with important risks faced by the sector, such as the transition to electrification and other energy sources, growing competition from Chinese companies, the new USMCA rules, among others. In short, it would be beneficial for Mexico to diversify production chains around other sectors already present and new activities; a free trade agreement could attract Korean companies willing to develop them.

³⁰ José Luis León Manríquez and Mara Andrea Rivas Bonilla, “La industria automotriz: sector clave en la vinculación económica Corea-México,” in Embajada de la República de Corea en México, *op. cit.*, pp. 160-180; and Juan José Ramírez Bonilla, “Corea y México en el marco del Tratado Estados Unidos-México-Canadá,” in Embajada de la República de Corea en México, *op. cit.*, pp. 189-203.

However, the future treaty should not only be a comprehensive agreement that includes GVC disciplines and expands scientific and technological cooperation with Korea, rather it should also be accompanied by a strategic vision on Mexico's part; the country can learn a lot from the long-term vision developed by Korean companies and the Korean government. At a time when the most powerful countries on the planet are implementing industrial policies and seeking to reorder the GVCs, based on their own geo-economic and geo-strategic objectives, it is crucial for Mexico to define priorities and a long-term vision, not only in its relationship with Korea but also at the global level. The restructuring of the GVCs has just begun and is a costly and uncertain process that national governments will be able to influence.

Finally, we would like to add to this panorama the Pacific Alliance, an instrument of strategic linkage and projection of Mexico towards South America, which Korea is applying to join as an associate State.³¹ This represents another avenue through which a free trade agreement could be established between the two countries through group negotiations, just as the Pacific Alliance did with Singapore. The existing free trade agreements of Chile, Colombia and Peru with Korea, the presence of intra-industrial trade levels between these countries and the role of an export platform for the products of Korean companies that Mexico has adopted in the last decade could be linked to strengthen regional production chains, an explicit objective of the Pacific Alliance that was adopted to reduce the primary-export profile of the Andean countries.

Conclusions

We have analyzed the main economic aspects of the bilateral relationship between Mexico and Korea, such as trade in goods, investment flows and productive linkages. The positive trajectory of these relations has been the combined product of a favorable international context with economic globalization and productive fragmentation, the projection developed

³¹ Singapore became the first Pacific Alliance Partner State.

by large Korean companies, and the strengthening of Mexican productive capacities. It is also worth highlighting the capacity shown by the two governments to reach the agreements required for Korean companies to expand their productive activities in Mexico and to develop bilateral cooperation activities.

These mutually beneficial economic relations are complemented by bilateral ties that go beyond the purely economic. Today, strengthening these ties and bilateral dialogue has the potential to contribute to improving the resilience and competitive position of both nations in a context of great uncertainty.