Nearshoring in Mexico

Diverse options for industrial upgrading

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Abstract

Mexico has been a nearshoring platform for the United States (US) economy on a regular basis in recent decades. However, the nature and degree of Mexico's integration within North America, as well as its ability to create and capture value and innovation rents in its core domestic industries, have varied over time. Previous examples of nearshoring in Mexico in the automotive and textile/apparel industries, as well as regional trade agreements like NAFTA and USMCA and global trade conflicts such as the US-China trade war, have made Mexico a likely candidate to take advantage of recent US industrial policies to strengthen strategic American supply chains in industries such as semiconductors, electric vehicles, pharmaceutical active ingredients, and rare-earth minerals (e.g., lithium). While some investments are occurring at the subnational level in Mexico, a more focused national response will multiply potential nearshoring benefits for Mexico.

In the current conjuncture, Mexico should consider several policy options related to nearshoring in the North American setting:

- Successful nearshoring requires a commitment to an active industrial policy in Mexico that builds critical infrastructure, identifies the specific niches in global value chains (GVCs) that the country wishes to occupy, attracts appropriate foreign direct investment, supports local firms in acquiring needed productive and technological capabilities, and pursues a human capital strategy that creates a skilled workforce needed to implement this strategy.
- US supply-chain priorities are product-specific and nearshoring countries should position themselves in appropriate niches of these chains.
- The most important part of a GVC often is not the finished good or service, but rather key components or raw materials.
- The complex interdependencies in GVCs magnify the possibilities for unintended consequences, which can help as well as hurt Mexico.
- Resource nationalism offers control but hinders the economic partnerships needed to move up the value chain in high-tech sectors.

Introduction

Over the past decade, the global economy has confronted an unprecedented array of major disruptions, which led to a growing awareness of the significance of multitiered cross-border supply chain:

- A retreat to a postglobalization economic order in which flows of international trade and foreign direct investment (FDI) experienced sharp fluctuations and became more regionalized (O'Neil, 2022).
- A shift to a more fragmented, contentious and multipolar geopolitical scene marked by numerous trends: the rise of China as a major technological and economic power; the growing economic and political clout of large emerging economies such as India, Brazil, and Indonesia; a new wave of economic nationalism across all regions, including the United Kingdom's withdrawal from the European Union (Brexit), and the onset of populist and nationalist leaders across North America, Europe, and Asia; and a series of cross-border military confrontations, such as the Russian invasion of Ukraine (February 2022) and the Israel-Hamas conflict (since October 2023).
- A global health crisis sparked by the outbreak of the COVID-19 pandemic in early 2020 that fragmented and weakened global supply chains for all goods and services for several years (Gereffi, 2020).
- A digital revolution that is upending traditional goods- and service-based industries through the dramatic expansion of e-commerce, artificial intelligence (AI), advanced manufacturing, cloud computing, social media, and other innovations that have reshaped economic and social transactions in virtually all sectors (UNCTAD, 2017).

These disruptions challenged established paradigms for looking at the global economic order and how countries develop within it. Global industries and technological progress are better understood through the lens of highly complex international supply chains, where multinational enterprises (MNEs) spread their sourcing, production, and distribution facilities across multiple countries and regions. Countries of different sizes, capabilities, political orientations, and resource endowments occupied varied niches within these chains, and economic leadership reflected power, knowledge, and labour dynamics (Dicken, 2015; Gereffi, 2018a and 2019a; Janeway, 2024; and Tett, 2024).

This paper will look at US-Mexico relations from a specific vantage point: the concept of "nearshoring". Recent studies of globalization and development highlight the role of global supply chains as a backdrop for the interplay between government policies and firm strategies in global industries. Countries are repositioning themselves in global value chains (GVCs) to try to improve the likelihood of economic, social, and environmental upgrading (Gereffi, 2018a and 2019b). For policymakers and academics, the disruptions caused by the COVID-19 pandemic and other recent events affect the configuration of GVCs (Gereffi, Lim and Lee, 2021) in various ways, such as:

- *Offshoring:* relocating factories that produce goods and services from more costly to lower cost regions and countries;
- *Reshoring:* relocating factories previously offshored by an MNE back to the domestic territory of the parent company;
- *Nearshoring:* moving manufacturing operations geographically closer to the country where the goods or services will ultimately be sold;
- *Friendshoring:* shifting production and sourcing operations to countries considered to be geopolitical allies of the home countries or main markets of MNEs; and
- *Security-shoring:* the recently articulated US policy since 2022-2023 of redefining competition with China in terms of US national security objectives, applicable to third parties with whom the US has economic, political, and diplomatic ties (Dussel Peters, 2024).

Nearshoring is particularly relevant to Mexico because recent US policy initiatives prioritize efforts to strengthen American supply chains by making them more "resilient," which includes reshoring, nearshoring, and friendshoring options (Gereffi, 2023a and 2023b). To explore the implications of new US industrial policies for Mexico, this paper is organized as follows. Section I reviews Mexico's previous nearshoring ties with the US economy in the postwar era, and section II links these patterns of regional economic integration to the burgeoning academic and policy focus on GVCs as a new development paradigm. Section III taps the extensive GVC research on Mexican industrial development to discuss four cases of US-Mexico nearshoring, while section IV explores lessons that can be distilled from Mexico's previous nearshoring experiences.[1] Section V assesses how recent US industrial policies will affect nearshoring options in Mexico, and section VI discusses the GVC policy implications of nearshoring in Mexico.

[1] The historical discussion of nearshoring in Mexico and the analysis of specific GVC cases used to illustrate Mexico's nearshoring experience draw heavily from a forthcoming article by Gary Gereffi on "The lessons of nearshoring in Mexico", *Foro Internacional*, El Colegio de México.

I. Postwar United States-Mexico economic integration in the North American context

The United States (US) and Mexico have been closely intertwined for the past several decades. In the post-World War II era, several programs have linked the two economies with varying kinds of ties, including migrant workers, trade agreements, and FDI.

The *maquiladora* program began in 1965 as the Border Industrialization Program, which permitted Mexican plants to assemble and export goods and services using duty-free inputs from the foreign markets where those goods are consumed (predominantly the US). Over time, the scale and scope of maquila activities expanded dramatically, with the primary industries shifting from "old" maquiladora plants for labour-intensive light consumer goods like textiles and apparel, footwear, and basic electronics items like transistor radios located close to the US-Mexico border to "new" maquiladoras for more capital- and technology-intensive goods such as motor vehicles, computers, medical supplies, and advanced electronics products that were spread throughout the Mexican economy (Gereffi, 1996; Carrillo and Lara, 2004).

The North American Free Trade Agreement (NAFTA) in 1994 increased the transnational integration between the US and Mexican economies by facilitating cross-border FDI as well as trade, and it allowed the duty-free access of US and Canadian inputs to industrial plants established anywhere within Mexico. NAFTA's impact on the Mexican economy was enhanced by advances made across a wide range of industries during the country's pursuit of an import-substituting industrialization (ISI) development strategy in the 1950s through the 1970s (Gereffi and Wyman, 1990). Mexico's relatively successful adoption of ISI policies had numerous economic benefits, including extensive FDI from the US, Canada, Europe, and Japan that helped to build local industries, increased local content and technology transfer, as well as the promotion of domestic joint ventures.

Mexico's industrial progress via ISI policies was not sustained in the 1980s and 1990s, due to the onset of the Latin American debt crisis in the early 1980s,[2] prompting a "lost decade" in Latin American development. As a result, Mexico and most countries in Latin America turned away from state-centered approaches like ISI to a market-oriented development paradigm dubbed the "Washington Consensus" (Babb, 2013; Gereffi, 2014). This new model was premised on lowering the trade barriers and FDI

[2] After August 1982, when Mexico's Finance Minister Jesús Silva Herzog declared that Mexico would no longer be able to service its debt, most commercial banks significantly reduced or halted new lending to Latin America.

restrictions associated with ISI, adopting widespread privatization and liberalization reforms, and returning to an export-led growth path across both manufacturing and resource-based sectors. This also prompted Mexico to engage in head-to-head competition with China after 2000 for access to the rapidly growing and profitable US market (Gereffi, 2018c).

As this brief overview indicates, Mexico has been a nearshoring platform for the US economy on a regular basis in recent decades. However, the nature and degree of Mexico's integration within North America, as well as its ability to create and capture value and innovation rents in its core domestic industries, have varied over time. To better understand these trade-offs and to assess what Mexico's policy options are vis-à-vis nearshoring, we will examine Mexico's recent economic development from a GVC perspective (Gereffi, 2018a).

II. Global value chains as a development paradigm

Traditionally, the economics discipline has distinguished two main levels of analysis: (i) *macroeconomics:* top-down studies of broad systems like trade and investment regimes, and the behaviour of statistical aggregates, such as gross domestic product (GDP), national income, and the like; and (ii) *microeconomics*: bottom-up studies of individual agents, such as firms, consumers, workers, and investors. However, the space between the two has largely been neglected. This oversight is now being redressed by the growing attention given to the structure and dynamics of industrial supply chains, which fall between the macro-micro divide. Some economists refer to this new field as *mesoeconomics* (Janeway, 2024; Tett, 2024).

The study of industrial supply chains and related concepts like global value chains has received a lot of attention outside of economics for decades. Since the mid-1990s and early 2000s, extensive literatures in development studies, economic sociology, economic geography, and international business have emerged using a variety of closely related concepts:

- *Global supply chains:* Supply chains are the basic building block for international business. They refer to the input-output structure (buyer-seller links) that firms rely on to procure and sell goods and services in any industry. Supply chains have become increasingly globalized since the 1980s, and a major goal of MNEs is lowering logistics costs and trade barriers that permit faster, cheaper, and assured access to global markets (Shih, 2020; Gereffi and Lee, 2012).
- *Global commodity chains (GCCs):* This approach arose in the 1990s as researchers began to examine the global industries in natural resources, manufacturing, and services that linked developing countries to the world economy (Gereffi and Korzeniewicz, 1994; Bair, 2005 and 2009; Gereffi, 2022). GCC studies carried out interview-based field research with grounded concepts, such as: (i) the buyer-driven and producer-driven "governance structures" by which lead firms in global and local industries exercise power in supply chains (Gereffi, 1994 and 1999); and (ii) the trajectories of economic, social, and environmental "upgrading" (or downgrading) that shape the winners and losers and spillover effects of the development process at diverse geographic scales (e.g., Gereffi, 2018a and 2019b; Ponte, Gereffi and Raj-Reichert, 2019).
- *Global production networks (GPNs):* Economic geographers pioneered an extensive body of empirical research using the GPN concept, which highlighted the role of the state and other local institutions in the development process (Henderson and others, 2002; Dicken, 2015; Coe and Yeung, 2015). In an era of growing economic and political nationalism, nationalist

sentiments often shape the behaviour of MNEs and related corporate strategies can significantly impact regional and national development (Edman and others, 2024).

- *Global value chains (GVCs):* The vast (and still growing) work on GVCs originated with the Rockefeller Foundation's "Global Value Chains Initiative" in 2000-2005 (Gereffi and Kaplinksy, 2001), and it extended many of the conceptual and empirical insights of the GCC approach with greater attention to create, capture and maintain different kinds of "value" (e.g., skills, jobs, exports, profits, R&D) along global supply chains (Gereffi, 2018a and 2018b; Ponte, Gereffi and Raj-Reichert, 2019; De Marchi and others, 2020).

There are six main dimensions of a standard GVC analysis (Gereffi and Fernandez-Stark, 2016):

- The input-output structure of a GVC[3]
- Geographic scope
- Governance structure (lead firms and industry organization)
- Levels and types of upgrading
- Institutional context
- Industry stakeholders

The policy relevance of the GVC perspective was greatly enhanced via its adoption by international organizations such as the World Trade Organization (WTO), the World Bank, and the United Nations Conference on Trade and Development (UNCTAD, 2013) as a development paradigm following the global recession of 2008-2009, which precipitated the world's greatest trade collapse since the Great Depression of the 1930s (Baldwin, 2009). For the WTO, the economic crisis of 2008 was an existential threat. Since its creation in 1995, developing nations had critiqued the organization for supporting free trade as an engine of development. As global trade slowed dramatically during the global recession, the WTO was concerned that many countries might adopt protectionist measures that would undo years of progress towards freer global trade (Mayer and Gereffi, 2019).

Pascal Lamy, Director-General of the WTO from 2005 to 2013, believed the WTO needed a different narrative to demonstrate the importance of maintaining open markets. Lamy quickly became a champion of the GVC concept, which bridged the "old" world of 20th century trade when production was largely national and the "new" world of 21st century trade that was organized in global supply chains where production was spread across up to 10-12 countries, and the volume of trade in intermediate products often surpassed trade in finished goods (Lamy, 2018). The WTO's embrace of GVC analysis under Lamy's leadership was showcased in its "Aid for Trade" initiative with the Organization for Economic Cooperation and Development (OECD) that was intended to foster trade among developing and especially least-developed countries (WTO, 2013).

The World Bank's uptake of the GVC approach parallels that of the WTO and the OECD, since the World Bank largely ignored GVCs prior to the onset of the 2008-2009 global financial crisis. But the World Bank story is more bottom-up than top-down, since it begins with "policy entrepreneurs" who worked in the World Bank's Poverty Reduction and Economic Management (PREM) division that provided policy advice and technical assistance to developing countries. When the 2008 financial crisis hit, the first reaction of economists in PREM's International Trade Unit mimicked those at WTO and OECD: fear of rising protectionism (Gereffi, 2019a, pp. 199-201). However, the financial crisis created an opening for a non-traditional way of thinking because the pressures for protectionism were a great deal less than expected. To explain why this was the case, the World Bank publicly adopted the GVC approach in a new book, *Global Value Chains in a Postcrisis World: A Development Perspective* (Cattaneo, Gereffi and Staritz, 2010). It highlighted the resilience of a global economy organized around GVCs due in part to the growing importance of supply chains linking producers and markets in South-South trade as well as more traditional North-South trade and investment.

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[3] This is conceptually elaborated and empirically grounded using a distinctive methodology known as GVC mapping (Frederick, 2019).

While the GVC approach has flourished in both academic circles and numerous international organizations, like the WTO, the World Bank, the International Labor Organization (ILO), the United Nations Industrial Development Organization (UNIDO), and UNCTAD (Gereffi, 2019a; Mayer and Gereffi, 2019), it also has a big impact at the country level. The academic literature is replete with GVC country studies (De Marchi and others, 2020; Kano, Tsang and Yeung, 2020), and national policymakers, multilateral development agencies, and diverse stakeholders have commissioned focused reports on international competitiveness and economic, social, and environmental upgrading across a wide range of global industries.[4]

[4] The Global Value Chains Center at Duke University has an extensive portfolio of GVC studies carried out for a wide range of clients including countries, international organizations, and non-governmental organizations (NGOs) [online] https://www.globalvaluechains.org/. Illustrative studies include "Chile's offshore services value chain" (Fernandez-Stark, Bamber and Gereffi, 2010); "Costa Rica in global value chains: Medical devices, electronics, aerospace and offshore services" (Gereffi and others, 2013); and the Philippines across a wide range of GVCs, including shipbuilding, rubber, cocoa-chocolate, coffee, mangos, paper, chemicals, electronics and electrical, automotive, and aerospace [online] https://www.globalvaluechains.org/cggcproject/philippines/.

III. United States-Mexico nearshoring: Four cases from a GVC perspective

Mexico is a rich repository of GVC research, especially given that one of the originators of the GCC and GVC approaches, Gary Gereffi, has worked extensively on the country since carrying out his doctoral dissertation research on the Mexican pharmaceutical industry in the late 1970s (Gereffi, 1983 and 2022). Section III will highlight four cases of industrial development in Mexico that relied on the interplay of government policies and firm-level analysis as a baseline for exploring how the nearshoring agenda today compares in its challenges and opportunities to those in Mexico's recent past.

In this section, four recent GVC case studies of nearshoring in Mexico are briefly summarized in terms of the relevant industries and products, time periods, the role of firm strategies and interfirm networks, the main Mexican and US policies employed, and the most significant development outcomes and takeaways for Mexico. These cases use the firm-oriented GVC framework discussed in section II to analyse the impact of Mexican development strategies at the national, local, and transnational levels. We will then assess Mexico's ability to take advantage of new US industrial policies in the early 2020s by the Biden administration, to be discussed in sections IV and V.

A. Pharmaceuticals and the ISI regime in Mexico

Industry/product; time period–pharmaceuticals/steroid hormones; 1950s-1970s

Significance of the case: In the 1950s, Mexico emerged as the leading global producer of a new category of "wonder drugs" called steroid hormones, which included cortisone (an anti-inflammatory drug that dramatically relieved the symptoms of rheumatoid arthritis) as well as the active ingredient in the first generation of oral contraceptives. By the end of the 1950s, Mexico controlled 80-90% of the world production of steroid hormones. By 1975, steroids accounted for over 60% of all pharmaceutical exports from Mexico (Gereffi, 1978 and 1983).

Key firms: Syntex was a Mexican firm set up in the mid-1940s that processed Mexican raw materials (a plant called barbasco) to dominate the production of bulk intermediates (mainly diosgenin) used to make cortisone and its derivatives. An oligopoly of six European and American MNEs controlled the R&D and marketing of steroid hormones to the US and European markets, and a Mexican state-owned enterprise (Proquivemex) was created in 1975 to control the supply of barbasco to the European and American MNEs.

Main policies: President Luis Echeverría (1970-1976) was the architect of Mexico's most ambitious phase of ISI policymaking. The goal of the ISI strategy was to induce MNEs to invest in Mexico in order to build local industries, and in return, the state guaranteed MNEs access to the protected Mexican market. In the steroid hormone case, Echeverría hoped to use Proquivemex to "renegotiate Mexico's dependency" on MNEs by imposing three new conditions on their access to barbasco: (i) MNEs would pay a much high price for processed barbasco from Proquivemex; (ii) MNEs would devote a certain percentage of their installed capacity to make finished steroid hormones for Proquivemex (to be used either as exports or for sale to the internal market); and (iii) the government desired the Mexicanization (majority local control) of the six MNE subsidiaries in the industry, all of which were 100% foreign-owned (Gereffi, 1978, pp. 275-276).

Economic outcomes: For various reasons, the plans proposed by the Mexican state to reduce Mexico's dependency on MNEs in the steroid hormone industry backfired. In 1955, Syntex moved its headquarters from Mexico to Palo Alto, CA in order to have fuller access to US scientific talent, and thus Mexico lost its lone technological lead firm in the field (Gereffi, 1983, pp. 109-114). In addition to this key defection, the US government intervened at the behest of American MNEs and forced the Mexican state to stop protecting domestic producers of steroid intermediates, or the US would block the sale of Mexico's steroid exports to the US market.

Lessons from the case: The use of a state-owned enterprise like Proquivemex to promote industrial development in Mexico's steroid hormone industry was ill advised for several reasons: (i) Mexico was still technologically dependent on MNEs for the vast majority of active ingredients used in steroid hormones and other pharmaceutical products consumed nationally; (ii) Mexico was economically dependent on the US as a mass market for its pharmaceutical exports; and (iii) Proquivemex was politically dependent on continued support from the government to carry out its reforms. Both bureaucratic conflicts during the Echeverría administration and the sexennial change to a new president (José Lopez Portillo, 1976-1982) diminished Proquivemex's domestic political support.

B. NAFTA's impact on industrial deepening in Mexico

Industry/product; time period: textiles and apparel/blue jeans; 1990s

Significance of the case: Mexico became a world-class player among global textile and apparel exporters during the second half of the 1990s. In 1991, Mexico was the 7th largest apparel exporter to the US. By the end of the decade, Mexico surpassed China to gain the top spot in the US market. The value of Mexican apparel exports increased more than sevenfold from $1.2 billion in 1990 to $8.8 billion in 1999 (Bair and Gereffi, 2001, p. 1889). Blue jeans were the leading item in Mexico's garment export repertoire, accounting for 34% of Mexico's apparel exports to the US in 1999, and the northern Mexican city of Torreón surpassed El Paso, Texas as the leading blue jeans export cluster in the world.

Key firms: The main GVC story in this case is the shift in the structure of Mexico's apparel industry from a reliance on in-bond assembly plants in the *maquila* sector that flourished along the border throughout the 1980s and early 1990s to the rise of "full-package" apparel suppliers[5] that emerged after the passage of NAFTA in 1994 (see diagrams 1 and 2). In 1993, the major US customers for the denim blue jeans made in Torreón were four large manufacturers: Levi Strauss, Wrangler, Farah, and Sun Apparel. By 2000, these companies were joined by top US retail chains (JC Penney, Sears, Kmart, Wal-Mart, and Target), the two leading specialty apparel retailers (Gap and Limited), and marketers selling a wide range of fashionable brands (e.g., Liz Claiborne, Donna Karan, Tommy Hilfiger, Calvin Klein, and Polo/Ralph Lauren) (Bair and Gereffi, 2001, p. 1892).

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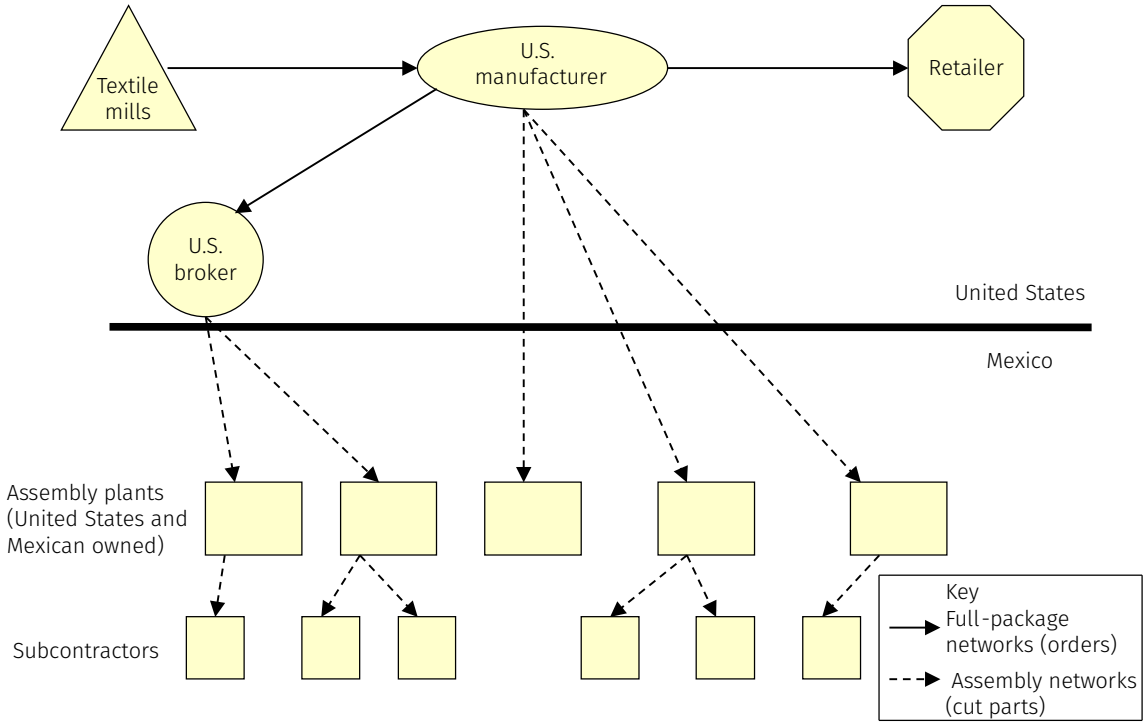
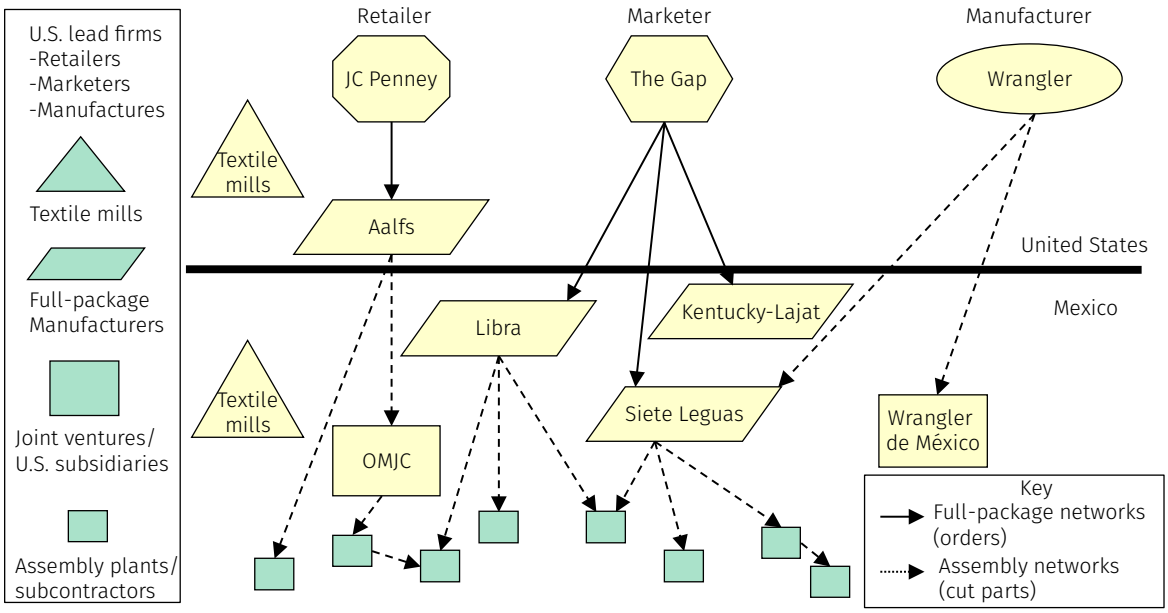
[5] The rise of buyer-driven GVCs in the global apparel industry facilitated the shift from the mere assembly of imported inputs into finished garments (traditionally associated with export-processing zones and Mexico's "maquila" sector) to a more domestically integrated and higher value-added form of exporting known as "full-package" supply. Full-package production was a key to the success in East Asia's highly dynamic consumer-goods export sectors in economies like Hong Kong (SAR), the Republic of Korea, Taiwan Province of China, and China from the 1970s through the 1990s (Gereffi, 1999). In Mexico and Central America and the Caribbean, full-package production was enabled by regional trade agreements like NAFTA and CAFTA-DR (the Dominican Republic-Central America Free Trade Agreement) (Gereffi, Spener and Bair, 2002).

Diagram 1
Pre-NAFTA maquila networks in Torreón



Source: Prepared by the author, on the basis of J. Bair and G. Gereffi, "Local clusters in global chains: the causes and consequences of export dynamism in Torreón's blue jeans industry", *World Development*, vol. 29, No. 11, 2001, p. 1893.

Diagram 2
Post-NAFTA full-package networks in Torreón



Source: Prepared by the author, on the basis of J. Bair and G. Gereffi, "Local clusters in global chains: the causes and consequences of export dynamism in Torreón's blue jeans industry", *World Development*, vol. 29, No. 11, 2001, p. 1893.

Main policies: ISI policies in Mexico were largely abandoned after the 1970s with the onset of the debt crisis in the early 1980s and the promotion of the neoliberal Washington Consensus development model. The passage of the NAFTA trade agreement in 1994 ushered in Mexico's new export-oriented strategy, with exports more than tripling from $52 billion in 1993 to $166 billion in 2000 (Bair and Gereffi, 2001, p. 1885). Because of NAFTA, the Torreón blue jeans cluster experienced a qualitative change in the type of networks connecting local firms to export markets. In GVC terms, NAFTA enabled the shift from a low-value-added assembly industry to a highly dynamic buyer-driven chain that fostered various types of local upgrading. In line with the Washington Consensus, public policies were mainly focused on opening up the economy and providing a stable political and economic environment for FDI.

Economic outcomes: NAFTA created dramatic growth in Torreón's blue jeans cluster. Between 1993 (the year prior to NAFTA's adoption) and 2000, Torreón's output of blue jeans grew from 500,000 to 6 million garments per week, employment rose from 12,000 to 75,000 workers, and the percentage of Mexican denim used in Torreón's export production increased from 1-2% to 15% because NAFTA allowed duty-free use of Mexican inputs (Bair and Gereffi, 2001, p. 1889). Growth in Mexico's *maquila* sector was accelerated by a 13-15% devaluation of the Mexican peso in December 1994, which made Mexican labour even cheaper for US firms.

Lessons from the case: The new set of foreign buyers that began to source directly from Mexico after NAFTA set up full package (versus pure assembly) networks that promoted local upgrading at different levels. At the industry level, NAFTA encouraged more activities in the apparel commodity chain to be carried out in Mexico (e.g., textile production, cutting, laundry, and distribution), although the highest value-added activities (design and marketing) remained in the US. At the firm level, the first-tier manufacturers in Torreón developed the capabilities and capital needed to coordinate full-package networks and there was some upgrading of local skills, but small, lower-tier subcontractors generally had worse working conditions and lower wages (Bair and Gereffi, 2001, pp. 1894-1898).

C. Mexico versus China as key competitors for the United States market

Industry/product; time period: manufactured exports (apparel & footwear; furniture; motor vehicles and auto parts; electrical machinery; telecom equipment; computers); 2000-2014

Significance of the case: Following NAFTA, Mexico diversified its export structure to encompass a wide range of manufactured goods, from relatively low-tech items like apparel, footwear, and furniture, to mid-tech industries such as automotive and electrical machinery, to relatively high-tech electronics including telecom equipment, computers, and flat-screen televisions. In 2000, Mexico was the leading exporter to the US market in most of these product categories. By 2014, however, China displaced Mexico as the top exporter to the US in virtually every industry. This case explores how and why this happened.

Key firms: As in Torreón's blue jeans cluster, the role of buyer-driven GVCs was instrumental in China's ability to conquer global export markets across a broad range of consumer goods. Giant retailers like Wal-Mart were favoured partners of China, and they facilitated China's success as an export leader in multiple consumer goods products that were all sourced by global retailers and popular brands such as Nike and Adidas (Gereffi and Christian, 2009). Unlike its East Asian export rivals, the Republic of Korea and Japan, China welcomed foreign investors in its economy to promote "fast learning" in new industries, with the potential of also accessing China's vast domestic market. Thus, leading MNEs in producer-driven chains, such as Apple in personal computers and smartphones, also favoured China as an export platform for their high-tech products (Duhigg and Bradsher, 2012; Barboza, 2016; McGee, 2023).

Main policies: China's surge as a dominant global exporter is often attributed to its abundant supply of cheap labour and the role of scale economies in allowing China to become a lower-cost producer, but institutional factors are equally if not more important. China's admission to the WTO in 2001 was very significant for Chinese exporters; it gave China most-favoured-nation treatment, which improved access to foreign markets, and it signalled Chinese reforms to reduce market restrictions and overhaul its state-owned enterprise sector. Perhaps China's central advantage was the active role of the Chinese state in formulating and implementing a coherent and multidimensional upgrading strategy to diversify and add high-value activities to its export sector (Gereffi, Bamber and Fernandez-Stark, 2022).

Economic outcomes: In its head-to-head export competition with Mexico, China's dominance was established rapidly and decisively. In apparel and clothing, China's share of US imports grew from 13.2% in 2000 to 33.4% in 2007 and 37.9% in 2014. In furniture, a similar pattern was observed: China accounted for 23.6% of US imports in 2000, 47.7% in 2007, and 46.3% in 2014. In electrical machinery, China's US import market share rose from 11.9% in 2000 to 33.2% in 2014; telecom equipment, from 10.3% in 2000 to 58% in 2014; and automatic data processing machines, China's share of US imports rose from 11.3% in 2000 to 49.3% in 2007, and 65.7% in 2014. In every industry except furniture, Mexico's share of US imports was higher than China's in 2000. But by 2007 China already surpassed Mexico by a large margin, and its lead grew further by 2014. Only in the auto parts industry did Mexico enjoy a continuous US market share lead over China, rising from 16.3% of US imports for this sector in 2000 to 30.4% in 2014 (see table 1 below).

Table 1
Mexico's and China's competing exports to the United States market, 2000-2014

SITC Category	Product		2000		2007		2014		Change in market share 2000-2007	Change in market share 2000-2014
			Value (*billions*)	Share of the US market	Value (*billions*)	Share of the US market	Value (*billions*)	Share of the US market		
752	Automatic data processing machines	Mexico	6.4	11.5	5.6	9.6	13.5	16.6	-1.9	7.0
		China	6.3	11.3	28.6	49.3	53.3	65.7	38.0	16.4
		US Total	55.9		57.9		81.1			
764	Telecomm equipment	Mexico	9.1	20.6	10.8	13.6	12.1	10.2	-7.0	-3.4
		China	4.6	10.3	29.6	37.3	68.7	58.0	26.9	20.8
		US Total	44.3		79.5		118.4			
778	Electrical machinery	Mexico	3.1	18.3	5.0	21.8	7.2	21.4	3.5	-0.4
		China	2.0	11.9	6.1	26.6	11.2	33.2	14.7	6.6
		US Total	17.1		23.1		33.7			
784	Auto parts	Mexico	4.6	16.3	10.2	22.2	19.1	30.4	5.8	8.2
		China	0.4	1.5	3.6	7.8	8.3	13.2	6.2	5.4
		US Total	28.4		46.2		62.9			
821	Furniture	Mexico	3.2	16.9	4.6	13.6	7.6	18.3	-3.3	4.7
		China	4.5	23.6	16.2	47.7	19.2	46.3	24.1	-1.4
		US Total	18.9		33.9		41.5			
84	Apparel and clothing	Mexico	8.7	13.6	4.7	5.8	4.0	4.4	-7.8	-1.4
		China	8.5	13.2	27.1	33.4	34.2	37.9	20.2	4.5
		US Total	64.3		81.2		90.2			

Source: Prepared by the author, on the basis of G. Gereffi, "Development models and industrial upgrading in China and Mexico", *Global Value Chains and Development: Redefining the Contours of 21st Century Capitalism*, Cambridge, UK, Cambridge University Press, 2018c, p. 215.

Lessons from the case: Since China became the world's unquestioned leader in manufacturing exports over the past two decades, it is essential to understand the sources of China's success. Whereas the Washington Consensus model encouraged developing economies to restrict the role of the state in its economic development, China (like its East Asian brethren, Japan, the Republic of Korea, Taiwan Province of China, and Singapore) has moved in the opposite direction and embraced a strong developmental state with an export-oriented strategy that engages with FDI and seeks not just lower costs but also technological leadership. However, China's export success and technological ambitions have generated strong pushback from the advanced capitalist economies, including the US, the European Union, and Japan.

D. The United States trade war with China and regional value chains

Industry/product; time period: United States imports from China, Canada, Mexico, and the European Union (steel; semiconductors; diverse manufactures; agricultural products); 2016-2020

Significance of the case: Given China's spectacular rise as a global exporter in the 21st century and its rapidly growing market share in numerous US industries, a strong US protectionist response was predictable. Indeed, President Donald Trump won the US presidential election in 2016 on an "America First" agenda, and in early 2018, the Trump administration levied a series of import tariffs with a specific focus on China because the country was seen as the biggest threat to US jobs and industries. On March 8, 2018, President Trump imposed a 25% tariff on steel imports and a 10% tariff on aluminium imports, with exemptions for Mexico and Canada. In early April, Trump ratcheted up the trade war with China, listing more than 1,300 imported goods worth about $50 billion that would face a 25% US tariff, including flat-screen televisions, medical devices, and aircraft parts (US Department of Commerce, 2018). China immediately struck back with its own tariffs, also worth $50 billion, on 106 types of American goods with a heavy focus on agricultural products, including soybeans, corn, cotton, tobacco, and whiskey (Bradsher and Myers, 2018). A US-China trade war was underway.

Key firms: Protectionist policies can affect a wide range of industries and many different types of suppliers. To understand the systematic impact of these policies, we need an analytical framework that looks at the interaction and co-evolution between GVC-oriented trade policies, firm strategies, and GVC configurations (geographic and organizational) over time. Such a framework is applied in a recent study of three major GVCs (apparel, automotive, and electronics) over the past 50 years, with an emphasis on two types of firm strategies that mediate between government trade policies (either restrictions or trade agreements) and the organization of global industries (called GVC configurations) (Gereffi, Lim and Lee, 2021, see table 1 and figure 2, pp. 515-517).

Two main findings emerge from this study. First, there are "switching strategies," whereby firms can engage in: (i) *production switching* (move production to other countries not affected by the restrictions —e.g., from China to Vietnam, or move production to countries that benefit from trade agreements —e.g., from China to Mexico to take advantage of NAFTA or successor agreements); (ii) *market switching* (selling products in markets not affected by restrictions —e.g., Chinese firms can shift from protected export markets to their domestic market); and (iii) *supplier switching* (firms can change their sourcing partners to circumvent a restriction, like the US ban against Huawei and its suppliers). Second, there are diverse "upgrading strategies," whereby firms attempt to circumvent restrictions by capturing more value via *product* or *process upgrading*, or by moving into higher-value-added segments of a GVC (*functional upgr*ading).[6]

Main policies: US policymakers have dealt with trade imbalances via several protectionist measures. During the early 1980s, the US handled Japan's large trade surplus with the US through voluntary export restraints (VERs), which placed a quantitative limit on Japanese auto imports into the US (e.g., 1.7 million cars in 1981). VERs remained in place until the mid-1990s. However, in a supply-chain world, nationalist trade restrictions often have "unintended consequences." In the case of VERs, the policy had the effect of inducing many Japanese automakers (and later European and South Korean auto companies) to build plants in the US to bypass US-imposed export restrictions (Gereffi, Lim and Lee, 2021, pp. 510-511). More generally, multiple types of trade restrictions in the apparel, automotive, and electronics GVCs from the 1970s to the early 2020s were relatively ineffective in curbing imports from targeted companies. Mainly they accelerated switching and upgrading strategies of the exporting firms, leading to the geographic reconfiguration of GVCs (Gereffi, Lim and Lee, 2021).

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[6] A fuller typology of economic upgrading includes *product upgrading* (making more sophisticated products with higher unit values); *process upgrading* (transforming inputs into outputs more efficiently, often using superior technology); *functional upgrading* (acquiring new functions and typically increasing the skill content of activities); and *chain upgrading* (diversifying into new sectors using the competences gained in a particular chain) (Gereffi, 2019b, p. 241).

Economic outcomes: President Trump's use of high tariffs to restrict imports not only from China, but also from other top US trade partners such as Mexico, Canada, and the European Union, created contradictory outcomes. For example, in the regionally integrated North American automotive industry under NAFTA, many US auto parts exports return to the US as imported motor vehicles or subassemblies. Thus, US automotive imports from Mexico contain about 40% US content, and imports from Canada are 25% US content by value. By contrast, imports from China contain only about 4% US value. Thus, all imports are not created equal in terms of their potential effect on US producers, workers, and consumers. US suppliers are far more likely to be hurt by a protectionist response to NAFTA partners than to China (Gereffi, 2018d, p. 436).

Lessons from the case: Given the intertwined nature of North American and global supply chains, protectionist policies like import tariffs or quotas do not necessarily help US companies, workers, or national security. Many of the medium- and high-tech US manufacturing firms in industries like automobiles, medical devices, pharmaceuticals, electronics, and aircraft utilize regional and global supply chains to make finished products with imported parts. In none of these industries is it feasible to buy all the needed parts from domestic sources. This suggests that the current trade disputes between the US and China, the world's two largest and most dynamic economies, are the harbinger of a much deeper "strategic competition" about the technologies of the future (e.g., advanced manufacturing, clean energy, artificial intelligence, and quantum computing).

China's centrally controlled economy and highly ambitious Five-Year National Plans, especially under President Xi Jinping who became General Secretary of the ruling Chinese Communist Party in 2012 and was re-elected president for an unprecedented third 5-year term in March 2023, have changed US perceptions of its rivalry with China from an economic competitor to a potential national security threat (Pence, 2018; Blinken, 2022). However, given the well-established difficulties of decoupling from China and establishing greater resilience in global supply chains (Farrell and Newman, 2020; Shih, 2020), international leaders have begun advocating for an alternative notion of "de-risking" to deal with a more assertive China (Ciuriak, 2023).

European Commission President Ursula von der Leyen initially introduced the term in a speech on March 30, 2023: "I believe it is neither viable —nor in Europe's interest— to decouple from China. Our relations are not black or white —and our response cannot be either. This is why we need to focus on de-risk —and not decouple" (Cave, 2023). The distinction between de-risking and decoupling was reinforced a few weeks later by US National Security advisor Jake Sullivan in a speech setting out the new US doctrine vis-à-vis China:

> "As President von der Leyen put it recently, we are for de-risking and diversifying, not decoupling. We'll keep investing in our capacities and in secure, resilient supply chains…We are not cutting off trade…[W]e are competing with China on multiple dimensions, but we are not looking for confrontation or conflict. President Biden has made clear that the United States and China can and should work together on global challenges like climate, like macroeconomic stability, health security, and food security" (Sullivan, 2023).

Taken together, these four cases of Mexican industrial development highlight not only the significance of shifting trade policies over time (in Mexico as well as the US and China), but also the need to specify both the industrial and global supply chain contexts to understand the gains and limitations in each situation. Mexico's economic outcomes are profoundly shaped by its public policies and its degree and type of integration with the US in the North American setting, as well as by major global competitors such as China. Nearshoring is intrinsic to the Mexican economy due to its proximity to the US, but Mexico's policy options for dealing with the current era of nearshoring are inevitably limited by the "security-shoring" constraints that the US is imposing on third-parties who deal with China (Dussel Peters, 2024). While an extensive US decoupling from China would be extremely difficult for either country, Mexico has to navigate a its own pathway to determine how it will relate to both global superpowers.

IV. Main takeaways from Mexico's previous nearshoring experiences

The trajectory of these four cases of Mexican nearshoring reveals obvious differences but also key lessons that apply to the current nearshoring conjuncture for Mexico. The industries involved are varied, including both producer-driven chains (like the pharmaceutical and automotive industries) and buyer-driven chains (like apparel and furniture). The timing of the four cases is sequential and covers more than five decades of Mexico's development, ranging from the use of a state-owned enterprise to try to limit Mexico's dependency in the steroid hormone industry in the 1970s to the disruptions caused by the COVID-19 pandemic in the early 2020s. Furthermore, Mexican state policies show striking contrasts, from the ISI development strategy of the Echeverría era (1970-1976) to the launching of NAFTA in 1994, and more recently, Mexican and Chinese competition for US market shares in the 2000s and 2010s, and the US-China trade war post-2016.

From Mexico's perspective, the nature of nearshoring has evolved over time. In the ISI period, nearshoring was a byproduct of Mexico's proximity to the US market, which was the main source of both technological innovations and booming demand for the new generation of "wonder drugs" that revolutionized the pharmaceutical field. The main mechanism of Mexico's transnational economic integration in the ISI regime was US and European FDI, and their bulk exports of a key intermediate product (diosgenin) used to make finished cortisone and oral contraceptives in the US and Europe.

NAFTA's impact in the mid-1990s was different. Nearshoring was tied to Mexico's participation in a regional trade agreement. Trade policy was the key driver, and FDI soon followed. In Torreón's blue jeans industry, US FDI in textiles, laundry, finishing, and distribution led to functional upgrading and industrial deepening in Mexico (see diagrams 1 and 2), which increased the country's economic value-added. NAFTA promoted industrial diversification in Mexico as well as export gains across a wide range of industries by 2000 (see table 1).

China's success in capturing a dominant share of the US market by 2014 triggered a trade war with the US. High US tariffs and other import restrictions show the Janus-faced nature of trade policy's impact on development, as supply-chain integration created numerous "unintended consequences" of trade restrictions (Gereffi, Lim and Lee, 2021). The US discovered that trying to impose tariffs on imports from Mexico and Canada was counterproductive, since these imports contained high percentages of US content given NAFTA's success in creating a highly interdependent North American economy (Gereffi, 2018d). Nearshoring via NAFTA eased the tariff restrictions on Mexico and Canada, but it did not allow them to prevail over China's superior scale, lower costs, and more coherent export-oriented development strategy.

Notwithstanding these differences, there are positive lessons from Mexico's nearshoring experiences. In the steroid hormone case, Mexico enjoyed considerable success in attracting US and European FDI that brought new technology and capital and transformed a Mexican raw material, the plant *barbasco*, into an essential intermediate input for finished pharmaceuticals made in the US. Mexico's use of a state-owned firm, Proquivemex, to monopolize the collection and sale of *barbasco* to MNEs was shortsighted, however, because Mexico lost its technological edge after Syntex moved to the US in 1955. Thus, Mexico's dependence on the US market for sales of diosgenin made it vulnerable to US government pressure to reverse the Mexican government's mandate to give Proquivemex control over the domestic supply of *barbasco*.

However, Mexico's ISI strategy in the 1970s was more successful in sectors relying on diversified supply chains and sales to the domestic market, such as the automotive industry. Like Brazil in Latin America, and the Republic of Korea and Taiwan Province of China in East Asia, Mexico's pursuit of state-led industrialization since the 1950s created a "developmental state" with substantial bureaucratic capabilities to design and implement policies related to both import-substituting and export-oriented development strategies (Gereffi and Wyman, 1990). For Mexico, this involved strengthening key ministries responsible for registering and regulating FDI that helped establish many new industries in the country (e.g., automobiles, electrical and non-electrical machinery, petrochemicals, and pharmaceuticals). When Mexico dismantled its ISI strategy in the 1980s, it scrapped many of the regulatory, information-gathering, and policy tools it used to manage the economy, which by contrast remain strong in East Asian economies like Japan, the Republic of Korea, Taiwan Province of China, Singapore, and China (Wade, 2018; Gereffi, Bamber and Fernandez-Stark, 2022). A relevant lesson is that it takes considerable effort to build the state capacity needed for proactive development policies, and this needs to be a priority for current efforts to create 21st century industrial policies.

The Torreón case illustrates how Mexico was able to build a world-class export cluster in the blue jeans GVC in the late 1990s by using NAFTA policies to transition from the assembly-oriented maquila model to more vertically integrated full-package production. In 2000, there were 350 apparel factories operating in Torreón making about six million pairs of jeans a week. In the following decade Mexico was surpassed by China, which became the undisputed leader in the global exports of light consumer goods such as apparel. This does not diminish Mexico's significant economic upgrading accomplishments in textiles and apparel under NAFTA, which allowed Mexican firms to develop a broad range of full-package capabilities that put them well ahead of their assembly-oriented Central American and Caribbean neighbours that also shipped apparel to the US market, but with fewer backward and forward linkages (Bair and Gereffi, 2003; Gereffi, Spener and Bair, 2002).

China's ability to pull far ahead of Mexico in most US-oriented export industries in the 2000-2014 period (see table 1) is a tale of contrasting national development strategies. China's development model after its accession to the WTO in 2001 relied on a unique combination of factors: abundant low-cost labour; the aggressive attraction of FDI; opening its large domestic market to the outside world; lessening bureaucratic red tape; increasing the quality of its workforce through education and training; upgrading its logistical capabilities; and rapidly moving up the technology value chain (Gereffi, 2018c). It also targeted specific industries that set up export hubs in giant, vertically integrated factories located in China's "supply-chain cities," which created full industrial ecosystems to facilitate economies of scale for a wide range of products, from simple apparel items like socks, neckties, and underwear (Barboza, 2004) to complex products such as iPhones (Duhigg and Bradsher, 2012; Barboza, 2016).

Mexico's development strategy in the 1980s shifted from the state-centric ISI model to the more market-oriented or neoliberal "Washington Consensus" approach. Whereas initial reforms following the debt crisis included stabilization programs to lower state expenditures, widespread privatization, lowering of trade barriers, and the liberalization of regulations governing FDI, Mexico's adoption of NAFTA in the mid-1990s moved Mexico into a more explicit partnership with the US, and created higher levels of regional interdependence in terms of both trade and FDI. While NAFTA seemed like a safe bet for Mexico in its early decades, the rise of economic nationalism heralded by Brexit in 2016 was a forerunner of broader protectionist sentiments associated with the "America First" campaign of the Trump administration.

Presaging his skepticism of mega-regional trade agreements, President Trump's initial executive order on January 23, 2017 was to withdraw from the Trans-Pacific Partnership (TPP) negotiations, a sweeping 12-nation trade deal accounting for 40% of global GDP that Trump claimed was a US job killer. Shortly thereafter, Trump threatened to withdraw from NAFTA as well, and ultimately agreed to a revamped version of NAFTA – the US-Mexico-Canada Agreement (USMCA) – signed on November 30, 2018 (Gereffi, 2018d). Among the main changes in the USMCA are tighter rules of origin for selected industries (e.g., 75% of each vehicle produced in the automotive sector must originate in member countries), better enforcement of environmental protections, and additional labour provisions to drive higher wages by requiring that 40%-45% of auto content be made by workers earning at least US$16 per hour. The USMCA was also the first trade agreement to include a chapter on digital trade. Trump's more nationalist approach to trade sparked the US-China trade war, which used high and escalating tariffs to reduce US imports from China.

The transition to the US administration of President Joe Biden (2020-2024) raises a different set of nearshoring opportunities and challenges for Mexico. Section V will outline how a new form of American industrial strategy will affect nearshoring options in Mexico, and section VI outlines the main policy implications if Mexico wants to use nearshoring with the US to promote national economic development.

V. Current US industrial policies and nearshoring in Mexico

In the aftermath of the COVID-19 global pandemic that wracked the world economy in 2020-2023, both industrial policy and national security in the US are being linked to the increased resilience of global supply chains (Gereffi, 2020, 2023a and 2023b; Gereffi, Pananond and Pedersen, 2022; Janeway, 2024). In addition, there is a strong emphasis on nearshoring US supply chains to friendly and capable neighbouring economies such as Mexico and Canada (Garrido, 2022; Kiy and Zapata, 2023). But the implications of recent US industrial policies for its nearshoring partners can be quite complex.

Modern industrial policies require a shift from "passive" to "active" policymaking in advanced and less industrialized economies alike. Passive policies are based on investments that capitalize on static comparative advantages such as natural resources, cheap labour, or market size. In contrast, active policies are more selective. They seek to create dynamic competitive advantages through a broader development strategy that focuses on integrated elements like FDI attraction, improving human capital in a targeted way, investing in productive and technological capabilities, and creating more sophisticated institutional frameworks and coordinated policy units for sustainable development goals (ECLAC, 2024, p. 12).

In integrated regional economies like North America, all participating countries require active productive policies because the lead economies in a global region are typically investing in advanced manufacturing and new digital technologies that require new or upgraded factories and appropriate human capital skills. In addition, all regional partners require enhanced state capacity and bureaucratic capabilities to undertake the planning, policy coordination, and implementation needed for complex regional ecosystems to function at a high level.

A. Boosting resilient United States supply chains

The COVID-19 pandemic highlighted the vulnerabilities of supply chains based entirely on minimizing costs (Gereffi, 2020). Sourcing networks were too rigid and dependent on a small number of offshore locations, most notably China. Making strategic supply chains more resilient was a core theme in the Biden administration's 100-day supply-chain review that focused on semiconductors, batteries for electric vehicles (EVs), active ingredients for essential medicines, and critical minerals (White House, 2021). GVC research shows that "resilience" has diverse meanings at different levels: individual firms (operational efficiency); global industries (managing company participation in geographically shifting and organizationally complex supply chains); and countries (national security) (Gereffi, Pananond and Pedersen, 2022).

The Biden administration advanced a bold "modern American industrial strategy" (Sullivan, 2023) that consolidated the push to rebuild strategic US supply chains in three major legislative bills, each targeting key industries (Gereffi, 2023b):

- The Bipartisan Infrastructure Law (BIL), Nov. 26, 2021; US$ 840 billion.
- The CHIPS and Science Act (CHIPS Act), Aug. 9, 2022; US$ 53 billion.
- The Inflation Reduction Act (IRA), Aug. 16, 2022; US$ 738 billion.

In China, President Xi Jinping's call to realize the "Chinese Dream" (i.e., the great rejuvenation of the Chinese nation) has fuelled China's relentless quest to become a technological superpower with rapid progress in advanced manufacturing, electric vehicles, clean energy, and digital technologies. The launch of China's long-term state-sponsored initiatives, for example, "Made in China 2025," the Belt and Road Initiative (BRI), and China's Dual Circulation model (Ciuriak, 2023), are strategic moves to make China dominant in global high-tech manufacturing and simultaneously they highlight domestic demand and indigenous innovation. The US-China rivalry is increasing and the challenges for trade and industrial policies in GVCs are daunting (Gereffi, Bamber and Fernandez-Stark, 2022).

In response to these multiple threats related to global supply chains and national security, US Secretary of State Anthony Blinken and Secretary of Commerce Gina Raimondo hosted a 2022 Supply Chain Ministerial with 17 partner economies and the European Union on July 19-20 to build resiliency through greater international cooperation (US Department of State, 2022). A central theme was how to make global supply chains more resilient to lessen the risks of supply chain fragmentation and vulnerability. Countries and firms can increase resilience in global supply chains in four ways (Gereffi, 2023a):

- make them more *domestic* (e.g., reshoring, stockpiles);
- make them *shorter* (e.g., nearshoring or reducing the distances traversed by supply chains through regionalized production, such as Mexico and Central America for the US);
- make them *more diversified* (e.g., reduce dependence on one or a few countries); and
- make them more *digital* (e.g., digital versions of real products and using digital technology to track the supply chain better).

B. Assessing Mexico's readiness to take advantage of current US nearshoring opportunities

Nearshoring is a critical opportunity for Mexico, but it also comes with major challenges in terms of Mexico's preparedness and ability to exploit this policy window in a hyper-competitive global setting (Lilly, 2024). If Mexico is not actively prepared to exploit the current nearshoring conjuncture with the US, Mexico could lose out as other countries step forward to fill the gap (Castañeda, 2024). FDI and provision of critical minerals are two key factors in this scenario, and they are accompanied by major infrastructure constraints such as water supply and electric power that are becoming significant barriers to growth in multiple regions.

Mexico ranked as the second-largest recipient of FDI in Latin America and the Caribbean in 2023, accounting for 16.4% of total inflows into the region with an amount of US$ 30.2 billion, a 23% decline from 2022 (due mainly to shifts in the service sector). The manufacturing sector received 50% of total inward FDI in Mexico, and inflows grew by 29% to their highest level for the sector since 2016. Transport equipment was particularly notable, accounting for 41% of total FDI inflows in the Mexican manufacturing sector in 2023, representing a 58% increase compared to 2022 (ECLAC, 2024, p. 52).

The automotive sector highlights both the great potential and equally significant pitfalls of the current nearshoring context. To satisfy US market demand in high priority industries, there is an increased number of megaproject FDI announcements, particularly in sectors such as renewable energy, oil and gas, metals and minerals, and automotive and auto parts (ECLAC, 2024, p. 11). One of these megaprojects was Tesla's proposed investment of approximately US$ 10-$15 billion to construct a gigafactory for electric vehicles near Monterrey, Mexico, with new vehicle production expected as early as 2026. However, in July 2024, Tesla placed construction of Gigafactory Mexico on hold until after the 2024 US presidential election because former President Trump pledged to add tariffs on cars made in Mexico (Revell, 2024).

In addition to concern over potential Trump tariffs, there has been a global slowdown in demand for electric vehicles, as rising interest rates have made auto loans more expensive and gas-powered cars are making a surprising comeback. Domestic politics come into play as well. New Mexican president Claudia Sheinbaum has expressed concern that Tesla's gigafactory would exacerbate droughts in the region where the factory is being built (Brandom, 2024).

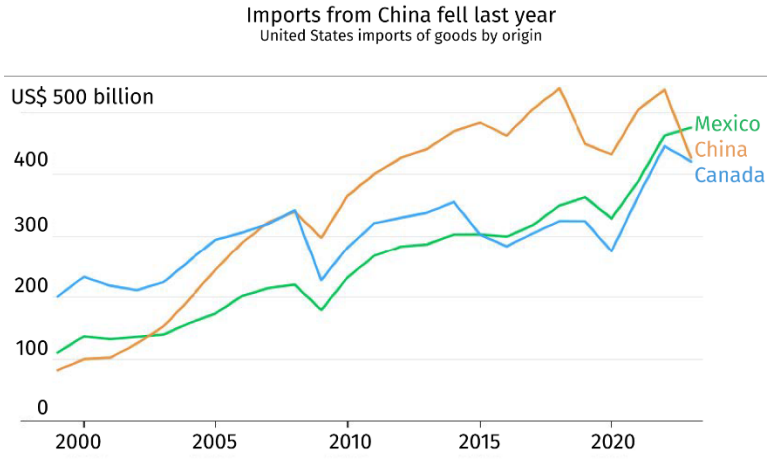
While Mexico's membership in the regional USMCA trade agreement is generally a major political asset in attracting FDI, it can also be a liability. Two of the biggest foreign investors in Mexico's automotive sector are Chinese assemblers, SAIC Motor and Beijing Automotive Industry Holding, with combined investment project announcements in 2023 of US$ 2.75 billion for the manufacture of vehicles, including electric trucks (ECLAC, 2024, p. 52). China has become the fastest growing source of FDI in Mexico (Lilly, 2024, p. 17), especially in the EV automotive sector. However, this is unlikely to facilitate nearshoring in Mexico since US officials are determined to prevent Chinese investors from using Mexico as a backdoor to the US market.

Mexico has upstream advantages as a potential supplier of critical raw materials (e.g., lithium) that are essential ingredients in EV batteries and advanced electronics products such as smartphones. Mexican President Andrés Manuel López Obrador nationalized the lithium industry in April 2022 and put it under the control of a state-run company, LitioMx (Copeland, 2023; Pulice, 2023), but it lacks the technological capabilities to extract or process this lithium, let alone turn it into the components needed for EV batteries and electronic devices.

As noted in the discussion of Proquivemex in the Mexican steroid hormone case (see section III.A), it is quite difficult for a state-owned enterprise to compete in a technologically dynamic field like EV batteries without a strong technology partner and guaranteed access to a large market for products made from the natural resource. Chinese firms are global leaders in EV battery technology, but they won't be able to export EV products from Mexico to the US market without US government approval. Thus, the nationalization of lithium in Mexico is likely to be a symbolic gesture rather than a strategic advantage unless Mexico finds a non-Chinese technology partner.

The US trade war with China has allowed Mexico to pass China in 2023 as the top exporter to the US for the first time in two decades. In 2023 Mexican exports to the US surpassed US$ 475 billion (about the same as in 2022), while Chinese exports dropped 20% from the preceding year to $ 427 billion (see figure 1). In 2023, Mexico and Canada were the US's top export destinations, and US bilateral goods trade with Mexico reached US$ 799 billion and US$ 774 billion with Canada (compared to US$ 575 billion for the US-China bilateral goods trade, down more than 15% from 2022) (Lilly, 2024, p. 9). Mexico's top spot in trade flows with the US highlights the importance of Mexico as part of a North American region to counterbalance China, but by itself it does not challenge China's technological rise nor improve US competitiveness.

Figure 1
Shifts in top United States import trade partners, 2000-2023

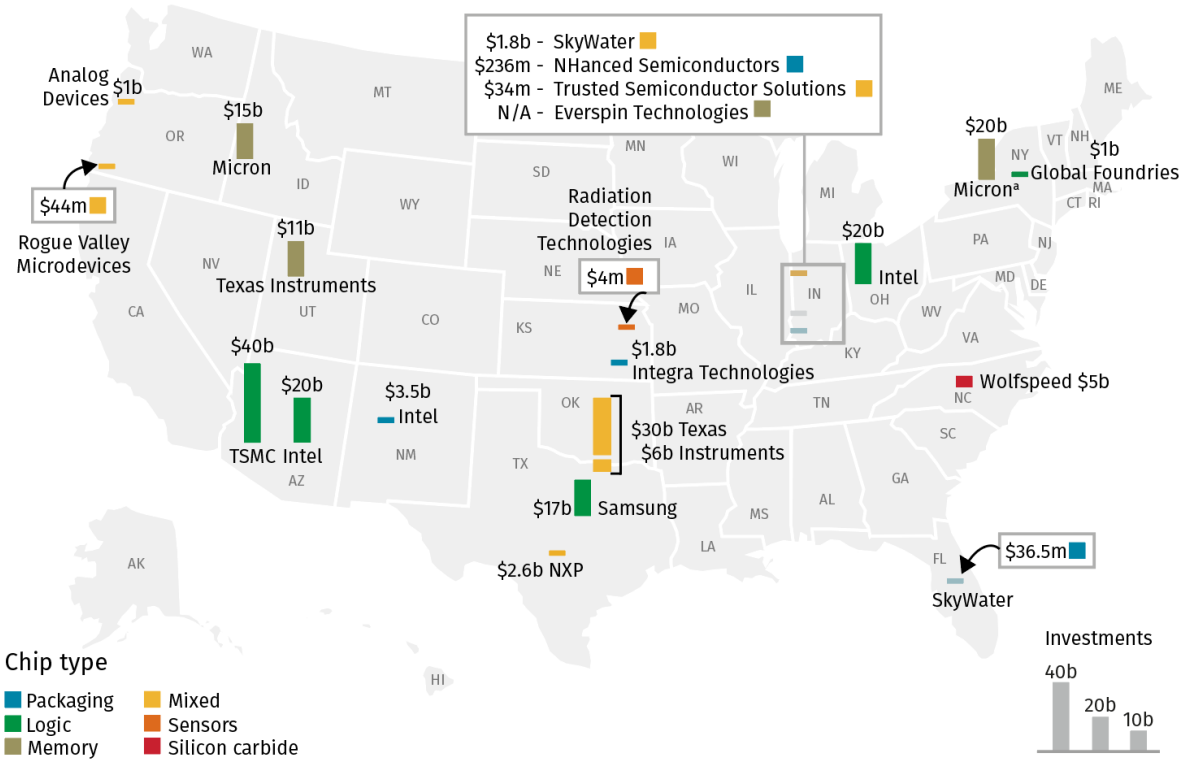


Source: On the basis of A. Swanson and S. Romero, "For first time in two decades, U.S. buys more from Mexico than China", *New York Times*, 7 February 2024.

What Mexico must do to promote its industrial upgrading and increase the international competitiveness of critical North American industries is define and pursue an ambitious proactive development policy that is aligned with the current agenda of large strategic allies such as the US. During the administration of President López Obrador, Mexico has not pursued an integrated industrial development strategy to become internationally competitive in industries such as semiconductors, EV vehicles and batteries, pharmaceuticals, or critical minerals. Mexico has serious limitations in critical infrastructure, such as electric power, ports, roads, and the water supply, that would allow Mexico to compete more effectively with China (Goodman, 2023; McNeece, 2023).

In the context of current US nearshoring opportunities, large-scale and targeted investments are fundamental. Map 1 provides information on recently announced plans to expand US semiconductor manufacturing. All of the major global chip companies are on this map (e.g., TSMC, Samsung, Intel, Micron, Texas Instruments), and their individual planned investments are in the range of US$ 20 to US$ 40 billion for each firm. Between 2020 and 2022, far in excess of US$ 200 billion in private investments has been committed to expand US domestic manufacturing capacity in semiconductors (Kiy and Zapata, 2023, p. 8). For Mexico to play a significant role in dynamic, capital-intensive industries like semiconductors, a passive or reactive approach of relying on existing firms in Mexico to complement these megadeals in the US will not get the job done. The Mexican government needs to play a role in catalysing a private-sector response.

Map 1
Map of announced plans to expand US semiconductor manufacturing
(US dollars)



Source: On the basis of R. Kiy and A. Zapata, *U.S. Industrial Policy: Impacts on the Geography of EV/semiconductors Re-Shoring and its Influence on Sub-National Investment and Job Growth*, North American Competitiveness Working Group, UCSD Center for US-Mexico Studies, 9 August 2023, p. 9 [online] https://iamericas.org/wp-content/uploads/2023/11/U.S.-INDUSTRIAL-POLICY-Kiy-Zapata_compressed.pdf.
Note: The announced plans shown on this map are intended to be illustrative and not comprehensive. Not all planned investments may be made and result in actual fab construction/expansion.
The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.
[a] Micron has announced US$ 100 billion in investments into New York manufacturing facilities over the next 20-plus years; only the investment specified through this decade to 2023 is shown here.

The US, Mexico, and Canada have intertwined supply chains, but for the North American region to reach its full potential, Mexico needs to attract the right kind of FDI to bolster the capabilities of its domestic firms. Furthermore, it will need to coordinate its efforts more explicitly with those of the US and Canada to complement the FDI that is streaming into the region as a result of US industrial policies such as the CHIPS Act, the Inflation Reduction Act, and the Bipartisan Infrastructure Law (Lilly, 2024; Kiy and Zapata, 2023; Kiy, 2023). In order to compete with US subsidies for EV battery producers, Canada and the province of Ontario offered Volkswagen a subsidy of 1 billion Canadian dollars (about $ 750 million in US currency) to build a $ 7 billion battery factory, with 8 billion to 10 billion Canadian dollars in subsidies over the next decade to match the benefits Volkswagen would have received from the IRA if it had put its factory in the US (Austen, 2023).

In addition to substantial financial resources, an industrial policy focus requires major bureaucratic capability-building of the sort that Mexico and Brazil had in their ISI development strategies (Gereffi and Wyman, 1990). The US provides a good example of what this entails in the case of its recently passed CHIPS and Science Act, which authorized US$ 53 billion to be set aside for semiconductor manufacturing in the US. The CHIPS program is run out of the U.S. Department of Commerce, led by Secretary Gina Raimondo, who has created a staff of over 200 people to identify and screen the companies that will receive funds to make chips in the US, as well as major investment in broadband access and the creation of nearly three dozen new “tech hubs” around the US. As a result of the CHIPS Act, the Commerce Department budget has grown from US$ 9 billion to US$ 150 billion (Iyengar, 2024). The US has attracted major investments from all five of the leading semiconductor manufacturers in the world (American firms Intel and Micron, Taiwan Semiconductor Manufacturing Company (TSMC), and South Korean companies Samsung and SK Hynix); no other economy in the world has investments from more than two of these firms (Swanson and Ngo, 2024).

VI. Policy implications of nearshoring in Mexico

Nearshoring has received much attention in US and Mexican policy circles. The question for Mexico is whether it is fully prepared to take advantage of this opportunity. Several lessons from GVC research are relevant for implementing supply-chain resiliency in the North American setting.

Successful nearshoring requires a commitment to an active industrial policy in Mexico that builds critical infrastructure, identifies the specific niches in GVCs that the country wishes to occupy, attracts appropriate FDI, supports local firms in acquiring needed productive and technological capabilities, and pursues a human capital strategy that creates a skilled workforce needed to implement this strategy.

In the Biden administration's efforts to strengthen US supply chains, both domestically and internationally, President Biden signed an Executive Order on February 24, 2021 directing an all-of-government assessment of both the vulnerabilities and plans for creating resilience in US supply chains. Based on this assessment, the Biden administration announced an Action Plan to revitalize American manufacturing and strengthen long-term resilience across critical supply chains (McNeece, 2023, pp. 16-17). China's domination of the EV vehicle and EV battery sectors reflects a long-term strategy to train Chinese students in science, math, and engineering, which has allowed Chinese researchers to lead the world in publishing widely cited papers in 52 of 64 critical technologies. In EV batteries, nearly two-thirds of widely cited technical papers come from researchers in China, compared with 12% from the US (Bradsher, 2024).

The US supply-chain priorities are product-specific and nearshoring countries need to position themselves in appropriate niches of these chains.

The Biden administration has targeted a handful of key industries (White House, 2021). One of these is semiconductors, which receives significant funding from the CHIPS Act. The world's five leading chipmakers have all committed to build major new chip facilities in the US, using about US$ 30 billion of the US$ 39 billion pot of investment incentives from the CHIPS Act (Swanson and Ngo, 2024). These semiconductor plants are highly capital-intensive (costing a minimum of US$ 20-US$ 25 billion each) and they use cutting-edge technology to make the most sophisticated chips (e.g., 3 nanometre process nodes) used in artificial intelligence, digital platforms, and defence industry applications.

To participate in US semiconductor plans on a nearshoring basis, Mexico is being urged to boost its chip production over the next two years in the assembly and testing of more mature "legacy" chips (larger than 14-16 nanometres) used in other manufacturing sectors such as automotive products, home

appliances and consumer electronics that can be made in factories in northern Mexico (e.g., Baja California and Jalisco) (Ayerbuch, 2024). The trade-off for Mexico is occupying a relatively low-value rung in a high-tech and strategic GVC.

The most important part of a GVC often is not the finished good or service, but rather key components or raw materials.

As seen in the steroid hormone case (section III.A above), Mexico's pre-eminent role in the pharmaceuticals industry derived from a plant-based raw material (barbasco) and a key steroid hormone intermediate product (diosgenin) used to make cortisone and other wonder drugs. The pharmaceutical industry is in the global spotlight again. During the COVID-19 pandemic, new breakthrough vaccines were created in various countries around the world, including India and China (Gereffi, Pananond and Pedersen, 2022), but the current priority for the US is producing the active ingredients for key finished pharmaceuticals. Mexico lost that kind of technological leadership when Syntex relocated to the US in 1955; today India and China are the leading developing economies for pharmaceutical intermediates.

The complex interdependencies in GVCs magnify the possibilities for unintended consequences, which can help as well as hurt Mexico.

Electrical vehicles and EV batteries are strategic products for current US industrial policy, and major incentives to expand the EV supply chain in the US are available through the Inflation Reduction Act. However, China is the dominant producer of EVs and EV batteries in the world today, including the two largest makers of electric car batteries, CATL and BYD (Bradsher, 2024). Chinese EV manufacturers have been investing in Mexico in recent years to take advantage of the country's skilled labour force, existing automotive infrastructure, and the potential to use the USMCA to avoid US tariffs and sell low-priced EVs in the US market. However, the US government is exerting pressure for Mexico to halt its incentives to Chinese EV firms (Oré, 2024). While USMCA, like NAFTA, are intended to enhance Mexico's exports and industrial deepening, US officials made clear they don't want Chinese automakers to use USMCA as a backdoor to seek US market access from Mexico without paying steep US tariffs for Chinese products, now at 27.5% (Padilla, 2024).

Resource nationalism offers control but hinders the economic partnerships needed to move up the value chain in a high-tech sector.

The EV supply chain includes one of the critical minerals, lithium, used to make the lithium-ion batteries that power EVs (Tokuoka and others, 2010). The administration of President López Obrador in Mexico passed legislation to nationalize its lithium industry in April 2022 and put it under the control of a state-run company, LitioMx. Resource nationalism has been a popular strategy with countries that possess strategic commodities, and Mexico has nationalized other natural resource industries in the past, such as oil in 1938 (under the aegis of the state firm, Pemex) and barbasco in 1975 (controlled by Proquivemex). A big problem with this approach is that the natural resource only generates value once it is extracted, processed, and converted into intermediate and final products by actors (usually private firms) located further down the supply chain. In Mexico's case, its deposits of lithium are in clay soils in the state of Sonora, and innovative technology is needed to extract this lithium. President López Obrador sought to keep foreign companies from China, the US, and other countries from exploiting this resource. But without private-sector involvement, Mexico has little chance to profit by linking its lithium to higher-value activities further down the electric vehicle GVC (Copeland, 2023; Pulice, 2023).

The reality of 21st century industrial policy is that national self-sufficiency is an unachievable goal, even for large and technologically advanced economies like the US. As global supply chains continue to shift and fragment, regions matter more than ever (O'Neil, 2022). The cases reviewed in this paper illustrate that GVC-oriented policies link trade and production in multiple ways, and policy coordination and international partnerships among like-minded countries are essential. For Mexico to take advantage of recent US industrial policies that emphasize supply chain resilience and nearshoring options, it needs to develop a complementary industrial policy that builds its bureaucratic, private-sector, technological, and human capital capabilities to advance its own objectives in effective international and public-private supply-chain partnerships.

On October 1, 2024, Mexico inaugurated the administration of incoming President Claudia Sheinbaum. From all accounts, a high priority will be placed on accelerating nearshoring in Mexico. Our analysis suggests that a proactive and ambitious policy agenda by Mexico will have the best chance of success. Other topics of high international interest include sustainable development and "green industrial policy" for the Global South,[7] which also could be linked to a nearshoring agenda. It is an open question whether and how Mexico chooses to embrace these objectives. There is considerable momentum related to nearshoring and great anticipation to see how Mexico will pursue this opportunity.

In the United States, Donald Trump was elected in November 2024 to a second presidential term, and he will take office on January 20, 2025. Recent statements suggest that a new era of "supply chain warfare" has already begun. On Novembrer 25, 2024, President-elect Trump said that he would impose tariffs on all products coming into the United States from Mexico and Canada "until drugs and migrants stopped coming over the border" (Swanson, Stevis-Gridneff and Romero, 2024). Mexican President Sheinbaum countered that her country might respond with retaliatory tariffs, although she cautioned that "the best path is dialogue" (Romero, 2024). China has similarly announced that it is prepared to escalate its responses to future US tariffs by penalizing companies that undermine its national interests by choking their global access to critical minerals like lithium and key components like batteries for drones and electric vehicles (Stevenson and Mozur, 2024).

While supply-chain conflicts are likely to be pervasive for the foreseeable future, there is a mounting body of evidence and a wide array of policy tools that show how GVCs can become reliable pathways for development. Global interdependencies can be mitigated but not reversed. Productive development policies that leverage GVCs and are cognizant of their dynamics are essential for countries at all levels of development to navigate an increasingly multipolar and unsettled world.

[7] There is a great deal of interest in the GVC field in sustainable development options in today's world economy (De Marchi and Gereffi, 2023). One of the NGOs active in this field is the Open Society Foundations, which recently announced it will commit $400 million over eight years to support green industrial policies that contribute to economic growth in the Global South (Open Society Foundations, 2024).

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Mexico has been a "nearshoring" platform for the United States (U.S.) economy on a regular basis in recent decades. However, the nature and degree of Mexico's integration within North America, as well as its ability to create and capture value and innovation rents in its core domestic industries, have varied over time. Previous examples of nearshoring in Mexico in the automotive and textile and apparel industries, we well as regional trade agreements like NAFTA and USMCA and global trade conflicts such as the U.S.-China trade war, have made Mexico a likely candidate to take advantage of recent U.S. industrial policies to strengthen strategic American supply chains.

Current U.S. nearshoring opportunities in industries such as semiconductors, electric vehicles, pharmaceutical active ingredients, and rare-earth minerals such as lithium will require active industrial policies in Mexico related to infrastructure (e.g., ports, electricity, water), attracting appropriate foreign direct investment, capability-building in local firms, and building a skilled workforce for new industries. While some investments are occurring at the subnational level in Mexico, a more focused national response will multiply potential nearshoring benefits for Mexico.

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