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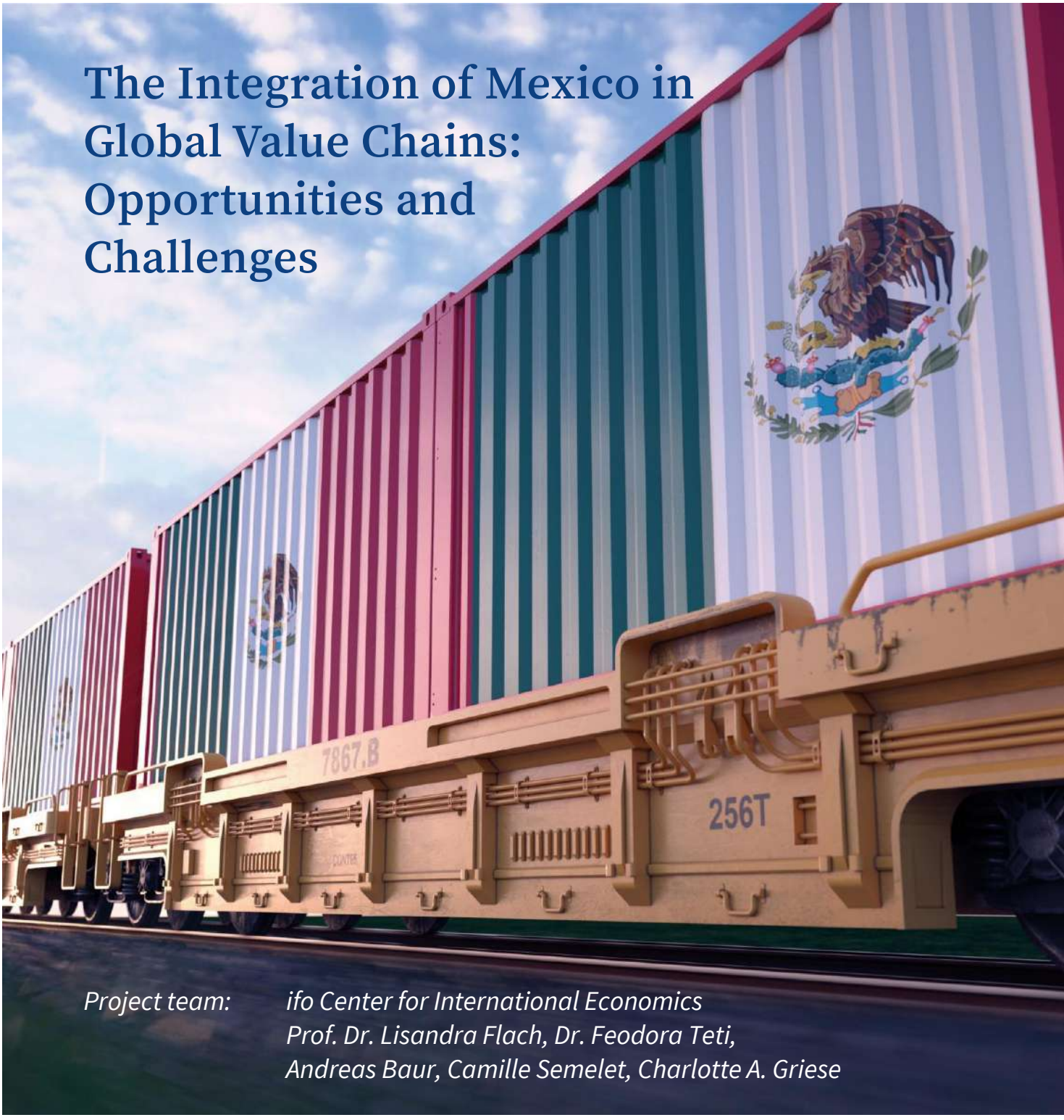
STUDY

The Integration of Mexico in Global Value Chains: Opportunities and Challenges



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KONRAD ADENAUER STIFTUNG

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Executive Summary

Mexico is among the most open large economies in the world: it ranks ninth in the world in terms of total exports and thirteenth in total imports (OEC, 2022).[1] The country's open trade policy has led to enormous gains from integration in supply chains in the last two decades (OECD, 2017). The geographic and economic proximity to the United States (US) implies that Mexico also plays a central role in the regional production in North America, often referred to as "Factory North America". Nonetheless, the strong interdependence with the US also imposes challenges in the face of geopolitical tensions and increasing economic uncertainty. The goal of this study is to provide a deep analysis of the integration of Mexico in the global economy and highlight the main opportunities and challenges that the country will face in the next years.

In the first part of the study, we will look back at the past three decades and discuss which **recent developments have shaped the global economy and Mexico** in particular. Broadly, two different periods of trade globalization can be discerned: first, an **era of strong growth in global trade** starting in 1990 and sometimes referred to as "hyperglobalization", which came to an end with the outbreak of the global financial crisis in 2008. In the following decade, a period of "slowbalization" has followed, with trade growth slowing markedly and stagnating relative to global production.

- From 1990 to 2010, the share of world trade as a percentage of GDP almost doubled, trade in **services** gained in importance, **global value chains** (GVCs) emerged, and liberalizing **trade policy** globally reduced trade costs.
- Mexico took part of this development and its **integration into GVCs** has increased more than the world average.
- A **globalization backlash** in many countries characterizes the era of slowbalization starting after the global financial crisis. The trade war between the US and China, the rising support for nationalist and radical-right parties in Europe, and Brexit are examples for this phenomenon (Colantone, Ottaviano, & Stanig, 2021). More recently, Covid-19 and the resulting **supply chain bottlenecks** lead to further disruptions in international trade.
- Besides these global challenges, Mexican exporters additionally face tougher conditions in their biggest export market: The **renegotiations of NAFTA** resulted in **stricter rules of origin** making exporting to the US much more expensive.

In the second part of the study, we focus on **Mexico's role in the global economy**. Over the past decades the integration of the Mexican economy into global trade and production networks has constantly increased. Total trade went up from 24 percent of GDP in 1979 to 82 percent in 2021. Furthermore, despite the global slowdown in international trade after 2010, Mexican trade continued to grow.

[1] https://oec.world/en

- **65 percent of all Mexican trade is with the US—**by far the most important partner for Mexico. The **US buys three-quarter** of all Mexican goods and is therefore the most important export destination for Mexico. **China** and the remaining countries of the "**Factory Asia**" have **tripled their share in the Mexican market**.
- The manufacturing of **motor vehicles** and the manufacturing **of computers and electronics** are the most important sectors for Mexican trade with a total trade volume of 197 billion USD and 162 billion USD, respectively, in 2019. **Other fast-growing sectors** are crop and animal production, the manufacture of furniture, the manufacture of rubber and plastics and the manufacture of other transport equipment. However, most of these sectors started with a low share.
- The Mexican economy is highly integrated into global production networks. In global comparison, the **importance of imported intermediate goods and services for domestic production** in Mexico is extraordinarily high, suggesting large-scale **downstream production activities within GVCs**. Across sectors, high-tech manufacturing industries exhibit the highest dependence on the import of intermediate inputs. For the Mexican automotive industry, the share of imported inputs in final production equals more than 40 percent.
- Mexico's **GVC activities are strongly linked to the US**: More than 60 percent of Mexican exports of intermediate inputs are used for US-based final production (forward linkages). Similarly, 44 percent of foreign value-added in Mexican final production can be traced back to the US (backward linkages). For Mexican **high-tech manufacturing**, inputs from **China and other Asian countries play a crucial role**. Taken together, they account for almost 40 percent of foreign value-added in Mexican final products, exceeding the share of US inputs (36 percent).
- Mexico's outward investment position is negative, implying higher stocks of inward rather than outward **foreign direct investment (FDI)**. In 2021, the stock of inward FDI in Mexico relative to GDP was 45 percent, while the stock of Mexico's direct investment abroad reached 14 percent of GDP. The inward FDI positions have **been diversifying away from the US** with European countries catching up. In 2019, **the EU was the major holder of FDI stocks in Mexico,** accounting for 47 percent of inward investment.
- Gains from trade are unequally distributed: mostly the **largest firms** participate in international trade and large disparities in export intensity across Mexican states are apparent, with the **northern part and Centro Bajío being the most integrated** regions.

Both, the international and the domestic environment, matter for firms' activities. While so far, we have mostly taken the international view, in chapter four, we will focus on the **local conditions and try to identify structural problems** that hinder Mexican firms to fully untap their potential.

- **Weak institutions and criminality** are detrimental factors for the Mexican economy. Various indices highlight the severe deficit in the rule of law, especially in terms of organized crime and government corruption. Even more worrisome, the evolution of governance indicators shows that the situation has **even worsened with time**.
- **Infrastructure and logistics** remain obstacles to conducting business in Mexico. In 2018, Mexico ranked 51st out of 160 countries in the World Bank's International Logistics Performance Index (LPI). Mexico scored in international comparison lowest in the ability to **track and trace consignments** and the quality of **trade and transport infrastructure**.
- Mexico is rated **lowest among OECD** countries in terms of **upper secondary education enrollment**. Given the importance of education in human capital, the **low share of people with a higher education degree is a large impediment** to constituting a pool of skilled workers. However, a high-skilled labor force is crucial to be **competitive** in innovative sectors such as high-tech.
- Mexico could **improve its business environment** along several dimensions, as the World Bank's Doing Business Index shows: poor governance, bad quality infrastructure, and inefficient administrative processes are costly for firms to deal with.

Next, we discuss the **high dependency of the Mexican economy on the US**, both as a buyer of Mexican goods and as a supplier of intermediate inputs.

- The US are the **single most important buyer** of Mexican goods. Hence, a **downturn in the US economy** that results in lower overall US-demand, would hit the Mexican **economy severely**.
- Besides this negative demand-side effect of the high dependency on the US, there are also supply-side risks related to potential **disruptions in cross-border supply chains**, that can impose big challenges for Mexican producers.
- We identify the risk for supply chain disruptions by determining **dependencies at the product-level.** Whenever a product is imported from three or less source countries, we consider Mexico being highly dependent on few suppliers. Overall, Mexico's share of **highly dependent goods equals 22 percent**, which is more than five times the share of the US or China.
- Even more alarmingly, **82 percent** of the critical goods are **imported from the US**, hence, Mexico's risk of supply chain bottlenecks is very clustered.
- **Decoupling from GVCs** would have detrimental effects on the Mexican economy: using the ifo trade model, we find that reshoring supply chains would lead to a **decline in real GDP of 9.3 to 11 percent**.
- We identify **potential alternative suppliers** for Mexico to diversify its risk for supply chain disruptions. Using market shares to determine the capacity to serve the Mexican market, we find that especially the **EU** and **China** could serve as alternative suppliers. Furthermore, many **Asian countries** are highly competitive in specific sectors.

- Lastly, Mexico could benefit from **MNEs plans to relocate**. Recently, many firms have experienced supply chain disruptions due to high dependencies on few suppliers, and plan to reduce this type of risk by diversifying their portfolio of source countries. Some **firms** have **already shifted or announced to shift production plans of inputs from China to Mexico** (Jung, 2020).

This study provides a detailed overview over Mexico's integration into the global economy. It highlights the important role of international trade, GVCs and foreign investment for Mexico and identifies domestic impediments to economic development. Moreover, we critically discuss the dependency of Mexico's economy on the US and show that nationalizing supply chains would involve very high costs for Mexico. Finally, we identify potential avenues for diversifying Mexico's portfolio of trade partners and emphasize the benefits of deepening trade relations with the EU in this context.

We draw the following **policy implications:**

1. Given the high costs of reshoring, policymakers should **avoid protectionist measures** that lead to decoupling from global supply chains.
2. Instead, the focus should be on **reducing the dependency on the United States (US)** by creating a clear and reliable business environment that incentivizes firms to diversify trade partners to mitigate US-specific shocks in the future.
3. We identify the **European Union as an alternative supplier** for intermediates currently imported almost exclusively from the US. To lower the risk of supply chain disruptions, Mexico should push to finalize the renegotiations of the EU-Mexico trade deal that should be deepened to tackle also non-tariff barriers.
4. Given the relevance of **Asia as a provider of inputs**, Mexico should focus on concluding the ongoing negotiations with South Korea as soon as possible and ideally try to start talks with members of the Regional Comprehensive Economic Partnership agreement consisting of 15 Southeast Asian and Pacific countries.
5. In **identifying and monitoring risks in supply chains**, companies can be effectively supported by the Mexican government. For example, the promotion of digital technologies in risk management can help ensure that disruptions in supply chains can be easily identified and at an early stage such that appropriate adjustments can be made more quickly.
6. A **national dialog platform on the topic of supply chains** would also offer an important opportunity for an exchange of information between the government and businesses. This would greatly facilitate the identification of potential bottlenecks at the sectoral level and also facilitate the promotion of different mitigation strategies by making it easier to swap know-how among Mexican exporters.

7. The use of bilateral trade agreements is associated with considerable bureaucratic hurdles, especially for small and medium-sized enterprises (SMEs). A **more SME-friendly design of trade agreements** can make an important contribution to more robust supply chains.
8. The Mexican government should also increase its efforts in **export promotion activities targeting SMEs**. For many firms, it is very costly to find new business partners, particularly in countries where they have not yet gained any experience. Export promotion agencies could put Mexican exporters directly into contact with potential foreign partners and thereby contribute to significantly reducing the search costs. Thus, after the full dissolution of the national export promotion agency PROMEXICO in 2019, the Mexican government should as soon as possible put forward a plan for setting up a new trade and investment promotion organization for Mexico. In this context, the Inter-American Development Bank (IDB) could provide important technical assistance in establishing effective monitoring and impact evaluation frameworks.
9. To make it easier for **companies and especially SMEs to comply with rules of origin**, there are two concrete recommendations for action: First, local institutions should support companies in complying with rules of origin, e.g. through legal advice or information campaigns. Second, harmonization of the rules across agreements is desirable. Within the World Trade Organization, consideration should be given to limiting proof of origin to transactions where triangular trade is actually profitable, instead of requiring it for every export, as is currently the case.
10. To ensure a rule-based global trading system, Mexico should give top priority to an ambitious **reform of the World Trade Organization**. Mexico could take on the role of an intermediary between the interests of the high- and low-income countries that are hard to reconcile and are currently one of the main reasons for stalling multilateral trade negotiations.
11. Improvements in **infrastructure** and connecting Mexico better with other trade partners than the US is essential to bring transportation costs down and thereby facilitate international trade. This will also help to achieve the goal of broader diversification of trade partners.
12. Technological advances, particularly in communication, made it possible to **trade services**, leading to strong and persistent growth prospects in this sector. The Mexican economy is still centered on manufacturing. We propose to create more awareness for the large growth potential in trade in services. Especially the large complementarities between manufacturing and services should be stressed. Export promotion agencies could assist this mission.
13. To be successful in services sectors that require a high-skilled labor force, such as business services, Mexico needs to **improve its educational system** and **training on the job**.

To tackle this challenging task, we suggest bringing together researchers, NGOs, and other institutions to create scale effects.

14. Lastly, Mexico needs to **fight the high crime rates** and **improve its institutions** to stay an attractive place to do business.

1 Introduction

Trade plays an important role for the Mexican economy: Over the last decade, the integration into global production has constantly been increasing and total trade went up from 57 percent of GDP in 2007 to 82 percent in 2021 (World Bank Group, 2022). Whereas the global division of tasks has many advantages, recent global disruptions—above all Covid-19 and the war in Ukraine—have exposed the risks associated with the international production networks. Furthermore, Mexico has experienced turbulent and unprecedented times in terms of trade policy due to the trade war launched by President Trump and the resulting increase in economic uncertainty. The goal of this study is to provide a deep analysis of the integration of Mexico into the global economy and highlight the main opportunities and challenges that the country will face in the next years.

Despite the global slowdown in international trade after 2010, Mexican trade continued to grow. The United States (US) are the most important trade partner, but since the early 2000s Asia gained in relevance and tripled its share in the Mexican market. Gains from trade are unequally distributed: mostly large firms are internationally active and large disparities across regions are apparent.

Both the international and the domestic environment matter for firms' activities. Mexico could improve its business environment along several dimensions. Especially weak institutions and high crime rates constitute detrimental factors for the Mexican economy. But there is also much left to be done in terms of education and workforce training. A highly trained workforce is crucial for many promising sectors such as high-tech or services. Hence, improving in this area should be a top priority for policymakers.

Mexico is highly dependent on the US. The US account for 65 percent of all Mexican trade and are by far the most important export destination buying three-quarters of all Mexican goods going abroad. Global value chain (GVC) activities are strongly linked to the US as well: More than 60 percent of Mexican exports of intermediate inputs are used for US-based final production. Similarly, 44 percent of foreign value-added in Mexican final production can be traced back to the US.

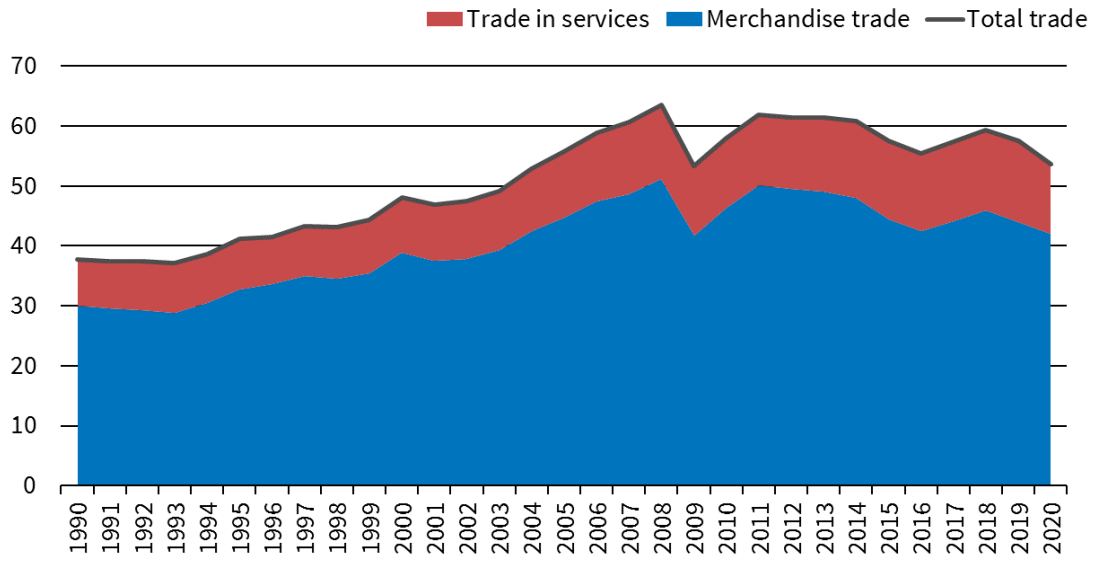
What could be done to reduce Mexico's dependency on the US? We discuss two potential strategies, i.e., decoupling from GVCs and diversifying the portfolio of trade partners. Given the high costs of reshoring, policymakers should avoid protectionist measures that lead to decoupling from global supply chains. Instead, the focus should be on reducing the dependency on the US by creating a clear and reliable business environment that incentivizes firms to diversify trade partners to mitigate US-specific shocks in the future. This would allow companies to enjoy the efficiency gains of international production and use trade as insurance to hedge risks. Mexico should particularly strengthen its ties with the European Union and Asia as both could serve as alternative suppliers for intermediates currently imported almost exclusively from the US.

2 Recent Trends in the Global Economy and in Mexico

2.1 Decade of Hyberglobalization

Since the end of the Cold War, the world has witnessed a period that is sometimes referred to as hyperglobalization and is characterized by a massive increase in global trade flows (Subramanian & Kessler, 2013). From 1990 until 2010 the share of world trade as a percentage of GDP increased from 38 to 58 percent and hence, almost doubled (c.f., Figure 1). This remarkable growth in trade has slowed down since 2010. At the onset of the 2008 financial crisis, global trade reached about 63 percent of total GDP. Despite the crisis, world trade was relatively fast to recover and, in 2011, it surpassed the 2008-level in absolute terms, almost catching up with the pre-crisis growth level. That said, trade intensity, i.e., world trade relative to world economic output, has been stagnating ever since, and has been below 60 percent of the GDP level for the past five years.

Figure 1: World trade as a percentage of GDP has been stalling for the past decade



Notes: The figure shows world trade expressed as a percentage of world economic output (GDP) broken down by goods and services over time. Source: World Bank Group (2022). Authors' calculations.

Trade in Services

Another recent trend is the increase in the relevance of trade in services over time: while in 1990 trade in services made up only 8 percent of GDP this number increased to 12 percent by 2021 (World Bank Group, 2022). Services trade has grown faster than trade in goods, and distribution services and financial services are the most traded services globally, accounting for almost one-

fifth of trade in services each, followed by telecommunications, audio-visual, and computer services, which together account for 13 percent (WTO, 2019). Digital technologies allow firms to expand their marketplace internationally. For a long time, services were non-tradable because they usually require face-to-face interaction—technological advances, particularly in communication, have changed this and played an essential role in the rapid growth of services trade.

Furthermore, there are strong complementarities between services and goods trade: first, trading goods is always associated with services such as transportation, financial, and insurance services. Second, firms can increase the perceived quality and hence distinguish themselves from competitors by adding services and/or bundling their manufactured products with services (Ariu, Mayneris, & Parenti, 2020). The growing importance of services shows itself not only in trade statistics but also in the labor market. For instance, the information and communications technology sector in India employs around 3.5 million workers (WTO, 2019). Worldwide, the International Labor Organization (ILO) estimates for the year 2019 51 percent of total employment to be associated with jobs in the services sector.[2]

Emergence of Global Value Chains

The era of massive trade flows around the 2000s can be explained by at least two broad phenomena: the emergence of global value chains (GVCs) and liberalizing trade policy. A GVC refers to a production process that takes place in two or more countries while at each stage of production and in each location value is added. Hence, GVCs are a special form of production that heavily relies on multiple border crossings and only became profitable with the ITC-revolution[3] and lower transportation costs, that significantly reduced trade costs (Baldwin, 2012).

Following Xiao et al. (2020) and Wang et al. (2017), production activities can be characterized into four broad types: (i) pure domestic, when the value added of a good is produced and consumed in the same country, (ii) traditional trade, when only domestic value added is used to produce a final good that is exported and consumed in a foreign country, (iii) simple GVCs, when stages of production are divided across countries and factor content crosses national border once for production abroad, and (iv) complex GVCs, when stages of production are divided across countries and factor content crosses national borders at least twice. By spreading the production across different countries, it is possible to leverage efficiency potentials through specialization.

Two different perspectives can be taken to evaluate the integration of economies into GVCs. First, countries can be involved in GVC activities by importing intermediate goods and services from other countries for domestic production activities. In the context of GVCs, this is commonly referred to as backward participation. Following Wang et al. (2017) we calculate the rate of backward GVC participation as the share of total final production, which can be attributed to imports of intermediate inputs. Second, economies are also involved in cross-border production sharing

[2] The share can be retrieved through the World Bank: https://data.worldbank.org/indicator/SL.SRV.EMPL.ZS

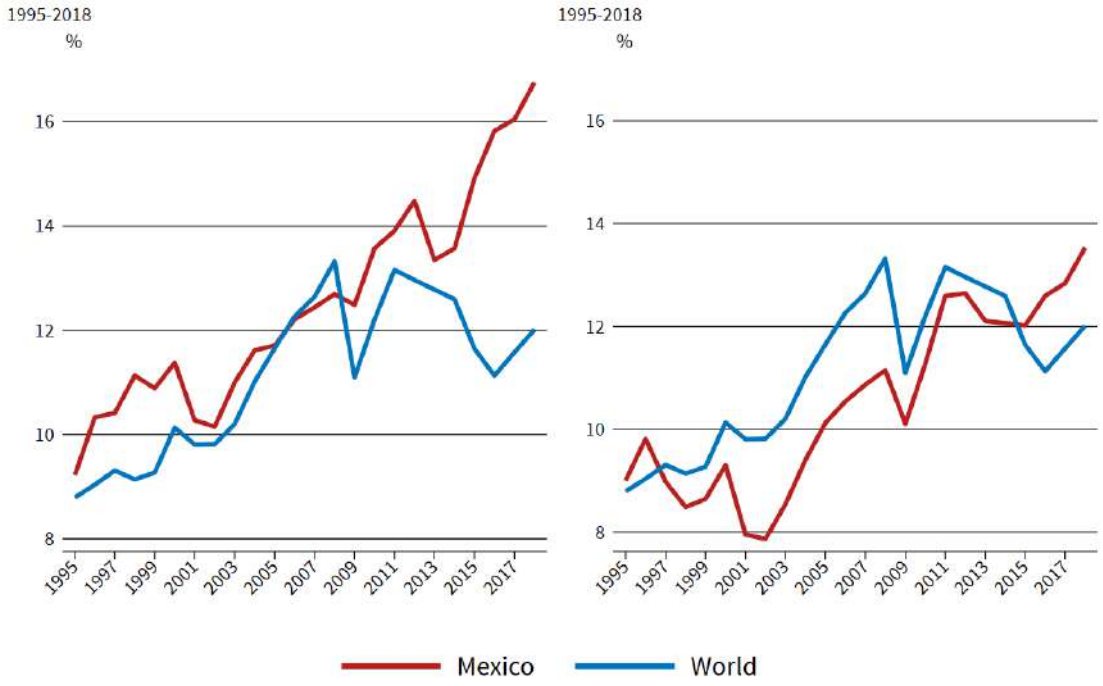
[3] ICT stands for Information and Communication Technologies

activities by exporting intermediate inputs to other countries. This form of GVC integration is called forward participation. The respective rate of forward GVC participation is calculated as the share of total domestic value-added, that is sent abroad in an unfinished state. Our calculations are based on the OECD's inter-country input-output tables, which were published in 2021 and cover the years from 1995 to 2018.

Figure 2: Mexico's integration into GVCs has increased more than the world average

2a: Backward GVC Participation

2b: Forward GVC Participation

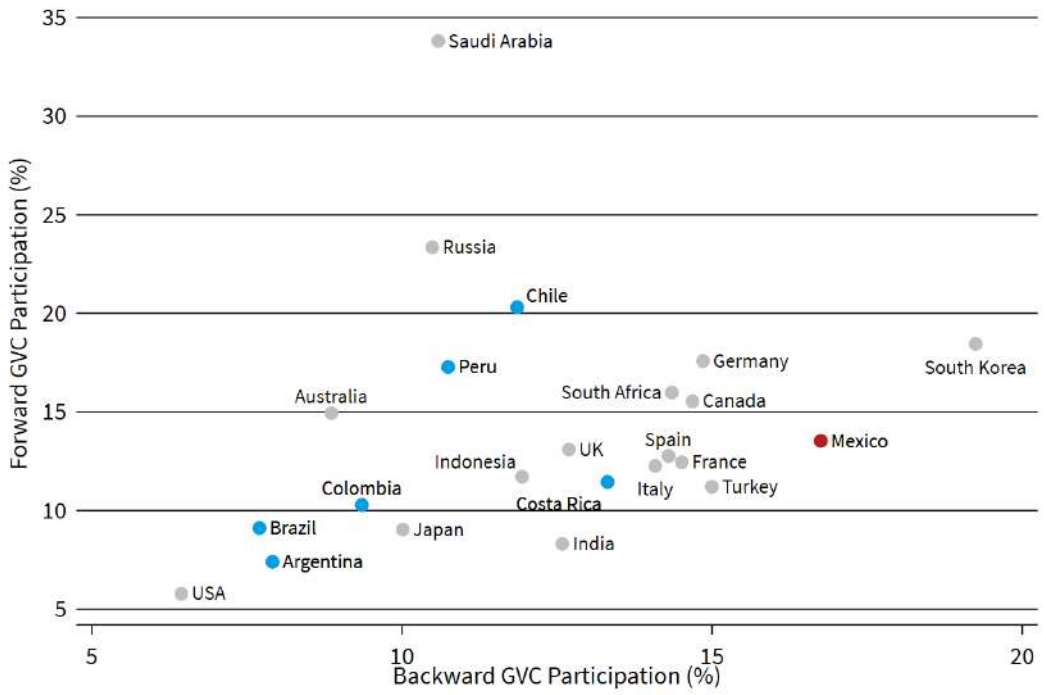


Notes: This figure shows the evolution of GVC activities at the global level and for Mexico from 1995 to 2018. The left panel (a) shows a measure of backward GVC participation (share of imported inputs in domestic final production), the right panel (b) illustrates a measure of forward GVC integration (share of domestic value-added related to the export of intermediate goods and services). Source: OECD ICIO (2021a). Authors' calculations.

In Figure 2, the backward GVC participation rate (left panel) and the forward GVC participation rate (right panel) are shown for Mexico and the entire world economy. Similar to global exports and global imports, backward and forward GVC activities must coincide for the world as a whole, whereas this is not necessarily the case at the country level. Two different periods of GVC expansion are discernible at the world level, which parallels the evolution of world trade shown in Figure 1. From 1995 to 2008, worldwide GVC activities have expanded rapidly, with the global GVC participation rate rising from less than 8 percent to more than 12 percent of global GDP. The global financial crisis in 2008 led to a sharp drop in global GVC activities which was followed by a fast recovery in the following two years. Since then, however, GVC activities seem to have stagnated or even declined on a global level relative to global GDP.

Against this backdrop, the recent development of Mexico's GVC participation is noteworthy. In contrast to the global trend, the integration of the Mexican economy into GVCs has continued to deepen after the global financial crisis. In particular, Mexican backward linkages have shown strong momentum: The share of imported inputs in Mexican final production has almost doubled, from an initial value of 9 percent in 1995 to close to 17 percent in 2018. Similarly, the forward GVC rate of Mexico has grown steadily since 2002 and has been above the global average since 2014. In 2018, around 14 percent of Mexican GDP could be attributed to the export of intermediate goods and services within international production networks.

Figure 3: In global comparison, Mexico is highly dependent on foreign inputs



Notes: This figure shows the GVC participation of all G-20 countries and four additional Latin American countries for the year 2018. The vertical axis depicts the countries' backward GVC integration (share of imported inputs in domestic final production in percent), and the horizontal axis the countries' forward GVC integration (share of domestic value-added related to the export of intermediate goods and services). Source: OECD ICIO (2021a). Author's calculations.

Figure 3 shows that also in direct comparison to other G-20 countries and to the largest economies in Latin America, the integration of the Mexican economy into GVCs is relatively high. The horizontal axis of this figure depicts the backward GVC integration rate for the year 2018. Among all G-20 countries, Mexico is one of the countries with the highest rate of backward participation, only topped by South Korea. The gap in backward participation rates is particularly high in comparison to other large Latin American countries such as Brazil or Argentina. But even advanced European economies, like Germany or France, rely less on imported parts and components than Mexico. When it comes to forward GVC linkages, which are depicted in Figure 3 along the vertical axis, Mexico's level of forward integration is comparable to the level of France or Spain. Among

countries with stronger GVC forward linkages than Mexico are major exporters of natural resources, such as Saudi Arabia, Russia, or Chile, as well as important manufacturing hubs like Germany or South Korea.

The relative importance of backward GVC participation in comparison to forward GVC participation for Mexico indicates that the Mexican economy is more engaged in downstream production activities in GVCs. Thus, the importance of imported goods and services for domestic production in Mexico is particularly high.

For GVCs, low trade barriers between participating countries are particularly important because products cross country borders multiple times—with high barriers, high costs accumulate, and this type of production becomes unprofitable. Therefore, with the emergence of GVCs, countries participating in global production have had great incentives to liberalize trade policy, at least in sectors that are relevant for production, i.e., intermediate goods for complex industrial goods. Next, we will discuss recent trends in trade policy.

Successful multilateral trading system

Spearheaded by the US and the United Kingdom, 23 countries founded the GATT (General Agreement on Tariffs and Trade), the predecessor of the World Trade Organization (WTO), in 1947. The main goal was, after experiencing two world wars, to secure peace through higher economic integration and to reduce trade wars by creating a rule-based trading system (Bagwell, Bown, & Staiger, 2016). Since then, seven successful negotiation rounds followed, and in 1995, the WTO was created, successfully bringing together 123 countries.

Today, the WTO has 164 members with China and Russia being the most prominent late-joiners in 2001 and 2012, respectively, and, as of today, its members account for 98 percent of global trade. Furthermore, multilateral trade talks substantially liberalized global trade and reduced the average level of tariffs from 22 percent in 1947 to 8 percent in 2017 (Bown & Irwin, 2017; Teti, 2020). Besides goods, the WTO agreements also cover services, and intellectual property rights specifying the principles of liberalization and the permitted exceptions. Hence, the WTO sets the guidelines for issues such as subsidies, quotas, safeguards, anti-dumping procedures, investment, and trade facilitation. Furthermore, the WTO agreements establish procedures for settling disputes.

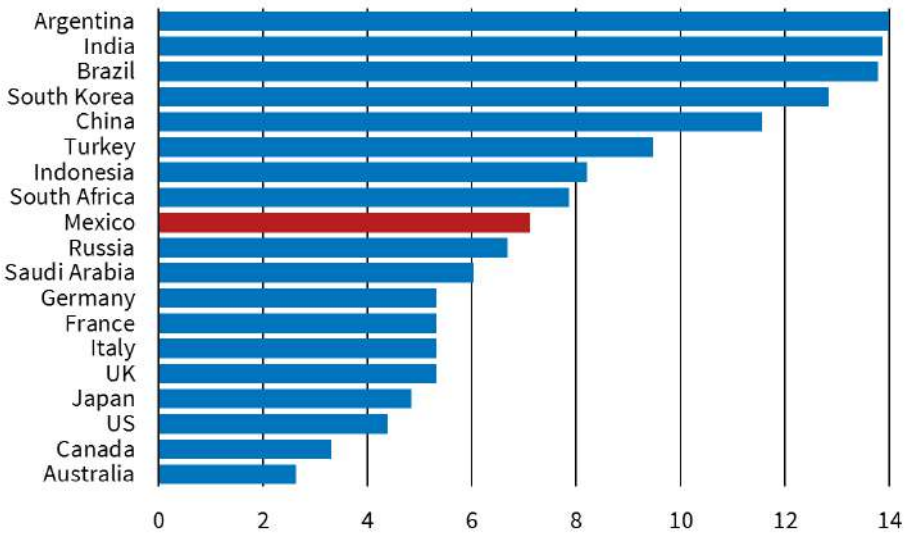
The WTO under attack

However, since the conclusion of the Uruguay Round and the creation of the WTO in 1995, there has been no significant further tariff reduction and only very few advances in other areas of trade policy. The Doha Round failed, in part, because the high-income countries' tariffs are already very low, whereas most favored nation (MFN) tariffs in many low-income countries are still at high levels. MFN tariffs, are defined at the product level and specify the tariff charged on imports for all WTO members. MFN means that under the WTO agreements, countries cannot discriminate

between trading partners, some exemptions are however allowed, the most prominent being regional trade agreements that offer lower preferential tariffs to participating countries.

As shown in Figure 4, large tariff disparities are even present within the group of G20 countries. For instance, the average applied MFN tariff is 14 percent in Argentina, 13.9 percent in India, and 13.8 percent in Brazil, whereas in high-income countries tariffs are much lower: 4.4 percent in the US, 4.8 percent in Japan, 5.3 percent in Italy, France, Germany, and the UK (see Teti (2020)). The large tariff differential makes future tariff reductions much more difficult as, when negotiating tariff reductions with low-income and emerging countries, high-income countries can hardly offer further tariff reductions. Mexico joined the GATT/WTO in 1986 and ranks in the middle of the G20 countries in terms of average tariff rates. .

Figure 4: Large disparities in MFNs tariffs applied by the G20 countries make multilateral trade negotiations difficult



Notes: The figure shows the average applied MFN tariff rates (percent) of the G20 countries in 2017. Source: Teti (2020). Authors' calculations.

The proliferation of regional trade agreements

The standstill in multilateralism of the last years has led countries to shift to bilateral trade talks: since 1990 the number of regional trade agreements (RTAs) in force increased by more than ten times, from 28 to 354 in 2022 (WTO, 2022). In fact, reaching a consensual agreement is quicker with fewer partners and easier with regard to removing some non-tariff trade barriers such as product safety or phytosanitary standards for example. For instance, the EU concluded several

new trade agreements in recent years, e.g., with Singapore, Canada, Japan, Mexico[4], Vietnam. Participating countries benefit because the agreement puts them in a much better position compared to the most-favored-nation treatment that applies under WTO rules (cf., Flach (2021) for a more detailed discussion).

Deep trade agreements

In comparison to the WTO deals, many of the bilateral trade agreements are much more comprehensive than just tariff negotiations, so-called "deep" agreements (Mattoo, Rocha, & Ruta, 2020). They often include harmonization of product safety and hygiene standards, approval procedures, recognition of geographical indications, as well as access to local service and procurement markets. Dhingra, Freeman & Huang (2021) show that these deals are primordial for trade in services. They include, for instance, investment liberalization, recognition of professional qualifications for service providers, intellectual property protection commitments as well as policy areas such as anti-corruption, visa, and asylum. Hence, these RTAs focus very much on non-tariff barriers. Dhingra, Freeman & Huang (2021) find that the elimination of tariffs increased welfare by 1.8 percent on average, compared to 1.4 percent for non-tariff measures.

Mexico's trade deals

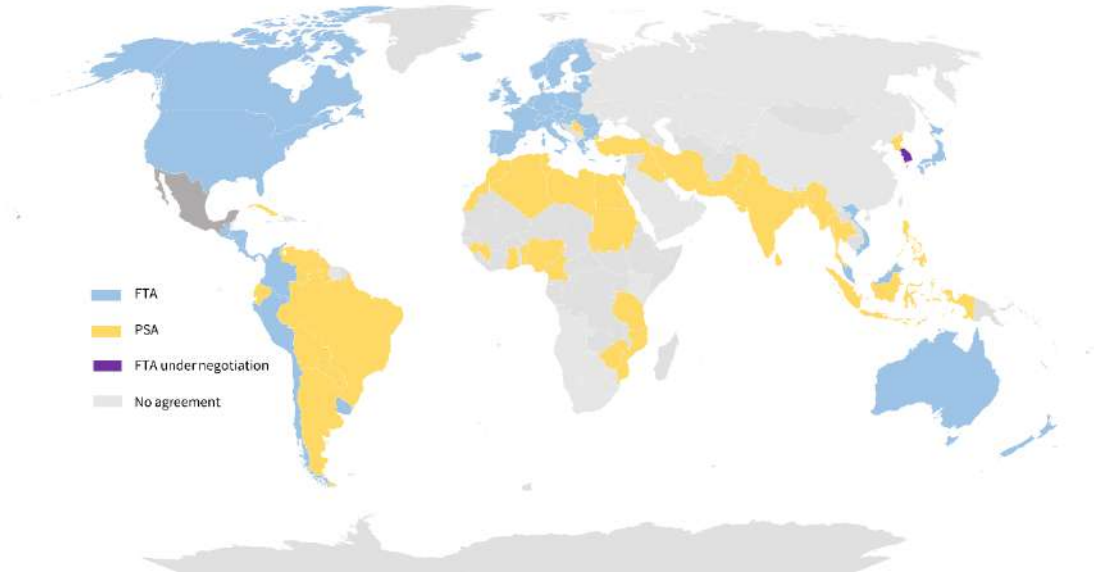
As shown in Figure 5, Mexico has already successfully signed several free trade agreements (FTAs), the most well-known being the North American Free Trade Agreement (NAFTA) with the US and Canada in 1994, renegotiated as United States-Mexico-Canada-Agreement (USMCA) in 2019. Other economically important FTAs for Mexico are the ones with the EU signed in 1997, which is renegotiated since 2016, the Pacific Alliance deal with Chile, Columbia, and Peru, as well as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). After President Trump formally withdrew the US from the Trans-Pacific Partnership (TPP) in January 2017, the remaining parties signed the CPTPP, which entered into force for seven countries in 2019. The member states are Australia, Brunei (not yet ratified), Canada, Chile (not yet ratified), Japan, Malaysia (not yet ratified), Mexico, New Zealand, Peru (entered into force in 2021), Singapore, and Vietnam.

Despite being deeply integrated with the US, Canada, and the EU, Mexico has not managed to sign further agreements with crucial partners: there is no sign of trade deal talks with China, Mexico's second-largest trading partner, and the negotiations with South Korea have been put on hold since 2008 and just resumed in 2022. With the countries that appear in yellow in Figure 5, Mexico has partial scope agreements (PSAs) in place that only cover tariff reductions in a few

[4] In 2020 the EU and Mexico concluded the negotiations on the trade parts of a new EU-Mexico association agreement which will replace the existing EU-Mexico Global Agreement from 2000. It includes the removal of further tariff and non-tariff barriers to trade in goods and services as well as new provisions regarding public procurement and investment protection. Moreover, the new trade agreement includes comprehensive commitments on trade and sustainable development, including provisions on environmental protection and labour rights. However, the agreement is not ratified yet.

sectors, and barely touches on non-tariff barriers. For example, the Mexico-Mercosur trade deal only reduces tariffs in the automotive sector (SICE, 2022).

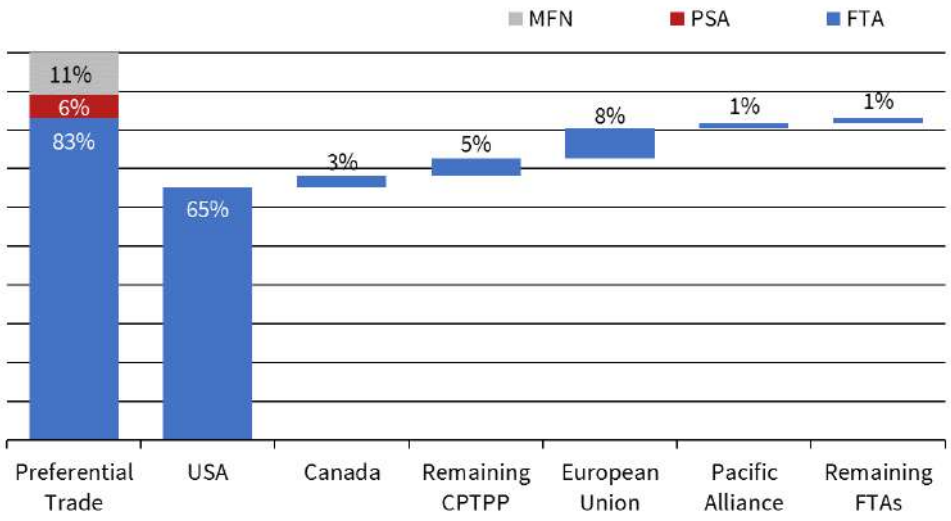
Figure 5: Despite being deeply integrated with the US, Canada, and the EU, Mexico has not signed trade agreements with many crucial partners such as China or South Korea



Notes: This map shows countries that have bilateral trade agreements with Mexico, by types of agreements: Free Trade Agreement (FTA), Partial Scope Agreement (PSA), or no agreement. Only one FTA is currently under negotiation with South Korea. Source: WTO (2022a). Authors' calculations.

In economic terms, the existing trade agreements are very important for Mexico. As shown in Figure 6, preferential trade, i.e. both under FTAs and PSAs, accounts for 89 percent of total Mexican trade. Although many PSAs with Latin American, African and Asian countries exist, they only reduce tariffs in very few sectors, resulting in a little overall trade share of 6 percent. Instead, almost all preferential trade occurs under FTAs, with the USMCA being by far the most important agreement for Mexico. Within the USMCA there is again a large disparity between the partners with the US playing the dominant role: 65 percent of all trade occurs between the neighboring countries while trade with Canada only accounts for 3 percent of Mexican trade. Trade with the remaining CPTPP countries equals 5 percent, in 2019, Australia, Japan, New Zealand, Singapore, and Vietnam were already trading under the CPTPP. The EU-Mexico agreement is the second most important agreement for Mexico covering 8 percent of total trade. The Pacific Alliance, a trade agreement with three other Latin-American countries (Chile, Colombia, and Peru), and the remaining FTAs only play a minor role.

Figure 6: Preferential trade within the USMCA constitutes the bulk of Mexico's trade flows



Notes: The figure shows the trade shares of Mexico across different regional trade agreements in 2019: Most Favored Nation (MFN), Partial Scope Agreement (PSA) and Free Trade Agreement (FTA). Source: Gaulier & Zignago (2010). Authors' calculations.

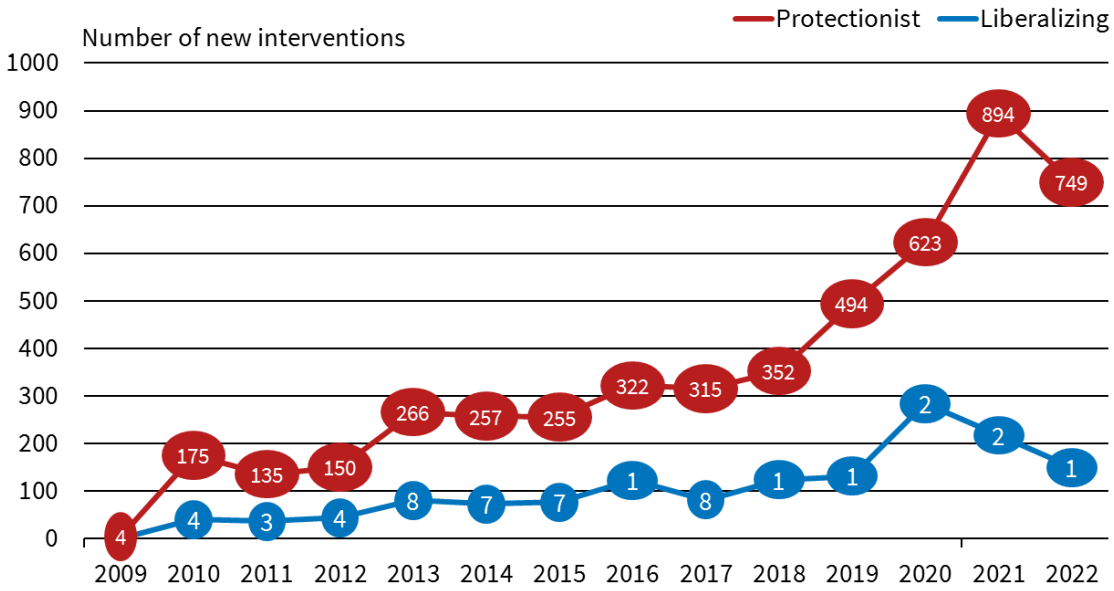
2.2 Slowbalization

The global slowdown in world trade, and especially for trade in goods, as an aftermath of the financial crisis in 2007/08 can be explained by several factors. First, some markets have naturally become saturated, and innovation and new technologies are now key to creating new market opportunities (Flach et al., 2021). Second, on the political spectrum, a "globalization backlash" recently emerged with more voters and parties worldwide shifting toward a protectionist and isolationist direction (Colantone, Ottaviano, & Stanig, 2021). Anecdotally, the American tariffs on Chinese exports, the rising support for nationalist and radical-right parties in Europe, and Brexit, have all taken part in the "slowbalization" and stagnation observed today.

Protectionism on the Rise

We can also observe an increase in the number of protectionist measures worldwide. Data from the Global Trade Alert (GTA, see Evenett & Fritz (2020)) show that since 2009, protectionist policy interventions have outnumbered liberalizing policies, with a sharp increase starting in 2018 (see Figure 7). In 2021, newly created protectionist measures exceeded four times the liberalizing ones, compared to three times on average from 2013 to 2018.

Figure 7: The global number of protectionist measures is soaring since 2018



Notes: The figure shows the global number of new policy interventions created each year that affect international trade by type over time, relative to 2008. Each intervention is only counted once even if it is implemented by several countries at once (same intervention ID). The total number of measures is not weighted by their policy relevance. Source: Global Trade Alert (2022). Authors' calculations.

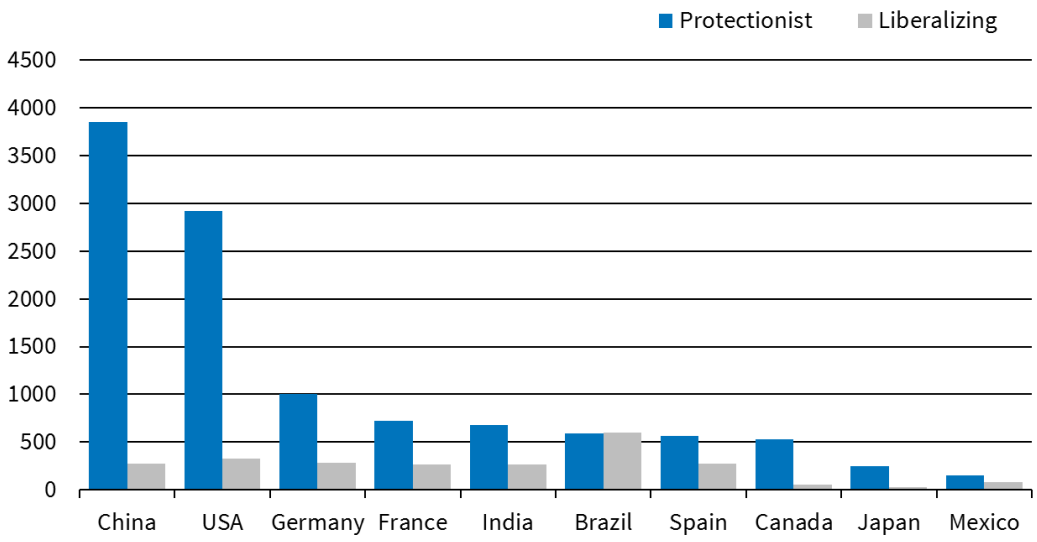
As the global trade environment has gotten more hostile, many economies are now facing additional challenges. Figure 8a shows the number of protectionist interventions implemented over the last ten years for selected countries. The US and China have implemented at least four times more protectionist measures than the other countries, which is mostly a result of the raging trade war from 2018 onwards.[5] Still, also other countries turn to protectionism with protectionist measures exceeding liberalizing ones.

Taking the opposite stance, Figure 8b shows the number of interventions that countries have faced, rather than imposed. Here, the number of protectionist measures faced by countries is higher than the liberalizing ones, too. Further, there is less heterogeneity across countries as they face a comparable amount of protectionist and liberal measures, with European countries such as Germany and France being the target of more protectionist interventions.

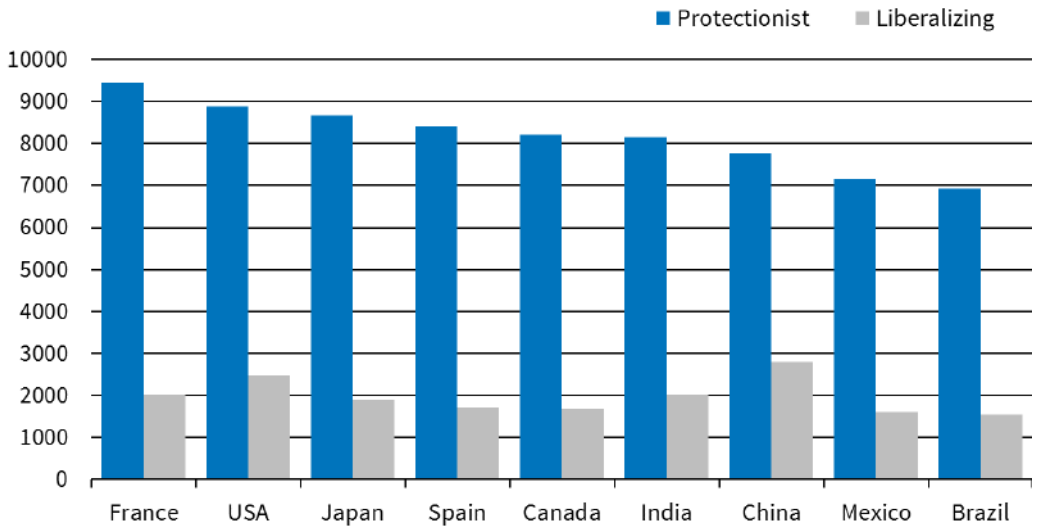
[5] As a word of caution, the total numbers of measures are not weighted by their policy relevance, and some may concern only a very specific set of products.

Figure 8: The US and China impose more protectionist measures than other countries

8a: Number of measures imposed between 2012-2022



8b: Number of measures faced between 2012-2022



Notes: These figures show the total number of imposed (a) and faced (b) policy interventions of selected countries over the last ten years, i.e. the number of protectionist and liberalizing measures from 2012 to 2022. In (a), measures with a similar ID but imposed on several countries are only counted once. In (b), measures with a similar ID but imposed by several countries are only counted once. The total number of measures is not weighted by policy relevance. Source: Global Trade Alert (2022a). Authors' calculations.

The many faces of protectionism

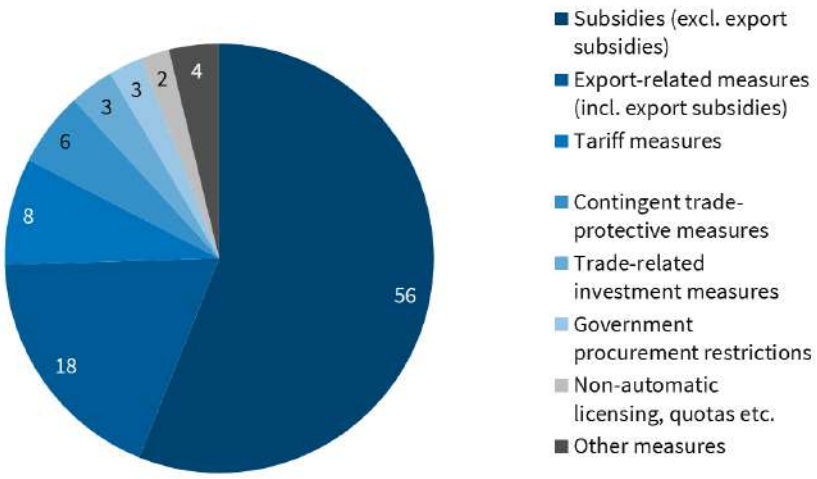
Protectionist measures are not limited to increases in tariffs but can instead take on a variety of shapes such as market access restrictions, quantity restrictions, subsidies, and indirect trade barriers, export subsidies and dumping, labor, environmental, and animal welfare standards (cf.,

Appendix B for more details). Figure 9a shows the types of protectionist measures that were imposed over the last ten years globally. Subsidies represent an overwhelming majority: they account for almost three-quarters of all interventions. Subsidies do not only apply to the exports of agricultural products but also more frequently to trade in industrial goods. According to the 28th Global Trade Alert report (Evenett & Fritz, 2021), the number of subsidy-related disputes taken to the WTO has steadily increased since 2010. Regarding the other types of interventions, tariff measures represent only 8 percent of the total number, and the last 18 percent is mainly split between contingent trade-protective measures (anti-dumping measures, countervailing measures, and safeguards), trade investment, and government procurement restrictions.

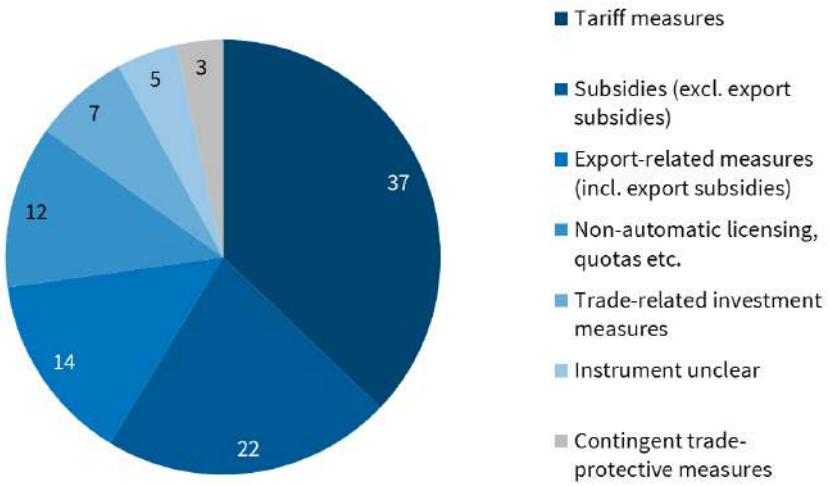
Mexico has been no exception and is facing identical protectionist barriers, with subsidies being the main obstacle. Over the period 2012-2022, they represented 75 percent of all harmful measures imposed on the Mexican economy (Figure 9b). As seen in the previous section, Mexico has also imposed some protectionist measures to protect its firms, and subsidies account for 36 percent of them (Global Trade Alert, 2022). In addition, Mexico has also imposed higher tariffs on imports (37 percent of interventions) to cope with the competition.

Figure 9: Subsidies account for more than half of global protectionist measures

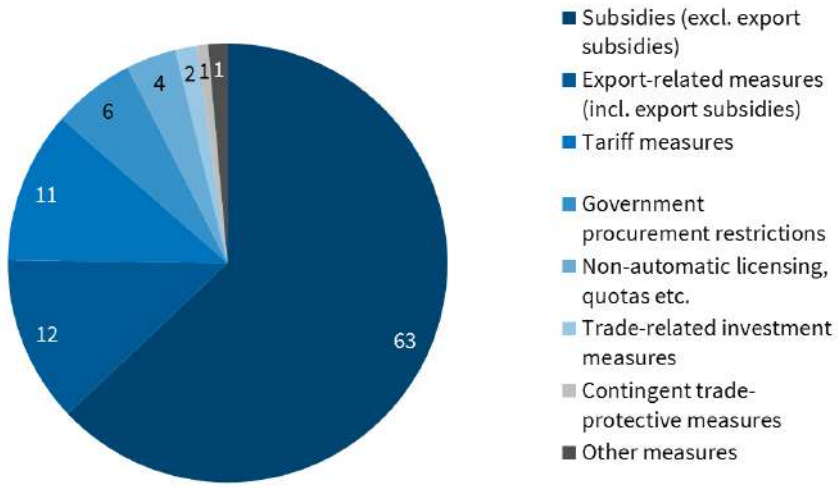
9a: Implemented globally



9b: Implemented by Mexico



9c: Targeted towards Mexico

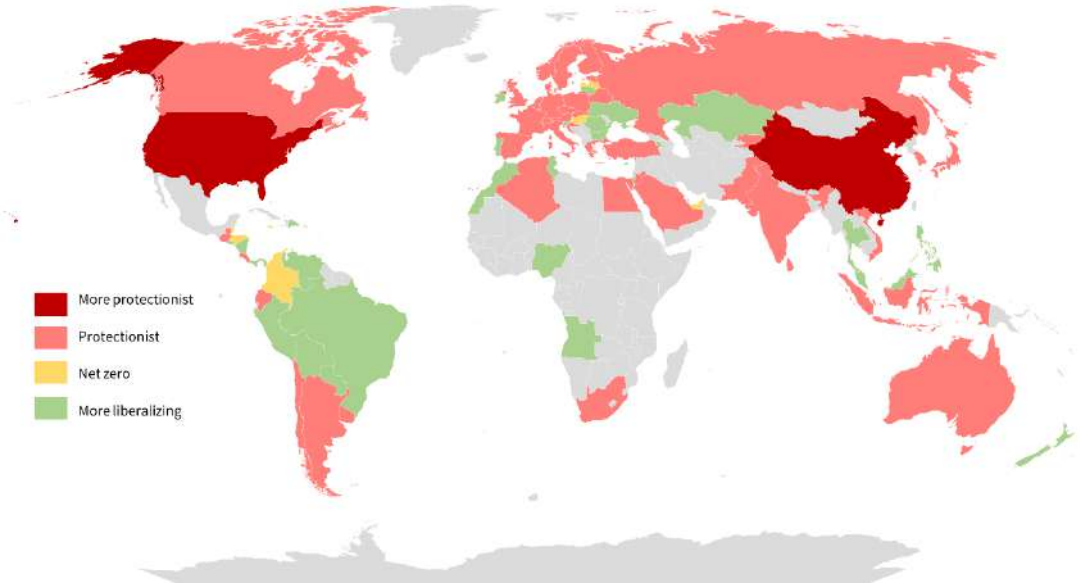


Notes: These figures show the composition of protectionist policy measures between 2012 and 2022, for the world (a), (b) implemented by Mexico and faced by Mexico (c). Other measures include FDI, capital control, migration, price control, finance, and sanitary measures, as well as technical barriers to trade, intellectual property and other non-specified measures. Source: Global Trade Alert (2022). Authors' calculations.

Finally, Figure 10 maps countries that have imposed measures affecting Mexico. For each country, the net number of interventions is computed—i.e., the number of liberal interventions minus the number of protectionist ones—and serves as an intensity measure. The US and China, Mexico's main trading partners, impose a disproportionally large amount of protectionist measures on the Mexican economy. This is not only a result of the trade war initiated by the US in 2018, which hit Mexico especially hard in the iron and steel sector (Bown & Kold, 2022), but seems to

be a development that is going on for a longer period. Canada, India, Japan, South Korea and most countries in Europe have also imposed more protectionist measures, but the net count is more balanced. Mexico however benefits from a more liberal environment by trading with other Latin American countries such as Brazil, Argentina, and Venezuela, or some Eastern European countries.

Figure 10: Mexico has also been facing more protectionist measures in the past decade



Notes: This map shows the number of net interventions, i.e. number of liberal measures minus the number of protectionist measures, that have been imposed on Mexico by each country over the past ten years (2012-2022). More protectionist ranges from -3010 to -1405; protectionist -207 to -1, net zero is 0, and liberalizing from 1 to 62. The US and China imposed a significantly higher number of protectionist measures on Mexico than liberal measures. Source: Global Trade Alert (2022a). Authors' calculations.

Recent developments in Mexican trade policy

Recently, Mexico has experienced turbulent and unprecedented times in terms of trade policy. On his quest to reduce the large trade deficit of the US, former US President Donald Trump, has launched a trade war that mostly targeted China, but also other countries were caught in the cross-fire: In March 2018, import tariffs of 25 percent on steel and aluminum were imposed against all countries. Not even NAFTA, a signed trade agreement that had been in place for more than two decades and provides free market access (Besedes, Kohl, & Lake, 2020), could shield Canada and Mexico that in turn imposed retaliatory tariffs on agricultural and consumer products.

Further, President Trump threatened to leave NAFTA altogether and openly discussed the possibility of import tariffs of 25 percent on cars and car parts, pressuring Mexico and Canada to renegotiate NAFTA, which resulted in the new USMCA that is currently in place. Even after negotiations on the new trade deal have officially closed, President Trump threatened in May 2019 to

impose tariffs of 5% on all imports from Mexico with monthly increases unless Mexico curbs illegal immigration (Bown & Kold, 2022; Salam, 2019)—a plan that got canceled when Mexico signed an agreement to reduce illegal immigration in June 2019.

Since July 2020 the new USMCA is in force. The new trade deal is all about non-tariff barriers as tariff-free market access was already granted in NAFTA and a lot of political capital was invested into tightening the NAFTA rules of origin (RoOs) for automobiles. RoOs set out the conditions a car has to meet to be granted free market access. Hence, Mexican exporters that want to make use of the zero tariffs when serving the US market have to comply with the rules, otherwise a tariff of 2.5 percent will apply. Typically, the rules include exact criteria on the regional value content a car has to have.

In the new USMCA, the required share of a car's components made in North America rose from 62.5 to 75 percent making the rules more restrictive because even fewer intermediates from outside of North America can be included in the car production. Additionally, 70 percent of steel and aluminum must be produced in North America and 40 to 45 percent of final assembly will need to be done by workers earning an average of 16 USD an hour or more. The latter is directly targeted at Mexico where many workers earn little more than 2 USD an hour (Drohan, Ensor, & Keynes, 2018). The wage rule disincentivizes investment and production in Mexico, where production is less likely to qualify, most likely resulting in lower US imports from Mexico (Bown, 2018).

The credible threat of the US leaving NAFTA altogether or slapping tariffs of up to 25 percent on cars made Canada and Mexico agree to these terms. However, the US had to make a concession and agreed on a side agreement that protects both partners from future tariff hikes. Mexican car exporters that do not comply with the new USMCA-RoOs, will continue to have access to the US market at the current MFN tariff rate of 2.5 percent even if the US increases its MFN tariff in the future. Two conditions have to be met: first, the original NAFTA RoOs for automobiles must be satisfied to prevent Mexican located manufactures to switch to European or Asian car parts, and second, the number of Mexican cars exported to the US must stay below 1.6 million units per year. However, this relatively cheap way out does not apply to truck producers as the US MFN tariff on trucks is 25 percent, as of today.

Given its strong dependence on the US value chains and following President Trumps' election in 2016, Mexico has sought to diversify its trade and modernize the EU-Mexico Global Agreement from 2000 (Grieger, 2020). The new agreement calls for the liberalization of trade in agricultural goods, removing barriers for trade in services, public procurements for EU bidders, a redefinition of RoOs, and increased standards regarding human rights, labor, environmental rights, and fight against corruption in trade and investment.

Despite the initial enthusiasm for the new deal, Mexico declined a proposal from the EU in June 2021 to divide the agreement into several parts to accelerate the ratification process. In a study

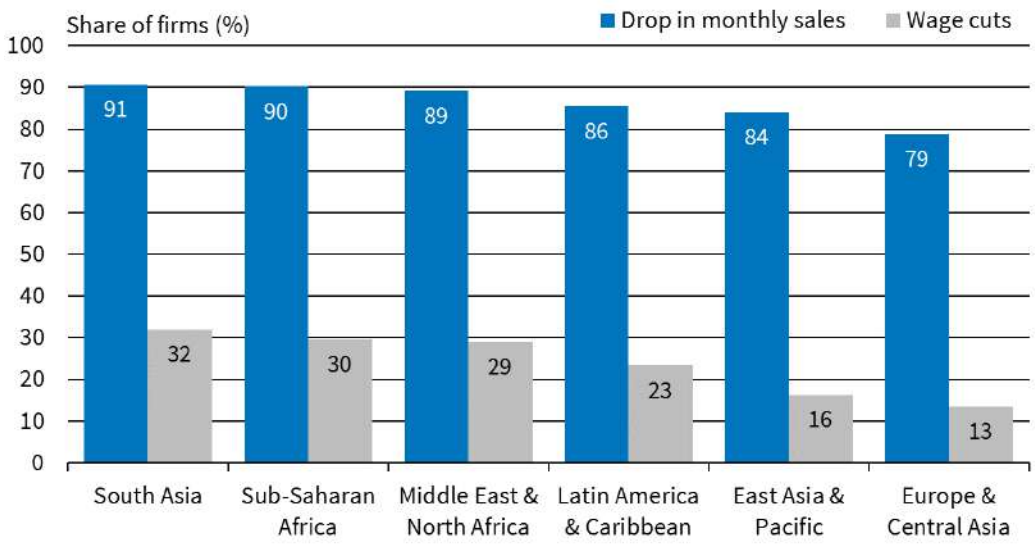
by the European Commission (2019) , under a conservative scenario, it was simulated that the new agreement would create around 22,000 unskilled and 5,000 skilled jobs in Mexico—the net effect on employment is estimated to amount to an additional 1,000 unskilled jobs, while employment gains in the skilled jobs will be offset by their losses.

Covid-19 and Global Trade

Along with the morose trade environment of the last years, the first disruptions due to the Covid-19 crisis depressed global trade flows to 54 percent of GDP in 2020, which is only slightly above the 2004 level (Figure 1). Besides direct effects, i.e. production standstills due to lockdowns, supply shortages in numerous intermediates disrupted global production. These shortages have long-lasting effects: as the ifo Business Survey, a representative survey of 5,000 firms, shows, 74 percent of German manufacturing firms complained about bottlenecks and problems procuring intermediate products and raw materials as late as June 2022. Even more troublesome, firms expect the shortages to last between 7.2 and 13.1 month (ifo Institute, 2022).

Taking a closer look at how firms at a global scale were impacted during the midst of the pandemic, Figure 11 shows the share of firms across global regions that reported a drop in sales and wages cuts in June 2020, for countries that took part in the large World Bank COVID-19 Pulse Survey (World Bank, 2022). In South Asia, the Middle East, and Africa, an overwhelming 90 percent of firms declared a drop in sales compared to last year. While relatively fewer firms in Europe and Central Asia report a decline in sales, they still account for almost 80 percent of responding firms. Workers have also largely suffered from the pandemic and experienced wage cuts, in addition to lay-offs. For the most affected regions, around 30 percent of establishments reduced the wages of their workers in the last 30 days before the interview was conducted. For Europe and Central Asia, this is around 13 percent.

Figure 11: The impact of Covid-19 on firms and workers has been challenging



Notes: This figure shows the share of firms that declared in June 2020 a drop in monthly sales compared to last year, and employee wage cuts compared to last month, for different regions of the world. Data is from the World Bank Business Pulse Survey which samples of representative firms in the private sector. Data on the drop in monthly sales is based on 46,127 respondents from 63 countries, and data on wage cuts is based on 34,222 respondents from 32 countries. Source: World Bank (2022). Authors' calculations.

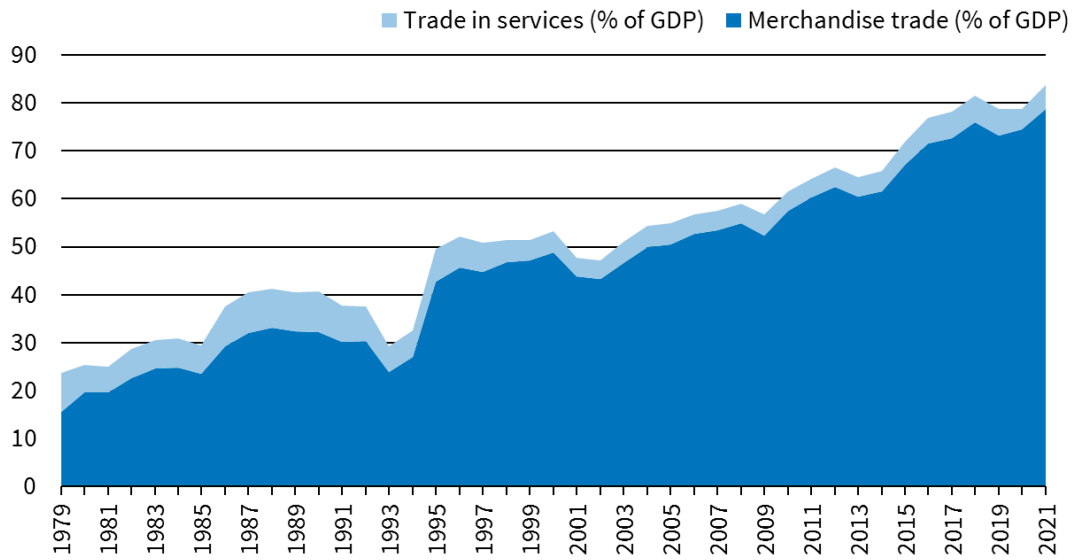
3 Mexico's Role in the Global Economy

In the following chapter, we will focus the analysis on Mexico and start by describing the main trade patterns, Mexico's integration in GVCs, the role of foreign direct investment, and conclude with a summary of the unequal gains from trade in Mexico.

3.1 Trading with the World: with Whom and What?

Trade plays an important role for the Mexican economy: For more than forty years, Mexico has constantly been increasing its international trade integration. Total trade went up from 24 percent of GDP in 1979 to 82 percent in 2021 (World Bank Group, 2022a) (see Figure 12). Comparing Mexico's trade share of GDP with the worldwide one (cf., Figure 1), allows us to make three distinct observations: first, Mexico is in international comparison a highly open and integrated country; world trade as a share of GDP equals only 57 percent in 2020, which is almost 50 percent lower than for Mexico. Second, in contrast to the global slowdown in trade after 2010, the upward trend remained stable in Mexico, so Mexico outperformed world trade in recent years. Lastly, this positive development is almost exclusively driven by trade in manufacturing, i.e., trade in services has not been growing as much as internationally.

Figure 12: Mexico is highly integrated in international trade and did not experience a slowdown since 2010



Notes: The figure shows Mexico's trade as a percentage of GDP (by goods and services) over time. Source: World Bank Group (2022a). Authors' calculations.

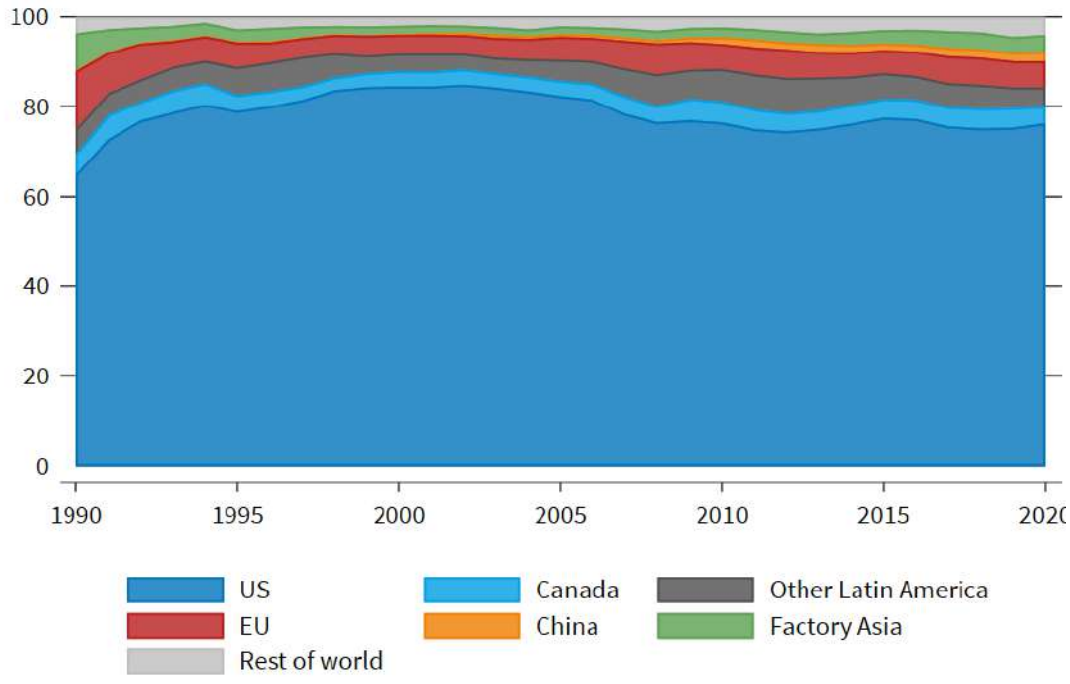
The relative importance of the US for Mexican exports is staggering: starting in 1990 the share of total exports has already been equal to 73 percent and increased with the entry into force of

NAFTA in 1994 to its maximum of roughly 84 percent around the turn of the millennium (see Figure 13a). The relative gains of the US in these years occur at the expense of exports to the EU. After these peaks, the share stabilizes at roughly 75 percent. Hence, the US buy three-quarter of all Mexican goods.

The US are also Mexico's most important partner for imports (see Figure 13b). However, China and the remaining countries of the "Factory Asia" consisting of the signatories of the Regional Comprehensive Economic Partnership (RCEP)[6] gained significantly in importance as a source country for Mexico since China's entry to the WTO in 2001: while only 1 percent of Mexico's imports came from China in 2001, this number grew by the factor of 16 until 2020, and the import share from the remaining Factory Asia countries increased by four percentage points. Although the shares of US imports to Mexico are still very high, a reorientation towards Asia is observable in the data.

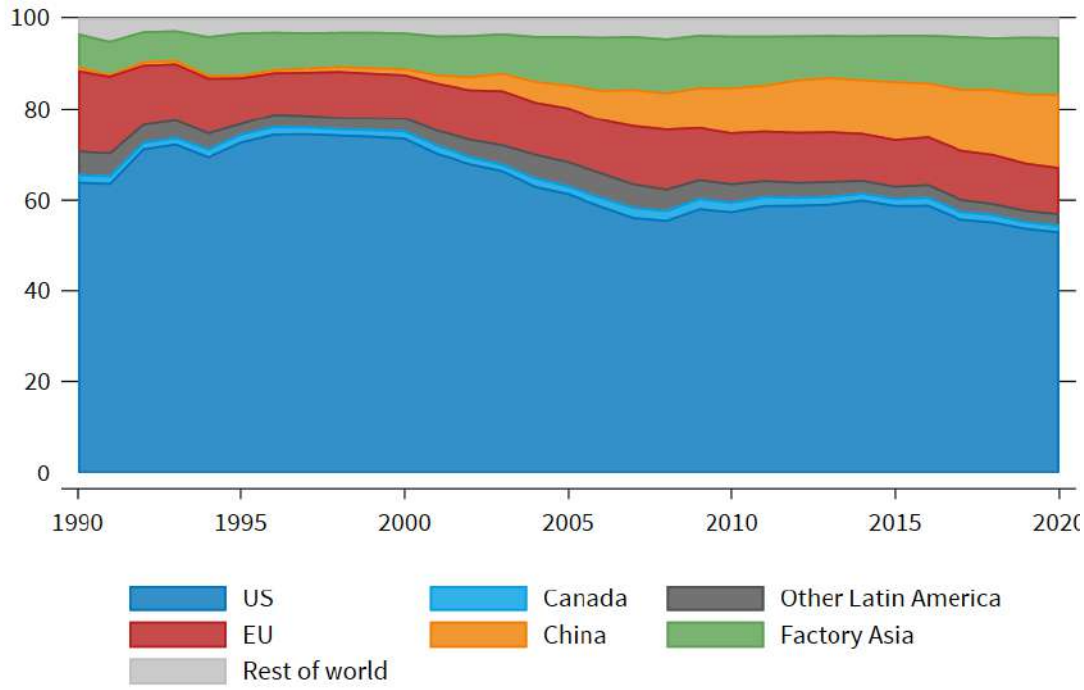
Figure 13: The US buy three-quarter of all Mexican goods, and imports are reorienting towards Asia

13a: Share of Mexico's total exports (in percent)



13b: Share of Mexico's total imports (in percent)

[6] The country group consists of the ASEAN members (the Association of Southeast Asian Nations, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam), China, Japan South Korea, Australia, and New Zealand.

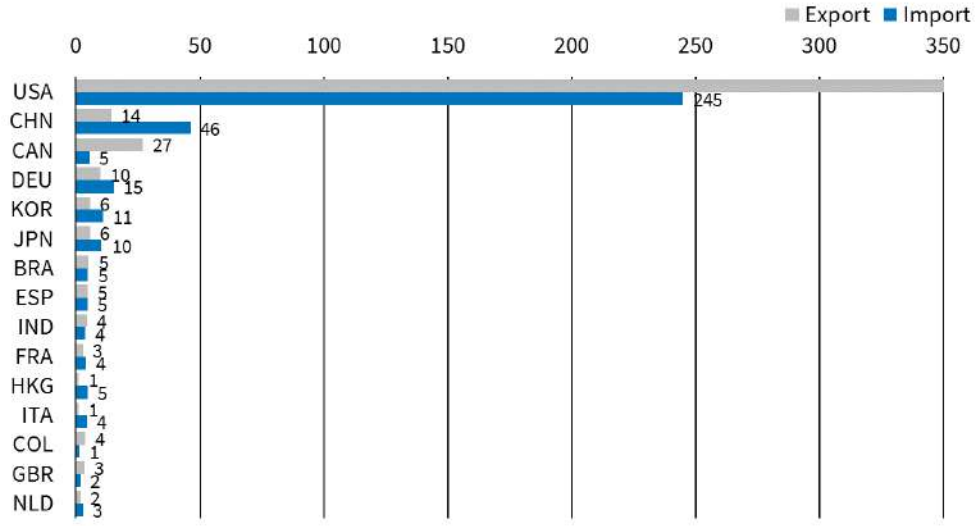


Notes: The figure shows the trade shares, of Mexico with important trade partners. Factory Asia includes Australia, Brunei Darussalam, Cambodia, India, Japan, Lao People's Democratic Republic, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Korea, Thailand, Viet Nam. Source: Gaulier & Zignago (2010). Authors' calculations.

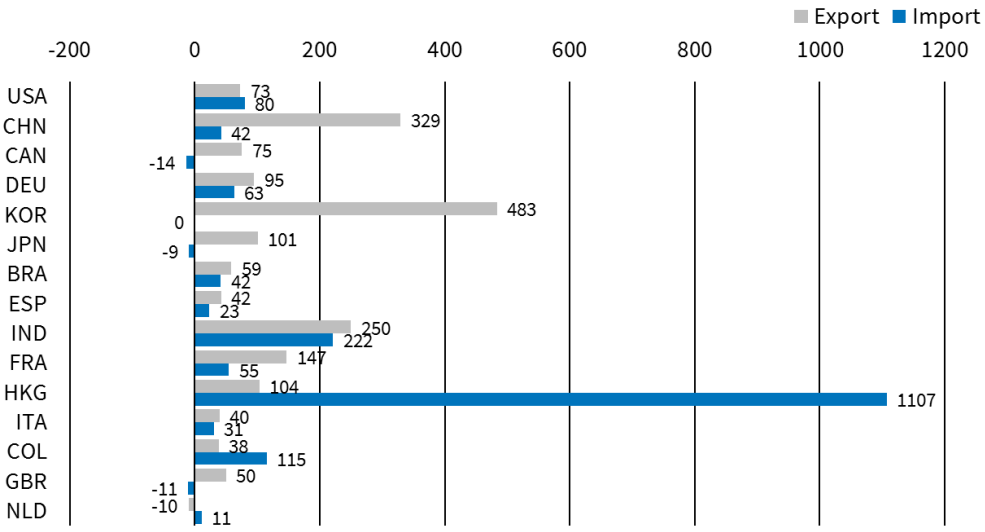
Next, we drill even deeper and have a closer look at Mexico's main trade partners in 2019. Figure 14a shows exports and imports in absolute terms, and Figure 14b their growth rate over the period 2009 to 2019. Although in relative terms the US has lost market shares over the past ten years, in absolute terms it has grown. China, Canada and Germany are also important trade partners of Mexico and accounted together for roughly 120 billion USD in 2019. Imports from China have grown significantly since 2009 (by over 300 percent), and China has become Mexico's second largest importer with 46 billion USD traded in 2019. Canada remains the second largest exporter (27 billion USD), but Mexico has diminished its Canadian imports by 14 percent over the last ten years. The strong ties with the EU mainly come from the privileged relationship with Germany: it is the third partner in terms of imports and the fourth in terms of exports. Finally, despite its undeniable dependency on the US, Mexico has started to diversify its trade and opened itself up to the Asian market: exports to South Korea, Japan and India, as well as imports from Hong Kong have risen significantly. The very low levels in 2009 are the reason for the in parts enormous growth rates with some Asian countries.

Figure 14: The US remains Mexico's main trading partner, despite significant growth in trade flows with new partners

14a: Trade value by partner country in 2019 (in billion USD)



14b: Growth in trade value by partner country from 2009-2019 (in percent)



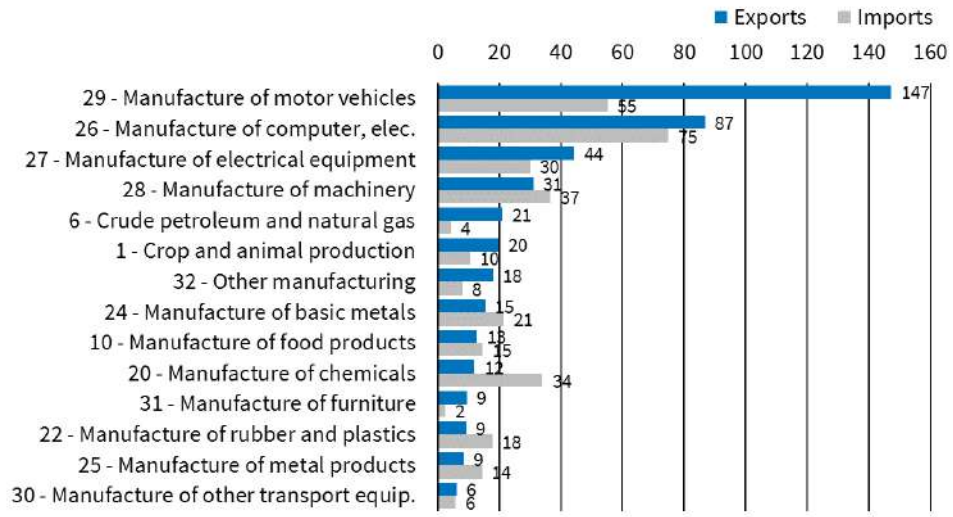
Notes: Panel (a) shows Mexico's main trading partners by export and import value in billion dollars for 2019. Panel (b) shows the percentage growth in export and import over the period 2009 to 2019 (adjusted for inflation). Source: Gaulier & Zignago (2010). Authors' calculations.

Next, we want to identify the most traded sectors in Mexico. Trade is largely dominated by the manufacturing industry. In fact, since the 1980s, the economy has slowly diversified away from oil in favor of machinery. Figures 15a and 15b show the leading sectors in terms of exports and imports in 2019, and their growth over the last decade. Exports of crude oil and gas have indeed decreased by 33 percent in the last ten years, but it remains the fifth largest exporting industry. For the leading trade-intensive sectors, the top positions are held by the manufacturing of motor

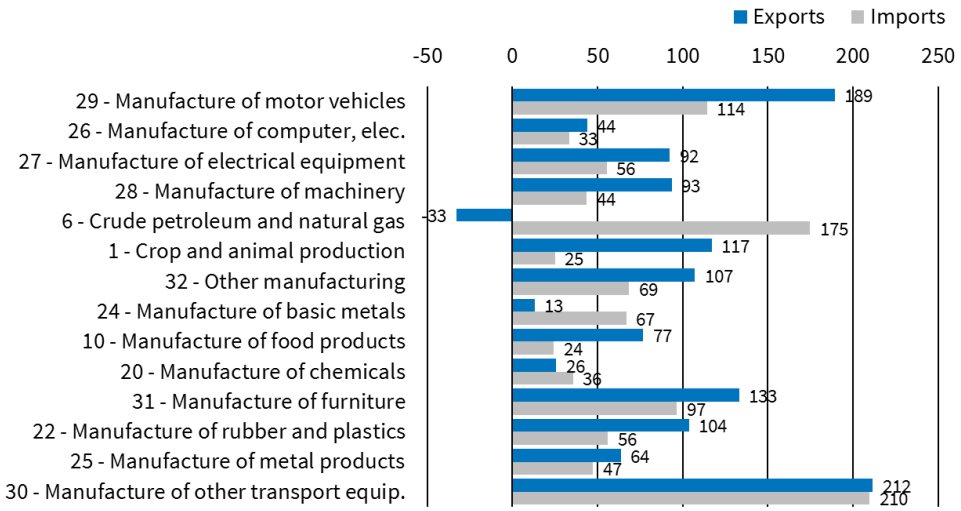
vehicles, with 147 billion USD in exports in 2019, and the manufacturing of computers and electronics, with 75 billion USD in imports in 2019. Those two industries are largely related to Mexico's integration in the GVCs of the car manufacturing industry, and their trade has been growing substantially in the last decade. The US mainly imports and exports from these two industries, with 34 (12) percent of US exports (imports) for the motor vehicles industry 29, and 17 (18) percent of US exports (imports) for the computer and electronics industry.

Figure 15: Mexico's trade across sectors is well diversified among the manufacturing industries, and has been intensively growing since 2009

15a: Trade value by sectors in 2019 (in billion USD)



15b: Growth in trade value by sectors from 2009-2019 (in percent)



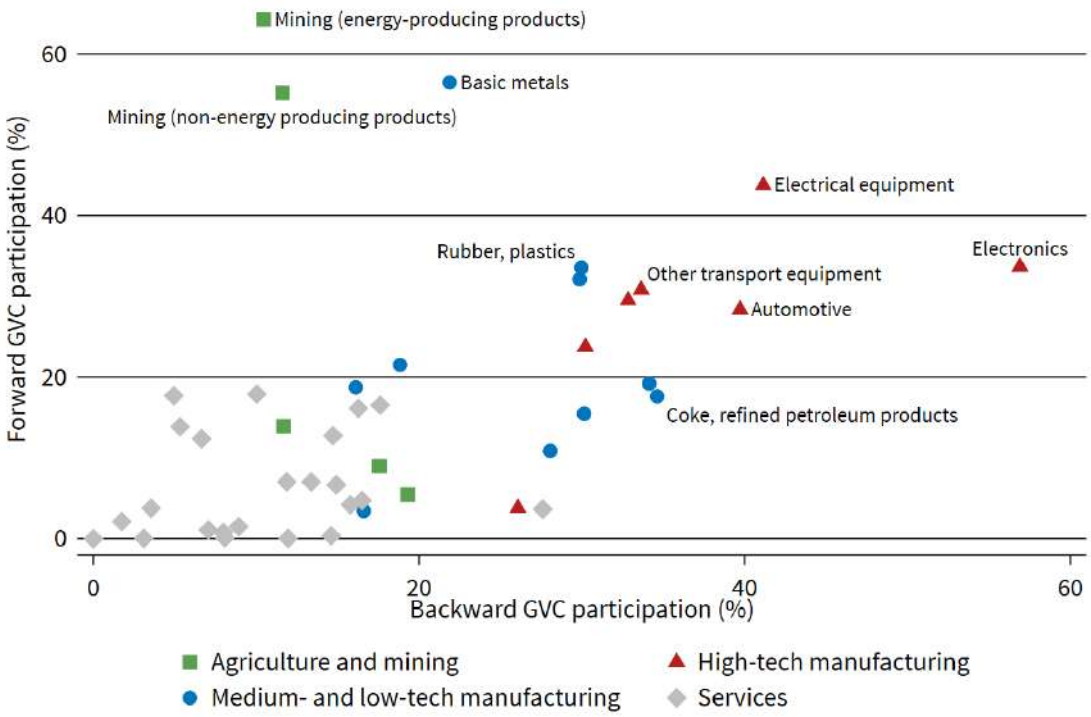
Notes: Panel (a) shows Mexico's main trading sectors by export and import value in billion dollars for 2019. Panel (b) shows the percentage growth in export and import over the period 2009 to 2019 (adjusted for inflation). The 2-digit ISIC rev.4 sector official labels are outlined in the Appendix table A 1. Source: Gaulier & Zignago (2010). Authors' calculations.

For Germany, most of the trade integration comes from the motor vehicle manufacturing industry: 51 percent of all Mexican exports to Germany solely depends on this industry, and it also accounts for most of its import from Germany (28 percent).[7] Overall, trade between Germany and Mexico has been increasing substantially since 2009. This is true for all top fifteen manufacturing sectors.

While Mexico's economy is heavily reliant on international trade, Figure 13 and Figure 14 suggest that this integration is heterogenous and mainly comes from the deep integration of Mexico's manufacturing sector into global value chains, with a couple of selected partners.

3.2 Mexico's Integration in GVCs: Backward and Forward Linkages

Figure 16: Mexican high-tech manufacturing is highly integrated into GVCs

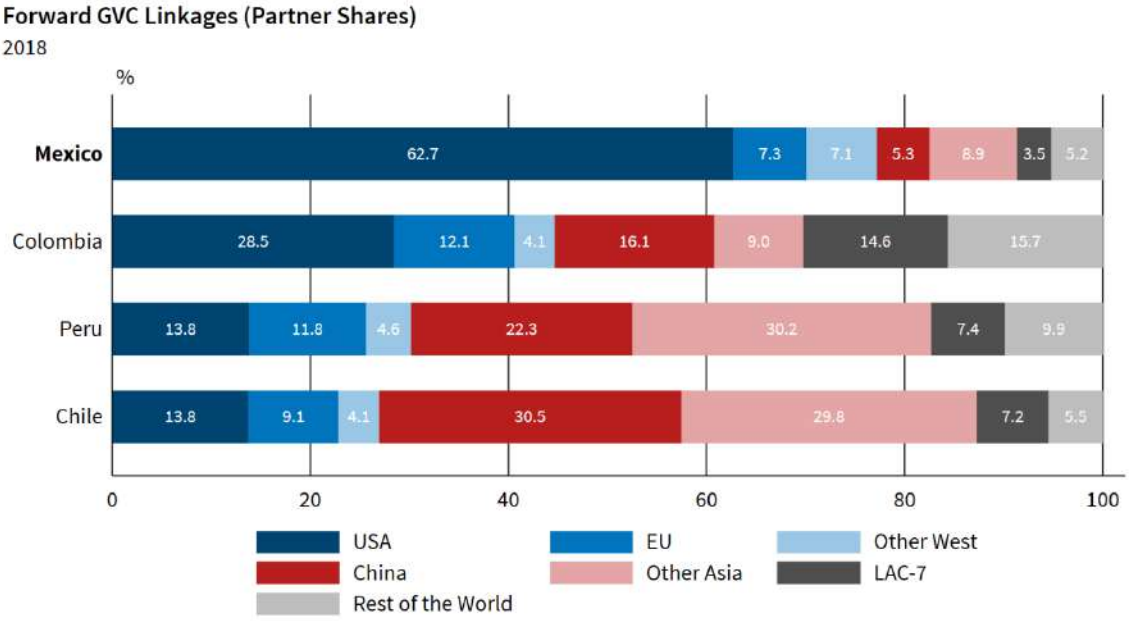


Notes: This figure shows the GVC participation of Mexican industries for the year 2018. The vertical axis depicts the industries' backward GVC-integration (share of imported inputs in domestic final production in percent), and the horizontal axis the industries' forward GVC-integration (share of domestic value-added related to the export of intermediate goods and services). Source: OECD ICIO (2021a). Authors' calculations.

[7] Authors' calculations based on BACI, 202201 version. Numbers are for 2019.

The variation of GVC integration across different sectors of the Mexican economy is substantial, as can be seen in Figure 16. Especially Mexican high-tech manufacturing industries are deeply integrated into international production networks. With respect to backward linkages, more than 50 percent of Mexican final goods production of computer, electronic and optical equipment ("electronics") can be attributed to imports of intermediate inputs. Strong backward linkages also exist for the production of electrical equipment (41 percent) and the automotive industry (40 percent). These high-tech manufacturing industries are also characterized by a high level of forward GVC integration. In the case of the manufacture of electrical equipment, more than 40 percent of total value-added created in this industry is linked to export activities within GVCs. This level of forward integration is only surpassed by the mining sector in Mexico, where roughly 60 percent of total value-added is exported as intermediate inputs for other industries. The same is true for the manufacture of basic metals in Mexico with a forward participation rate of around 56 percent. In contrast, the general importance of GVC activities remains relatively low for Mexican service industries.

Figure 17: USA dominates Mexico's forward linkages

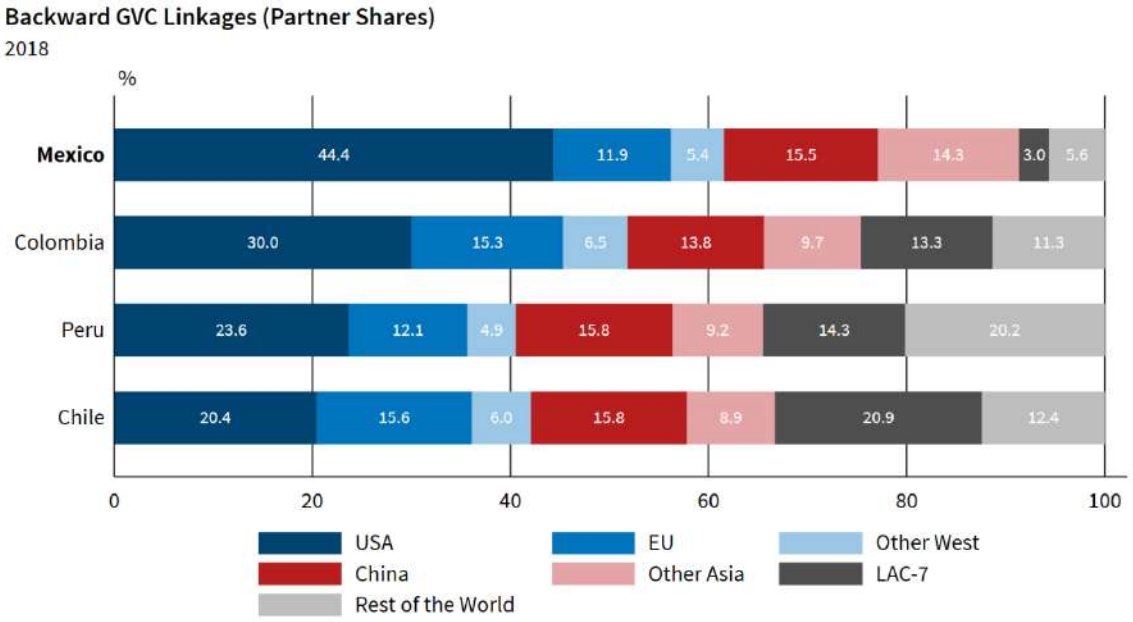


Notes: This figure shows the geographic orientation of the forward GVC linkages of Mexico, Colombia, Peru and Chile for the year 2018. "Other West" refers to the UK, Switzerland, Norway, Iceland, Canada, Australia and New Zealand. "Other Asia" refers to Japan, South Korea, Hong Kong, Taiwan, India and the ASEAN-10. "LAC-7" refers to Brazil, Argentina, Chile, Peru, Colombia, Costa Rica and Mexico (excluding the respective domestic linkages). Source: OECD ICIO (2021a). Authors' calculations.

What are the most important partner countries and regions for Mexican GVC activities? Figure 17 compares the geographic footprint of Mexican forward linkages to the other three member states of the Pacific Alliance. It is easy to see from this figure that the US dominates Mexican forward GVC activities. More than 60 percent of Mexican exports of intermediate inputs are used for final production in the US. In comparison, less than 30 percent of Colombian GVC exports are linked

to US-based final production. For Peru and Chile this share is even lower and equals around 14 percent. On the other hand, other Latin American countries and the EU play a relatively small role for Mexican forward GVC integration in comparison to the other Pacific Alliance members. The biggest differences within the Pacific Alliance with respect to forward GVC integration, however, are related to the importance of "Factory Asia". While more than half of Peruvian and Chilean exports of intermediate inputs are linked to final production in Asian countries, the respective share of Mexican GVC exports is just below 15 percent.

Figure 18: "Factory Asia" plays important role in backward linkages of the Pacific Alliance

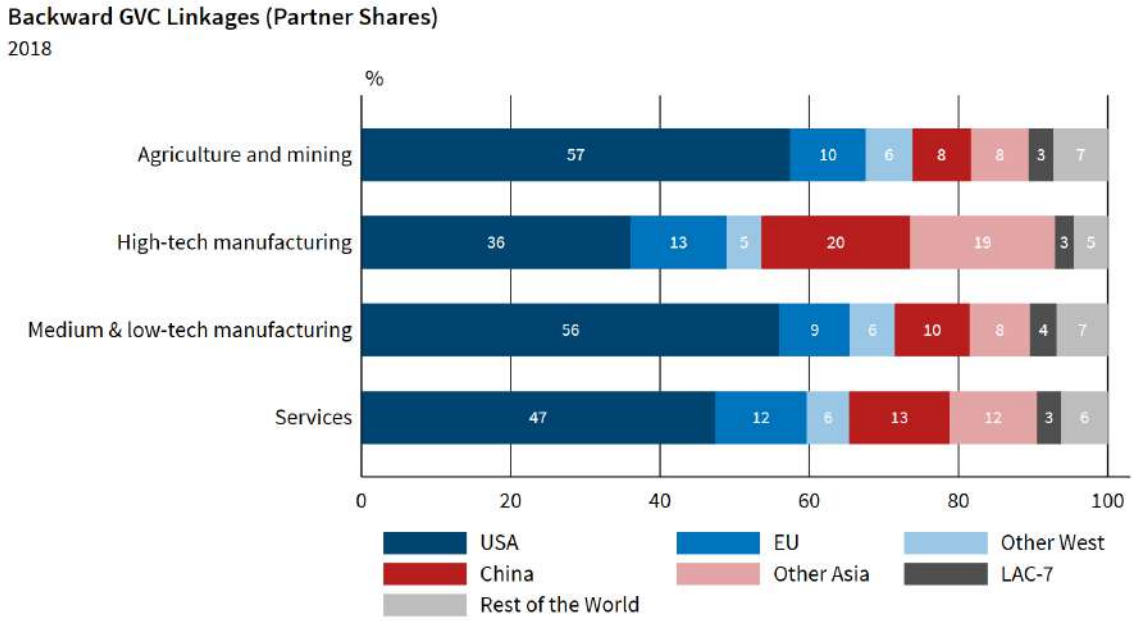


Notes: This figure shows the geographic orientation of the backward GVC linkages of Mexico, Colombia, Peru and Chile for the year 2018. "Other West" refers to the UK, Switzerland, Norway, Iceland, Canada, Australia and New Zealand. "Other Asia" refers to Japan, South Korea, Hong Kong, Taiwan, India and the ASEAN-10. "LAC-7" refers to Brazil, Argentina, Chile, Peru, Colombia, Costa Rica and Mexico (excluding the respective domestic linkages). Pacific Alliance refers to Chile, Colombia, Mexico, and Peru. Source: OECD ICIO (2021a). Authors' calculations.

With respect to the geographic footprint of backward GVC linkages, however, a different picture for Mexico emerges (see Figure 18). Still, the highest share of Mexican backward linkages can be attributed to the US, with more than 44 percent of foreign value-added in Mexican final production originating there. However, this share is considerably smaller than the respective share for forward linkages. On the other hand, the importance of Asia, and in particular China, is much higher for Mexican backward linkages than for forward linkages. In total, more than 30 percent of foreign value-added in Mexican final production can be traced back to China and other Asian countries. In comparison, the respective shares for Colombia, Peru and Chile are substantially

lower and equal less than 25 percent.[8] The share of EU inputs in Mexican final production equals 12 percent, which is the lowest among all member states of the Pacific Alliance.

Figure 19: Mexican high-tech manufacturing relies less on US inputs than other sectors



Notes: This figure shows the geographic orientation of the backward GVC linkages of sectors of the Mexican economy for the year 2018. "Other West" refers to the UK, Switzerland, Norway, Iceland, Canada, Australia and New Zealand. "Other Asia" refers to Japan, South Korea, Hong Kong, Taiwan, India and the ASEAN-10. "LAC-7" refers to Brazil, Argentina, Chile, Peru, Colombia, Costa Rica and Mexico (excluding the respective domestic linkages). Source: OECD ICIO (2021a). Authors' calculations.

Moreover, important heterogeneities across Mexican sectors can be observed regarding the origin of foreign inputs (see Figure 19). Backward GVC linkages with the US are particularly important for Mexican agriculture and mining (57 percent) as well as medium and low-tech manufacturing (56 percent). For high-tech manufacturing in Mexico, however, inputs from China and other Asian countries play a dominant role. Taken together, they account for almost 40 percent of foreign value-added in Mexican final products.

3.3 The Role of FDI in Mexico's Economy

Along with international trade, foreign direct investment (FDI) is a key driver of global production. We differentiate between inward FDI, i.e., foreign owners invest in Mexico, and outward FDI, when Mexican firms invest abroad. Mexico's outward investment position is negative, implying higher stocks of inward rather than outward investment. In 2021, the stock of inward FDI in Mexico relative to GDP was 45 percent, while the stock of Mexico's direct investment abroad reached 14

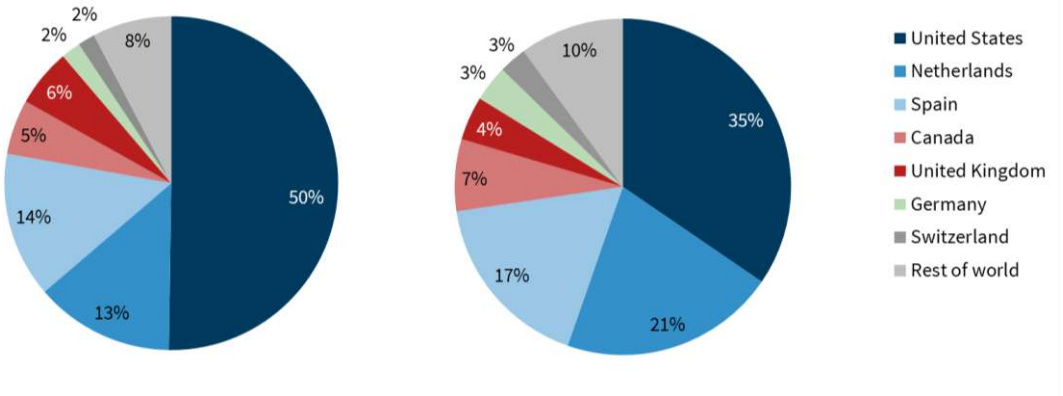
[8] Baur and Flach (2022) also show that in comparison to all other G-20 members, Mexico is one of the countries with the highest overall economic dependence on Chinese intermediate inputs.

percent of GDP. Nevertheless, both stocks have largely increased since 2005, with outward FDI stocks growing faster than inward ones.

Focusing on foreign direct investment positions in Mexico, Figure 20 shows the decomposition of inward FDI by source country and compares 2009 to 2019 to give a sense of the distribution of foreign-ownership shares in Mexico. The US is one of the major holders of FDI stocks in Mexico. Over the past decade, however, the share of US FDI has been declining, from being the majority foreign shareholder in 2009 to holding less than 35 percent of total FDI in 2019. This diversification away from the US in terms of investment has been to the benefit of EU countries that were already previously important partners of Mexico. In the top positions after the US, the Netherlands, Spain, Canada, the UK and Germany have all increased their outward FDI to Mexico. Taken together, the EU was the principal inward investor in Mexico, accounting for 47 percent of total inward investment in 2019.

Figure 20: Mexico's Inward FDIs have slowly been diversifying away from the US

20a: Inward FDI position in 2009 **20b: Inward FDI position in 2019**



Notes: This figure shows the distribution of Mexico's inward FDI by investing countries for 2009 (a) and 2019 (b). Source: OECD (2022). Authors' calculations.

The Role of Foreign Multinationals

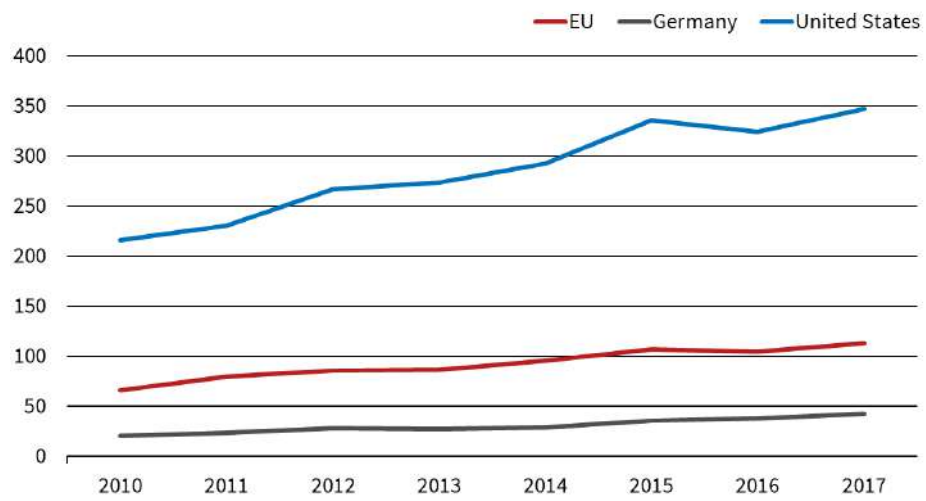
The inward activity of foreign multinational enterprise (MNE) affiliates has been increasingly important for the Mexican economy in terms of production and employment, but also value-added research and development, wage, and exports. Figure 21 presents (a) the turnover and (b) the number of employees of MNE affiliates from the US, the EU, and Germany. Comparable data on MNE activity are scarce: Data for the EU and Germany is retrieved from Eurostat, whereas data for the US comes from the OECD AMNE database. Data restrictions make the comparison between the two databases imperfect: for the EU and hence Germany, only the top six sectors for each outcome variable could be used, restricting the sample to the following industries: administrative and support service activities, financial and insurance activities, manufacturing, transportation and storage, and wholesale and retail trade; repair of motor vehicles and motorcycles.

Hence, numbers for the EU and Germany are likely lower bound estimates. However, the time series are not affected by data attrition and the trend can be analyzed without further caveats.

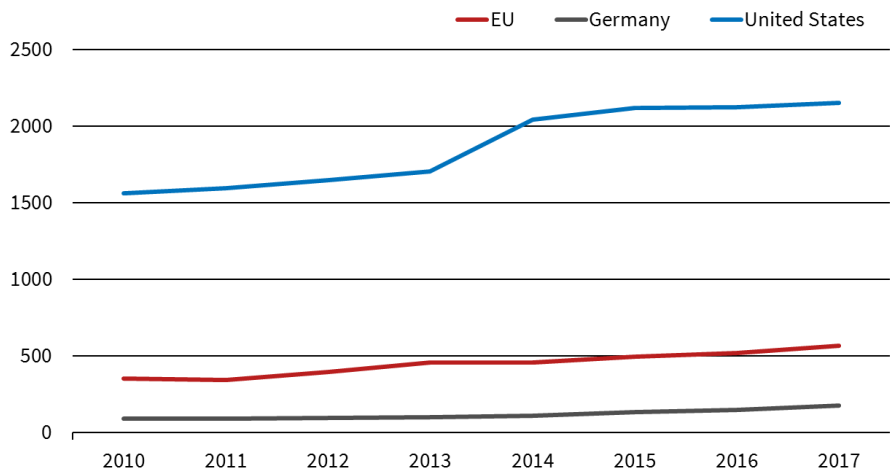
In levels, US companies located in Mexico have contributed to the bulk of the foreign affiliate production, with almost 350 billion EUR in 2017, which roughly equals 0.3 percent of Mexico's GDP that year. The overall turnover of EU companies has also largely increased over the period, from 66 billion EUR in 2010 to 113 billion in 2017. In particular, production from German affiliates has more than doubled over this period. In terms of employment, we observe very similar trends: the US stands out with well above 200 thousand workers employed by American firms in 2017. Nevertheless, the EU and Germany overall exhibit larger growth in employment, with a 61 percent and a 95 percent increase in employees between 2010 and 2017, respectively, against 38 percent for the US. This increasing trend in employment is benefiting the Mexican economy and its workers, especially as MNEs tend to pay higher wages than domestic firms (Hijzen et al., 2013).

Figure 21: Mexico has attracted foreign MNE affiliates creating value for the economy

21a: Turnover over time (in billion EUR)



21b: Number of employees over time (in thousand)

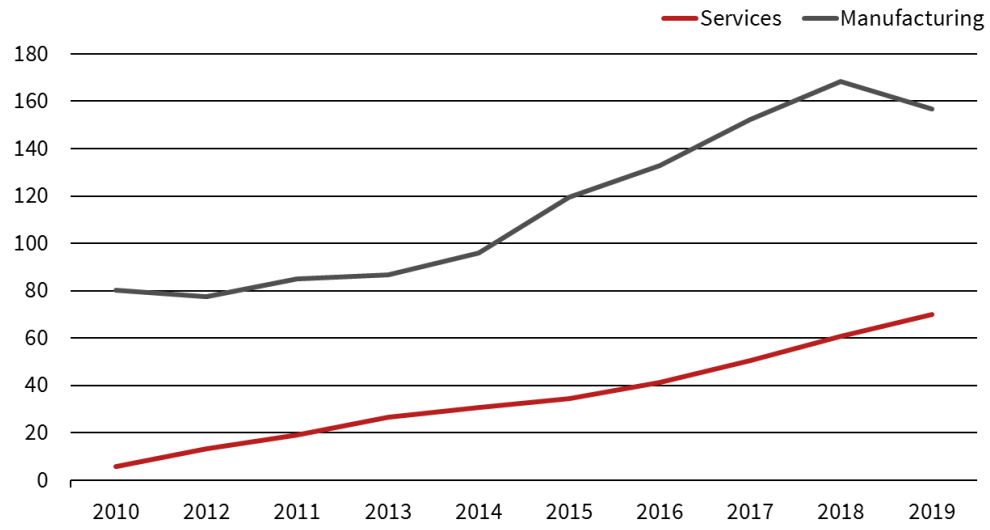


Notes: These figures show the turnover in billion Euro (a) and the number of employees (b) in thousand generated by foreign MNE affiliates located in Mexico from the EU and the US, between 2010 and 2017. Source: OECD (2022a) and Eurostat (2022). Authors' calculations.

As described above, Germany is Mexico's most important EU partner and plays an important role in one of Mexico's key industries, the car manufacturing sector. In fact, Germany is Mexico's third largest importer and fourth largest exporter. To understand the relationship between these two economies better, we next examine whether FDI between the two countries is also significant.

German affiliates have been increasingly contributing to the Mexican economy through large job creation over the last years, not only in the manufacturing sector. Figure 22 shows the number of employees (in thousand) for German firms in Mexico, for the manufacturing and the services sector. In levels, the manufacturing sector employs significantly more workers than services, around 160,000 against 70,000. In terms of growth, however, German MNEs in the services sector have hired exponentially more workers. Starting from 6,000 in 2010, employment was multiplied by almost the factor twelve in 2019. In comparison, the manufacturing industry has roughly doubled in nine years but has declined slightly in the last year. The dynamic evolution in terms of employment suggests that services are becoming more and more important for the Mexican economy.

Figure 22: German foreign affiliates in Mexico have increased employment in the manufacturing sector by almost 100,000 in the last decade



Notes: The figure shows the number of employees in thousands in German foreign affiliates located in Mexico, between 2009 and 2019, for the services and manufacturing sectors. Due to data constraints, services include only the following industries: Administrative and support service activities, Financial and insurance activities, Transportation and storage, and Wholesale and retail trade; repair of motor vehicles and motorcycles. Source: Eurostat (2022). Authors' calculations.

3.4 Distributional Impacts of Trade

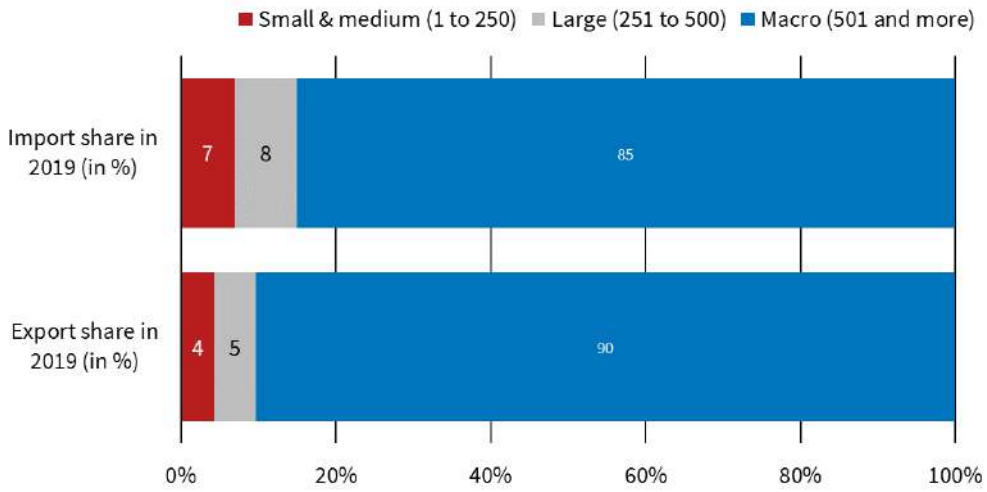
Firm size

The gains from trade are unevenly distributed among firms depending on their firm size. Exporting involves high fixed costs: before companies can start to serve a foreign market, they need to assess and evaluate market potential, understand the characteristics of the new markets and, if necessary, adjust production to better match the preferences or legal requirements of the new market. New exporters must also pay market entry costs, such as those incurred for marketing campaigns. New business relationships and a new distribution network also need to be established, and cultural differences and language barriers are often major obstacles for exporters.

In a fundamental contribution, Melitz (2003) succeeded in showing that only the "best" companies—the most productive and largest—export. Only these firms are competitive enough to generate enough sales in the new market to make it worthwhile to bear the fixed costs. While trade policy measures such as trade agreements can help to reduce the high fixed costs, know-how is often needed (e.g., because of the additional bureaucracy because of RoOs) to effectively benefit from the trade agreement. It follows, first, that few companies export and, second, that exporters are predominantly large companies. Small and medium-sized enterprises (SMEs) often find it difficult to exploit the full export potential due to a lack of spare capacity.

The implied uneven participation in international trade can also be observed for Mexican firms: 85 percent of imports and 90 percent of exports are accounted for by firms with more than 500 employees while SMEs account for the smallest share (Figure 23).

Figure 23: International trade is mainly driven by the largest firms in Mexico



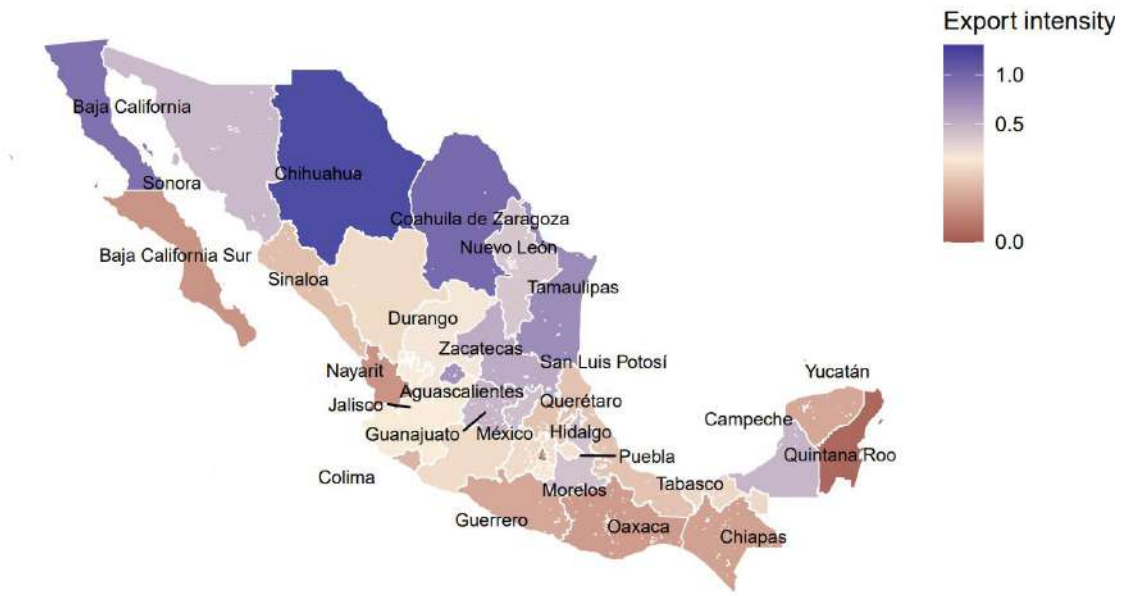
Notes: This figure shows export and import shares by firm size, measured by the number of employees, for the manufacturing sector in 2019. Source: INEGI (2022). Authors' calculations.

Regional Disparities

Furthermore, large regional disparities in the participation in international business activities are apparent. Figure 24 shows the export intensity across Mexican states in 2019, that is the ratio between export value and GDP for each state. Most of the northern states are export intensive, as well as some states in the Centro Bajío region. In total, the top five exporting states (Chihuahua, Coahuila de Zaragoza, Baja California, Nuevo León, and Tamaulipas) account for 52 percent of total exports, and the top ten for 77 percent. With an export intensity measure above one, Chihuahua is highly trade-intensive and is the largest exporting state, with over 57 billion USD of export in 2019, which represents 14 percent of Mexico's exports that year. On the opposite, the remaining 21 states account for then less than 25 percent of Mexico's export, with most southern states and the eastern part that exhibit very low levels of export intensity. This pattern corroborates the fact that only a few Mexican regions are integrated into GVCs, and that these are often key manufacturing states for the economy, such as the Centro Bajío region where the entire automotive industry is located.

Figure 24: Large disparities in export intensity across the Mexican States, with the northern part and

Centro Bajío being the most integrated regions

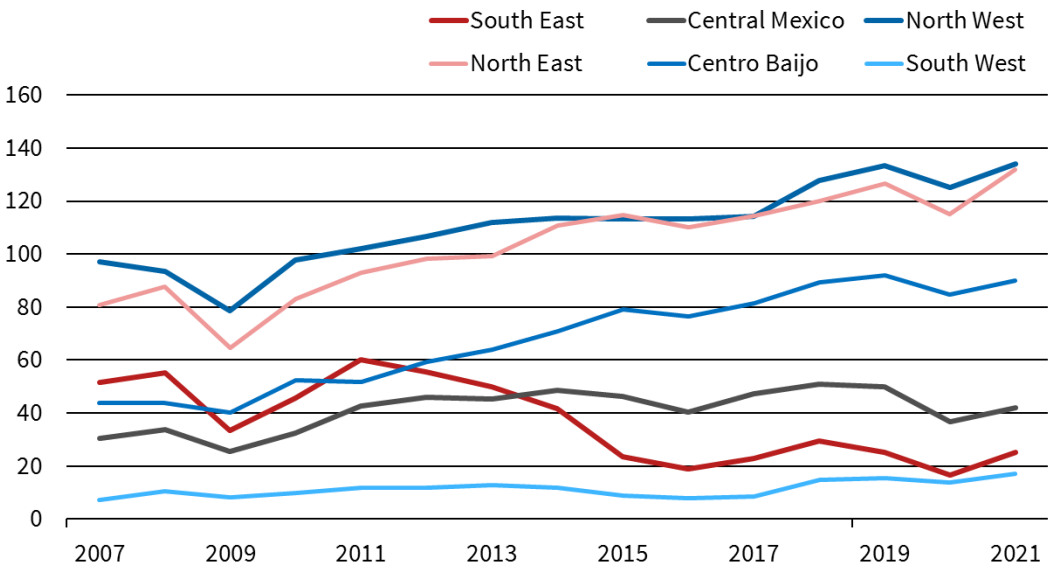


Notes: This figure shows export intensity, i.e. export value divided by GDP for each Mexican state, in 2019. Source: INEGI (2022a). Authors' calculations.

Further, the growth in exports for the different Mexican regions mirrors the previous picture of the export intensity. Since 2007, the northern part has seen its exports grow by 50 percent, from just under 180 billion USD worth of exports to almost 270 billion USD in 2021 (Figure 25). The region Centro Bajío also experienced a rapid increase in exports, where export value doubled within ten years to reach 90 billion USD in 2021. In comparison, the southwest of the country and central Mexico do not rely much on exports, as shown by their export intensity measure, and the trend in their exports since 2007. Nevertheless, the absolute value of exports has been increasing for these two regions. Finally, exports have decreased in the South-East region, by 60 percent since 2011.

In Campeche, Chiapas, and Tabasco for instance, over 90 percent of export value comes from the oil and gas industry (INEGI, 2022a). As described above, Mexico has been moving away from oil production and increasingly relies on imports in this sector. Overall, Mexico is split between a deeply integrated northeast and a southwest that is independent of trade for most of its activities. It is also interesting to note that regions that are deeply engaged in international trade have reduced their exports relatively more in response to global crises, for instance in 2009 after the financial crisis, and in 2020 during the Covid-19 pandemic.

Figure 25: Large disparities in export growth, in favor of the northern region and Centro Bajío



Notes: This figure shows export in billion dollars (adjusted for inflation), from 2007 to 2021, for Mexico's large geographical regions. Mexican states are categorized as follows: Central Mexico includes Mexico City, Hidalgo, Morelos, Puebla, Mexico (State) and Tiaxcala; Centro-Bajío includes Aguascalientes, Guanajuato, Jalisco, Queretaro and San Luis Potosi; the North East region includes Coahuila, Nuevo Leon, Tamaulipas and Zacatecas; the North West region includes Baja California, Baja California Sur, Chihuahua, Sonora, Durango, Nayarit and Sinaloa; the South East region includes Campeche, Chiapas, Quintana Roo, Tabasco and Yuacatan; and finally the South West region includes Colima, Guerrero, Michoacan, Oaxaca and Veracruz. Source: INEGI (2022a). Authors' calculations.

4 Mexico as a Place to Do Business

Both the international and the domestic environment matter for firms' activities. While so far, we have mostly taken the international view, in this chapter, we will focus on the local conditions and try to identify structural problems that hinder Mexican firms to fully untap their potential. Multiple factors must be considered—from (financial) institutions to general infrastructures and public security—to assess whether Mexico has favorable conditions for business to develop.

4.1 Institutions and Criminality

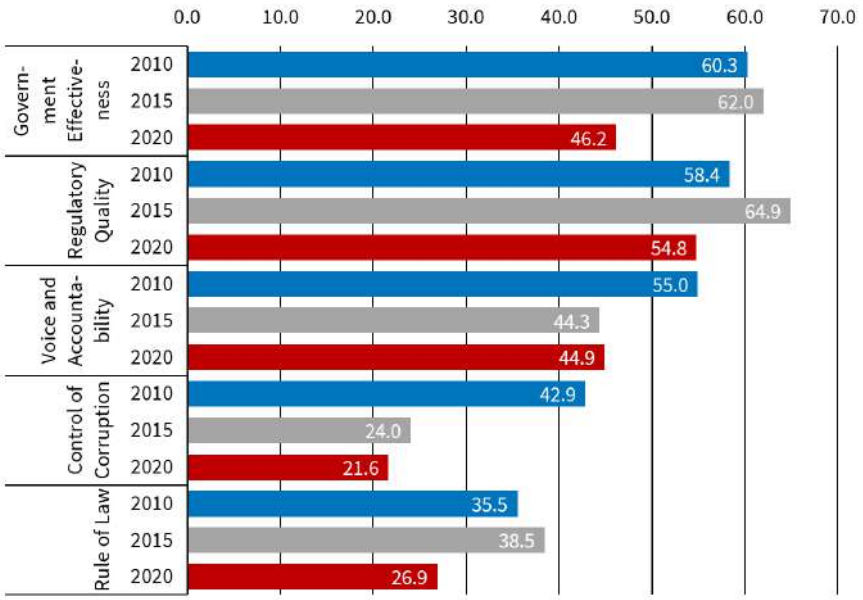
Crime and corruption are major concerns in Mexico holding the economy back. Various indices highlight the severe deficit in the rule of law, especially in terms of organized crime and government corruption.[9] Specifically, Mexico has ranked the fourth highest country out of 193 in terms of criminality in 2021, while also having one of the lowest levels of resilience to crime (Global Initiative, 2021). Moreover, mafia-style groups and criminal networks dominate the Mexican public and private markets (Freedom House, 2022; Global Initiative, 2021).

Figure 26 shows the evolution of governance indicators over the past ten years for Mexico. Out of six indicators, five have decreased, and the last one is constant, suggesting that the situation has even worsened with time. The lack of political stability, poor rule of law, and absence of corruption control are worrisome and are likely to affect negatively firms and businesses. In comparison, the average LAC country is doing much better in all of those three indicators, and the difference in score is the starkest for political stability, where Mexico is in the 18th percentile against 58th for LAC in 2020.

Security threats and a corrupt environment adversely impact the ease of conducting business in Mexico. In fact, 40 percent of large companies in Mexico have reported feeling unsafe running their business due to high criminality (American Chamber Mexico, 2022). Moreover, 57 percent of these companies report spending around 2 to 7 percent of their annual budget on security issues, which is viewed as a tax to operate in Mexico. We assess the security tax for small and medium-sized enterprises to be in the same ballpark. Given that large foreign MNEs play a decisive role in the Mexican economy, as seen with the importance of FDI in the last chapter, this is a huge concern to address to successfully retain and keep attracting foreign investments. The high crime rates negatively affect Mexico's attractiveness as a location to do business. Furthermore, the money firms spend on security cannot be used for other, productive investments such as F&E or workforce training.

[9] For example, the Freedom House (2022), the 2022 Global Peace Index by the Institute for Economics & Peace (2022), and the Corruption Perception Index (Transparency International, 2022).

Figure 26: Mexico has been doing worse in terms of governance



Notes: This figure shows governance indicators for Mexico in 2010, 2015 and 2020. Countries are ranked on a percentile scale from 0 to 100 where 100 suggests the best score. Source: Kaufmann, Kraay & Mastruzzi (2010). Authors' calculations.

Further, 76 percent of Mexican companies say that lawlessness in Mexico affects their business, especially due to corruption (American Chamber Mexico, 2022). Law enforcement deficits due to organized crime and corruption dominate both public and private markets and place a large (financial) burden on firms in Mexico. Overall, weak institutions and criminality are detrimental factors for the Mexican economy.

4.2 Infrastructure and Logistics

The ability to do business domestically but also trade internationally is highly dependent on the quality of infrastructure. Overall, Mexico has improved its railroad infrastructure, with a bit more than 2,400 additional kilometers of line built between 2016 and 2018.[10] The quality of roads, however, has decreased since 2013 and was just below the world average level in 2019, based on the Global Competitiveness Index.[11]

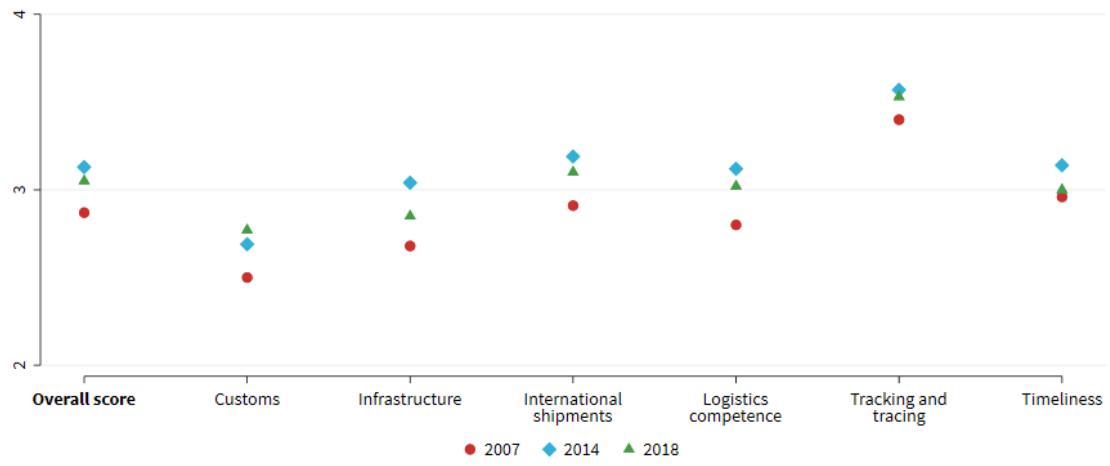
To assess Mexico's general performance in logistics and infrastructure, we look at the World Bank's International Logistics Performance Index (LPI) ranking. The LPI provides an assessment for 160 countries in six categories of trade logistics, based on the view of each country's trading partners (World Bank Group, 2015). Figure 27 shows Mexico's performance in each indicator over

[10] Global Competitiveness Index 2021 by the World Economic Forum (WEF).

[11] The quality of infrastructure for Mexico in 2019 is 3.3 points. For comparison, the world average in 2019 based on 101 countries is 3.61 points. The respondents are asked to rate the railroads in their country of operation on a scale from 1 (underdeveloped) to 7 (extensive and efficient by international standards). The individual responses are aggregated to produce a country score.

time. In 2018, Mexico ranked 51st out of 160 and performed the best in the category of timeliness, which evaluates the timeliness of shipments in their destination. In the same year, Mexico scored in international comparison lowest in the ability to track and trace consignments (tracking and tracing) and the quality of trade and transport infrastructure (infrastructure). Thereby, Mexico's scores in each category have improved compared to 2007.

Figure 27: Mexico's International Logistics Performance Index measuring overall performance in infrastructure has declined in almost all categories since 2014



Notes: This figure shows Mexico's scores in the years 2007, 2014 and 2018 for the different categories of the International Logistics Performance Index. Countries are ranked on a scale from 1 to 5, where 5 represents the best ranking. While Mexico's overall index has increased between 2007 and 2018, almost all categories have worsened since 2014, in particular the quality of infrastructure. Source: World Bank Group (2018). Authors' illustration.

However, Mexico performed worse in all categories, except customs, in 2018 compared to 2014. This result is puzzling and raises the question of whether Mexico's neighboring countries also experienced this sharp decline from 2014 to 2018. Indeed, Latin American and Caribbean countries saw an even larger drop in their overall score, as well as in infrastructure and ease of arranging competitively priced shipments (international shipments). In the four other categories, the LAC pattern differs from Mexico's scores. The quality of infrastructure in the LAC region has yet to reach the optimal level and has not been continuously improving. While Mexico is somehow following a similar pattern, it also has a greater potential to improve the quality of its infrastructure in comparison.

Infrastructure and logistics remain obstacles to conducting business in Mexico. The results of the international comparison of the LPI index show that Mexico could still improve significantly its infrastructure and logistics if it wants to catch up to high-income countries such as Germany, Sweden, or Belgium that lead the field and have the best infrastructure (Arvis et al., 2018). Investing in infrastructure does not only facilitate exporting but also creates jobs while finalizing infrastructure projects and improves the interconnectedness between firms within Mexico.

4.3 Labor Force

To participate in global trends in high technology and services industries, an educated labor force is a crucial input. Also for MNE activity access to a skilled labor force is often decisive. We analyze next what efforts have been undertaken so far to improve Mexico's position and make Mexico internationally competitive.

In 2012, the government launched two large reforms to increase the pool of skilled workers and improve labor conditions. First, high school education was made mandatory in 2012 and, one year later, a large education quality reform aimed at providing quality education for all students, creating a cultural shift by reasserting federal control over the education sector (Islas & Calef, 2021). Second, the 2012 Labour Act reforms introduced short-term training contracts and six-month probation periods to facilitate the hiring of temporary and part-time workers, and lower the strictness of employment legislation. These reforms had some success: regarding education, scholarships were provided for every three students out of ten from public schools (World Bank Group, 2018a); the labor market reform brought more than 3 additional percentage points of GDP in tax revenues, and informal employment dropped by 2.6 percentage points between 2012 and 2017 (World Bank Group, 2018a).

Despite the small wins of these large-scale reforms, the overall situation remains problematic. Access to education and the quality of schooling is largely unequal across regions and enrollment after the secondary level falls by about half for young people aged 15 to 19-year-old. This brings Mexico to the lowest rate among OECD countries in terms of upper secondary education enrollment (OECD, 2019). Given the importance of education in human capital, the low share of people with a higher education degree is a large impediment to constituting a pool of skilled workers. In fact, youth labor force participation, along with female participation, remains low, and informal employment is often an alternative for dropped-out students. In 2017, informality represented 58 percent of all jobs, where workers are left without social security and pension coverage, but also without further job training (OECD, 2019). Those jobs are disproportionally held by women, as only 45.5 percent of working-age Mexican women are part of the formal labor force, below the rate in LAC countries (53 percent), and the OECD (51 percent) (OECD, 2019).

To better integrate into GVCs and future labor markets, Mexico needs to decrease informal jobs and improve the productivity of its workers. Right now, most of the labor force is employed in traditional sectors, whereas there is high growth potential in strategic industries such as automotive, agro-industrial, aerospace, and electric-electronics (OECD, 2019).

4.4 Administrative Capacity and Financial Environment

To analyze the business environment in Mexico, the World Bank Doing Business Index looks at ten aspects that matter for the ease of doing business (Figure 28). In 2020, Mexico has ranked 60th out of 190 countries, thus implying that Mexico is at the bottom of the top tercile of favorable

countries where to conduct business.[12] In the figure, we compare the Mexican scores with the average scores for the OECD and Latin-American and Caribbean countries (LAC). The indicators can be split between financial and legal conditions, infrastructure and administrative capacity. Focusing on the latter, inefficient administrative processes are one of the most important barriers to doing business in Mexico—based on procedures for construction permits, registering property, starting a business, and paying taxes.

Paying taxes is a major hurdle, and most potential for improvement lies in the post-filing process, where Mexico is currently well below the OECD and LAC averages (World Bank Group, 2020b). In particular, the refund of VAT and the correction of corporate income tax currently take a very long time, which can be a burden for firms with low financial resources. Procedures to start a business can also be optimized, as it currently requires a lot of red tape. Finally, Mexico scores poorly on the ease of registering property. This category is based on five dimensions: 1) reliability of infrastructure, 2) transparency of information, 3) geographical coverage, 4) resolution of land disputes and 5) equal access to property rights. Overall, property registering is associated with heavy red tape, high costs as a percentage of the property value, and low quality of land administration. This low land administration index is particularly driven by the lack of transparency of information and the low geographical coverage of public administrative bodies.

Despite low administrative capacity, Figure 28 also highlights Mexico's relative strength in financial and property rights conditions. In particular, Mexico performs well in the categories of getting credit, resolving insolvency, and enforcing contracts in comparison to the OECD average. However, Mexico's outstanding performance in the category "getting credit" is to be taken cautiously, given the large disparities in financial development in the country. The Doing Business index assesses access to credit through the strength of legal rights and credit information systems, and samples firms from Mexico City and Monterrey only. Meanwhile, actual access to credit is heterogeneous across firms, and Iacovone et al. (2022) find that merely 14 percent of microenterprises have access to finance in Mexico. More than general unequal credit access, this limits the growth potential of small and dynamic firms that cannot find the necessary funds to scale up their production. Expanding access to credit for micro-, small- and medium-sized enterprises would induce productivity growth.

[12] When interpreting the results of the index, it must be kept in mind that the survey makes strong assumptions about the "standardized" company for each category, which are small- or medium-sized domestic enterprises only located in the country's largest business cities (Mexico City and Monterrey).

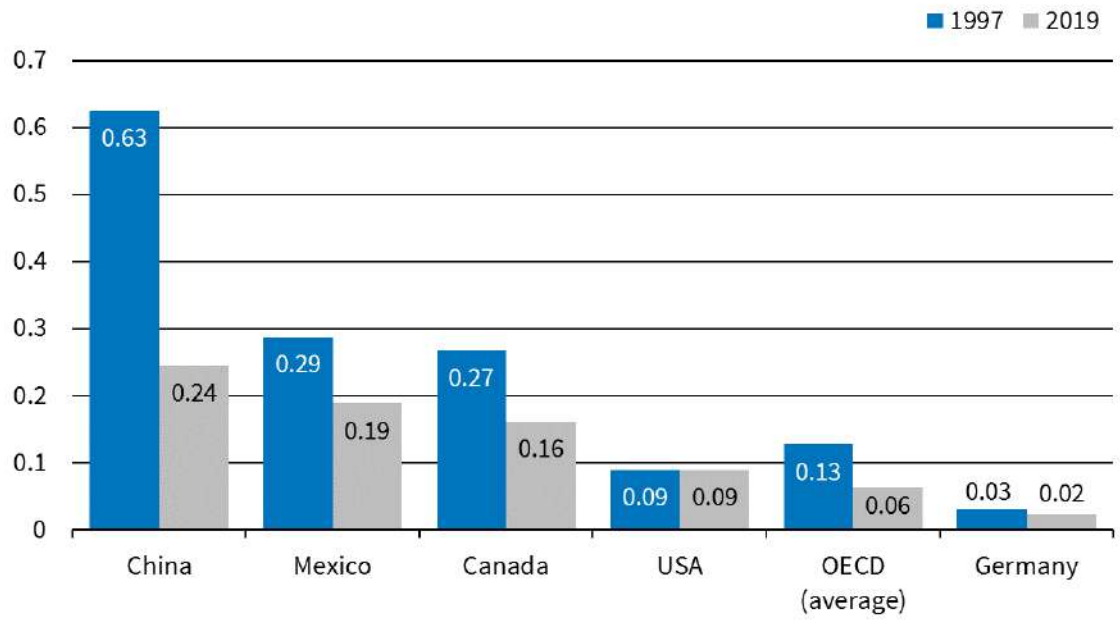
Figure 28: From accessible financial services to the administrative burden, doing business in Mexico is multifaceted

Notes: This figure shows the average ranking for LAC countries, OECD countries, and for Mexico for different categories of the Doing Business indicator in 2020. Countries are ranked on a scale from 1 to 190, where 1 represents the best ranking. Mexican firms have easy access to financial services such as getting credit, and resolving insolvency, with a similar ranking as OECD high-income countries. However, Mexico ranks very poorly in terms of basic administration and electricity needs, sometimes lower than other LAC countries. Source: World Bank Group (2020; 2020a; 2020b). Authors' illustration.

From an international perspective, the view of Mexico as a trustworthy partner has grown over time. Despite the numerous obstacles described above, Mexico has strong macroeconomic institutions, with an honorable policy track record. Over the past decades, new reforms included the adoption of a flexible exchange rate, an inflation-targeting regime, an autonomous Central Bank, and among other things, the openness of the financial sector to foreign participation (World Bank Group, 2018a). As a result, Mexico has also become a better place to attract FDI.

Figure 29 shows the evolution of the FDI restrictiveness index from the OECD, between 1997 and 2019. This index measures statutory restrictions on foreign direct investment and quantifies barriers to cross-border investment flows. This index is a composite of foreign equity restrictions, screening and prior approval requirements, rules for key personnel, and other restrictions on the operation of foreign enterprises. Overall, Mexico has made significant progress in opening its border to FDI compared to the beginning of the century: the index dropped by 0.10 in favor of openness. In comparison to countries that had a similar or higher score initially, Mexico has however not managed to reduce its score by as much. China for example reduced its index by 0.39, and Canada by 0.11. Further, Mexico has yet to reach the level of other OECD countries. In fact, it is the second worst performing country within the OECD country group, just below New Zealand.

Figure 29: Mexico has opened its borders and facilitated FDI for the past twenty years, but has yet to reach the level of other OECD countries



Notes: This figure shows the OECD FDI Restrictiveness Index (2010). It measures statutory restrictions on foreign direct investment and quantifies (statutory) barriers to cross-border investment flows. The index ranges from 0 to 1 where 1 indicates that borders on FDI flows are closed and 0 indicates open borders. While Mexico has improved its openness to FDI by 0.10 percentage points, it still is below the level of other OECD countries. Source: OECD (2022b).

Mexico appears as a multi-sided economy. The growth potential of SMEs is hindered as they often struggle to get financial services and credit access, while they employ over two-thirds of the workforce (Iacovone et al. , 2022; OECD, 2019). In addition, poor governance, bad quality infrastructure and inefficient administrative processes are costly for firms to deal with. However, some large companies, especially foreign affiliates of MNEs, do invest in the country and participate in Mexico's wealth. This participation is happening despite those poor conditions, and solely because larger firms have the financial means to face the cost of corruption and security threat.

5 The High Dependency on the US: Risks and Potential Solutions

In this chapter, we discuss the high dependency of the Mexican economy on the US, both as a buyer of Mexican goods but also as a supplier. We will then discuss two potential strategies to reduce the dependency, i.e., decoupling from GVCs and diversifying the portfolio of trade partners.

5.1 High Dependency on the US

The US are the single most important partner for Mexico. The two economies are closely integrated with strong backward and forward linkages that illustrate the dominant role of regional value chains within the "Factory North America". Also, with respect to FDI, the US are the single biggest investor in Mexico, although European countries are catching up. Lastly, the US is the single most important buyer of Mexican goods. In 2020 over three-quarters of Mexico's total exports went to the US. Hence, a downturn in the US economy that results in lower overall US demand, will hit the Mexican economy severely.

Besides this direct negative effect of the high dependency on the US, there are also indirect risks through supply chain disruptions, that impose a big challenge for production. Covid-19 and the resulting bottlenecks around the globe and across industries revealed this shortcoming of global production. For example, in May 2022, 77 percent of manufacturing firms in Germany said they were affected by shortages of materials (ifo Business Survey, 2022). Supply bottlenecks for individual products can cause disruptions along the entire value chain. The risk of shortages is significantly higher when a product is sourced from only a few suppliers. The higher the concentration in the supplier market, i.e., the smaller the number of suppliers for a certain product, the harder it is to find an adequate substitute in case of a failed delivery. Next, we will analyze how much Mexico is dependent on its partners as a supplier of individual products.[13]

To identify dependencies at the product level we count for over 5,000 individual products the number of distinct countries that export the respective product to Mexico. The level of aggregation of the products is very fine, i.e. we can distinguish between different types of engines in vehicles. Whenever a product is imported from three or fewer source countries, we consider the product to be "critical", i.e., Mexico has a high dependency for this product. We use the year 2019 for the analysis to avoid any disruptions caused by Covid-19 or the war in the Ukraine.

Of overall 5,123 products, Mexico imports 22 percent from three or fewer suppliers. This is a very high share: for the US the share equals four percent, for Canada and China six percent, Brazil 14

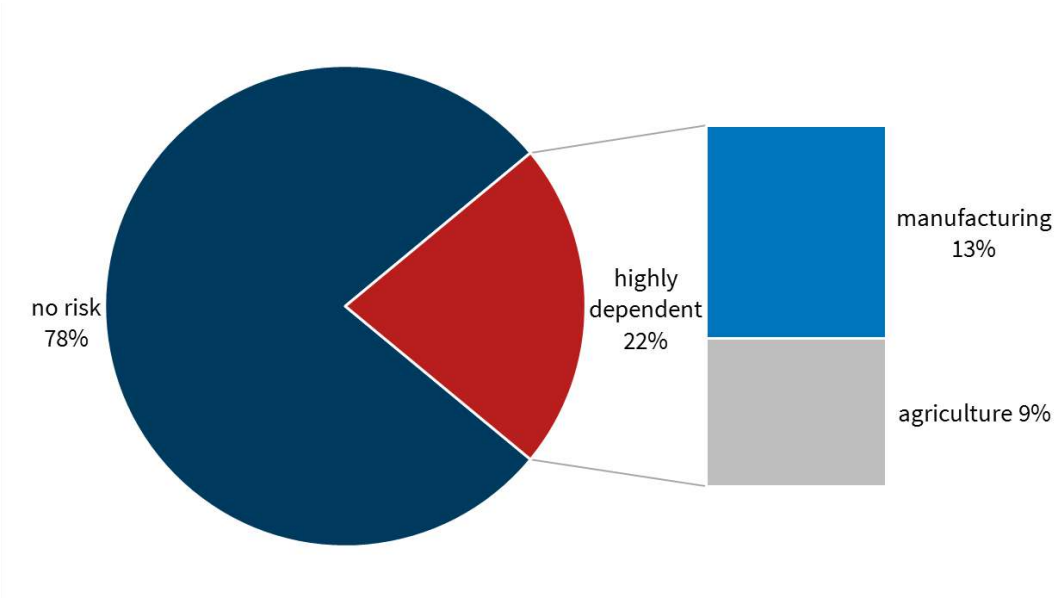
[13] Flach, Hildenbrand & Teti (2021) and Flach et al. (2020) provide similar analyses for Germany and the United Kingdom, respectively.

percent and for Chile 16 percent. Most of Mexico's critical products belong to manufacturing (c.f., Figure 30).

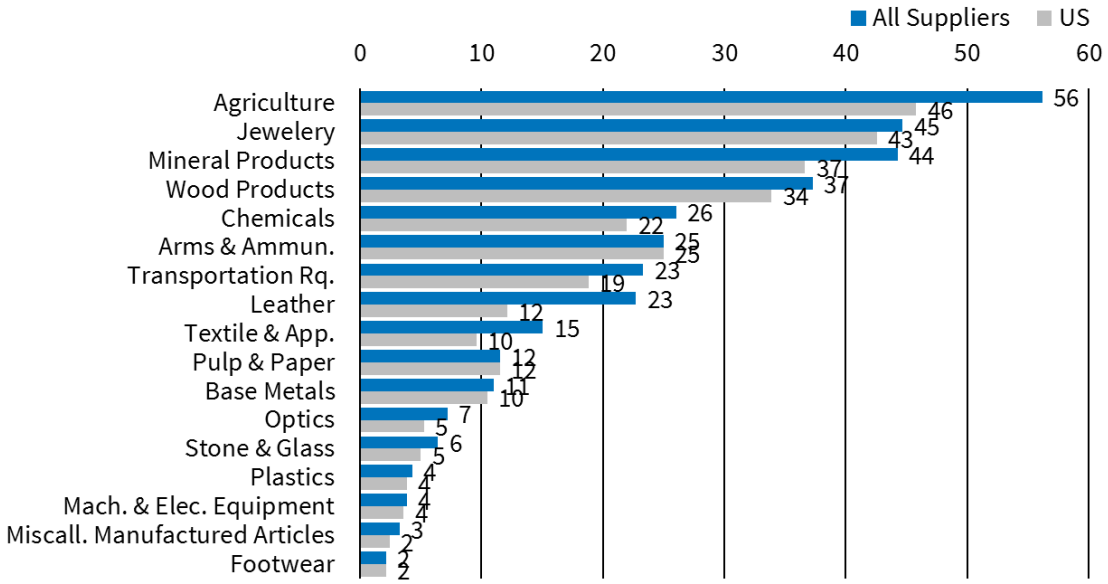
In Panel b of Figure 30, we drill further down and check how the highly dependent products are distributed across sectors. The blue bars tell us the share of products within a sector that Mexico imports from three or fewer suppliers, i.e., 44 percent of all mineral products that Mexico imports are sourced from three or fewer suppliers. The sectors are displayed in descending order of dependencies. Large heterogeneities across sectors become apparent: While footwear, machinery, electrical equipment, and plastics are highly diversified sectors, especially for jewelry, chemicals, mineral and wood products Mexico exposes high dependencies on very few suppliers.

Figure 30: More than 20 percent of Mexico's imported products come from three or fewer suppliers suggesting a high risk for supply chain disruptions

30a: Share of overall dependent products



30b: Share of dependent products across sectors and suppliers



Note: The graph shows the overall share of highly dependent products, of Mexico defined as products that are imported from three or fewer suppliers, and across sectors. The total number of imported products equals 5,123. The data are for the year 2019. Source: Gaulier & Zignago (2010). Authors' calculations.

For many manufacturing sectors, Mexico has not only a poorly diversified supplier portfolio but also many of these products are imported from the US. The bars in grey show the share of products for which the US is one of the three suppliers. For example, 37 percent of mineral products are considered critical because of the lack of diversification with respect to the number of suppliers, and the US is one of the three supplier countries. For all sectors except for leather, Mexico's exposure to the US is very high as the large shares of highly US-dependent products displayed in grey show. Overall, 82 percent of all critical products are provided by the US.

Overall, the analysis of product dependencies shows that Mexico's risk of supply chain bottlenecks is very clustered, which is very alarming: 22 percent of Mexico's imported products are highly dependent, which is more than 5 times the amount of the US exposure, and by itself troublesome. Furthermore, the very high exposure to the US increases Mexico's risk of shortages in supply chains even more. Thus, if the US is hit by a shock, Mexico will not only suffer substantially due to a demand reduction, as the US is one of the most important markets for Mexican firms. Additionally, also production in Mexico might be severely disrupted because of the little diversification across suppliers for many products.

5.2 Strategies to Reduce the Dependency on the US

In the following subchapter, we will discuss two strategies to reduce Mexico's high dependency on the US and the associated risk. First, we analyze whether bringing production back to Mexico

can help to reduce its dependency and if so, at what cost. Second, we check whether Mexico can be diversifying its portfolio of trade partners. We will focus on the critical products and show which countries might serve as alternatives. Hence, the two proposed strategies are contrasting and mutually exclusive: while the latter proposes to use trade as insurance to hedge risks, the former is about reducing Mexico's integration into the global economy.

Strategy 1: Decoupling from GVCs

The integration of the Mexican economy into GVCs has been currently portrayed not only as an opportunity but also as a risk. Alternatives such as decoupling from GVCs are therefore being discussed in the media. To evaluate the costs of a renationalization of supply chains, we simulate the general equilibrium effects of bringing production back to Mexico using the ifo trade model. The model is based on a general equilibrium model of Caliendo and Parro (2015) and builds on the seminal work of Eaton and Kortum (2002). The technical and complex details of the model are described in academic studies by the ifo Institute (see Flach, Hildenbrand & Teti (2021) and Sforza and Steininger (2020)). It is a static general equilibrium model of international trade and is used to analyze various trade policy scenarios.

The ifo trade model identifies the long-run level effect, but no growth effects. This means that the existing level of a parameter, e.g. real gross domestic product (GDP), is set to a lower level. Dynamic effects of trade, for example, due to the diffusion of new technologies, innovation activity of firms, or increasing demand from trading partners for imports due to increasing population and economic growth, are left out. Moreover, no adjustment path is calculated in the simulations: In the short run, trade diversion to another country can lead to significant disruptions in supply chains and negative macroeconomic effects, e.g., due to the costs of switching suppliers. On the other hand, in the long run, the negative effects of trade restrictions can be partially offset by trade shifts to other countries.

We evaluate the following policy scenario: what would be the effect of a renationalization of GVCs for the Mexican economy? To evaluate this scenario, we increase non-tariff barriers (NTBs) between Mexico and the rest of the world, such that it becomes more expensive for Mexico to import products from abroad. We calculate one scenario where we double NTBs and a second one where we triple NTBs. In both scenarios, Mexican tariffs also increase by 25 percent. In response to the increase in trade costs, which make importing less profitable, we approach a situation of decoupling from GVCs, in which Mexico drastically decreases imports from all countries. At the same time, however, importing intermediate goods and raw materials that cannot be produced in Mexico is allowed. This approximation allows us to make more realistic statements about the effects of the trade policy scenarios considered.

In both scenarios, Mexico's GDP would be at a much lower level, with a permanent decrease in real GDP between 9.3 percent and 11 percent. A decrease of 9.3 percent in real GDP refers to the scenario with an increase in NTBs by 100 percent. If we triple trade barriers, which refers to a

more precise approximation of decoupling, real GDP in Mexico would decrease by roughly 11 percent. These results are a lower bound of the true effects, as we do not consider retaliation or a trade war: if Mexico increases barriers, other countries might react by increasing barriers too, which would impose additional costs on the Mexican economy that, for simplicity, we do not consider in our analysis.

Decoupling from GVCs involves very high costs for the Mexican economy and would lead to an inefficient allocation of resources. Instead, our analysis highlights the importance for Mexico of being integrated into GVCs, therefore, policymakers should avoid protectionist measures that lead to decoupling.

Strategy 2: Diversifying the Risk of Supply Chain Disruptions

Our analysis has shown that Mexico is particularly exposed to US-specific risk of supply chain disruptions: 81 percent of critical goods, i.e., products that are hard to substitute in the short-term as business relationships only exist with at most three suppliers, are provided by the US, indicating a large cluster risk. We want to understand next, whether Mexico can reduce this dependency by diversifying its portfolio of trade partners and if so, who the alternative suppliers might be.

First, we determine market shares for the disaggregated products at the HS6-level to determine potential alternative suppliers. We exclude the US as a potential supplier and only look at critical goods from the US, i.e., the focus is on the 901 products with at most three suppliers out of which one are the US. We only keep the market leaders, i.e., the five countries with the largest market shares. To aggregate to sectors, we then keep the five suppliers that are the market leaders for most of the products within the respective sector. This aggregation means that for individual products the market leader might not coincide with the one shown in Table 1. For example, Brazil is the world's biggest exporter of quartzites (HS code: 25 06 20). However, Brazil does not appear in Table 1 in the row of the sector Mineral Products because Brazil only dominates, within the set of critical US goods, the small market of quartzites but other countries, namely the EU, Russia, South Africa, China, and Canada are the top exporters for most of the other critical US goods within the sector Mineral Products.

Ideally, Mexico should intensify trade relations with partners that can be considered as low-risk countries to avoid substituting US imports with an unreliable partner. Therefore, the suppliers have been evaluated according to their risk based on their performance in three established indices: The Democracy Index, the Environmental Index, and Working Conditions (see Appendix C for more details on each indicator and Flach et al. (2022) for a similar analysis). Thereby, each country is classified as either a low-, medium-, or high-risk trading partner represented in the table by 👍/👍/👎, depending on its performance in the respective index measured by the mode

of the three indicators.[14] The icon 🗎 indicates that Mexico has an FTA with the respective supplier.

The first striking result of this analysis is that the EU could be an alternative supplier for all sectors that Mexico has a high exposure to critical US goods. China could also serve as a potential substitute for many sectors but also many other Asian countries like India, Indonesia, Malaysia, Thailand, and the Philippines have the capacity. Furthermore, Canada, Japan and South Korea could become important alternatives to the US, too. Most interestingly, none of the other Latin-American countries appear as a potential alternative supplier for neither of the sectors. This could indicate the dominant role of the US in producing these particular goods in the whole region. Hence, one key goal for policymakers is to make it as easy as possible for Mexican exporters to diversify by focusing on reducing trade costs with the countries that can serve as alternative suppliers.

Table 1: The EU is the most important alternative supplier of critical goods imported from the US, Asian countries also have the capacity to substitute US production

Sector	Critical US goods	Alternative Supplier				
Agriculture	46.8 %	EU	China	Canada	Australia	Russia
Jewelery	42.6 %	EU	Japan	Switzerland	Russia	South Africa
Mineral Products	36.6 %	EU	Russia	South Africa	China	Canada
Wood Products	33.9 %	EU	Canada	China	Russia	Indonesia
Arms & Ammun.	25.0 %	EU	South Korea	Switzerland	Israel	Norway

[14] Countries are classified as a low-risk supplier when at least two of the three indicators suggest low risks. Analogously, countries are classified as a high-risk supplier when at least two of the three indicators are high risk and medium whenever the three indices give a mixed picture.

Chemicals	22.0 %	EU	China	India	Japan	South Korea
Transportation Rq.	18.8 %	EU	China	Japan	Russia	South Korea
Leather	12.2 %	EU	Thailand	Malaysia	Nigeria	Australia
Pulp & Paper	11.5 %	EU	China	Canada	New Zealand	Norway
Base Metals	10.5 %	EU	China	Japan	Canada	South Korea
Textile & App.	9.6 %	EU	China	India	Turkey	South Korea
Optics	5.3 %	EU	China	Hong Kong	Japan	Thailand
Stone & Glass	5.0 %	EU	China	Japan	Canada	Malaysia
Plastics	3.8 %	EU	Japan	China	Malaysia	Mexico
Mach. & Elec. Equipment	3.6 %	EU	China	Japan	Singapore	Canada
Miscall. Manufactured Articles	2.5 %	China	Indonesia	EU	Vietnam	UAE
Footwear	2.1 %	India	EU	Philippines	Myanmar	China

Note: This table shows the five most competitive alternative suppliers for critical goods that are currently imported to Mexico from the US. For these products, the risk of supply chain disruptions is high. / / equals the risk category (low/medium/high) of the respective supplier using indices covering democracy, environment, and working conditions. A detailed explanation for each index is available in Appendix C. indicates that Mexico has an FTA with the respective supplier. The total number of critical goods from the US equals 901. The data are for the year 2019. Source: Gaulier & Zignago (2010), WTO, ITUC (2021), Economist Intelligence (2022), and Wolf et al. (2020). Authors' calculations.

The decision whether it is profitable for an exporter to switch to an alternative supplier for their intermediates depends on numerous factors: First, direct trade costs with the alternative suppliers, i.e. tariffs and non-tariff trade costs. Second, indirect costs are induced by strict RoOs whenever the final good's destination is the US. Third, the probability that the US is hit by a shock that would lead to a shortage of intermediates in the first place, and lastly, the cost of a shortage of the intermediate.

FTAs are the most straightforward way for policymakers to reduce direct trade costs. Mexico already has an FTA in place with many of the alternative suppliers, i.e. the EU, the EFTA countries (Iceland, Liechtenstein, Norway, and Switzerland), and the CPTPP countries (Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam). Nevertheless, there is still room for improvement: the agreements with the EU and EFTA could be deepened to tackle also non-tariff barriers. Furthermore, the analysis of alternative suppliers stresses one more time how important the agreement with South Korea is for Mexico. The negotiations for the trade deal should come back on the political agenda. The Mexican government could also increase efforts of export promotion activities. For many firms, it is very costly to find new business partners, particularly in countries where they have not yet done any business with. Export promotion agencies could put Mexican exporters directly into contact with potential foreign partners and thereby contribute to significantly reducing the search costs.

The NAFTA/USMCA RoOs might make it costly for Mexican exporters to switch suppliers. To be granted preferential market access to the US and therefore be exempted from paying the MFN tariff, Mexican firms must prove that most of the production takes place within the NAFTA/USMCA. Whenever Mexican firms only add little value to the final product they can only use intermediates from the US or Canada if they do not want to lose preferential market access. This protectionist feature of the RoOs increases the relative comparative advantage of the US vis-à-vis alternative suppliers such as the EU. However, in many cases, the tariff savings due to the NAFTA/USMCA preferences for Mexican firms exporting final products to the US are very low in the first place because the US levies only low MFN tariffs on most goods, especially in the manufacturing sector. Increasing transparency about potential costs of not complying with the RoOs through a centralized system, i.e., a national interactive website, would help firms to decide when it makes sense to switch suppliers. Furthermore, local institutions can support companies in complying with rules of origin, e.g. through legal advice or information campaigns.

In identifying and monitoring risks in supply chains, companies can be effectively supported by the Mexican government. For example, the promotion of digital technologies in the area of risk management can help ensure that disruptions in supply chains can be identified easily and at an early stage such that appropriate adjustments can be made more quickly. A national dialog platform on the topic of supply chains would also offer an important opportunity for an exchange of information between the government and businesses. This would greatly facilitate the identification of potential bottlenecks at the sectoral level and also facilitate the promotion of different mitigation strategies by making it easier to swap know-how among Mexican exporters (OECD, 2021).

Paradoxically, the surge in recent global risks such as the US-China trade war or the Covid-19 pandemic and the resulting strained GVCs could also open new opportunities for the integration of Mexico into global production networks. Firms around the globe experienced supply disruptions due to high dependencies on few suppliers, and plan to reduce this type of risk by diversifying their portfolio of suppliers, as a survey conducted by the ifo Institute in May 2021 shows (Flach et al., 2021a). So far, it remains unclear where globally active firms will relocate to diversify their supply chains to make production more resilient.

In 2020, the Peterson Institute for International Economics highlighted that, along with Vietnam, Mexico could become a major player in GVCs as large multinationals have already shifted or announced to shift production plans of inputs from China to Vietnam and Mexico (Jung, 2020). The proximity to the US market and low labor costs make Mexico an attractive location for MNEs. This is the case for instance for the company GoPro which added a new production line in Jalisco, one of Centro Bajio's states in 2019; other MNEs like Apple, Microsoft, Google, and Omnidex are following a similar path (Jung, 2020).

Mexico will only be able to participate in this development if it can convince MNEs that that it is a favorable location for doing business. . Therefore, the country must manage to overcome the surge in security threats and improve its infrastructure. Finally, to fully take part in high teach global value chains and meet their production standards, Mexico has to invest in raising the skill level of its workforce via education and training policies.

6 Conclusion

In this study we have provided a detailed overview over Mexico's ties to the global economy. Despite recent "slowbalization" trends, the integration of the Mexican economy into global trade and international production networks has continued to grow in the last decade. Mexican international trade in goods and services has increased significantly, from 63 percent of GDP in 2011 to 82 percent of GDP in 2021. Similarly, despite a global slowdown in cross-border production sharing activities, Mexico's integration into global value chains (GVCs) has deepened. In particular, the dependence on imported inputs for domestic production has grown for the Mexican economy, reaching one of the highest levels among G20 member states. However, the level of integration into the world economy is highly uneven across Mexican states: The northern part of Mexico and Centro Bajío are by far the most export-intensive regions while the rest of the countries exhibits only limited engagement in international trade. This is one of the reasons why addressing domestic impediments to the successful internationalization of Mexican firms (see chapter 4) is essential for sharing the gains from trade more equally.

Moreover, in this study we critically discuss the dependency of Mexico's economy on the US. Mexico's northern neighbor accounts for more than 65 percent of Mexican trade and plays a dominant role for GVC activities in Mexico. Moreover, Mexico imports 82 percent of all critical products, i.e., products with a high concentration of suppliers, from the US. Nonetheless, in a simulation exercise we can show that reducing Mexico's economic dependency on the US economy by nationalizing supply chains would come with substantial costs. Alternatively, we identify potential avenues for diversifying Mexico's portfolio of trade partners. Based on global market shares we find that the EU and many Asian countries could serve as alternative suppliers for a wide array of critical goods.

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8 Appendix

A. Tables

Tabel A 1: ISIC Rev. 4 Code Full Description

ISIC Rev. 4, 2 digits	Description
29	Manufacture of motor vehicles, trailers and semi-trailers
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
6	Extraction of crude petroleum and natural gas
1	Crop and animal production, hunting and related service activities
32	Other manufacturing
24	Manufacture of basic metals
10	Manufacture of food products
20	Manufacture of chemicals and chemical products
31	Manufacture of furniture
22	Manufacture of rubber and plastics products
25	Manufacture of fabricated metal products, except machinery and equipment
30	Manufacture of other transport equipment

B. Many Faces of Protectionism

- Market access restrictions: granting/sale of licenses to companies to be allowed to operate in a market. Market access restrictions also include total bans (e.g. foreign Internet services in China) or so-called "legal structure requirements", i.e. regulations on the choice of legal form in the target country ("joint venture compulsion").

- Quantity restrictions: Import quotas are used to keep the quantity of goods that foreign suppliers can offer on a market artificially low. This supply shortage leads to higher prices that benefit domestic producers. For instance, fixed import volumes into EU agricultural markets, e.g. for beef.

- Subsidies and indirect trade barriers: Subsidizing the domestic industry creates distortion in competition and puts foreign competitors at a disadvantage. Indirect trade barriers have a similar impact as they force companies to source a certain proportion of local value added in their upstream products.

- Export subsidies, dumping: equivalent to discriminating against foreign goods on the domestic market, subsidizing one's own export industry is also a form of protectionism. Some examples of export subsidies can be the relief of entrepreneurial risks (Hermes guarantees) or offering some products below market price (dumping) to gain market share internationally.

- Labor, environmental and animal welfare standards: many free trade agreements contain measures to prevent competition to the bottom in the area of social or environmental standards. Recently, the European Commission has also published a directive on corporate sustainability which compels firms to ensure sustainable and responsible corporate behavior throughout global value chains. In essence, however, these clauses are also protectionist: if the comparative advantage of many emerging countries lies in the low-cost labor, any increase in the cost of this factor acts as a trade barrier comparable to a tariff. For instance, the new agreement between Canada, Mexico and the USA (USMCA), stipulates that 40 percent of the value added in the automotive sector must be produced at hourly wages of $16 or more in order to be traded freely. While Mexican employees would benefit from this wage increase, this would also lead to a reduction in competitiveness and push unprofitable firms to reallocate to other locations, for example in the US.

C. Global Risk Indices Overview

The scores attainable in each index (explained below) were divided in thirds to create the three-color-based risk system shown in Figure 17a and b. These colors were then assigned to each country based on their score in the respective index. Following this, each country's share of total value exported (imported) was determined for each industry. In the next step, the share of total value exported (imported) was summed by the three risk-categories, implying that countries with higher values of import (export) make up a larger share. Then the ten largest industries in terms of imported (exported) value were ranked.

Name:	**Working Conditions** (based on ITUC Global Rights Index)
Description:	The ITUC categorizes countries by violations of workers' rights in law and practice
Coverage:	149 countries in 2021
Methodology:	Based on five pillars with 44 indicators of compliance to basic labor norms in law and practice. Information on law violations retrieved through surveys distributed to various unions in each country and law experts.
Measure:	Rating from 1 (sporadic violations of labor rights) to 5+ (no guarantee of rights due to breakdown of rule of law)
Color-coding:	1-2: green; 3-4: yellow; 5-5+: red
Source:	ITUC (2021) published by ITUC CSI IGB

Name:	**Democracy Index**
Description:	The Democracy Index measures the state of global democracy
Coverage:	165 states and 2 territories in 2021
Methodology:	Based on five categories: electoral process and pluralism, functioning of government, political participation, political culture and civil liberties; scores of categories based on 60 indicators (from 1-10); adjustment of classification if

country does not have free and fair national elections, security of voters, influence of foreign powers on government and capabilities of civil service to implement policies.

Measure: Classification in one of four types of regimes based on each categories' measure from 1-10 (with 10: full democracy)

Color-coding: Full & flawed democracy: green; hybrid regime: yellow; authoritarian: red

Source: EIU (2022) published by Economist Intelligence

Name: **Environmental Index** (Environmental Performance Index)

Description: The EPI provides a data-driven summary of the state of sustainability around the world, more specific, environmental health and ecosystem vitality.

Coverage: 180 countries in 2020

Methodology: Based on two policy objectives: Environmental Health (accounts for 40 percent), constructed by four issue categories, and Ecosystem Viability (60 percent), constructed by seven indicators. Each of the issue categories enters the policy objectives with an individual weight and are themselves based on further 32 weighted indicators retrieved from various sources.

Measure: Rating from 1-100 (aggregated at each level using simple weighted arithmetic average)

Color-coding: 100-49.2: green; 49.1-37.2: yellow; 37.1-0: red

Source: Yale.edu (2020) published by Yale Center for Environmental Law & Policy