

# Relocation of Global Value Chains: The Role of Mexico

Francisco Arizala, Tomohide Mineyama, and Hugo Tuesta

WP/25/180

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**Relocation of Global Value Chains: The Role of Mexico****Prepared by Francisco Arizala, Tomohide Mineyama, and Hugo Tuesta\***

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**ABSTRACT:** The paper documents recent changes in trade flow dynamics between Mexico, the U.S. and China, focusing on the period around 2017-2023. Using product-level bilateral trade data, the paper studies recent trends in the composition of the origin of U.S. imports, notably that a reduction of imports from China has been accompanied by an increase in imports from Mexico and other trading partners in Asia. The paper also documents that while Mexican exports to the U.S. have significantly increased in recent years, Mexico is also importing more from the U.S. and various countries in Asia, consistent with Mexico's deeper integration into global value chains. Furthermore, the paper presents evidence that FDI flows to Mexico since 2017, predominantly originated from the U.S., have increased more in economic sectors affected by the U.S. tariffs on imports from China, and that they have been mainly directed to regions in the North with well-established manufacturing networks with the U.S.

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WORKING PAPERS

# **Relocation of Global Value Chains: The Role of Mexico**

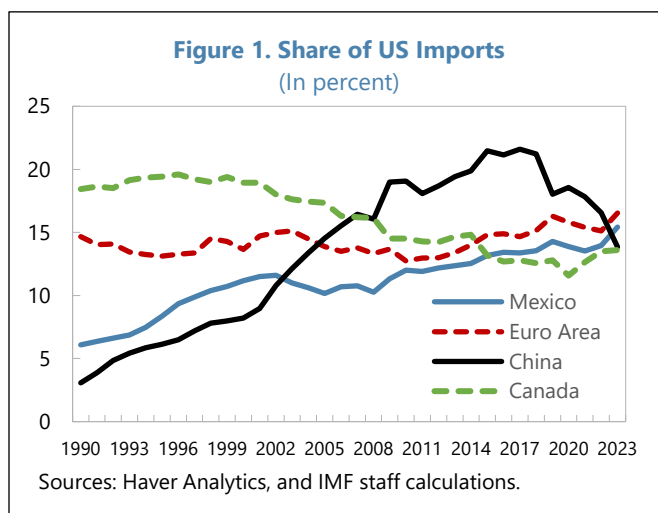
Prepared by Francisco Arizala, Tomohide Mineyama, and Hugo Tuesta

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## Introduction

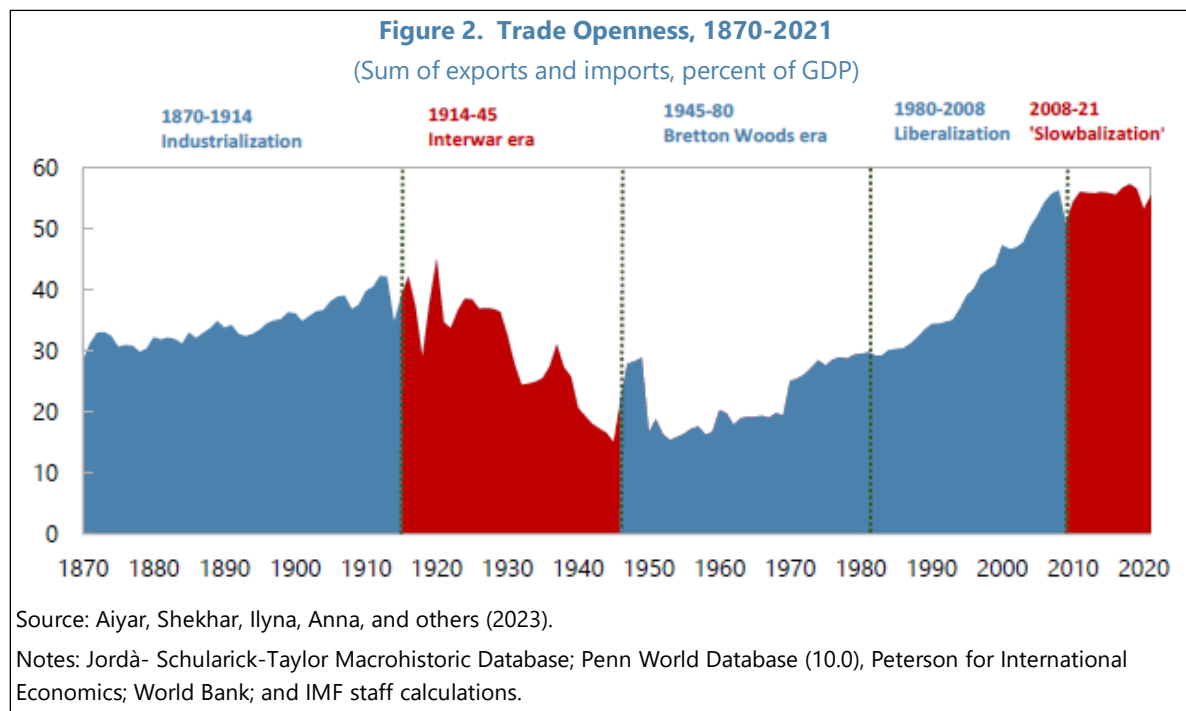
Since the introduction of NAFTA in 1992, Mexico has benefited from its favorable access to the U.S. market, with Mexico steadily increasing its share of U.S. imports. Given Mexico's relative cost competitiveness, productivity, proximity, and established logistics networks, its integration with the U.S. has continued even in the face of intensified geoeconomic fragmentation. Mexico became the most important U.S. trading partner in 2023, representing 15.4 percent of total U.S. imports and displacing China whose share has declined from its peak in 2017, prior to the introduction of U.S. tariffs on imports from China (Figure 1).



Mexico's increased integration with the U.S. is taking place amidst increased fragmentation in global trade. The post-World War II growth in trade was interrupted by the GFC and was subsequently negatively affected by other events with global implications such as the Arab Spring and Brexit. Global trade has further slowed down as geopolitical fragmentation accelerated with the rise in U.S.-China trade tensions, the pandemic, and Russia's invasion of Ukraine (IMF, 2023 and Fernández-Villaverde and others, 2024) (Figure 2). However, the rise in political tensions between opposing blocks has also led to increased trade flows within blocks and between countries that are not clearly aligned with either of the politically distant countries (Gopinath and others, 2025). Besides the political grounds, the ongoing relocation of global value chains is also a response to the desire to increase economic diversification for logistical reasons, as during the pandemic and with the intensification of conflict in Ukraine it became apparent that global developments can create significant disruptions to global production networks.

In some cases, increased geoeconomic fragmentation has materialized in trade policy choices that have resulted in changes in cross-border supply chains. For instance, there is evidence that the introduction of tariffs between the U.S. and China in 2018-19 led to an increase in exports in countries producing goods that are substitutes for exports from China and the U.S. (e.g. Thailand and Mexico), while exports have declined in countries concentrated in products complementary to the production in China and the U.S. (Fajgelbaum and others, 2024). In addition, it has been documented that following the U.S. decision to impose tariffs on imports from China in 2017, there has been a reduction in U.S. imports from China while at the same time other countries have gained share in the U.S. imports market (Alfaro and Chor, 2023). Moreover, there is evidence that some countries leveraged on their participation in global value chains linked to China to increase their share of the U.S. import market (Freund and others, 2024). In the case of Mexico, firms integrated in global

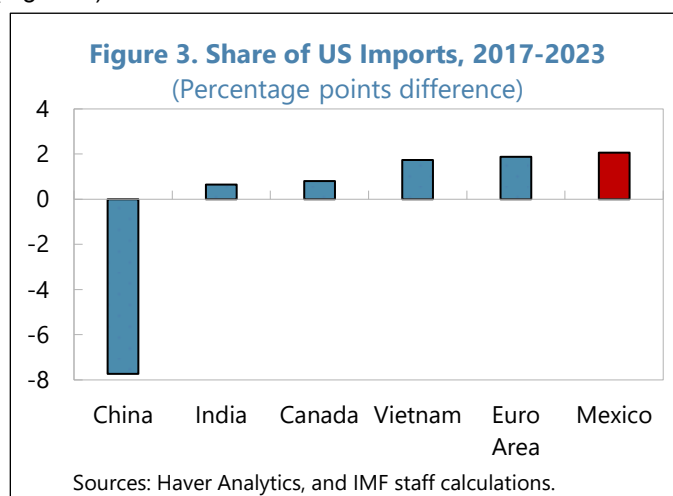
value chains increased their imports of inputs from China and other Asian countries, including Thailand, Vietnam, Japan, Korea, and Indonesia (Utar, Zurita, and Ruiz, 2023, Vidal and González Pandiella, 2024).



Our paper contributes to the literature by documenting how trade flows between the U.S., China, Mexico, and other important trading partners have evolved, focusing the period around 2017-2023. We rely on product-level trade data and exploit the variations in the 2018-19 U.S. tariffs on Chinese products to provide evidence that the U.S. has diversified its import base away from China in the aftermath of the tariffs and is importing more from other countries including Mexico and several other countries in Asia, Central America, and Europe. We also show that Mexico has increased its participation in the U.S. import market in specific sectors, notably transportation equipment and electronics, and we show that Mexico's imports from various trading partners have increased significantly, suggesting that firms in Mexico have intensified their participation in global supply chains. Importantly, we show that these trends gained dynamism with the introduction of U.S. tariffs on Chinese imports, and have accelerated after the pandemic and the intensification of the war in Ukraine, while Wang and Hannan (2023) provided early evidence of trade diversification in Mexico before the pandemic. In addition to the trade analysis, we explore shifts in FDI flows to Mexico and provide evidence that Mexico has become an increasingly attractive destination for FDI flows as it has gained share in the total pool of FDI directed to EMs, while the originating country shares remain mostly unchanged with a bulk of FDI arriving from the U.S. and other advanced economies. In addition, we provide evidence that the sectors affected by U.S. tariffs on imports from China have significantly benefitted from increased FDI flows, which much of that FDI coming from the U.S. itself. The evidence on FDI adds to the recent literature which speaks to the implications of the U.S. tariffs on FDI flows (Graziano et al., 2024) and broader geopolitical fragmentation (Aiyar et al., 2024).

## Trade Developments and Data

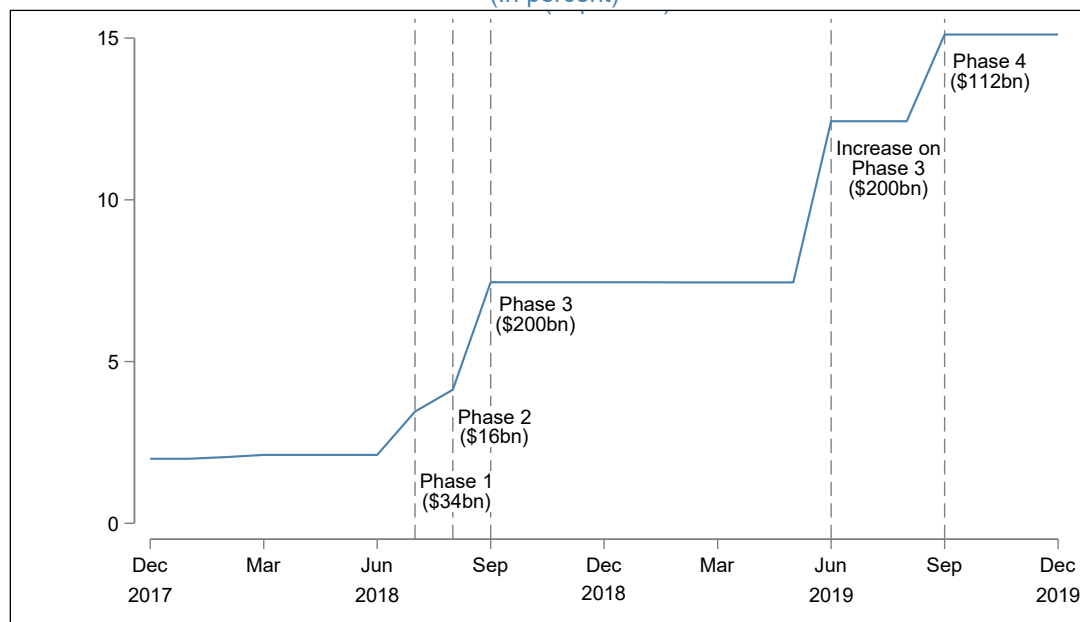
As discussed, the relocation of global supply chains has recently accelerated. Against the backdrop of the introduction of U.S. tariffs on Chinese products in 2018-19, the aftermath of the pandemic, and Russia's invasion of Ukraine, as well as rising costs of Chinese labor and higher trans-Pacific shipping costs have contributed to important relocation of supply chains across the globe. While U.S. imports from China have declined substantially since 2018, the share in U.S. imports from Mexico and other trading partners, including countries in Southeast Asia, have increased over the same period. Between 2017-2023, the share of imports from China in total U.S. imports declined by almost 8 percentage points, while other countries increased their penetration of the U.S. market, notably Mexico, the Euro Area, and Vietnam, with increases of around 2 percentage points each (Figure 3).<sup>1</sup>



These significant shifts in trade patterns reflect a strategic shift in firms' global supply chain allocation in response to the developments discussed above. With regards to trade policy, the U.S. imposed several waves of tariffs on Chinese imports between 2018 and 2019. First, in 2018, the U.S. introduced tariffs on imports from China amounting to about US\$50 billion. This was followed by additional tariffs on US\$200 billion worth of Chinese products in September 2018, initially set at 10 percent and later increased to 25 percent in January 2019. By the end of 2019, most goods traded between the U.S. and China were subject to tariffs (Figure 4), which have been mostly maintained as of end 2024.

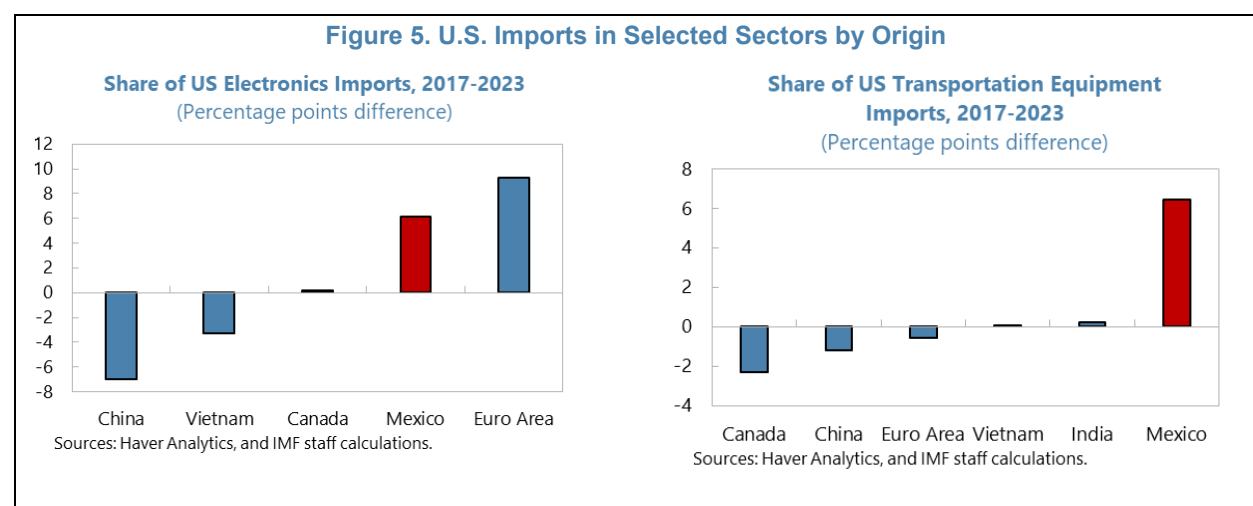
<sup>1</sup> Throughout the paper, we analyze trade flows across countries using product-level data, which does not directly reflect the activities of firms from each country.

**Figure 4. Average Tariff of the US on Imports from China**  
(In percent)



Manufacturing sectors where Mexico had already established a robust industrial sector with strong linkages to the U.S. market were the ones benefitting the most from the shifts in trade flows to the U.S. Notably, as imports from China faced tariffs from the U.S, Mexico's exports of electronics and semiconductors gained an important part of the U.S. market, with an increase of 6 percentage points in the share of U.S. imports in the sector (Figure 5). Other sectors also increased their market share in the U.S. market, for instance the transportation equipment industry, which includes automobile and trucks production, increased its exports to the U.S., with an increase in the sector's share in U.S. imports of 6.5 percentage points between 2017-2023.

**Figure 5. U.S. Imports in Selected Sectors by Origin**





## Trade: Empirical Strategy and Results

Given the background discussed earlier, this section formally estimates how the composition of the origin of U.S. imports has changed in response to the introduction of U.S. tariffs on imports from China, the pandemic, and the emergence of the conflict in Ukraine. This section also focuses on the shifts in Mexico's imports from several trading partners in the aftermath of the tariffs and other global developments that have affected international trade. Our empirical strategy consists of using monthly six-digit product level trade data from UNComtrade to estimate how U.S. tariffs on products from China have impacted U.S. imports from all trading partners, including China and Mexico. Particularly, building on Wang and Hannan (2023), we implement a difference-in-difference analysis with the following specification:

$$\ln(US\ imports)_{it} = \beta \Delta tariff_i \times 1(post\ Jul\ 2018)_t + \rho \ln(US\ imports)_{it-1} + \mu_i + \lambda_t + \varepsilon_{it}$$

where U.S. import values of product  $i$  at time  $t$  from each country are explained by the size of the changes in tariff for the product, lagged values of the U.S. imports, and the product and time fixed effects<sup>2</sup>. The coefficient of our interest is  $\beta$ , which represents the elasticity (percent response) of U.S. imports with respect to a one-percent tariff change.

### U.S. Import Partners are Increasingly Diversified

The difference-in-difference results show that Mexico and other U.S. partners have increased their exports to the U.S. by more in the products that were affected by the 2018-19 tariffs on Chinese products (Table 1).<sup>3</sup> According to a simple calculation based on the estimated elasticities,<sup>4</sup> in the case of Mexico, the initial impact is estimated to be of around US\$40 billion (Figure 6). However, the results suggest that Mexico's exports to the U.S. of products affected by the tariffs increased further in the aftermath of the Covid pandemic and especially following the eruption of the war in Ukraine. Indeed, the total estimated impact of about US\$70 billion on Mexico's exports to the U.S. accounts for around 45 percent of the total increase in Mexico's exports to the U.S. during 2017-2023. On the other hand, the tariffs are estimated to have reduced Chinese exports to the U.S. by close to US\$200 billion at the peak, while tariffs are estimated to have had a positive impact for exports from other countries, such as Canada (US\$30 billion) and Malaysia (US\$20 billion).

<sup>2</sup> The structure of the data favors a differences-in-differences product-level design rather than a firm-level model or a standard gravity model.

<sup>3</sup> Robustness checks, including a regression without lag and one with pooled sample, are provided in annex.

<sup>4</sup> The USD impact is calculated as:  $USD\ impact = \beta / (1 - \rho) \times \sum_i \Delta tariff_i \times 2017\ US\ imports$ , where  $\beta$  and  $\rho$  are obtained from the regression analysis.

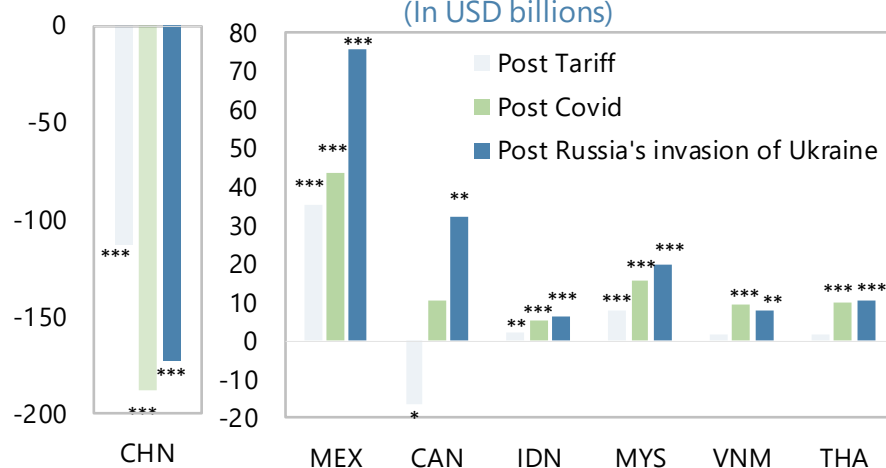
**Table 1. Estimated Impact of 2018-19 U.S. Tariffs on Exports to the U.S.**  
(In percent)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Variables/Country	CHN	MEX	CAN	GTM	HND	IDN	MYS	VNM	THA	AUT	POL
Tariff increase × Post Jul 2018	-1.285*** (0.076)	0.364*** (0.107)	0.084 (0.090)	1.108*** (0.326)	1.025*** (0.373)	0.749*** (0.195)	1.050*** (0.253)	0.415** (0.166)	0.642*** (0.154)	0.440** (0.183)	0.796*** (0.215)
lagged ln(US imports)	0.414*** (0.007)	0.539*** (0.009)	0.419*** (0.008)	0.402*** (0.019)	0.498*** (0.022)	0.442*** (0.012)	0.442*** (0.012)	0.528*** (0.010)	0.440*** (0.010)	0.284*** (0.010)	0.360*** (0.010)
N. of observations	328,669	234,849	289,195	26,249	19,389	88,706	80,701	116,075	122,143	96,719	98,681
R-squared	0.903	0.923	0.914	0.843	0.892	0.844	0.846	0.868	0.848	0.801	0.799
ID FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors (SEs) in parentheses. SEs are clustered by HS6-digit code. Sample period: 2016M1-2023M12.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 6. Estimated Impacts of US Tariff on Chinese Products**  
(In USD billions)

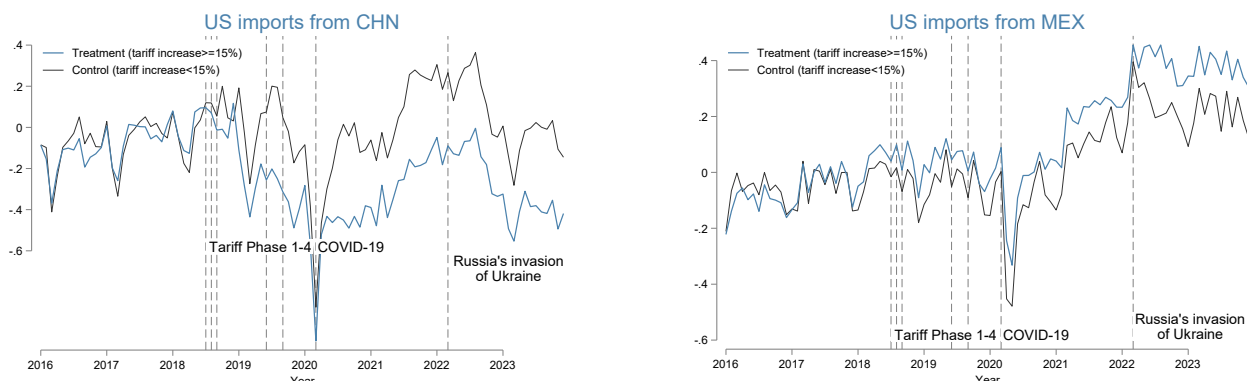


Source: IMF staff calculations.

Note: Stars mean significance as \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

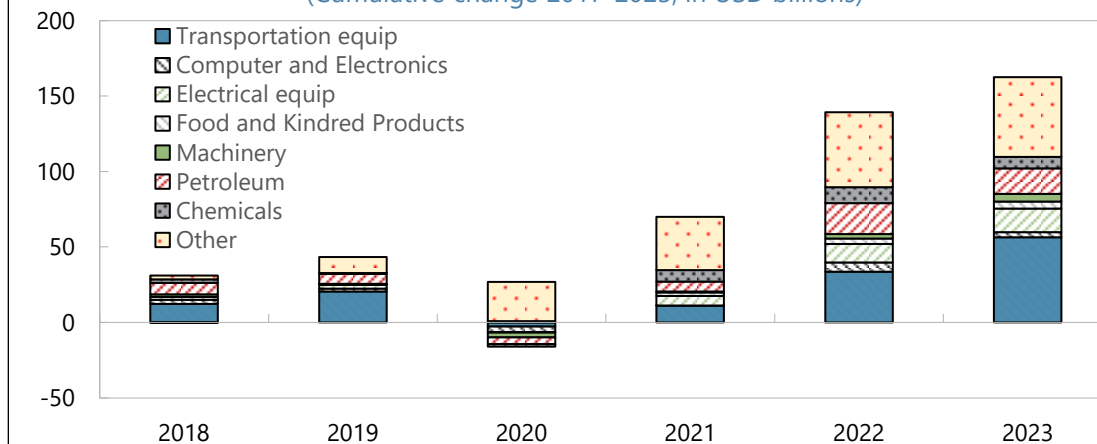
During 2018-19, a gap became apparent between the U.S. imports from China targeted by the tariffs (treated) and those not affected by the policy (Figure 7, Annex Figure A.12-14). Following the pandemic and since Russia's invasion of Ukraine, the difference between the imports affected by the tariffs and those not covered by the measure continued increasing. At the same time, the gap between Mexico's exports to the U.S. affected by the tariff and those not covered increased over time, suggesting that firms involved in global value chains adjusted to the emergence of a permanent shift in global trade dynamics.

**Figure 7. U.S. Imports from China and from Mexico**  
(Log-differences from 2017)



Mexican industries with already established networks with the U.S. and concentrated in sectors with growing demand from the U.S. have benefitted the most from the ongoing reconfiguration of global supply chains, with exports of manufactures representing most of the increase in Mexico's exports to the U.S. Between 2017-2023 Mexico's exports to the U.S. increased by US\$163 billion, with vehicles and cars representing about 30 percent of the total increase, followed by exports of computing and electronic products, accounting for about 15 percent of the rise in total exports (Figure 8).

**Figure 8. Mexico Exports to the US Flows**  
(Cumulative change 2017-2023, in USD billions)



Sources: Haver Analytics,, and IMF staff calculations.

## Mexico is Broadening its Participation in Global Value Chains

Following a similar empirical strategy as in the previous section, using monthly six-digit product level trade data from UNComtrade, we estimate how U.S. tariffs on China have impacted Mexico's imports from China, the U.S., and other trading partners. We estimate the following specification:

$$\ln(\text{Mexico imports})_{it} = \beta \Delta \text{tariff}_i \times 1(\text{post Jul 2018})_t + \rho \ln(\text{Mexico imports})_{it-1} + \mu_i + \lambda_t + \varepsilon_{it}$$

where U.S. imports of product  $i$  at time  $t$  from each country are explained by the size of the tariff for the sector, lagged values of Mexico's imports in the sector, and partner-country and time fixed effects.

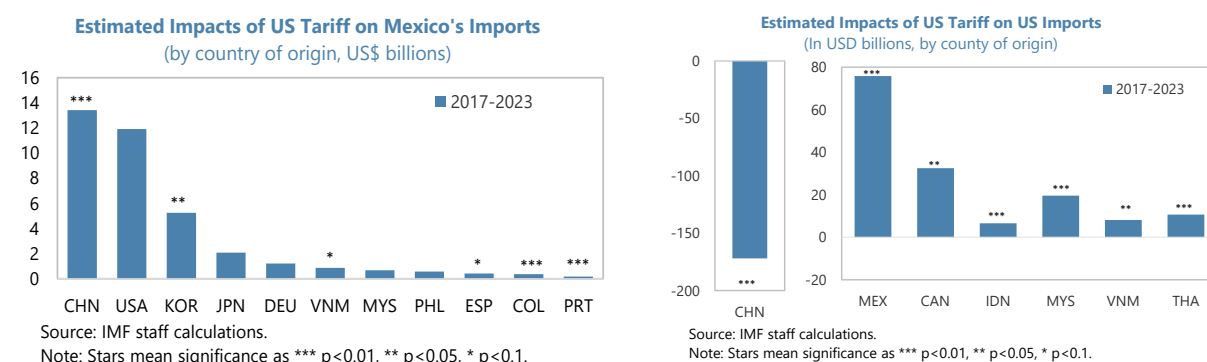
The results show that Mexico's imports of products affected by the 2018-19 U.S. tariffs on China have increased, although by significantly smaller amounts than the rise of Mexico's exports to the U.S., originating from various other EMs, including in Asia (Table 2). In particular, the econometric analysis indicates that the introduction of the U.S. tariffs on imports from China, followed by global events accelerating geoeconomic fragmentation such as the pandemic and the war in Ukraine, are associated with an increase of Mexico's imports from China by about US\$14 billion (Figure 9). Similarly, the results reveal that the changes in U.S. trade policies would be linked to an increase in Mexico's imports from Korea and Vietnam close to US\$6 billion and US\$1.5 billion, respectively.

**Table 2. Mexico: Estimated Impact of 2018 U.S. Tariffs on Mexico's Imports, by Country of Origin (In percent)**

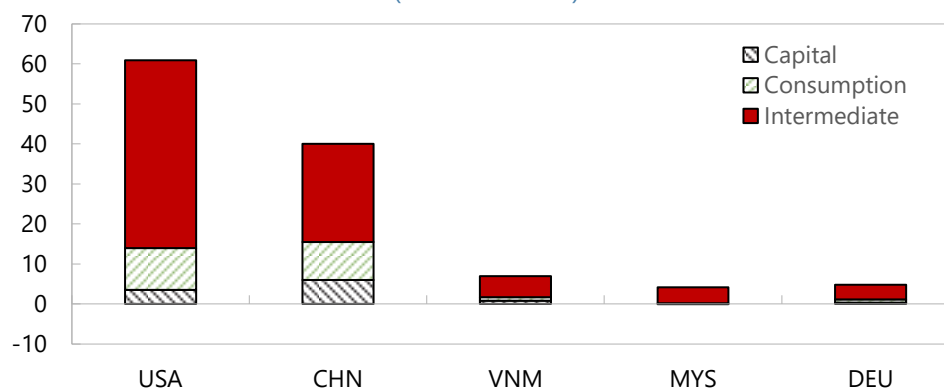
Variables/Country	Dependant variable: $\ln(\text{MEX imports})$																	
	(1) CHN	(2) USA	(3) BRA	(4) CHL	(5) COL	(6) PER	(7) IDN	(8) MYS	(9) PHL	(10) VNM	(11) THA	(12) JPN	(13) KOR	(14) DEU	(15) ESP	(16) POL	(17) PRT	(18) All
Tariff increase $\times$ Post Jul 2018	0.361*** (0.097)	0.104 (0.090)	-0.728* (0.376)	2.023** (0.913)	2.587*** (0.731)	-0.157 (1.587)	0.317 (0.443)	0.226 (0.400)	0.435 (0.568)	1.156*** (0.349)	0.242 (0.354)	0.183 (0.196)	0.438 (0.308)	0.315* (0.179)	0.498** (0.219)	-0.716 (0.876)	2.136*** (0.683)	-0.129* (0.066)
lagged $\ln(\text{MEX imports})$	0.363*** (0.009)	0.374*** (0.009)	0.292*** (0.016)	0.343*** (0.061)	0.228*** (0.030)	0.282*** (0.038)	0.341*** (0.021)	0.380*** (0.020)	0.445*** (0.027)	0.418*** (0.016)	0.413*** (0.021)	0.328*** (0.014)	0.379*** (0.016)	0.267*** (0.012)	0.230*** (0.012)	0.420*** (0.031)	0.403*** (0.024)	0.333*** (0.008)
N. of observations	187,982	239,398	31,836	2,312	8,928	2,251	23,541	23,947	13,056	31,568	30,812	79,315	58,793	101,391	67,090	20,608	11,971	280,247
R-squared	0.883	0.929	0.822	0.901	0.814	0.857	0.812	0.867	0.886	0.855	0.839	0.893	0.870	0.851	0.772	0.790	0.770	0.918
ID FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors (SEs) in parentheses. SEs are clustered by HS6-digit code. Sample period: 2016M1-2023M12.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

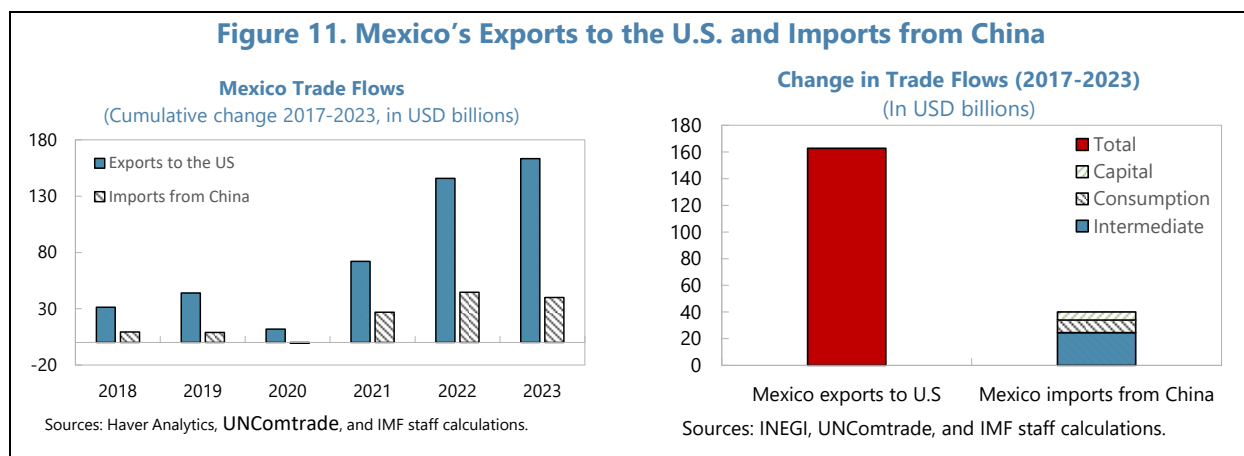
**Figure 9. Estimated Impact of U.S. Tariffs on China for Selected Countries, by Origin**

A disaggregated analysis of recent trends in the composition of Mexico's imports by categories and origin reveals important shifts that are in line with global dynamics. In particular, the recent rise in Mexico's imports from a broad base of trading partners, with a high concentration in intermediate goods, may suggest that Mexico is deepening its participation in global value chains. Importantly, Mexico's imports of intermediate goods from the U.S. have increased the most than from any other country between 2017-2023, a testament of the two countries accelerated trade integration (Figure 10).<sup>5</sup> Besides the U.S., the trading partners explaining most of the increase in Mexico's imports are China, Vietnam, Malaysia, and Germany. Critically, in all cases most of the increase in imports corresponds to intermediate goods feeding into supply chains of production. These results are consistent with the literature that finds that net exports of Mexican firms integrated into global value chains increased after the introduction of the U.S. tariffs on imports from China in 2018 (Utar and others, 2023), and that U.S. import growth from countries other than China after 2018 was higher on products with higher trade integration with China in 2017 (Freund and others, 2024; Fajgelbaum and others, 2024; and Alfaro and Chor, 2023).

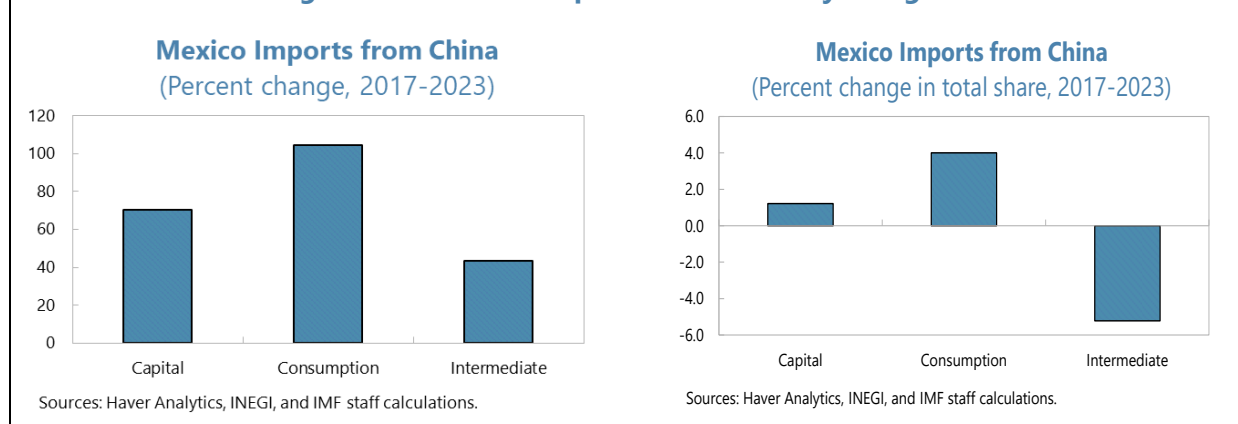
**Figure 10. Mexico: Imports Change in Trade Flows (2017-2023)**  
(In USD billions)

<sup>5</sup> Though the impact on Mexico's imports from the U.S. is not statistically significant in Table 2, Annex Table A.5 indicates that the increase in imports of intermediate goods from the U.S. is statistically significant.

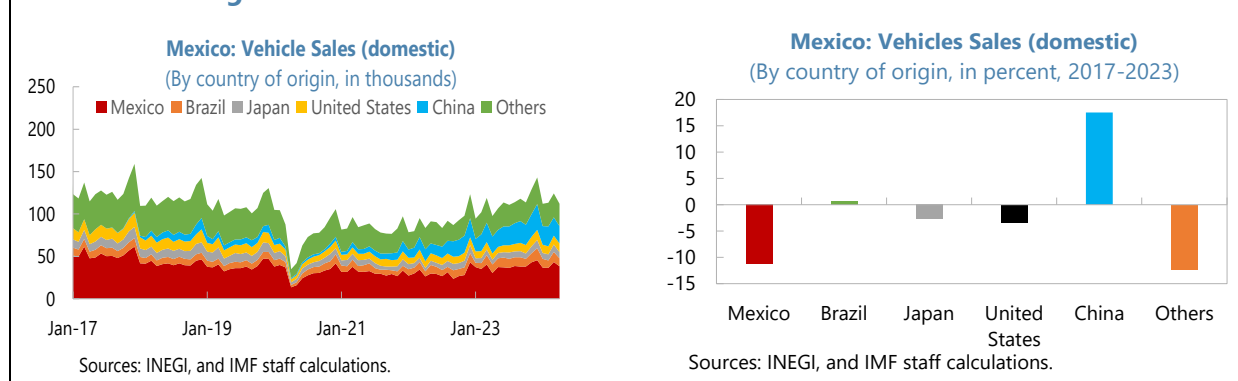
A deeper analysis of Mexico's bilateral trade flows with China shows that Mexico's exports to the U.S. have increased by a higher order of magnitude than Mexico's imports from China, suggesting that final products exported from Mexico to the U.S. contain significant valued added from Mexico and other trading partners. While Mexico's exports to the U.S. increased by more than US\$160 billion between 2017-2023, Mexico's imports from China increased by only US\$40 billion (Figure 11). In addition, a decomposition of the increase in Mexico's imports from China shows that the lion share of the rise in the value of Mexico's imports from China is explained by intermediate goods (about US\$25 billion), consistent with increased needs for inputs in the production of manufacturing of exports to the U.S.



Although as discussed, most of the increase in Mexico's imports in terms of value corresponds to intermediate goods, there has also been a shift in the share of imports for domestic consumption and capital goods. Indeed, Mexico's imports from China are now less concentrated on intermediate goods as imports of consumption and capital investment are growing at a faster pace. While imports of intermediate goods have increased by close to 40 percent between 2017-2023, imports of consumption and investment goods increased by about 100 percent and 70 percent, respectively, during the same period. As a result, Mexico's imports of final goods (consumption and capital) from China have increased as a share of total imports (by about close to 6 percentage points), reflecting changes in Mexican households' consumption patterns and increased imports of machinery to increase productive capacity (Figure 12). A regression analysis across goods types confirms that each of intermediate, consumption, and capital goods imports from China increased responding to the U.S. tariffs in a statistically significant manner (Annex Table A.5).

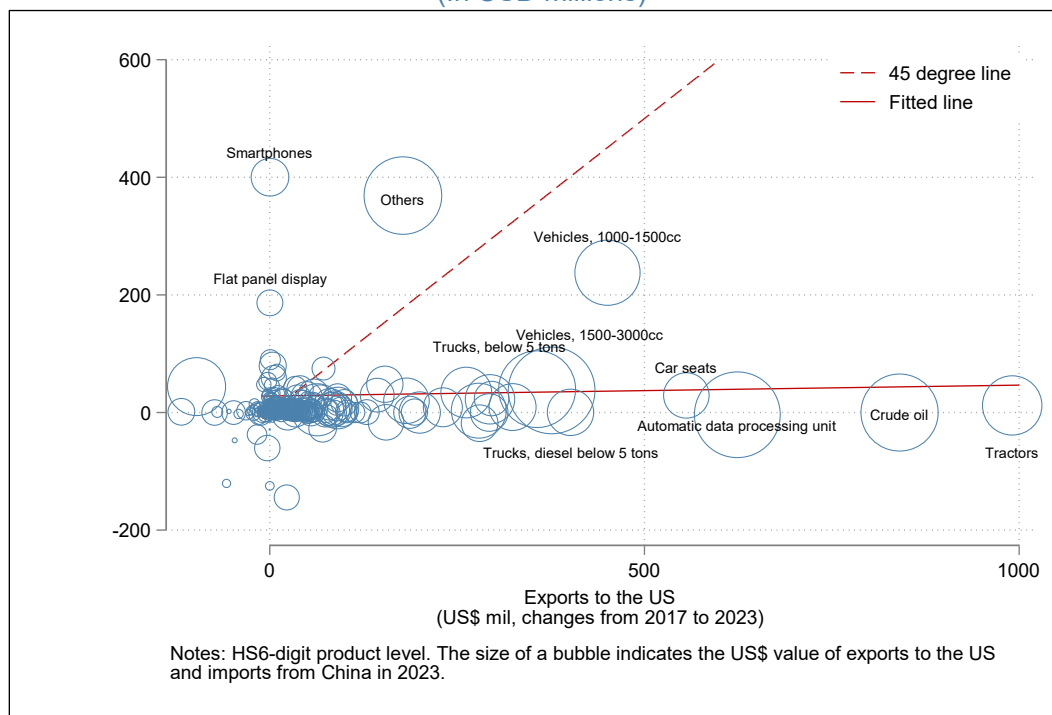
**Figure 12. Mexico's Imports from China by Categories**

In fact, a detailed analysis of the composition of imports at the product level shows large increases over 2017-2023 in Mexico's imports of consumption goods from China, including cars and smartphones. These trends are confirmed by data on sales of domestic vehicles in Mexico, which reveal that sales of Chinese vehicles have gained an important share in the Mexican market, particularly by gaining market share from domestically produced vehicles (Figure 13).

**Figure 13. Sales of Chinese Vehicles in Mexico's Domestic Market**

Noteworthy, a six-digit product level analysis highlights that there is no systematic relationship between imports from China that gained market share in Mexico and Mexican exports that have seen an increase in total U.S. import market. In fact, the analysis identifies that the products for which Mexico's imports from China have increased the most (e.g. home electronics, small vehicles, smartphones) are different than the products for which Mexico's exports to the U.S. have seen the largest increases (trucks, large cars, semiconductors) (Figure 14). Similar patterns are observed in each goods type (Annex Figure A7). Among products that indicate positive correlation of imports from China and exports to the U.S., small vehicle (1000-1500 cc) imports from China appear to be associated with domestic consumption as is shown in Figure 14, whereas "others" collect a variety of products not classified in other categories.

**Figure 14. Mexican Imports from China and Exports to the US**  
(In USD millions)

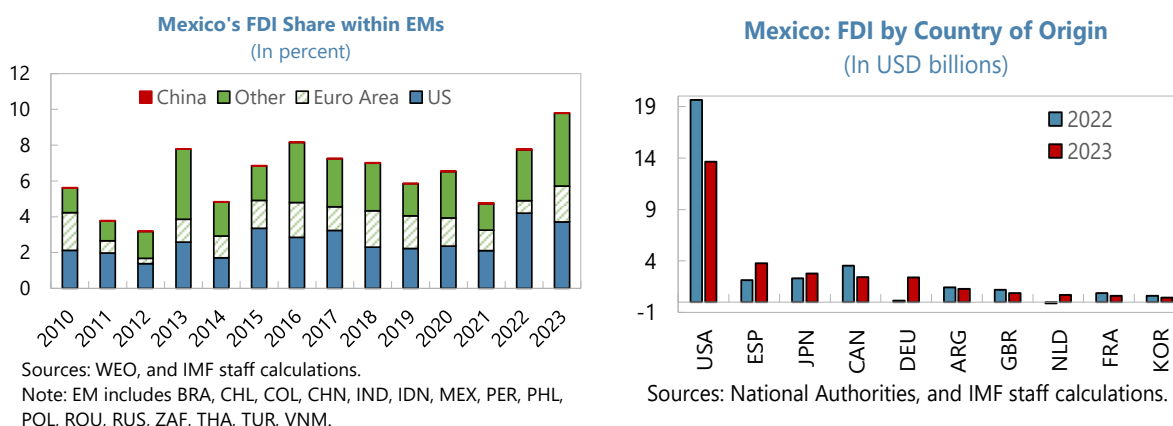


## Foreign Direct Investment Dynamics

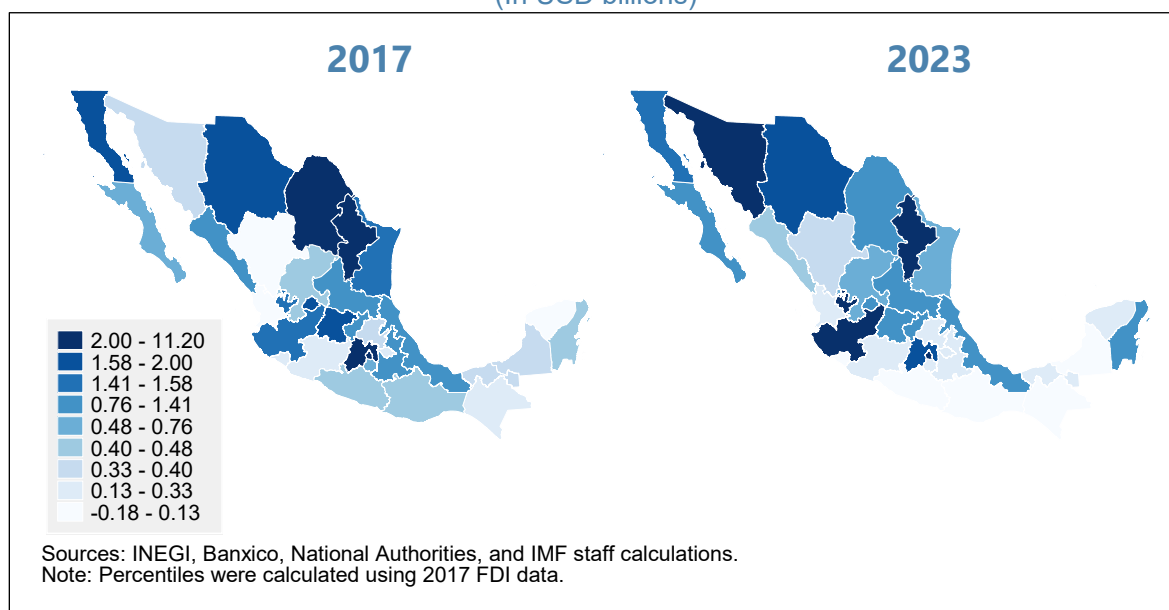
Going beyond the analysis of trade flows, this section documents recent dynamics in FDI flows to Mexico. We find that increased trade flows between the U.S. and Mexico have been accompanied by robust FDI flows from the U.S. to Mexico. Furthermore, increased export penetration by Mexico's exports in the U.S. market has been accompanied by a rise in Mexico's share in global FDI to EMs, rising from 6 percent on average in the 2010s to close to 10 percent in 2023, suggesting augmented interest from firms to invest in Mexico to supply the U.S. market (Figure 15). In fact, most of the growth in the concentration of global FDI to Mexico among EMs has been led by investment flows from the U.S. and the Euro Area. While Mexico is increasingly attracting interest from investors across the globe, as shown by elevated amounts of FDI announcements, FDI has continued to come predominantly from the U.S. (around 40 percent of total), the Euro Area (20 percent of total) and other advanced economies, including Japan, Canada, the UK, and Korea. Notably, despite large investments having been announced and an observed increase in recent years, FDI flows from China to Mexico have remained low, representing less than 2 percent of total FDI to Mexico and less than 0.02 percent of Mexico's GDP.<sup>6</sup>

<sup>6</sup> Official statistics are reported by Mexico's Ministry of the Economy. The data corresponds to the country of origin for "immediate" FDI, which refers to FDI flows sent from immediate shareholders to their host destinations, and may differ from the origin of a parent company if, for example, the investment comes through intermediaries present in other countries.

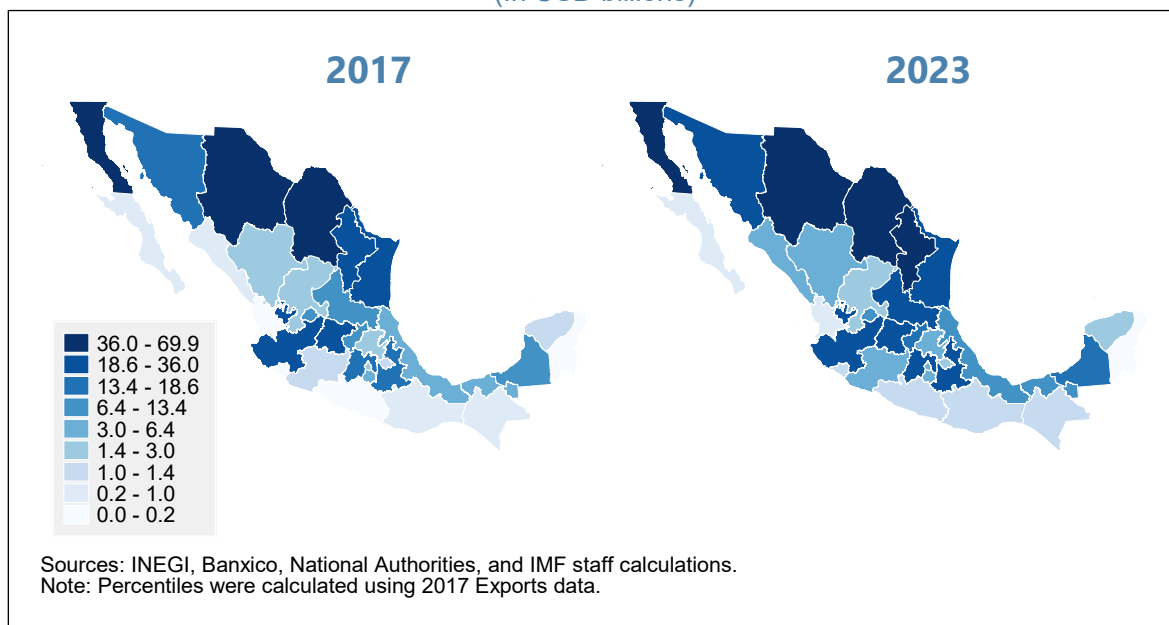


**Figure 15. FDI Flows to Mexico by Origin**

FDI to Mexico remains highly concentrated in terms of its regional and sectoral destination. FDI inflows to Mexico are mostly clustered in the northern states, where proximity to the U.S. facilitates the transportation of inputs and final products between the two countries. Indeed, most FDI over the past decade, and the acceleration in foreign investment in recent years, has been mainly directed to Sonora, Nuevo Leon, Jalisco, and Chihuahua, in addition to Mexico City. Furthermore, the sectors benefitting the most from FDI are those involved in the production of exports to the U.S., such as manufacturing (particularly vehicles and electronics industries), finance, and real estate (Figures 16-17 and Annex Figure A.8-9).

**Figure 16. Mexico. FDI by State**  
(In USD billions)

**Figure 17. Mexico. Exports by State**  
(In USD billions)



## FDI: Empirical Strategy and Results

As discussed, Mexico's favorable location and access to the U.S. market, including because of the existence of manufacturing networks and the long-standing trade relationship, has favored a tighter integration through trade flows between the two countries. Furthermore, higher FDI flows to Mexico have accompanied this trade integration as there are increased needs to expand production capacity to serve the U.S. market. This section follows a similar approach to the one presented in the trade discussion to formally estimate the impact of the imposition of U.S. tariffs on imports from China on FDI flows to Mexico, using industry-level FDI data provided by the Ministry of Economy in Mexico. However, one notable difference from earlier sections is that FDI data covers non-tradable sectors, which enables us to examine spillovers to these sectors through input-output linkage. In doing so, we follow Wang and Hannan (2023) by defining "upstream" tariff imposed on upstream industries that provide inputs to own industry, and "downstream" tariff imposed on downstream industries that use output of own sector, in addition to "output" tariff that is imposed on own industry. Non-tradable sectors, which are not affected by output tariffs by definition, can be exposed to tariff changes indirectly through upstream and downstream tariffs. To map the industry-level FDI with tariffs, we first match the National Institute of Statistics and Geography (INEGI) industrial classification (which FDI data follows) with NAICS 4-digit code, and then map the NAICS code to HS 6-digit code (which tariff data is based on) using the list provided by Pierce and Schott (2009).

We implement a difference-in-difference analysis using four-digit industry level FDI data and estimate the following specification:

$$\begin{aligned} \ln(FDI)_{ist} = & \beta_1 \Delta OutputTariff_i \times 1(post Jul 2018)_t \\ & + \beta_2 \Delta UpstreamTariff_i \times 1(post Jul 2018)_t \\ & + \beta_3 \Delta DownstreamTariff_i \times 1(post Jul 2018)_t + \rho \ln(FDI)_{ist-1} + \mu_i + \theta_s + \lambda_t + \varepsilon_{ist} \end{aligned}$$

where FDI flows to Mexico's in industry  $i$ , in state  $s$ , at time  $t$  are explained by the change in the tariff for the industry, lagged values of the FDI to the sector, and sector, state, and time fixed effects.

The results show that FDI directed to Mexico increased more in industries that were affected by the 2018-19 U.S. tariffs on Chinese products, supporting the hypothesis that higher investment flows have been directed to expand production capacity in Mexico to supply the U.S. market (Table 3). The statistically significant impact of downstream tariffs after controlling for output tariffs in column (4) implies indirect effects of tariff changes, including to non-tradable sectors, though input-output linkage, as industries can benefit from greater input demand from downstream industries expanding exports due to tariff changes. The downstream tariffs' impacts are statistically significant for both manufacturing and non-manufacturing sectors, while the magnitude is estimated to be larger for the former (Table 4). Upstream tariffs, on the other hand, have insignificant impact in several specifications, possibly suggesting that upstream sectors that benefit from tariff imposition may prioritize exports and their products can become less available in the domestic market, as discussed by Wang and Hannan (2023). In addition, an analysis distinguishing north vs south states suggest that, since 2017, FDI directed to the northern states increased more than to those located in the south, which are precisely the states with the highest concentration of firms exporting to the U.S. market (Annex Figure A.16).

**Table 3. Mexico: Estimated Impact of 2018 U.S. Tariffs on FDI to Mexico by Industry of Destination**  
(In percent)

Variables	Dependant variable: $\ln(\text{FDI})$			
	Baseline			
	(1)	(2)	(3)	(4)
Post Jul 2018 × Output Tariff	0.876*** (0.130)			0.831*** (0.133)
Post Jul 2018 × Upstream Tariff		1.160*** (0.393)		-0.349 (0.419)
Post Jul 2018 × Downstream Tariff			0.998*** (0.182)	0.664*** (0.170)
Lagged $\ln(\text{FDI})$	0.822*** (0.015)	0.824*** (0.015)	0.823*** (0.015)	0.822*** (0.015)
N. of observations	50,126	50,126	50,126	50,126
R-squared	0.953	0.953	0.953	0.953
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Notes: The construction of tariff rates follows Wang and Hannan (2023). "Output tariff" is the change in the U.S. tariff on Chinese products in own industries. "Upstream tariff" is that imposed on upstream industries that provide inputs to own industries through input linkages, whereas "downstream tariff" captures the tariffs on downstream industries that use outputs of own sectors. Input and output linkages are calculated using the input-output table of the Mexican economy from INEGI. Unit of observations is state by INEGI 4-digit industry at a quarterly frequency. Sample period: 2016Q1-2023Q4. Clustered standard errors (SEs) by state in parenthesis. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 4. Mexico: Estimated Impact of 2018 U.S. Tariffs on FDI to Mexico by Industry of Destination: Manufacturing and Non-manufacturing Sectors**  
(In percent)

VARIABLES	DEPENDENT VARIABLE: $\ln(\text{FDI})$			
	(1)	(2)	(3)	(4)
Manufacturing × Post Jul 2018 × Output Tariff	0.269** (0.109)			0.485** (0.188)
Non-manufacturing × Post Jul 2018 × Output Tariff	---			---
Manufacturing × Post Jul 2018 × Upstream Tariff		0.931** (0.447)		-0.476 (0.492)
Non-manufacturing × Post Jul 2018 × Upstream Tariff		0.885 (2.376)		5.592 (3.524)
Manufacturing × Post Jul 2018 × Downstream Tariff			0.951*** (0.254)	1.195*** (0.393)
Non-manufacturing × Post Jul 2018 × Downstream Tariff			0.619** (0.287)	0.570** (0.242)
Manufacturing × lagged $\ln(\text{FDI})$	0.877*** (0.017)	0.879*** (0.017)	0.879*** (0.017)	0.879*** (0.017)
Non-manufacturing × lagged $\ln(\text{FDI})$	0.759*** (0.021)	0.757*** (0.022)	0.757*** (0.022)	0.757*** (0.022)
N. of observations	45,678	45,678	45,678	45,678
R-squared	0.953	0.953	0.953	0.953
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Notes: Standard errors (SEs) in parentheses. SEs are clustered by state. Sample period: 2016Q1–2023Q4.

Agriculture is excluded from the sample.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## Conclusions and Policy Implications

In the context of increased trade tensions around the world, Mexico could take advantage of opportunities arising from a deeper integration to the North American market and the ongoing reshaping of global value chains. Indeed, Mexico benefits from a developed manufacturing system, availability of human capital, cost competitiveness, and proximity to the U.S. market. Overall, the findings presented in this paper suggest that a range of factors, including various trade measures and strategic shifts in the allocation of transnational supply chains in the aftermath of the pandemic and the intensification of the war in Ukraine, have allowed Mexico to expand its participation in global value chains, particularly for goods destined to the U.S.

As part of this extended role in supply chains, Mexico has also increased its imports of inputs from a broad range of countries and products, with the Mexican industry generating significant domestic value added. As Mexico has benefited from strong demand from the U.S., FDI into Mexico has been instrumental in supporting the development of Mexico's productive capacity, with much of that FDI coming from the U.S. itself. As the dynamics of global value chains may present some inherent uncertainty, fully taking advantage of these favorable trends requires a wide-ranging set of supply-side reforms. As outlined in the [2024 Mexico Article IV](#)

[Consultation Staff Report](#), the priorities entail improving the environment for private investment and business development, including opening markets to private sector participation, introducing regulatory reforms, and broadening access to financial services. These initiatives should be supported by better-targeted public investment that further relieves infrastructure bottleneck, notably in energy, transport, and water. In addition, maintaining open trade policies will continue to underpin business investment and bolster Mexico's international competitiveness.

# Annex I.

**Table A.1. US. Imports Summary Statistics**  
(In USD billions)

Country	2017			2023		
	Annual Sum	Mean	Obs.	Annual Sum	Mean	Obs.
All	2,220.3	0.037	59,970	2,872.4	0.046	62,208
All Excluding China	1,694.3	0.028	59,970	2,424.4	0.039	62,208
China	526.0	0.011	46,019	448.0	0.010	46,026
Mexico	317.2	0.010	32,723	480.1	0.014	35,467
Brasil	30.6	0.002	16,526	41.0	0.002	18,681
Chile	11.3	0.002	4,722	16.6	0.003	4,944
Colombia	14.1	0.002	8,380	17.0	0.002	10,249
Peru	7.6	0.001	6,479	9.3	0.001	7,150
Canada	305.9	0.008	40,402	429.6	0.010	42,660
Dominican Republic	4.9	0.001	6,559	7.3	0.001	7,298
Jamaica	0.3	0.000	1,059	0.4	0.000	1,108
Costa Rica	4.8	0.001	5,047	10.8	0.002	5,223
Guatemala	4.4	0.001	4,489	5.3	0.001	4,831
El Salvador	2.5	0.001	3,611	2.6	0.001	3,941
Panama	0.5	0.000	1,564	0.6	0.000	1,664
Honduras	4.8	0.002	3,192	5.8	0.002	3,563
Uruguay	0.6	0.001	1,161	0.9	0.001	1,351
Indonesia	21.2	0.002	13,534	28.1	0.002	14,464
Malaysia	38.1	0.003	12,357	47.3	0.003	13,894
Philippines	12.0	0.001	10,253	13.7	0.001	10,543
Vietnam	48.4	0.003	15,429	118.9	0.006	20,920
Thailand	32.3	0.002	18,414	58.7	0.003	19,892
Japan	139.8	0.004	33,632	151.6	0.005	33,129
South Korea	73.4	0.003	26,251	119.7	0.004	27,402
Singapore	19.6	0.002	8,945	40.7	0.005	8,960
Germany	120.0	0.003	37,628	163.0	0.004	38,001
Ireland	49.0	0.006	8,230	82.7	0.009	8,916
Italy	51.4	0.002	33,744	75.2	0.002	35,117
United Kingdom	54.0	0.002	32,592	64.8	0.002	32,707
Netherlands	18.4	0.001	21,215	39.3	0.002	22,293
Portugal	3.7	0.000	10,518	6.8	0.001	12,224
Eswatini	0.0	0.000	273	0.0	0.000	246
Austria	12.0	0.001	15,547	19.5	0.001	16,679
Poland	7.3	0.000	15,208	13.6	0.001	18,123
Tunisia	0.5	0.000	3,155	0.9	0.000	4,189
Myanmar	1.3	0.000	4,026	1.8	0.000	4,766

Sources: UNComtrade, and author's calculation.

Note: UNComtrade data at montly and HS6-digit code level.

**Table A.2. Mexico. Imports Summary Statistics**  
(In USD billions)

Country	2017			2023		
	Annual Sum	Mean	Obs.	Annual Sum	Mean	Obs.
All	399.2	0.010	39858	564.2	0.0140	40187
United States	194.9	0.006	34871	255.9	0.0075	34087
China	74.1	0.003	26478	114.2	0.0039	29196
Portugal	0.5	0.000	2184	0.7	0.0003	2195
Poland	0.8	0.000	3149	3.7	0.0010	3630
Spain	5.0	0.000	11461	6.3	0.0006	10662
Germany	16.4	0.001	15788	21.2	0.0014	14725
South Korea	15.7	0.002	9235	19.5	0.0022	8819
Japan	18.2	0.001	12410	20.6	0.0018	11519
Thailand	5.9	0.001	4969	8.8	0.0016	5313
Vietnam	4.6	0.001	4228	11.6	0.0018	6440
Philippines	2.4	0.001	2197	3.4	0.0015	2209
Malaysia	7.9	0.002	3775	12.0	0.0030	4062
Indonesia	1.5	0.000	3825	2.8	0.0007	3937
Peru	0.5	0.001	541	1.4	0.0019	711
Colombia	1.7	0.001	1694	2.2	0.0011	1953
Chile	1.5	0.002	609	2.0	0.0040	511
Brazil	5.4	0.001	5427	13.4	0.0024	5587

Sources: UNComtrade, and author's calculation.

Note: UNComtrade data at montly and HS6-digit code level.

**Table A.3. Estimated Impact of 2018-19 U.S. Tariffs on Exports to the U.S.: no lag**  
(In percent)

VARIABLES / COUNTRY	(1) MEX	(2) CAN	(3) GTM	(4) HND	(5) IDN	(6) MYS	(7) VNM	(8) THA	(9) AUT	(10) POL
Tariff increase × Post Jul 2018	0.884*** (0.222)	0.168 (0.148)	1.534*** (0.470)	1.486** (0.623)	1.089*** (0.328)	1.682*** (0.424)	0.662** (0.336)	1.126*** (0.259)	0.655*** (0.242)	1.196*** (0.304)
N. of observations	257,951	316,410	32,748	23,834	104,092	97,325	133,143	142,833	119,806	121,324
R-squared	0.888	0.894	0.810	0.852	0.803	0.802	0.813	0.806	0.780	0.763
ID FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors (SEs) in parentheses. SEs are clustered by HS6-digit code. Sample period: 2016M1-2023M12.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: Econometric specification:

$$\ln(US\ imports)_{it} = \beta \Delta tariff_i \times 1(post\ Jul\ 2018)_t + \mu_i + \lambda_t + \varepsilon_{it}$$

where U.S. import values of product i at time t are explained by the size of the changes in tariff for the product, and product and time fixed effects.

**Table A.4. Estimated Impact of 2018-19 U.S. Tariffs on Exports to the U.S.: pooled sample**  
(In percent)

VARIABLES / COUNTRY	Dependant variable: $\ln(\text{US imports})$										(11) Common coeff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
	MEX	CAN	GTM	HND	IDN	MYS	VNM	THA	AUT	POL	
Tariff increase × Post Jul 2018	0.311*** (0.068)	0.047 (0.062)	0.213* (0.127)	-0.012 (0.154)	0.398*** (0.091)	0.605*** (0.094)	1.712*** (0.101)	0.611*** (0.084)	0.223*** (0.075)	0.674*** (0.085)	0.366*** (0.060)
lagged $\ln(\text{US imports})$					0.442*** (0.004)						0.446*** (0.004)
N. of observations					1,172,707						1,172,707
R-squared					0.885						0.885
Country-by-Product FE					Yes						Yes
Time FE					Yes						Yes

Note: Standard errors (SEs) in parentheses. SEs are clustered by HS6-digit code. Sample period: 2016M1-2023M12.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The following regression is run on the pooled sample of countries listed in the table:

$$\ln(\text{US imports})_{ict} = \beta \Delta \text{tariff}_i \times 1(\text{post Jul 2018})_t + \rho \ln(\text{US imports})_{ict-1} + \mu_{ic} + \lambda_t + \varepsilon_{it}$$

where U.S. import values of product i from country c at time t are explained by the size of the changes in tariff for the product, lagged values of the U.S. imports, and the product-by-country and time fixed effects.

**Table A.5. Estimated Impact of 2018 U.S. Tariffs on Mexico's Imports, by Country of Origin: by Type of Goods**  
(In percent)

VARIABLES / COUNTRY	DEPENDENT VARIABLE: $\ln(\text{MEX imports})$																
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	CHN	USA	BRA	CHL	COL	PER	IDN	MYS	PHL	VNM	THA	JPN	KOR	DEU	ESP	POL	PRT
Tariff increase × Post Jul 2018																	
× Intermediate goods	0.335*** (0.113)	0.185* (0.095)	-0.343 (0.425)	2.258* (1.155)	2.008*** (0.745)	-0.202 (1.794)	0.708 (0.526)	0.365 (0.512)	0.903 (0.843)	0.529 (0.521)	0.276 (0.415)	0.448** (0.190)	0.459 (0.316)	0.369** (0.177)	0.557** (0.238)	0.327 (1.045)	2.999*** (0.676)
× Consumption goods	0.316*** (0.114)	-0.085 (0.113)	-0.633 (0.393)	3.430*** (1.499)	2.693*** (0.778)	0.373 (2.012)	0.143 (0.658)	0.474 (0.447)	-0.194 (0.733)	0.868** (0.416)	-0.136 (0.435)	0.270 (0.229)	0.581 (0.362)	0.220 (0.202)	0.643*** (0.246)	-0.711 (0.735)	2.084*** (0.755)
× Capital goods	0.491*** (0.105)	-0.067 (0.104)	-0.576 (0.382)	0.656 (1.344)	3.081*** (0.850)	0.292 (1.800)	0.123 (0.460)	0.216 (0.405)	0.371 (0.584)	1.375*** (0.365)	0.214 (0.363)	0.105 (0.215)	0.588* (0.337)	0.045 (0.190)	0.473* (0.247)	0.082 (0.716)	1.891*** (0.711)
lagged $\ln(\text{MEX imports})$	0.363*** (0.009)	0.362*** (0.010)	0.293*** (0.017)	0.277*** (0.056)	0.227*** (0.030)	0.258*** (0.037)	0.352*** (0.021)	0.385*** (0.020)	0.442*** (0.027)	0.416*** (0.016)	0.419*** (0.021)	0.331*** (0.015)	0.378*** (0.016)	0.264*** (0.012)	0.229*** (0.012)	0.394*** (0.022)	0.404*** (0.024)
N. of observations	183,451	225,710	31,281	1,752	8,793	1,980	22,817	23,625	12,752	30,867	29,973	77,958	57,785	99,755	65,797	20,241	11,900
R-squared	0.882	0.930	0.822	0.910	0.813	0.839	0.811	0.868	0.885	0.855	0.840	0.894	0.870	0.852	0.770	0.787	0.768
ID FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors (SEs) in parentheses. SEs are clustered by HS6-digit code. Sample period: 2016M1-2023M12.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The regression in Table 2 is augmented by allowing for different coefficients across goods type. Raw materials are excluded due to small sample.



Figure A.1. US. Exports and Imports by Country

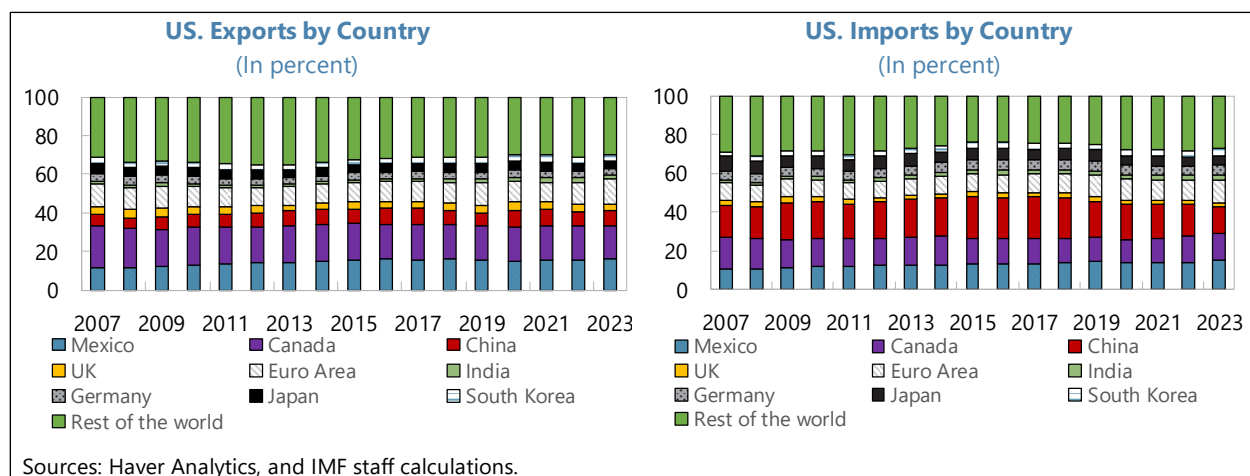
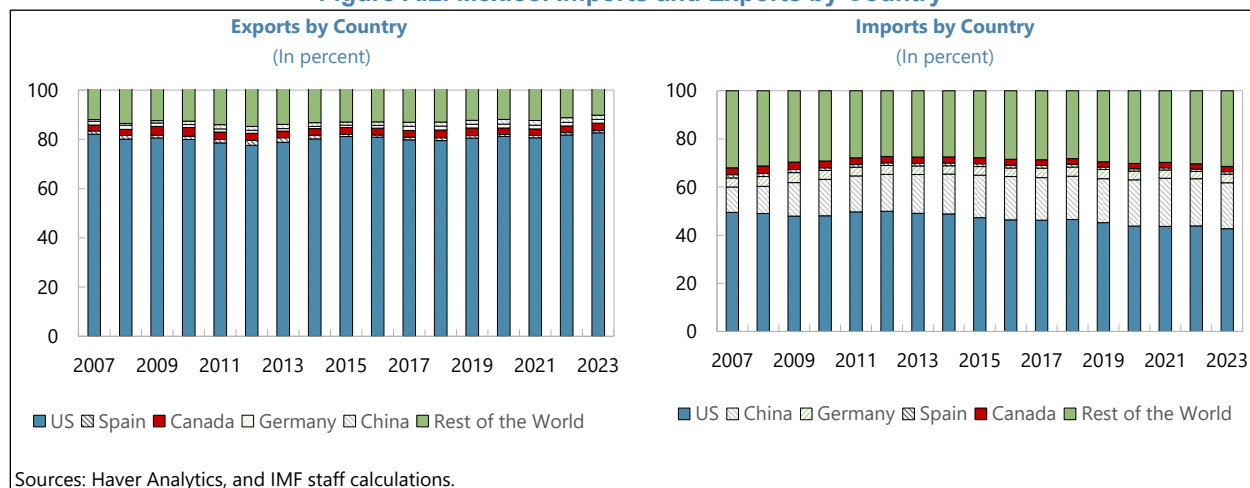
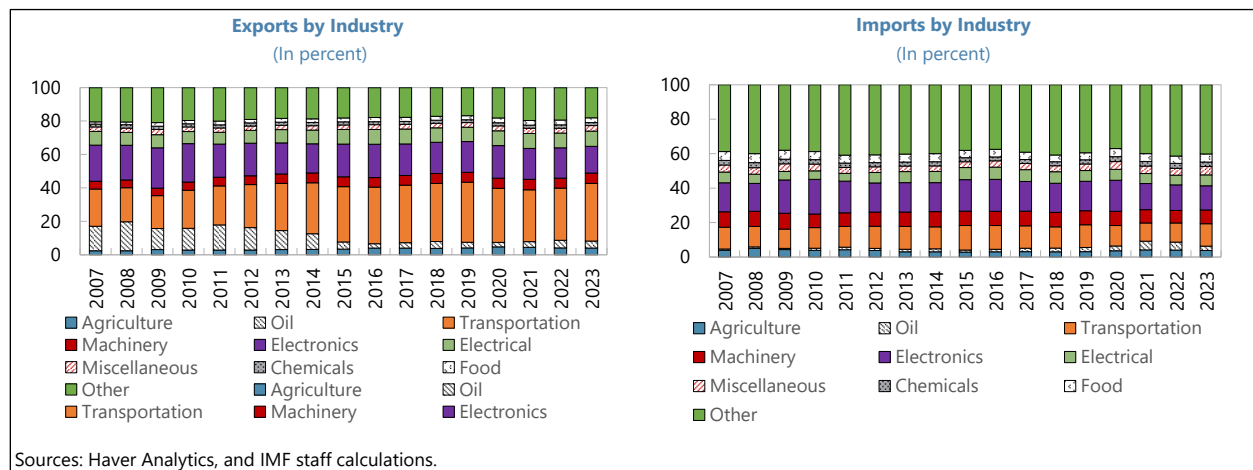
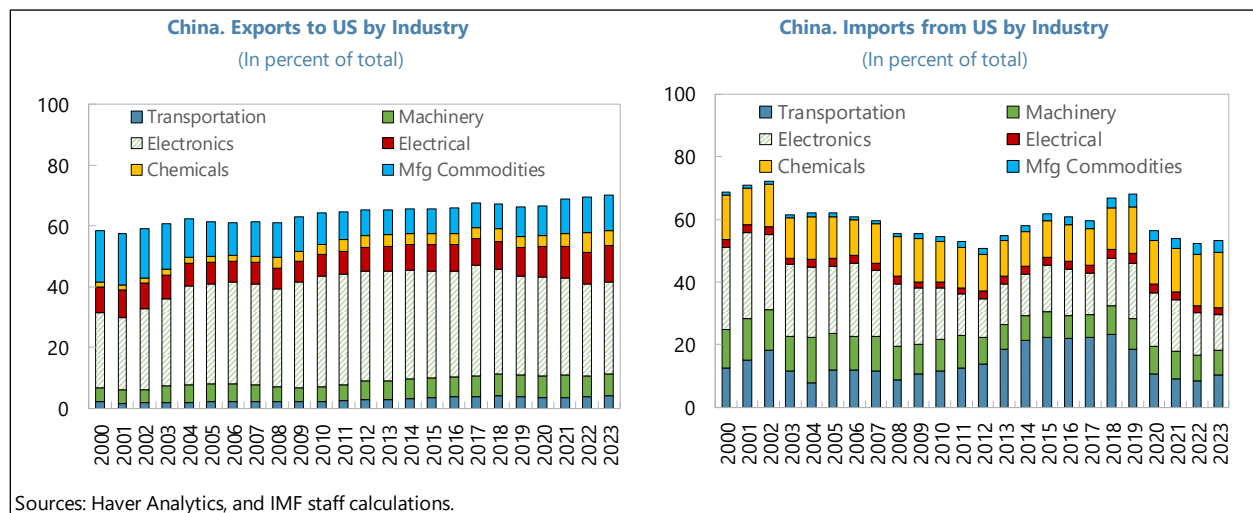
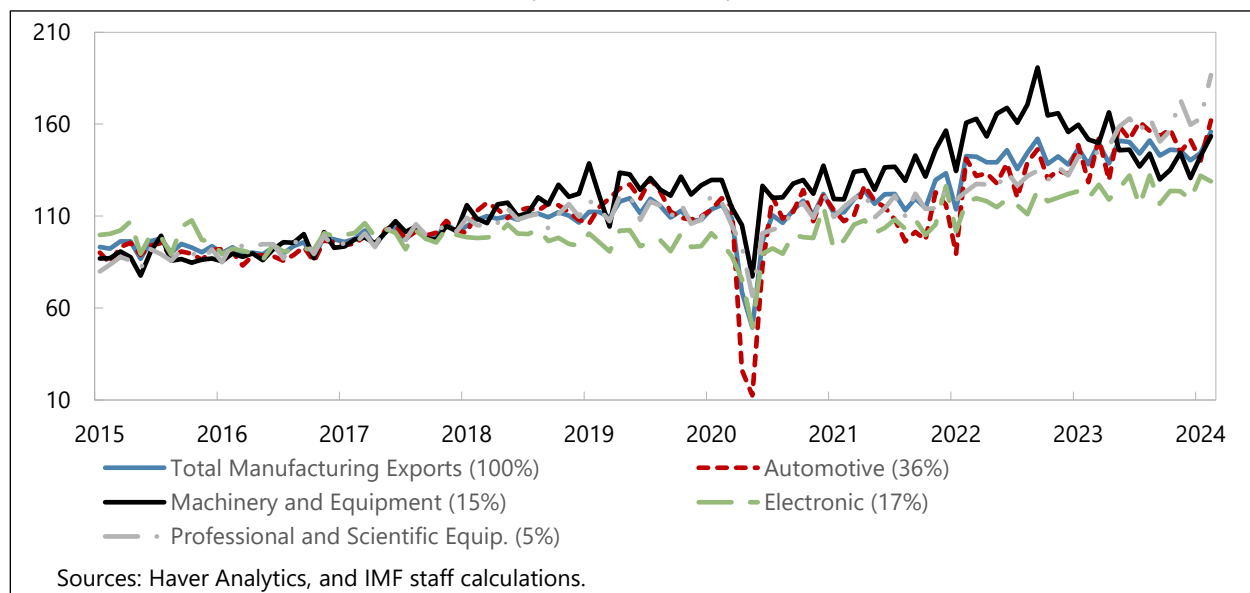


Figure A.2. Mexico. Imports and Exports by Country

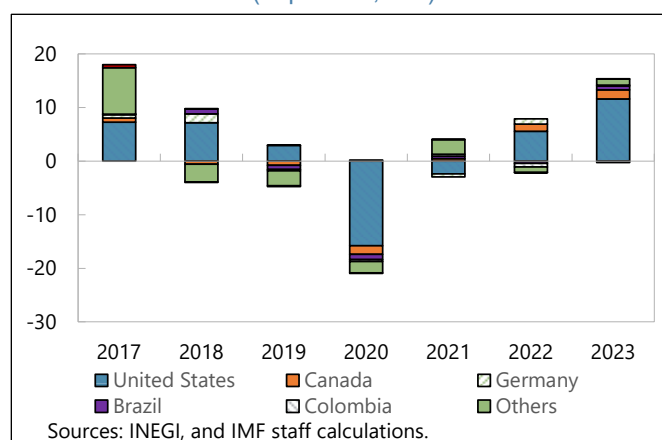


**Figure A.3. Mexico. Trade with US. Export and Imports by Industry****Figure A.4. China. Trade with US. Export and Imports by Industry**

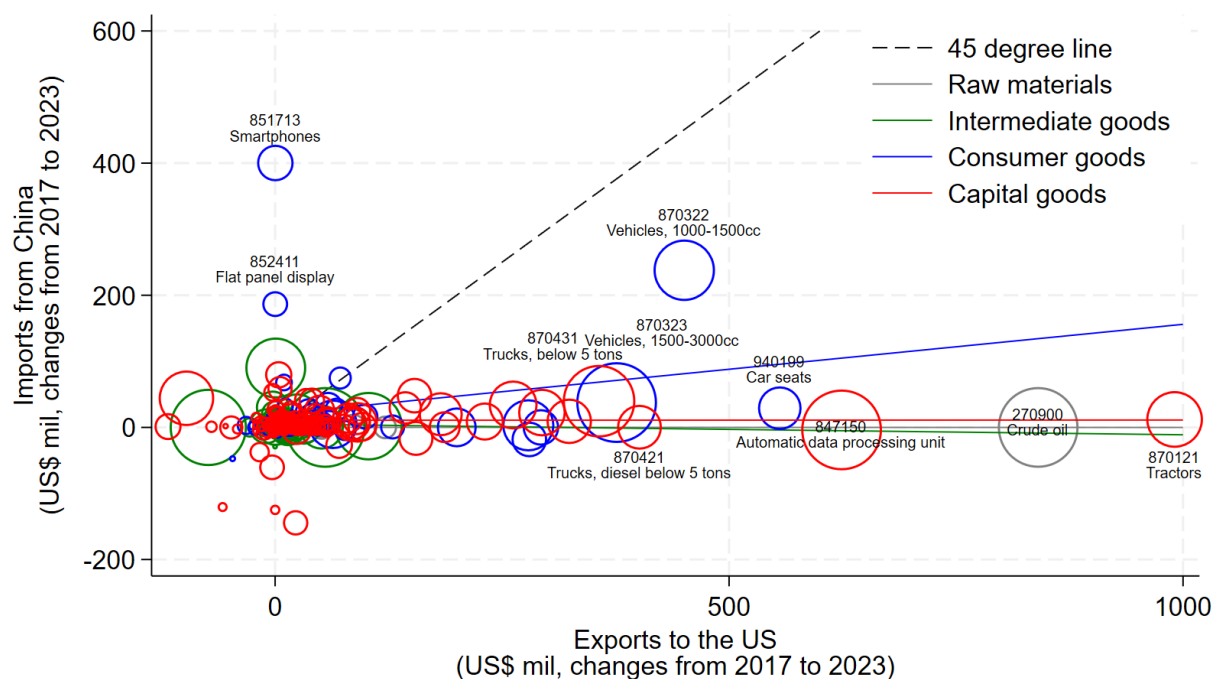
**Figure A.5. Mexico. Manufacturing Exports**  
(Index, 2017=100)



**Figure A.6. Mexico. Contributions to Vehicle Export Growth**  
(In percent, Y/Y)

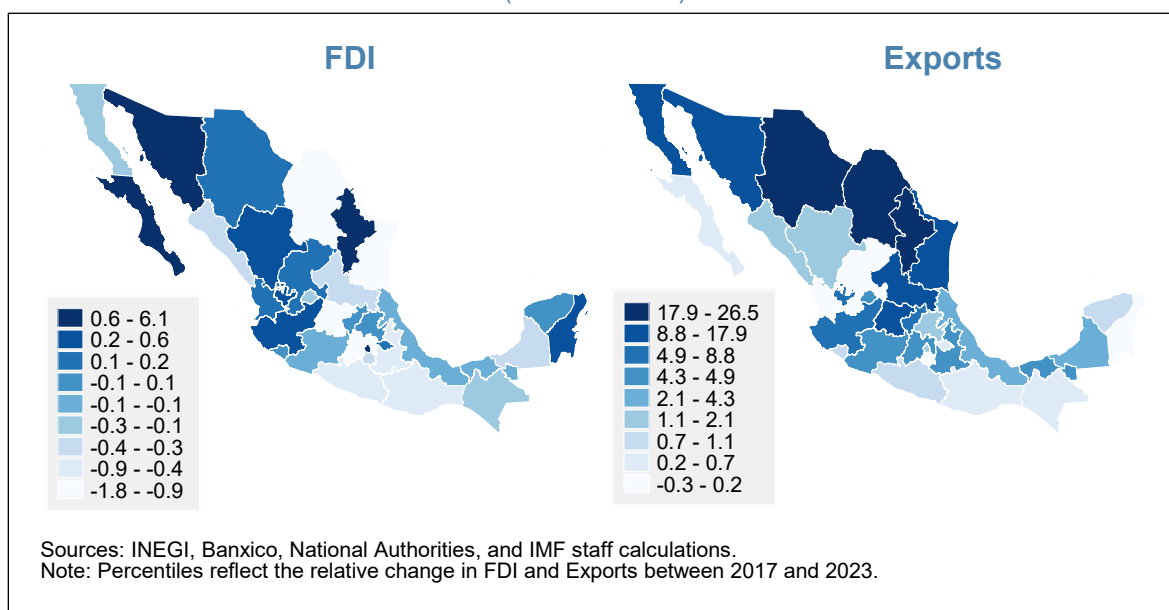


**Figure A.7. Mexican Imports from China and Exports to the US by Goods Type**  
(In USD millions)

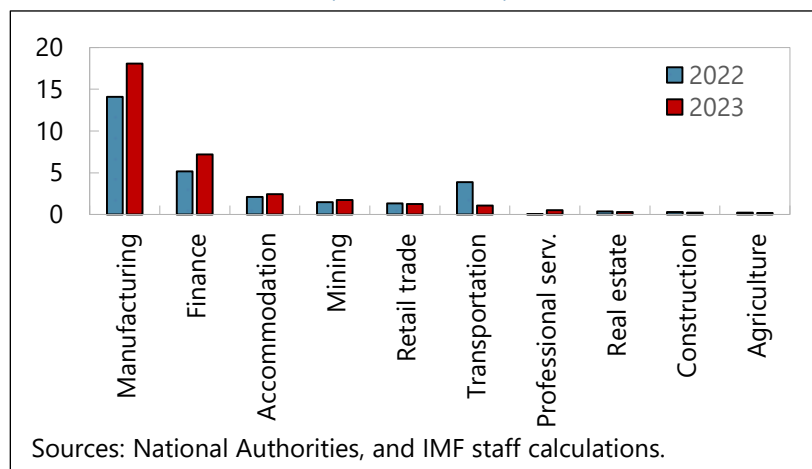


Notes: HS6-digit product level. The size of a bubble indicates the US\$ value of exports to the US and imports from China in 2023.

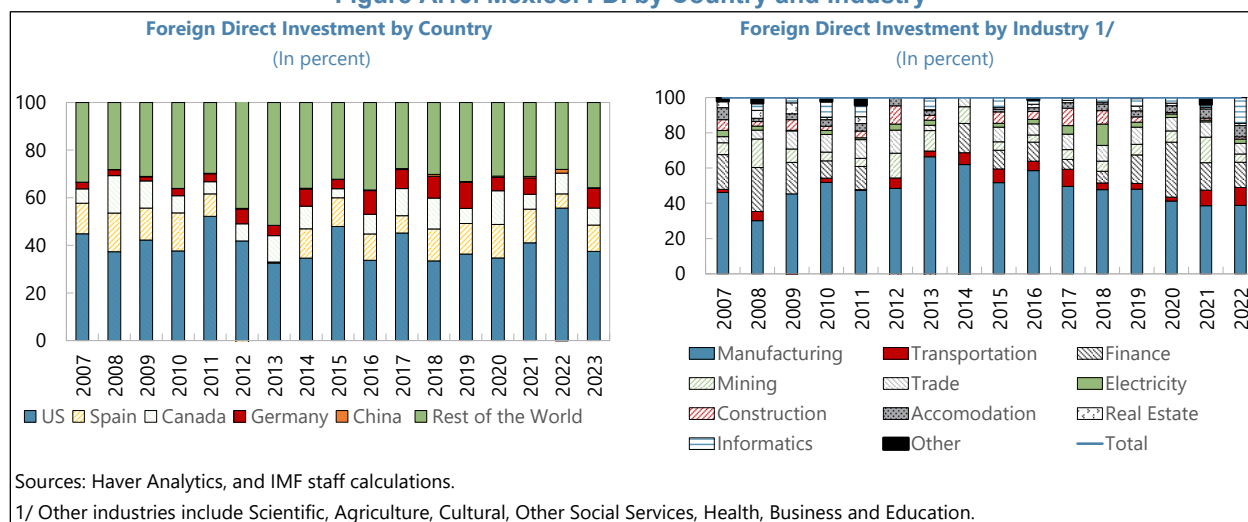
**Figure A.8. Mexico. FDI and Exports, 2017-2023**  
(In USD billions)



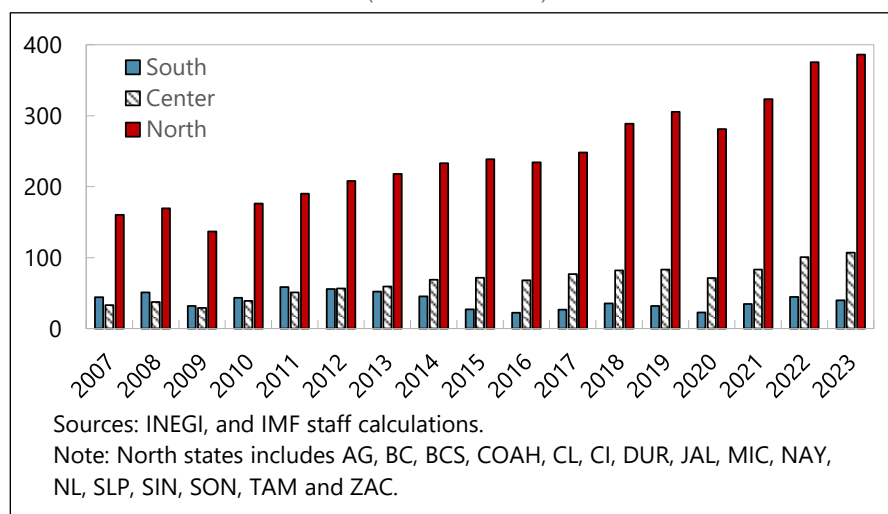
**Figure A.9. FDI to Mexico by Sector**  
(In USD billions)



**Figure A.10. Mexico. FDI by Country and Industry**



**Figure A.11. Mexico. Exports by Region**  
(In USD billions)



**Figure A.12. HS6-Digit Level Analysis: Dynamics of Treatment Effect**

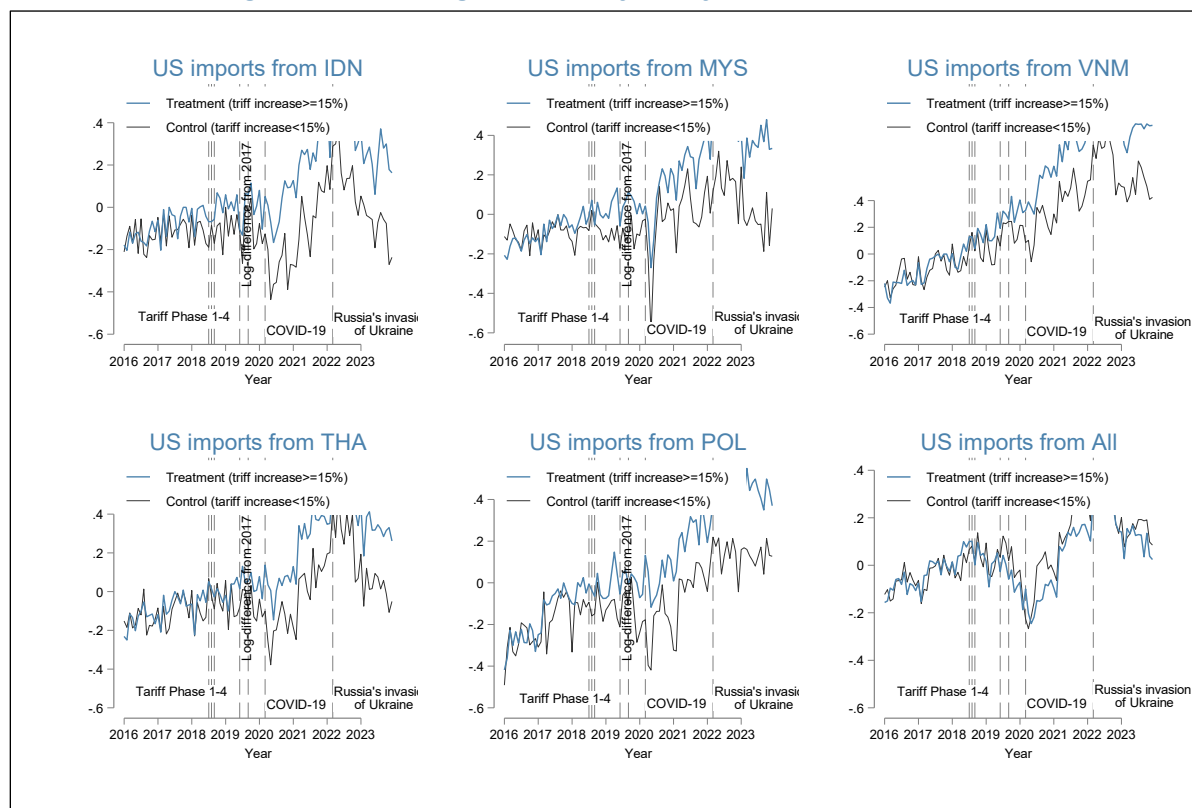


Figure A.13. HS6-digit Level Analysis: Treatment Effect by Periods

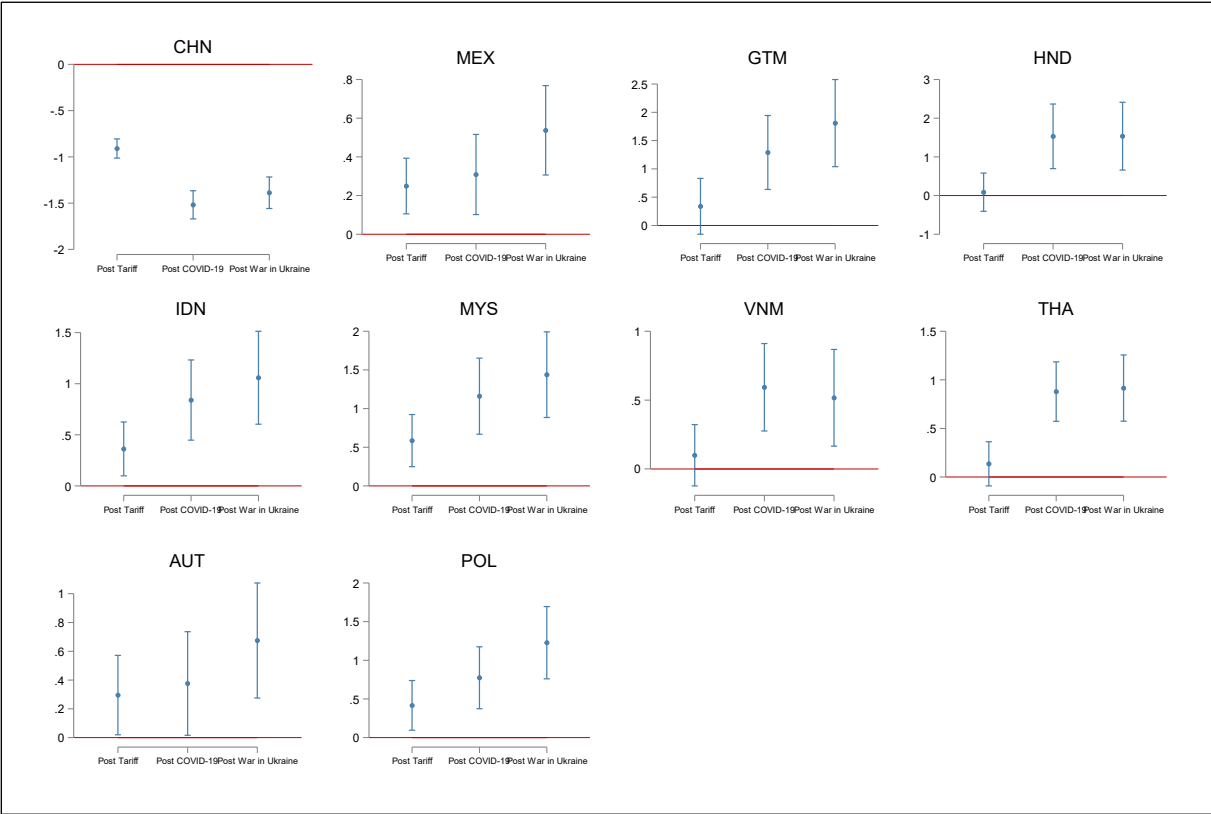


Figure A.14. HS6-digit Level Analysis: Treatment Effect by Categories

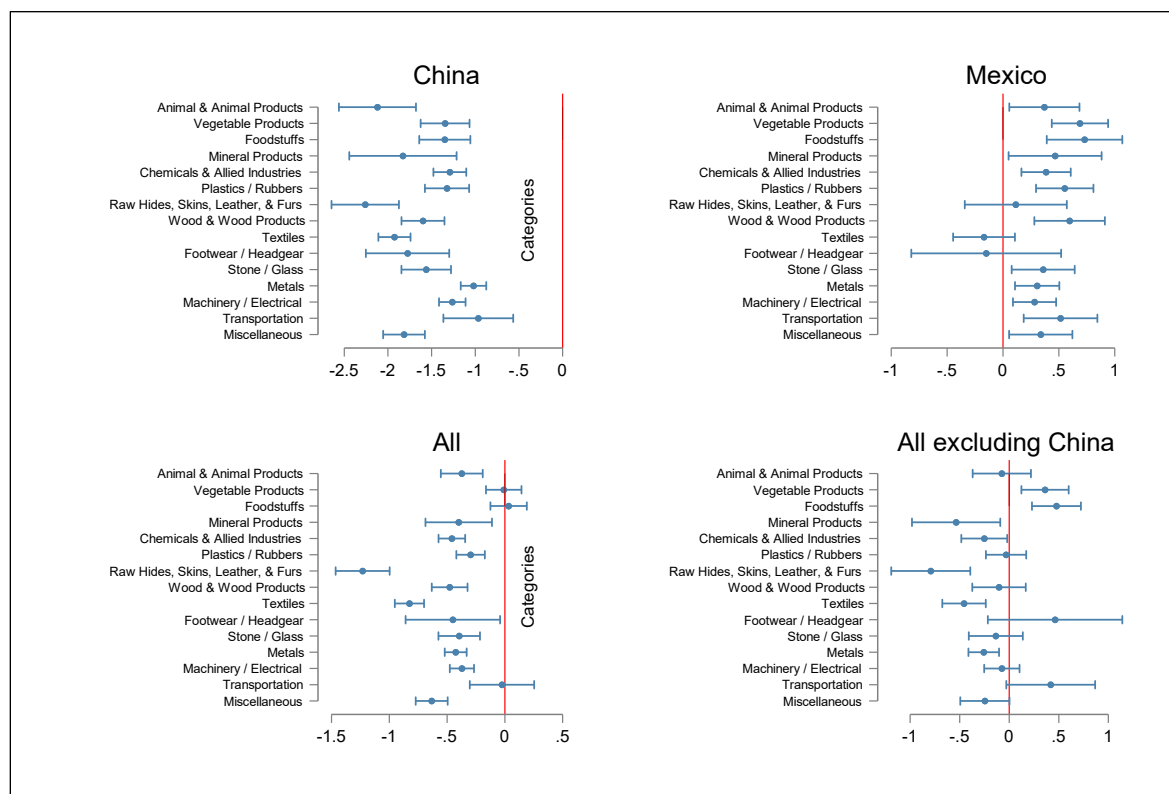
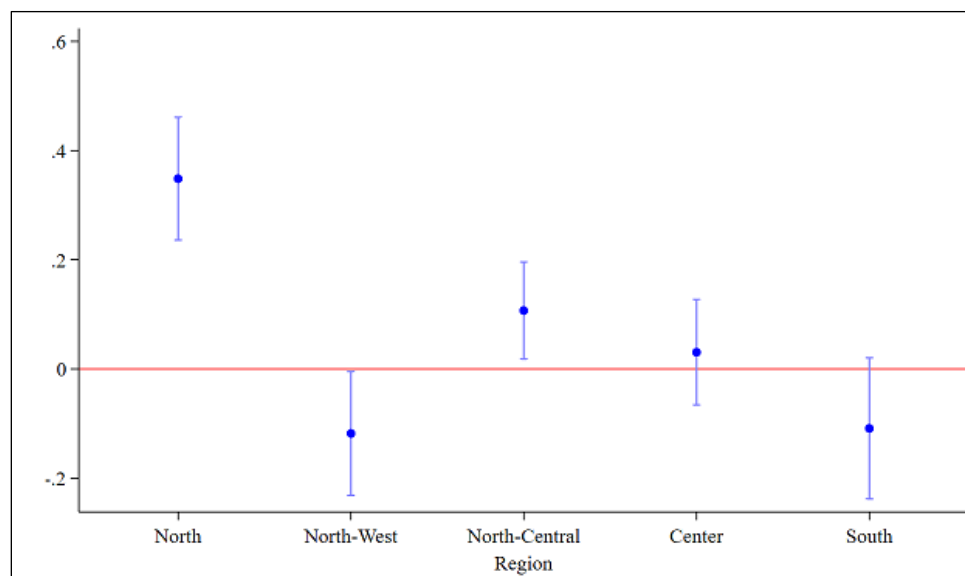


Figure A.15. 4-digit Industry Level Analysis: Impact on FDI by Region





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