NETWORK
LISER

Discussion Paper Series

IZA DP No. 18791

July 2026

Trade Diversion and Jobs: Evidence from Mexican Municipalities

Carlos Rodríguez-Castelán
World Bank and IZA@LISER

Emmanuel Vazquez
Universidad Nacional de La Plata

Hernan Winkler
World Bank

IZA@LISER NETWORK
ISSN: 2365-9793

IZA DP No. 18791 July 2026

Trade Diversion and Jobs: Evidence from Mexican Municipalities *

Abstract

This paper examines the local effects of the 2018–19 U.S.-China trade disruptions on Mexico. Combining detailed municipal-level customs data with U.S. tariff schedules, it estimates that municipalities with greater export concentration in products targeted by U.S. tariffs on China (hereafter, tariff exposure) experienced significantly larger nearshoring dividends. An increase of 1 percent in tariff exposure led to a 4.3 percent increase in municipality-level exports to the United States, with gains concentrated in northern and south-central states. These export gains translated into broad labor market improvements: total labor income rose by 5.6 percent for each 1 percent increase in tariff exposure, driven by job creation rather than wage growth as average earnings remained unchanged. The effects were heterogeneous across skill levels, with the largest employment rate gains among semi-skilled workers. Beyond job quantity, the shock improved job quality: each 1 percent increase in tariff exposure reduced labor informality by 0.25 percentage points, with newly created jobs disproportionately being formal. Effects were driven primarily by manufacturing but extended to services through local spillovers. The findings indicate that trade policy changes between major economies can significantly reshape the spatial distribution of economic activity and the quantity and quality of jobs in third-party countries.

JEL classification

F13, F14, F16, L60, O19, R122, R23

Keywords

international trade, labor markets, trade policy

Corresponding author

Carlos Rodríguez-Castelán

crodriguezc@worldbank.org

* We would like to thank Oscar Calvo-Gonzalez, Samuel Freije, Bill Maloney, Erik Von Uexkull, Guillermo Vuletin and Andres Zambrano for helpful comments and suggestions. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

1. Introduction

The escalation of protectionist measures between the United States and China, which began in 2018, has been one of the most severe disruptions to global trade flows in recent decades. Between 2018 and 2019, the United States implemented a series of trade interventions, including the imposition of elevated tariffs and antidumping and countervailing duties on imports from China. Consequently, the average US tariff on imports from China increased from 3 percent at the end of 2017 to 20 percent by 2019. By 2019, the share of US-China trade subject to the new tariffs exceeded 50 percent.[1] These levels persisted until early 2025, when new trade barriers were introduced, escalating tensions between the two countries.

This sudden shift in trade policy disrupted bilateral trade flows between these major economies and had consequences for other countries, particularly those deeply integrated into supply chains with the United States, such as Mexico. In recent years, exports to the United States rose sharply from around US$300 billion before the trade war to US$500 billion in 2024, an increase roughly equivalent to the GDP of Peru or Finland.[2] This notable surge has sparked debate over whether the US-China trade war, at least in part, played a role in redirecting production and trade toward Mexico.

The phenomenon of "nearshoring"—the strategic reallocation of production activities from distant countries such as China to neighboring nations such as Mexico—has gained considerable traction in the policy discourse as a potential explanation for this surge (Chiquiar and Tobal, 2024). Mexico's geographic proximity to the US, combined with its established status as a trade partner under the North American Free Trade Agreement (NAFTA) and its successor, the US-Mexico-Canada Agreement (USMCA), has positioned its economy as a potential beneficiary of the US-China trade frictions. These potential benefits can materialize through at least two mechanisms. First, multinational companies outside the United States may seek to minimize exposure to geopolitical risks and supply chain disruptions by relocating production to Mexico. Second, Mexican firms may capitalize on opportunities to increase production capacity, substituting for declining Chinese exports to the United States.

While there is a growing body of literature on the aggregate economic impacts of the US-China trade war on both participating economies (see, for example, Amiti, Redding, and Weinstein, 2019; Cavallo et al., 2021; Fajgelbaum et al., 2020), empirical evidence on third-country effects is limited, particularly at the subnational level. A large body of literature demonstrates that trade shocks propagate unevenly across local labor markets. Filling this subnational gap is therefore essential for understanding the distributional consequences of the US-China trade war in third countries like Mexico. Some exceptions include Fajgelbaum et al. (2024), Freund et al. (2024), and Alfaro and Chor (2023), who find that Mexico (among other economies) was among the largest

[1] Section 2 describes these events in detail.

[2] See Figure A1 in the Appendix.

beneficiaries of the trade disruptions; and Chiquiar and Tobal (2024), who find that the US-China trade war increased Mexico's exports of the products targeted by the escalation. However, none of these studies assesses the impacts of the US-China trade war at the local level within Mexico's territory. To our knowledge, only two studies provide subnational or worker-level evidence on the labor market impacts of the recent trade diversion episode in third countries: Mayr-Dorn et al. (2026) for Viet Nam and Hayakawa and Sudsawasd (2025) for Thailand. No comparable evidence exists for Mexico, whose economy differs substantially from its Southeast Asian counterparts in its depth of integration with the United States.

This paper helps fill this gap by investigating the impacts of the 2018-2019 US-China trade war on exports and labor market outcomes at the municipal level in Mexico. We combine detailed municipal-level customs records from Mexico's Ministry of Economy — covering product-level exports disaggregated to the six-digit Harmonized System for 186 manufacturing-exporting municipalities that account for 47 percent of total manufacturing exports during 2016–2021 — with U.S. tariff schedules and labor market data from Mexico's 2015 and 2020 population censuses. We build a measure of municipality-level tariff exposure that weights U.S. ad-valorem tariffs on Chinese goods by each municipality's pre-war export basket, capturing the competitive advantage accruing to localities whose exports were already concentrated in products targeted by the tariff escalation. We then estimate an OLS model of the change in exports and labor market outcomes between the pre- (2016–2017) and post-trade war (2018–2021) periods as a function of this exposure measure, controlling for changes in U.S. tariffs on Mexico, state fixed effects, and pre-war municipal characteristics. This approach adapts the Bartik-style shift-share logic of Autor, Dorn, and Hanson (2013) to an export-growth setting and builds on prior subnational trade analyses for Mexico (Hakobyan and McLaren, 2016; Vazquez and Winkler, 2023; Rodríguez-Castelán, Vázquez, and Winkler, 2024).

Our research makes two significant contributions to this literature. First, it shows that municipalities whose exports were more concentrated in products targeted by the US tariffs on China experienced a disproportionate increase in exports to the US. In other words, the nearshoring effects measured by previous studies have been driven by municipalities whose exports were already more specialized in the targeted products. Our results suggest that the trade war increased Mexico's manufacturing exports to the US by a magnitude equivalent to 15 percent of Mexico's total manufacturing exports. This indicates that changes in the trade policies of large economies can significantly affect the geographic distribution of economic activity in a third country. In Mexico, municipalities in Northern and South-Central states benefited disproportionately from the tariff shock.

Second, to our knowledge, this is the first paper to provide evidence on the labor market impacts of nearshoring associated with the US-China trade war. Municipalities more exposed to the tariff shock saw total labor income rise by 5.6 percent for each 1 percent increase in tariff exposure, with gains concentrated among semi-skilled and unskilled workers. Employment rates among semi-skilled workers increased significantly, and labor informality — measured as the share of workers without pension or retirement benefits — fell by 0.25 percentage points. These labor market gains were driven primarily by manufacturing, with positive spillovers to services. Taken together, the findings suggest that the nearshoring dividend from the US-China trade war translated not merely into higher export volumes, but into a measurable improvement in job quality for workers in exposed municipalities.

The remainder of this paper is organized as follows. Section 2 provides an overview of the US-China trade war and its implications for third-party economies. Section 3 describes the data sources and the construction of key variables, and Section 4 outlines our empirical methodology. Section 5 presents the main results on the impact of the US-China trade war on the export performance of Mexican municipalities and their labor market outcomes. Section 6 provides a series of robustness checks to validate our main findings, and Section 7 concludes.

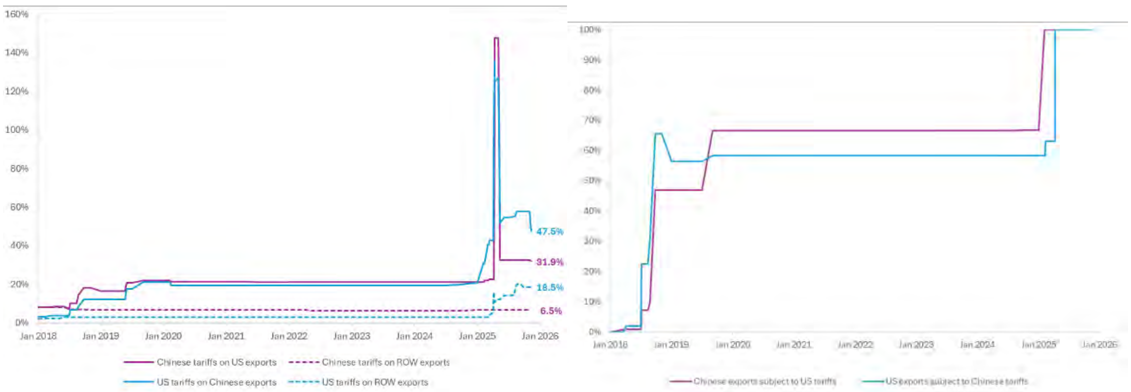
2. US-China Trade War (2018-2019)

The escalation of trade tensions between the United States and China began in 2018, when the United States imposed tariffs on appliances, solar panels, steel, and aluminum, later expanding the measures to cover a broad range of Chinese imports under Section 301 (Fajgelbaum and Khandelwal, 2022). Between 2018 and 2019, the United States implemented five rounds of tariffs affecting approximately US$350 billion of imports from China. Consequently, the average US tariff on imports from China increased from 3 percent at the end of 2017 to 20 percent by 2019 (Figure 1a). By 2019, the share of US-China trade subject to the new tariffs exceeded 50 percent (Figure 1b). China retaliated with tariffs on approximately US$100 billion of US exports, with 27 percent of the tariffs concentrated in agricultural products.

Figure 1. US-China trade war tariffs.

a. US-China tariff rates toward each other and the rest of the world (ROW)

b. Percent of US-China trade subject to trade war tariffs



Source: Chad P. Bown. 2025. US-China Trade War Tariffs: An Up-to-Date Chart (available at https://www.piie.com/research/piie-charts/us-china-trade-war-tariffs-date-chart).

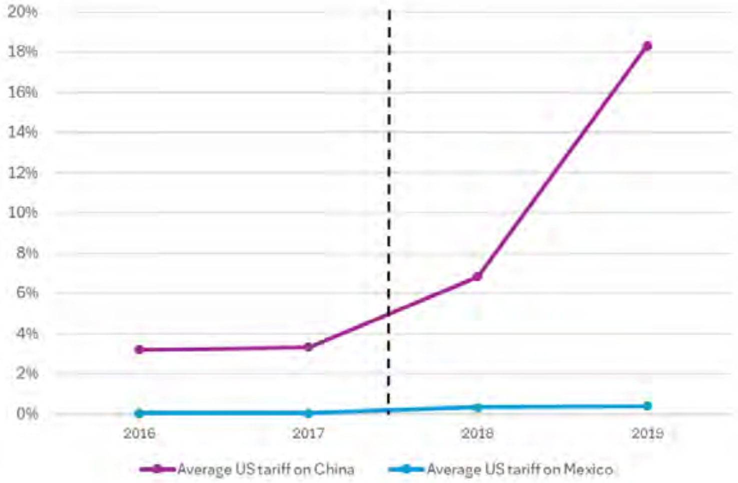
Note: Trade-weighted average tariffs computed from product-level tariffs and trade data, weighted by US exports to the world and China's exports to the world in 2017. The series is constructed by the authors using data from UN

Comtrade, Trade Map, and Market Access Map (International Trade Centre, marketanalysis.intracen.org), as well as announcements from China's Ministry of Finance and the USTR.

As a result, the average US tariff on manufacturing imports from China rose from 3.2 percent in 2016 to 18.3 percent in 2019 (Figure 2; Fajgelbaum et al., 2024). By contrast, tariffs on US imports from Mexico remained unchanged, underscoring the differential exposure of trading partners to the dispute. Although the "Phase One" deal signed in January 2020 rolled back some tariffs, most remained in place, cementing a significant shift in the global trade landscape.

The implications of these disruptions extended far beyond the two countries directly involved. A growing body of research indicates that "bystander" economies have increased their global exports of products subject to US-China tariffs, thereby gaining net trade opportunities rather than merely experiencing trade diversion (Fajgelbaum et al., 2024; Freund et al., 2024). The extent of these gains varied depending on countries' supply capacity and sectoral specialization, with Viet Nam, Thailand, the Republic of Korea, and Mexico emerging as the primary beneficiaries (Fajgelbaum et al., 2024). Strategic industries such as electronics, automotive products, and basic metals displayed notable shifts, reflecting the reallocation of demand away from the flows affected by tariffs (Freund et al., 2024; Alfaro and Chor, 2023).

Figure 2. Average US tariff on manufacturing products from China and Mexico, 2016-2019.



Source: Own elaboration based on ad-valorem tariffs on manufacturing products from Fajgelbaum et al. (2024).

Note: Manufacturing sector defined as HS chapters 16-24, 28-70, and 72-96.

Mexico stands out among these bystander economies. Recent evidence indicates that its non-motor vehicle exports to the United States were around 12 percent higher during 2018–2022 than they would have been in the absence of the trade war (Chiquiar and Tobal, 2024). Moreover, Mexico gained market share, particularly in automobiles, auto parts, and glass, iron, and steel products, with its share of US manufacturing imports increasing by 0.72 percentage points between 2017 and 2022 (Alfaro and Chor, 2023).

These findings suggest that Mexico benefited directly from reallocating US import demand away from China and became increasingly intertwined with global supply chain dynamics triggered by the trade war. This aggregate picture motivates our more granular analysis of how such global shifts translated into heterogeneous impacts across Mexican municipalities.

3. Data

We compiled a database from three primary sources: (1) detailed administrative records on exports and imports at the municipality level, provided by the Mexican Ministry of Economy; (2) data on U.S. tariffs on China and Mexico from Fajgelbaum et al. (2024); and (3) information on labor markets and demographic characteristics from population censuses and counts, along with complementary economic activity indicators from economic census data.

The data on municipal exports and imports in Mexico come from customs records collected by the Mexican Ministry of Economy and are publicly available on the DataMéxico platform.[3] These data are reported at the product level, with a level of detail valid at the municipal level up to six digits of the Harmonized System (HS), covering the period from 2006 to 2023.[4] In addition to the trade value in U.S. dollars, the dataset includes the country of origin for imports and the destination country for exports.[5]

Unlike other local trade databases that use imputation methods to assign trade values to municipalities (such as the database compiled by the Mexican Tax Authority and used in Rodríguez-Castelán, Vazquez, and Winkler, 2024), the database assembled by the Mexican Ministry of Economy provides disaggregated export data for 411 municipalities, capturing approximately 40 percent of the total export value with product-level detail at the municipal level. Among these 411 municipalities, 402 exported to the U.S. at some point, but only 315 did so during the base period (2013–2017). After restricting the sample to municipalities that exported manufactured goods to the U.S. during that period, 186 remain in our estimation sample. A map of the municipalities in the sample is shown in the appendix, along with a table comparing the characteristics of these municipalities with those of municipalities outside the sample (2,271 municipalities).[6] Generally, the sample municipalities tend to have better economic outcomes. This is expected, as participation in Global Value Chains (GVC) is typically correlated with economic benefits (World Bank, 2020).

---

[3] The data can be downloaded using the Viz Builder tool (https://www.economia.gob.mx/datamexico/en/vizbuilder) and selecting "Foreign trade (BCMM) by municipality."
[4] Data for the year 2024 were incomplete at the time of writing this paper.
[5] These values are later deflated to 2010 U.S. dollars using the US-CPI published by the IMF, downloaded on 06/04/2024 from https://data.imf.org.
[6] Serrano (2023) assessed the accuracy of these customs data in Mexico and validated them for use in his study of the labor market effects of industrial robot adoption in Mexico.

The data on U.S. tariffs on China and Mexico are sourced from Fajgelbaum et al. (2024).[7] The authors compiled a monthly panel dataset of U.S. statutory import tariffs at the HS-6 level from 2013 to 2019, using public schedules from the U.S. International Trade Commission (USITC). We calculate the average monthly ad valorem tariffs for each product per year, and define the period from 2016 to 2017 as the pre-trade-war period and the period from 2018 to 2019 as the post-trade-war period.[8] Our dataset includes tariff information for 5,050 products subject to U.S. import duties from China and 4,531 from Mexico.[9] The average U.S. tariff on manufacturing products from China and Mexico during these years is depicted in Figure 2.

Data from the 2020 Census of Population and Housing and the 2015 Population Count are used to construct labor market indicators and estimate the demographic characteristics of municipalities.[10] Since publicly available data from the Mexican Institute of Statistics impose restrictions on cross-tabulations and the computation of specific detailed indicators, census microdata samples from the Integrated Public Use Microdata Series (Ruggles et al., 2007) are used to estimate labor market variables. Additionally, in the robustness section, the initial median income for 2015 is calculated using the poverty mapping methodology (Elbers, Lanjouw, & Lanjouw, 2003).[11] We also incorporate economic activity data from the 2014 and 2024 Economic Censuses, compiled by INEGI through the Sistema Automatizado de Información Censal (SAIC), which provide establishment-level information at fine geographic detail. Finally, changes in COVID-19 mortality are measured based on data reported by the General Directorate of Epidemiology in Mexico for 2020–2021.

A potential limitation of our data is that the estimation sample is constrained by the use of anonymized trade data at the municipal level, as required by statistical confidentiality. This restriction excludes the smallest municipalities and goods produced by firms that are the sole or among the very few exporters in a given locality. Small trade flows—often originating from smaller municipalities or niche industries—are intentionally omitted. Therefore, the estimates primarily represent municipalities with larger export volumes and stronger labor market outcomes. While the 186 municipalities included in our sample may appear limited relative to the country's 2,457 municipalities, they accounted for roughly 47.5 percent of total manufacturing exports during 2016–2021, US$180 billion in exports to the U.S. in 2021, and over 52 percent of the Mexican

[7] These, in turn, are based on Fajgelbaum et al. (2020) and extended through the end of 2019. We downloaded the replication package from Khandelwal's webpage (https://akhandelwal8.github.io/research/) and applied the same processing steps used by the authors in the do-files z_usch.do and z_usi.do to construct datasets of unweighted U.S. tariffs on China and Mexico, respectively.

[8] Since 2020 marked the beginning of the phase-one agreement (Figure 1(a)), with almost no changes in tariffs during 2020–2021, we take the 2019 values as a valid measure for this period.

[9] While Bown (2021) provides more recent product-level U.S. tariff data for 2018–2020, we rely on Fajgelbaum et al. (2024) because their dataset, although limited to 2019, offers broader coverage of the pre–trade war period and includes U.S. tariffs on Mexico and the Rest of the World. The inclusion of tariffs on Mexico is particularly important for our analysis, as they serve as a key control variable.

[10] Although the 2015 Population Count is based on a survey, its large sample size ensures representativeness at the municipal level; see Enamorado et al. (2016).

[11] For a detailed description of the data, see Enamorado, López-Calva, Rodríguez-Castelán, & Winkler (2016).

population (according to the 2020 Census). These characteristics suggest that, despite its scope, the dataset provides a suitable basis for identifying the localized effects of trade shocks, as discussed in the next section.

4. Methodology

Our measure of municipalities' exposure to US tariffs on China is a municipality-weighted average of 1 plus the ad valorem tariff on Chinese goods, where the weights for each product are based on its share of the municipality's total exports to the US during 2013-2017. Intuitively, the effect of US-China tariff changes on municipality *m*'s economic outcomes is proportional to product *k*'s share in the municipality's export basket. A tariff-induced competitive advantage for products representing a larger share of a municipality's exports is expected to generate more substantial local economic impacts than equivalent tariff changes on products with a smaller share of exports.

Formally, the exposure of municipality m to US tariffs on China at period t ($E_{m,t}^{CH}$) is defined as:

$$E_{m,t}^{CH} = \sum_{k} \frac{X_{m,k,0}^{US}}{X_{m,0}^{US}} (1 + t_{k,t}^{CH})$$

where $t_{k,t}^{CH}$ is the ad-valorem tariff imposed by the US on China for product k in period t, $X_{m,k,0}^{US}$ represents the total exports of product k to the US from municipality m during the base period 0 (2013-2017), and $X_{m,0}^{US}$ denotes the total exports to the US from municipality m in the same base period 0.

We restrict our analysis to manufacturing products and focus on changes between the pre-trade-war period (2016-2017) and the post-trade-war period (2018-2021).[12] Exposure in the pre-trade war period is calculated as the average exposure in 2016 and 2017, while exposure in the post-trade war period is calculated as the average exposure in 2018 and 2019, since the ad valorem tariffs provided by Fajgelbaum et al. (2024) are only available until 2019. However, as Bown (2023) shows, the share of Chinese exports subject to US tariffs remained stagnant until January 2023. Our primary independent variable is the log change in exposure between these two periods:[13]

[12] We define the Manufacturing sector as Chapters 16-24, 28-70 and 72-96 of the Harmonized System (i.e., we exclude trade of Live Animals; Animal products (Section I), Vegetable products (Section II), Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes (Section III); Mineral products (Section V); Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin (Section XIV), and Works of art, collectors' pieces and antiques (Section XXI). See https://www.wcotradetools.org/en/harmonized-system for details.

[13] We estimate the elasticity of exports with respect to changes in tariff exposure by regressing the change in the log of exports on the change in the log of U.S. tariff exposure. Using a log-log model offers several advantages. First, it allows us to interpret the estimated coefficient as an elasticity. Second, taking logs helps reduce the influence of extreme values and heteroskedasticity, which are common in trade data where exports can vary substantially

$$\Delta\log(E_m^{CH}) = \log\left(E_{m,post}^{CH}\right) - \log\left(E_{m,pre}^{CH}\right)$$

We also construct a measure of exposure to US tariffs on Mexico using the same approach and include it as a control variable in the regressions.

We estimate how these changes in exposure affected municipality exports to the US and several labor market outcomes by estimating the following model:

$$Y_{m,post} - Y_{m,pre} = \alpha + \beta\,\Delta\log(E_m^{CH}) + \delta\Delta\log(E_m^{MX}) + \Gamma X_{m,pre} + \mu_s + \varepsilon_m$$

where $Y_{m,post}$ and $Y_{m,pre}$ are our main dependent variables for the post- and pre-trade-war periods, respectively. $\Delta\log(E_m^{MX})$ is the log change in exposure of municipality *m* to US tariffs on *Mexico*; $X_{m,pre}$ is a vector of variables in the pre-trade war period to control for different trends across municipalities; μ_s are state fixed effects and ε_m is the usual random error term. The model is estimated using OLS, weighting observations by the initial (i.e., average 2016-2017) municipality's manufacturing exports to the US.

Table A2 in the appendix presents descriptive statistics summarizing the average characteristics of municipalities in the sample over the period under analysis. The table also compares municipalities with low and high exposure to U.S. tariffs on China, covering key economic indicators such as employment rates, labor income, informality rates, and sectoral composition. Notably, highly exposed municipalities exhibit significantly higher manufacturing exports to both the U.S. and the rest of the world, greater total and average labor income across all skill levels, and lower informality rates. Given the differences across the two groups, we conduct a robustness test to assess whether our main results are biased by pre-existing trends across municipalities. Table A5 shows that the Mexican states along the US border, as well as those in the South-Central region, were the most exposed to U.S tariffs on China.

5. Results

5.1. Impact on Exports to the US

Before analyzing the effects of US tariffs on China at the municipal level, we estimate the average change in Mexico's exports to the US at the product level in response to changes in US ad valorem tariffs on China for those products. We use a model similar to the one described earlier to do this. However, instead of estimating it at the municipal level, we estimate it at the product level, following Chiquiar and Tobal (2024). The model controls for changes in US tariffs on Mexico at the product level, sector fixed effects, and the pre-existing trend in product exports.

---

between products or industries. This approach is standard in the literature analyzing trade flows and policy shocks (e.g., Fajgelbaum et al., 2020; Fajgelbaum et al., 2024).

The results in Table 1 show a positive relationship between US tariffs on Chinese products and Mexico's exports to the US. In our preferred specification, which includes all controls, a 1 percent increase in the average ad valorem tariff across all manufactured products is associated with a nearly 2.5 percent increase in average exports of each product from Mexico to the US.[14] Considering the actual change in US tariffs on Chinese imports during this period, the estimated effect suggests that the trade war increased Mexico's manufacturing exports to the US by 25.6 percent.[15] This evidence supports the hypothesis that Mexico experienced increased export opportunities to the United States due to the US-China trade war.

Table 1. Mexico's Exports to the US vs. US Tariffs on China at the Product Level, 2016-2017 to 2018-2021.

	Change in Log (Exports to US)		
	(1)	(2)	(3)
Log change in US tariffs on China	-0.255	2.076**	2.495***
	(0.811)	(0.998)	(0.907)
Log change in US tariffs on Mexico	YES	YES	YES
Sector FE	NO	YES	YES
Pre existing trend control	NO	NO	YES
Observations	1,552	1,552	1,440
R-squared	0.001	0.067	0.245

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of 6-digit HS product-level exports from Mexico to the United States between 2016-2017 and 2018-2021. (4) The independent variables are the log changes in one plus the ad-valorem tariff imposed on Chinese and Mexican goods by the US from 2016-2017 to 2018-2019, where the average value in each period is calculated per 6-digit HS product level. (5) Sector FE are the 2-digit HS chapter fixed effects. (6) Pre-trend controls correspond to the product-level trade growth with each destination from 2014-2015 to 2016-2017 (i.e., the lagged value of the dependent variable). (7) Sample of products restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96.

Table 2 presents the regression results of Mexico's exports to the United States on exposure to US tariffs on China at the municipal level. In this case, we estimate the effect of changes in exposure to US tariffs on China on municipality-level exports to the US, controlling for changes in exposure to US tariffs on Mexico, state fixed effects, and initial demographic and employment controls. The results show a statistically significant, positive relationship between changes in exposure to US tariffs on China and Mexico's exports to the United States. In the preferred specification (Column 3), a 1 percent

[14] With our sample, the values obtained are consistent with an elasticity of exports greater than 1 in the literature, although they are slightly more than double those reported in Chiquiar and Tobal (2024).

[15] This estimate is obtained by applying the coefficient from our preferred specification to the average US tariff increase on Chinese imports, which rose by 9.6 percentage points during the period for the 1,440 products in our final estimation sample.

increase in exposure to US tariffs on China[16] is associated with a 4.3 percent increase in municipality-level exports to the US. Considering the actual change in exposure to US-China tariffs during the period, the estimated effect suggests that the trade war increased Mexico's manufacturing exports to the US by 41 percent among the municipalities in the sample – about US$68 billion.[17] This corresponds to 15.6 percent of Mexico's total manufacturing exports, including those not captured in the municipal dataset, and indicates that municipalities more exposed to these tariff increases tend to experience higher export growth to the US, consistent with previous findings at the product level.[18]

Table 2. Mexico's Exports to the US vs. Exposure to US Tariffs on China at the Municipal Level, 2016-2017 to 2018-2021.

	Change in Log (Exports to US)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	4.951**	4.685**	4.272**
	(2.127)	(2.204)	(2.082)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	175	175	175
R-squared	0.173	0.424	0.463

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing exports from Mexico to the United States between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

[16] A 1 percent increase in exposure to US tariffs on China can result from a 1 percent increase in all ad valorem manufacturing tariffs on the products that the municipality exports to the US, or from any combination where the weighted average increase is 1 percent. For instance, if a municipality exports two products to the US—one representing 80 percent of exports in the pre-trade war period and the other 20 percent—then a 1.25 percent increase in US tariffs on China on the first product, with no change in tariffs on the second product, will suffice to produce the 1 percent increase in exposure.

[17] This estimate relies on the assumption of linear and homogeneous treatment effects and no stable unit treatment value assumption (SUTVA). It is obtained by applying the coefficient from our preferred specification to the average change in exposure to US tariffs on China, which rose by about 8 percentage points during the period across municipalities in our sample.

[18] For reference, Fajgelbaum et al. (2022) estimate that US imports from China declined by 8.5 percent during this period due to the increased tariffs. Given that China's total exports to the US reached about US$480 billion annually on average in 2017 and 2018, a back-of-the-envelope calculation suggests a decline of about US$41 billion.

5.2. Impact on Labor Outcomes

Table 3 displays the effects of US tariffs imposed on Chinese goods on labor market outcomes in Mexico at the municipal level. The results suggest that higher exposure to the US-China trade war is associated with a significant increase in total labor income (the sum of all individual labor incomes within the municipality). Specifically, a 1 percent increase in exposure is associated with a 5.6 percent increase in total labor income. This effect is particularly pronounced for semi-skilled workers, who experience a 7.2 percent increase, and for unskilled workers, who see a 5.75 percent increase, both of which are statistically significant at the 1 percent level. This increase in total labor income is largely driven by job creation rather than average earnings growth. In particular, while a 1 percent increase in exposure led to a 6.3 percent increase in the total number of employed people on average at the local level, average earnings showed no statistically significant change. This pattern is also partially explained by immigrants' attraction to municipalities more exposed to the trade war, likely drawn by a faster pace of job creation. [19]

Table 3. Labor Market Outcomes vs. Exposure to the U.S.–China Trade War (2015–2020): Total and Heterogeneous Effects by Skill

Dependent variable:	Total	By skill:		
		Unskilled	Semi-skilled	Skilled
Total employment, change (in logs)	6.342***	4.048***	7.286***	7.301***
	(1.427)	(1.332)	(1.139)	(1.588)
Employment rate, change	-2.660	-6.674	40.74**	0.570
	(8.447)	(13.36)	(15.72)	(15.30)
Total labor income, change (in logs)	5.580**	5.746***	7.155***	4.844
	(2.698)	(2.176)	(2.125)	(3.237)
Average labor income, change (in logs)	-0.128	-0.865	0.0847	0.753
	(1.535)	(0.992)	(1.425)	(1.833)
Informality rate, change	-25.38**	-55.60***	-16.97	-43.97**
	(12.45)	(19.78)	(21.01)	(21.51)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES
Observations	186	186	186	186

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Coefficients are estimated using separate regressions of 2015-2020 municipality-level changes in the employment and informality rate (0-100 scale), and the logarithm of total and average labor income (in 2010 Mexican pesos). (4) Unskilled: complete primary education or less; semi-skilled: complete secondary education; skilled: complete tertiary education. (5) Independent variable: log change in exposure to US tariffs on China, see section 4. (6) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. Log change in exposure to US tariffs on Mexico control: see section 3. (7) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70,

[19] This pattern is consistent with the findings of Rodríguez-Castelán, Vazquez, and Winkler (2024), who document that trade-induced economic expansions often attract migration, which can offset per capita income gains. Appendix Table A3 presents supporting evidence on migration patterns.

and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Exposure to the US-China trade war has no significant effect on overall employment rates. However, there is a significant impact on the employment rates of the semi-skilled: a 1 percent increase in exposure to US tariffs on China leads to a 0.41 percentage-point increase in their employment rate. Exposure to the trade war led to a decline in informality—measured as the share of employees without pension or retirement benefits—at the municipal level. Specifically, a 1 percent increase in exposure is associated with a 0.25 percentage-point reduction in the informality rate. This effect was driven by both unskilled and skilled workers, who witnessed a significant decrease in informality due to the US-China trade war.

Overall, these findings highlight the heterogeneous effects of trade policy on different skill groups. However, these impacts may also vary across sectors of economic activity, as industries respond differently to tariff-induced shocks. In particular, while changes in tariffs to manufacturing products do not directly impact the agriculture and service sectors, there could be indirect effects through input-output linkages or local spillover impacts. Table 4 explores this dimension by analyzing the labor market effects of exposure to US tariffs on Chinese manufacturing products across agriculture, manufacturing, and services in Mexican municipalities. As expected, total manufacturing employment grew in response to the shock, with statistically significant spillovers to the service sector as well. The impact on total labor income from the increase in manufacturing tariffs is primarily driven by this sector. However, there is also an effect in the service sector, although smaller and less precise. Interestingly, the reduction in overall labor informality comes from the decrease in informality in this sector. On the other hand, the agriculture sector did not benefit from the rise in US tariffs on Chinese manufacturing goods. Finally, data from the Economic Censuses 2014 and 2024 show that municipalities more exposed to the trade war did not experience any significant changes in firms' value added and fixed assets (see Table A4). This suggests that the trade war's impact on local economies primarily materialized through labor market adjustments rather than changes in productive capacity.

Table 4. Labor Market Outcomes vs. Exposure to the U.S.–China Trade War (2015–2020): Total and Heterogeneous Effects by Sector

Dependent variable:	Total	By sector:		
		Agriculture	Manufacturing	Services
Total employment, change (in logs)	6.342***	4.037	6.046***	6.215***
	(1.427)	(2.602)	(1.253)	(1.433)
Employment rate, change	-2.660	-0.685	-1.650	-0.324
	(8.447)	(1.206)	(3.918)	(9.858)
Total labor income, change (in logs)	5.580**	4.142	5.939***	5.537*
	(2.698)	(4.271)	(2.240)	(2.845)
Average labor income, change (in logs)	-0.128	-1.032	0.780	-0.240
	(1.535)	(3.145)	(1.509)	(1.566)
Informality rate, change	-25.38**	-65.46	-10.71	-37.90**
	(12.45)	(132.8)	(12.35)	(14.97)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES
Observations	186	186	186	186

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Coefficients are estimated using separate regressions of 2015-2020 municipality-level changes in the employment and informality rate (0-100 scale), and the logarithm of total and average labor income (in 2010 Mexican pesos). (4) Independent variable: log change in exposure to US tariffs on China, see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) manufacturing municipal exports to the US.

6. Robustness Checks

Impacts on Mexican exports to non-US markets

A key concern in our analysis is whether the observed effects on Mexican exports are driven by broader trends in export growth rather than the specific trade shock analyzed. In particular, if the positive impact of increased exposure to U.S. tariffs on Chinese goods merely captured a global trend in targeted exporting sectors, we would expect to observe similar effects across all export destinations. To test this, we examine whether the increase in exposure to U.S. tariffs on Chinese products also led to a rise in Mexican exports to the rest of the world (ROW). Table 5 presents the results of this robustness check.

Table 5. Mexico's Exports to Non-US Destinations vs. Exposure to US Tariffs on China at the Municipal Level.

	Change in Log (Exports to ROW)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	2.307	-1.179	-1.166
	(2.844)	(2.114)	(2.260)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	163	163	163
R-squared	0.021	0.444	0.459

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing exports from Mexico to the Rest of the World between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

The findings indicate that higher exposure to U.S. tariffs on China at the municipality level does not translate into significant growth in Mexican exports to non-U.S. destinations. Across all specifications, the coefficient associated with the change in tariff exposure remains statistically insignificant, with large standard errors. This suggests that the observed increase in Mexican exports is primarily driven by shipments to the U.S. rather than a broad-based expansion in external demand for the same products affected by the trade war.

Trade deflection

It has been argued that countries can avoid higher tariffs by rerouting goods through third-party countries and then exporting them to the final destination (Liu and Shi, 2019; Stoyanov, 2012; Iyoha et al., 2024). If this phenomenon—known as *trade deflection* or *transshipment*—took place during the US-China trade war, it would potentially challenge the interpretation of our results. This is because the increase in municipality-level exports from Mexico to the US would reflect a re-channeling of Chinese exports rather than an increase in the production of goods within Mexico that are exported to the US.

To test the *trade deflection* hypothesis at the local level, we first estimate the main specification in Table 2 but using Mexican imports from China as the dependent variable. Intuitively, if the hypothesis were true, we would find that municipalities more exposed to the US-China trade war experienced a disproportionate increase in imports from China, which would explain (in whole or in part) their estimated increase in exports to the US. If trade deflection were the primary factor driving the rise in Mexico's exports to the US, we should not expect to see significant labor market impacts.

As shown in Table 6, Mexican municipalities that were more exposed to the US-China trade war did not attract more imports from China than those that were less exposed. This suggests that the trade deflection hypothesis does not contribute to explaining the impact on exports to the US at the local level. However, this does not rule out the existence of trade deflection at the aggregate level—for example, if imports from China are transported between municipalities within Mexico and then shipped to the US.

Table 6. Mexico's Imports from China vs. Exposure to US Tariffs on China at the Municipal Level.

	Change in Log (Imports from CHN)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	2.708	1.308	1.074
	(1.707)	(1.773)	(2.111)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	165	165	165
R-squared	0.056	0.340	0.345

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing imports from China between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Parallel trends assumption

A key assumption underlying our municipality-level estimates is that municipalities with low and high exposure to the US-China trade war exhibited similar trends in the outcome variables before the onset of the war. Otherwise, our estimates would be biased as they reflect differential pre-existing trends unrelated to the US-China war.

We test this assumption by implementing an event study using annual export data for the whole available period (2013-2023).[20] This analysis divides municipalities into two groups based on their exposure to U.S. tariffs on Chinese goods—highly exposed versus less exposed—and examines the differences in the weighted average level of manufacturing exports to the U.S. before and after the onset of the trade war in 2018.

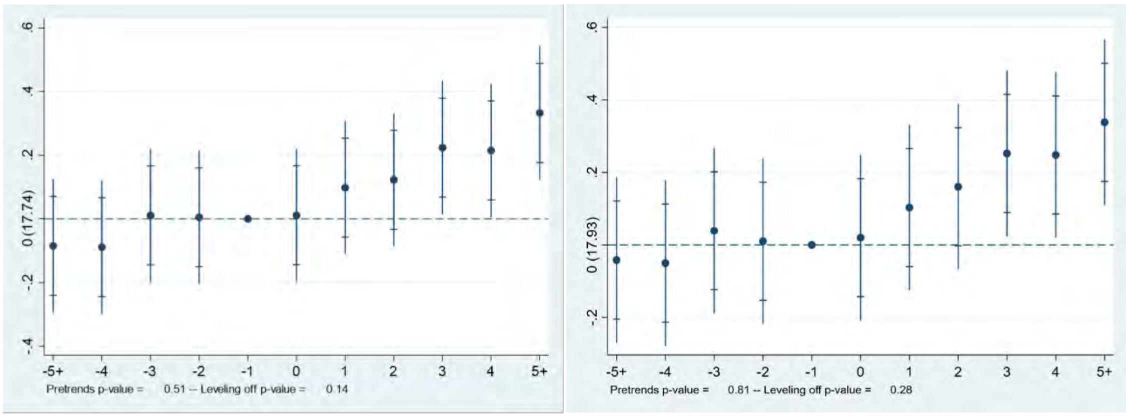
Figure 3 presents the results of this analysis, considering two alternative definitions of high exposure. In panel (a), highly exposed municipalities are those with a maximum level of manufacturing tariff exposure above the median among municipalities with

[20] We cannot implement a similar test for the labor variables because the data is not annual.

positive exposure. In panel (b), highly exposed municipalities correspond to those in the top 40 percent of the exposure distribution. In both cases, the results confirm that the observed export changes do not stem from different pre-existing trends between groups. This is because the difference in manufacturing exports between the two groups of municipalities is not statistically different from zero in any year before the start of the trade war. Such a difference becomes statistically significant only after 2020. This further supports the assumption that any post-2018 export divergence between the two groups is attributable to the trade war rather than pre-existing differential trends.

Figure 3. Weighted average difference in manufacturing exports to the US (in logs) between highly and less exposed municipalities before and after the start of the trade-war (2018), 2013-2023.

(a) Highly exposed: above the median **(b) Highly exposed: highest 40%**



Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and exports from Secretaría de Economía in Mexico.

Notes: (1) Plots obtained with Freyaldenhoven et al. (2024) methodology using as policy variable the interaction between the highly exposed municipality dummy and the trade war dummy (i.e., year>=2018), weighting observations by the average manufacturing exports to the US in the period 2016-2017, using the largest possible window with the minimum and maximum event times in the estimation sample. (2) In panel (a), Highly (less) exposed municipalities are those with maximum manufacturing exposure above (below) the median among municipalities with positive exposure. In panel (b), the cutoff is the 7th decile (≥7th for highly exposed). (3) Exposure per municipality-year is a weighted average of US tariffs on China by product-year, weighted by the share of each product in the municipality's manufacturing exports to the US in the base year (average 2013–2017). (4) Tariffs on China are from Fajgelbaum et al. (2024) for 2013-2019. (5) Exports, expressed in 2010 US dollars, are the sum of all manufacturing products at the 6-digit HS level. (6) Manufacturing includes HS chapters 16–24, 28–70, and 72–96.

Alternative specifications

Table 7 presents additional robustness checks to ensure that other confounding factors do not drive our baseline estimates. Specifically, we assess whether the estimated effects of exposure to U.S. tariffs on China remain consistent after controlling for (i) changes in COVID-19-related deaths at the municipal level over the period, (ii) initial municipal population and median income to account for differential trends in municipalities with different population sizes or income levels, and (iii) exposure to U.S.

tariffs measured in absolute levels rather than log changes, to verify that our results are not sensitive to the logarithmic transformation.

The results in Table 7 suggest that the total labor income effects observed in the baseline specification are attenuated when controlling for COVID-19 deaths and initial population size. This indicates that part of the estimated impact on total labor income may be partially explained by differential population trends—potentially due to migration—and by differences in the pandemic's effects across municipalities with varying degrees of exposure to U.S. tariffs on China. However, the estimated impacts on exports, employment, and informality remain robust across all specifications. These findings further confirm that the core labor market effects of exposure to U.S. tariffs on China are not driven by underlying demographic shifts, income disparities, or pandemic-related shocks.

Table 7. Robustness checks of the effects of Exposure to US tariffs on China.

Estimated impact of log (Exposure to US tariffs on China) change on:	Baseline	Additional control: COVID-19 deaths, change	Additional control: Total population, initial	Additional control: Median income, initial	Exposure in levels
Log (Manufacturing exports to US), change	4.272**	4.581**	4.415**	3.611*	3.844**
	(2.082)	(2.166)	(2.173)	(1.961)	(1.848)
Employment rate, change	-2.660	-2.645	-1.090	1.235	-2.760
	(8.447)	(8.814)	(8.482)	(7.360)	(7.435)
Employment rate of Unskilled, change	-6.674	-2.867	-1.376	-0.929	-5.822
	(13.36)	(15.87)	(16.33)	(14.15)	(11.97)
Employment rate of Semi-skilled, change	40.74**	47.79***	54.27***	40.91***	36.86***
	(15.72)	(15.96)	(14.46)	(15.01)	(13.58)
Employment rate of Skilled, change	0.570	-1.442	5.037	-0.501	-0.407
	(15.30)	(17.01)	(16.37)	(16.52)	(13.52)
Employment rate in Agriculture, change	-0.685	-1.223	-1.452	-0.732	-0.721
	(1.206)	(1.356)	(1.430)	(1.203)	(1.072)
Employment rate in Manufacturing, change	-1.650	1.670	3.213	-2.360	-1.695
	(3.918)	(4.444)	(4.760)	(4.371)	(3.514)
Employment rate in Services, change	-0.324	-3.091	-2.851	4.327	-0.344
	(9.858)	(11.18)	(11.23)	(8.369)	(8.839)
Total labor income, change (in logs)	5.580**	2.301	1.535	6.506***	4.929**
	(2.698)	(2.070)	(1.849)	(2.493)	(2.417)
Total labor income of Unskilled, change (in logs)	5.746***	2.638	2.148	6.422***	5.111**
	(2.176)	(1.653)	(1.526)	(2.148)	(1.967)
Total labor income of Semi-skilled, change (in logs)	7.155***	3.926**	3.194**	7.732***	6.346***
	(2.125)	(1.505)	(1.254)	(2.173)	(1.909)
Total labor income of Skilled, change (in logs)	4.844	1.867	0.862	5.895*	4.316
	(3.237)	(2.673)	(2.466)	(3.201)	(2.886)
Total labor income in Agriculture, change (in logs)	4.142	0.544	-1.032	4.177	3.643
	(4.271)	(3.810)	(3.279)	(4.335)	(3.813)
Total labor income in Manufacturing, change (in logs)	5.939***	3.653*	2.881*	6.637***	5.306***
	(2.240)	(1.948)	(1.720)	(2.180)	(2.019)
Total labor income in Services, change (in logs)	5.537*	2.024	1.173	6.595**	4.891*
	(2.845)	(2.146)	(1.905)	(2.628)	(2.546)
Average labor income, change (in logs)	-0.128	-0.743	-1.226	0.291	-0.177
	(1.535)	(1.257)	(1.163)	(1.370)	(1.346)
Average labor income of Unskilled, change (in logs)	-0.865	-1.583	-1.934*	-0.887	-0.825
	(0.992)	(1.153)	(1.100)	(1.219)	(0.878)
Average labor income of Semi-skilled, change (in logs)	0.0847	-0.536	-1.133	0.151	0.00809
	(1.425)	(1.405)	(1.264)	(1.542)	(1.260)
Average labor income of Skilled, change (in logs)	0.753	0.315	-0.155	1.436	0.647
	(1.833)	(1.457)	(1.378)	(1.721)	(1.622)
Average labor income in Agriculture, change (in logs)	-1.032	-0.784	-1.563	-0.566	-0.900
	(3.145)	(2.943)	(2.970)	(2.721)	(2.822)
Average labor income in Manufacturing, change (in logs)	0.780	0.871	0.134	1.001	0.685
	(1.509)	(1.468)	(1.339)	(1.423)	(1.351)
Average labor income in Services, change (in logs)	-0.240	-0.945	-1.416	0.193	-0.283
	(1.566)	(1.257)	(1.152)	(1.420)	(1.370)
Informality rate, change	-25.38**	-22.82*	-26.12**	-21.94*	-21.70*
	(12.45)	(13.38)	(13.01)	(12.64)	(11.07)
Informality rate of Unskilled, change	-55.60***	-42.48**	-44.65**	-45.15**	-49.24***
	(19.78)	(18.49)	(19.42)	(21.16)	(17.64)
Informality rate of Semi-skilled, change	-16.97	-37.89**	-44.43**	-23.49	-15.19
	(21.01)	(18.85)	(17.82)	(26.28)	(18.74)
Informality rate of Skilled, change	-43.97**	-42.80**	-47.74**	-35.88**	-38.78**
	(21.51)	(21.08)	(21.07)	(16.70)	(19.24)
Informality rate in Agriculture, change	-65.46	-122.7	-116.2	-93.56	-61.46
	(132.8)	(141.1)	(147.6)	(123.8)	(121.9)
Informality rate in Manufacturing, change	-10.71	-11.33	-7.567	-6.123	-9.651
	(12.35)	(16.32)	(14.77)	(16.75)	(10.71)
Informality rate in Services, change	-37.90**	-32.88**	-36.27**	-32.40**	-32.76**
	(14.97)	(15.84)	(15.19)	(14.97)	(13.23)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES	YES

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Each coefficient corresponds to a separate regression of the dependent variable specified in each row on the log change in exposure to US tariffs on China (except in the last column, where the absolute change in Exposure is used instead). (4) Regressions are weighted by initial (i.e., average 2016-2017) municipality manufacturing exports to the US.

7. Conclusions

To our knowledge, this is the first paper to provide evidence on the localized impacts of the US-China trade war at the local level within a third country. We find that Mexican municipalities with export baskets more concentrated in products targeted by US tariffs on Chinese goods experienced significantly larger increases in exports to the US. These export gains translated into improved labor market outcomes, including increased total labor income (particularly for semi-skilled and unskilled workers), higher employment rates for semi-skilled workers, and a reduction in labor informality. The effects were concentrated in manufacturing with some positive spillovers to services but none to agriculture. Future research could explore the impacts of nearshoring on Foreign Direct Investment (FDI), the reallocation of multinational companies, and the long-term effects of (potentially) short-term disruptions to international trade patterns.

The findings of this paper address the broader challenge of how developing countries can leverage a positive trade shock to improve export capacity and job quality. In the case of Mexico, trade integration and geographic proximity to the US market were important enabling conditions, and pre-existing productive capacity in the tariff-targeted sectors was critical. More broadly, these findings raise the question of whether the export and labor market gains documented here represent a temporary windfall or a permanent structural shift. The World Development Report 2020 (World Bank, 2020) outlines several policies that would help achieve the latter. First, human capital investments are essential to advance beyond assembly-intensive activities toward more sophisticated forms of GVC participation that are intensive in technical and managerial capacity. Second, investments in logistics infrastructure — including customs reforms and liberalization of transport services — are necessary conditions for sustained competitiveness. Third, regulatory continuity and policy predictability are critical for GVC expansion, as uncertainty about the institutional environment prompts firms to delay investment.

References

Alfaro, L., & Chor, D. (2023). *Global supply chains: The looming "great reallocation"* (No. w31661). National Bureau of Economic Research.

Amiti, M., Redding, S. J., & Weinstein, D. E. (2019). The impact of the 2018 tariffs on prices and welfare. *Journal of Economic Perspectives*, *33*(4), 187-210.

Autor, D., Dorn, D., and Hanson, G. H. (2013). The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review*, 103(6), 2121–2168.

Bown, C. P. (2021). The US–China trade war and Phase One agreement. *Journal of Policy Modeling, 43*(4), 805–843. https://doi.org/10.1016/j.jpolmod.2021.02.009

Cavallo, A., Gopinath, G., Neiman, B., & Tang, J. (2021). Tariff pass-through at the border and at the store: Evidence from U.S. trade policy. *American Economic Review: Insights*, *3*(1), 19-34.

Chiquiar, D., & Tobal, M. (2024). Nearshoring: Possible Scenarios of its Size and Impact on Mexico's Economy. Americas Institute, Georgetown University.

Elbers, C., Lanjouw, J. O., & Lanjouw, P. (2003). Micro-level estimation of poverty and inequality. *Econometrica*, 71(1), 355–364. doi:10.1111/1468-0262.00399

Enamorado, T., López-Calva, L. F., Rodríguez-Castelán, C., & Winkler, H. (2016). Income inequality and violent crime: Evidence from Mexico's drug war. *Journal of Development Economics*, 120(May), 128–143. doi:10.1016/j.jdeveco.2015.12.004

Fajgelbaum, P., Goldberg, P., Kennedy, P. & Khandelwal, A. (2020). The Return to Protectionism. *The Quarterly Journal of Economics*, 135(1), 1–55. https://doi.org/10.1093/qje/qjz036

Fajgelbaum, P., Goldberg, P. K., Kennedy, P. J., Khandelwal, A., & Taglioni, D. (2022). How the US-China trade war affected the rest of the world. NBER Digest, April 2022. https://www.nber.org/digest/202204/how-us-china-trade-war-affected-rest-world

Fajgelbaum, P., Goldberg, P., Kennedy, P., Khandelwal, A. & Taglioni, D. (2024). The US-China Trade War and Global Reallocations. *American Economic Review: Insights*, 6 (2), 295–312. doi: 10.1257/aeri.20230094.

Freund, C., Mattoo, A., Mulabdic, A., & Ruta, M. (2024). Is US trade policy reshaping global supply chains?. *Journal of International Economics*, *152*, 104011.

Hakobyan, S. and McLaren, J. (2016). Looking for Local Labor Market Effects of NAFTA. *Review of Economics and Statistics*, 98(4), 728–741.

Hayakawa, K. and Sudsawasd, S. (2025). Impacts of Trade Diversion from China in the United States Market on Wages in a Third Country: Evidence from Thailand. *International Economics*, 183.

INEGI (2024). Producto Interno Bruto por Entidad Federativa (PIBE) 2023. Comunicado de prensa número 741/24. 6 de diciembre de 2024.

Iyoha, E., Malesky, E., Wen, J., Wu, S. J., & Feng, B. (2024). *Exports in Disguise?: Trade Rerouting during the US-China Trade War*. Harvard Business School.

Liu, X., & Shi, H. (2019). Anti-dumping duty circumvention through trade rerouting: Evidence from Chinese exporters. The World Economy, 42(5), 1427-1466.

Mayr-Dorn, K., Narciso, G., Dang, D. A., and Phan, H. (2026). Trade Diversion and Labor Market Adjustment: Vietnam and the U.S.-China Trade War. *Journal of International Economics*.

Rodríguez-Castelán, C., Vázquez, E., & Winkler, H. (2024). Exports and Income Inequality in Mexico. *The Journal of Development Studies*, *60*(7), 1131–1159. https://doi.org/10.1080/00220388.2024.2337373

Ruggles, S., Sobek, M., Alexander, J. T., Fitch, C. A., Goeken, R., Hall, P. K., King, M., & Ronnander, C. (2007). Integrated public use microdata series: Version 3.0. Machine-readable database. Minneapolis: Minnesota Population Center.

Serrano, J. (2023). Do Robots Necessarily Displace Workers? Evidence from Mexican Local Labor Markets. Job Market Paper, University of California, Los Angeles (UCLA).

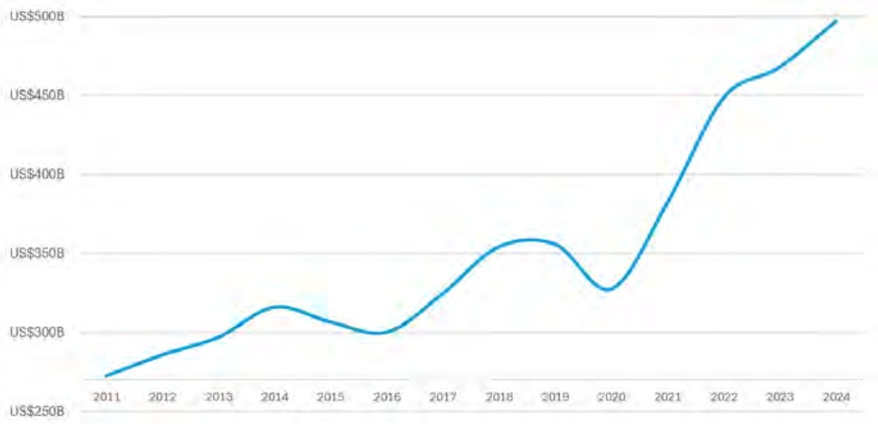
Stoyanov, A. (2012). Tariff evasion and rules of origin violations under the Canada-US Free Trade Agreement. Canadian Journal of Economics/Revue canadienne d'économique, 45(3), 879-902.

Vazquez, E. and Winkler, D. (2023). Trade and Local Labor Market Outcomes in Mexico: Disentangling the Channels and the Role of Geography, Sectors, and Trade Types. World Bank Policy Research Working Paper No. 10332.

World Bank. 2020. World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC: World Bank. doi:10.1596/978-1-4648-1457-0. License: Creative Commons Attribution CC BY 3.0 IGO

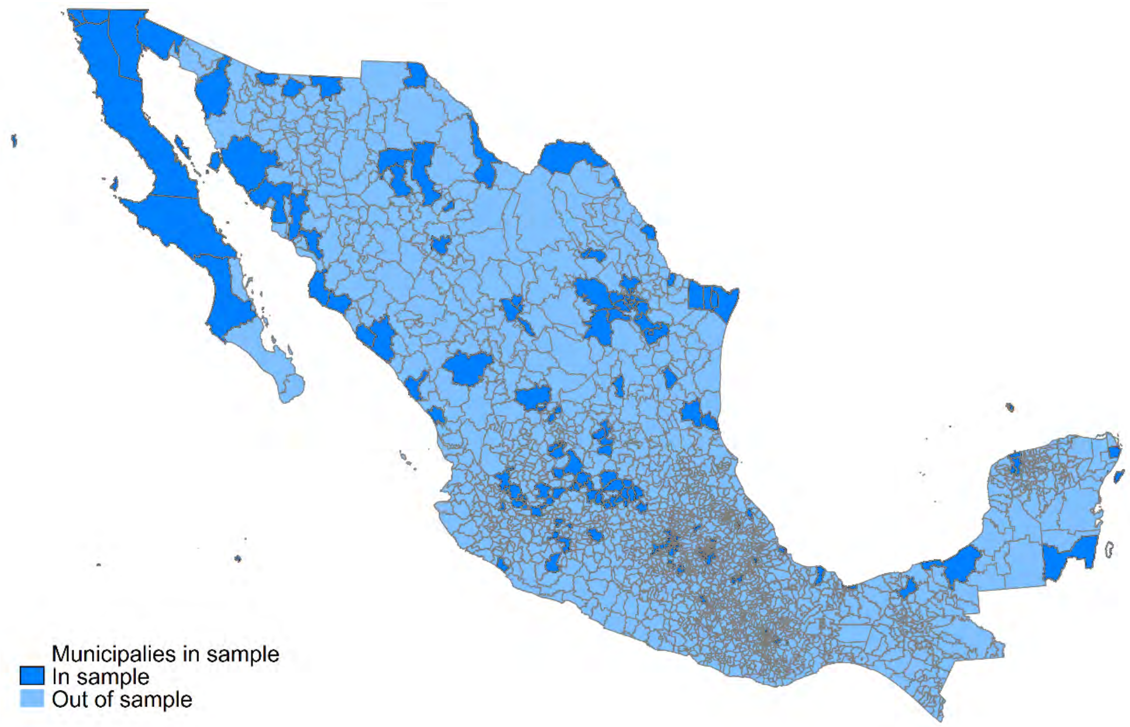
A. Appendix

Figure A1. Mexican exports to the United States, 2011-2024.



Source: INEGI – BCMM (available at https://www.economia.gob.mx/datamexico/en/profile/country/estados-unidos).

Figure A2. Map of municipalities in and out of the sample



Source: Own elaboration.

Table A1. Comparison of municipalities in and out of the sample.

Variable	In sample	Out of the sample
Employment rate	52.3	42.7
Employment rate of Unskilled	45.2	39.2
Employment rate of Semi-skilled	60.2	53.7
Employment rate of Skilled	76.7	74.0
Employment rate in Agriculture	4.3	15.2
Employment rate in Manufacturing	10.5	5.1
Employment rate in Services	36.6	21.6
Total labor income	29,680,677	4,923,142
Total labor income of Unskilled	12,026,407	2,939,030
Total labor income of Semi-skilled	8,096,464	1,229,502
Total labor income of Skilled	10,825,374	1,019,941
Total labor income in Agriculture	1,480,192	876,558
Total labor income in Manufacturing	5,402,294	648,636
Total labor income in Services	22,805,246	3,406,521
Average labor income	6,007	3,515
Average labor income of Unskilled	4,396	3,022
Average labor income of Semi-skilled	6,055	4,120
Average labor income of Skilled	10,557	6,973
Average labor income in Agriculture	6,542	2,857
Average labor income in Manufacturing	5,630	3,196
Average labor income in Services	6,141	3,939
Informality rate	47.1	82.1
Informality rate of Unskilled	59.3	89.6
Informality rate of Semi-skilled	37.3	73.2
Informality rate of Skilled	24.2	48.5
Informality rate in Agriculture	66.4	92.7
Informality rate in Manufacturing	34.8	79.8
Informality rate in Services	50.8	80.1
Share of population in rural areas, initial	0.30	0.90
Literacy rate, initial	0.96	0.88
Share of employment in agriculture, initial	0.09	0.39
Share of employment in manufacturing, initial	0.20	0.11
Share of employment in services, initial	0.71	0.50
COVID-19 deaths	1,072	46
Total population, initial	331,547	25,479
Per capita median income (in logs), initial	10.4	9.7
Number of municipalities	*186*	*2271*

Source: Own elaboration based on data from the 2020 Census of Population and Housing and the 2015 Population Count from INEGI and IPUMS, Total COVID-19 deaths reported in years 2020-2021 from Dirección General de Epidemiología in Mexico and Per capita median income from Rodríguez-Castelán et al. (2024).

Notes: (1) Per capita incomes are in 2014 Mexican pesos; average and total labor incomes are in 2015 Mexican pesos. (2) The table reports simple municipality averages for the entire period (2015–2020) when 'initial' is not specified, and for 2015 when 'initial' is specified.

Table A2. Descriptive statistics: Average characteristics of municipalities in the sample in the pre- and post-trade war period.

Variable	All municipalities in the sample	By exposure to trade war: Low	High	Difference
Exposure to US tariffs on China	1.07	1.05	1.08	0.03***
Exposure to US tariffs on Mexico	1.00	1.0001	1.0005	0.0004**
Manufacturing Exports to US (in logs)	16.3	15.3	17.2	1.9***
Manufacturing Exports to Rest of the World (in logs)	14.8	13.7	15.8	2.1***
Employment rate	52.3	52.0	52.7	0.7
Employment rate of Unskilled	45.2	45.4	44.9	-0.5
Employment rate of Semi-skilled	60.2	60.6	59.8	-0.8
Employment rate of Skilled	76.7	77.0	76.3	-0.7
Employment rate in Agriculture	4.3	5.4	3.2	-2.3***
Employment rate in Manufacturing	10.5	9.8	11.2	1.4**
Employment rate in Services	36.6	35.9	37.3	1.4*
Total labor income	29,680,677	25,517,436	33,843,919	8326483***
Total labor income of Unskilled	12,026,407	11,064,600	12,988,213	1923614**
Total labor income of Semi-skilled	8,096,464	6,991,831	9,201,097	2209266***
Total labor income of Skilled	10,825,374	8,371,851	13,278,896	4907046***
Total labor income in Agriculture	1,480,192	1,382,577	1,577,807	195,229
Total labor income in Manufacturing	5,402,294	4,526,940	6,277,648	1750707***
Total labor income in Services	22,805,246	19,614,476	25,996,016	6381540***
Average labor income	6,007	5,630	6,384	754***
Average labor income of Unskilled	4,396	4,226	4,566	340***
Average labor income of Semi-skilled	6,055	5,717	6,393	676***
Average labor income of Skilled	10,557	9,930	11,184	1254***
Average labor income in Agriculture	6,542	5,679	7,405	1726***
Average labor income in Manufacturing	5,630	5,201	6,059	859***
Average labor income in Services	6,141	5,786	6,497	710***
Informality rate	47.1	52.1	42.1	-10.1***
Informality rate of Unskilled	59.3	64.1	54.6	-9.5***
Informality rate of Semi-skilled	37.3	41.9	32.8	-9.1***
Informality rate of Skilled	24.2	26.6	21.7	-4.8***
Informality rate in Agriculture	66.4	73.7	59.2	-14.5***
Informality rate in Manufacturing	34.8	41.1	28.6	-12.5***
Informality rate in Services	50.8	55.0	46.7	-8.3***
Share of population in rural areas, initial	0.3	0.36	0.24	-0.12***
Literacy rate, initial	1.0	0.96	0.97	0.01***
Share of employment in agriculture, initial	0.09	0.11	0.06	-0.05***
Share of employment in manufacturing, initial	0.20	0.19	0.22	0.03*
Share of employment in services, initial	0.71	0.70	0.72	0.02
COVID-19 deaths	1,072	839	1,305	465**
Total population, initial	331,547	273,192	389,901	116709**
Per capita median income (in logs), initial	10.4	10.3	10.4	0.17***
Number of municipalities	*186*	*93*	*93*	

Source: Own elaboration based on IPUMS 2015 and 2020, Total COVID-19 deaths reported in years 2020-2021 from Dirección General de Epidemiología in Mexico, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Municipalities in the estimation sample were divided into two groups according to their maximum average level of manufacturing exposure to US tariffs on China in the two periods of analysis (2016-2017 and 2018-2021). Highly (lowly) exposed municipalities are those above (below) the median value for municipalities. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Per capita incomes are in 2014 Mexican pesos, average and total labor incomes are in 2015 Mexican pesos, and Exports are in 2010 US dollars.

Table A3. Regression of Local migration on Exposure to US tariffs on China at the municipality level.

	Change in Log (Working age population of immigrants)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	3.629*	3.122*	3.090**
	(2.009)	(1.880)	(1.510)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	186	186	186
R-squared	0.070	0.436	0.678

Source: Own elaboration based on Working age population of immigrants from IPUMS, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the change, from 2015 to 2020, in the logarithm of the total number of working-age (14-55) immigrants in the municipality, where immigrants are defined as residents who lived in another state of Mexico (internal immigrant) or abroad (external immigrant) 5 years before. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (6) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Table A4. Firm Employment, Value Added, and Fixed Assets vs Exposure to the U.S.–China Trade War (2013–2023)

Estimated impact of log (Exposure to US tariffs on China) change on:	OLS - weighted					
	All sectors			Manufacturing		
	(1)	(2)	(3)	(1)	(2)	(3)
Employment	2.186	0.605	0.204	2.408	0.212	-0.133
	(2.157)	(0.798)	(0.532)	(3.121)	(0.940)	(0.909)
Value added	2.969	1.895	1.261	4.732	-0.338	-1.574
	(2.713)	(2.123)	(2.046)	(3.753)	(1.581)	(1.545)
Fixed assets	-4.270	-3.662	-3.527	4.280	1.431	1.095
	(3.805)	(4.082)	(3.829)	(3.482)	(1.820)	(1.933)
State FE	NO	YES	YES	NO	YES	YES
Demographic and employment controls	NO	NO	YES	NO	NO	YES
Observations	186	186	186	186	186	186

Source: Own elaboration based on Employment, Value added, and Fixed assets from the Economic Censuses, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Each coefficient corresponds to a separate regression of the dependent variable specified in each row on the log change in exposure to US tariffs on China. (4) The dependent variables—Employment, Value added, and Fixed assets—are defined as the change from 2013 to 2023 in the logarithm of the corresponding municipal aggregate (considering all sectors or manufacturing only). (5) Log change in exposure to US tariffs on China and Mexico: see section 4. (6) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (7) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Table A5. Regional distribution of municipalities by sample inclusion and exposure to the tariff shock

Region	Out of the sample	In sample	Low exposure	High exposure
Northwest	8%	17%	15%	19%
Northeast	4%	18%	15%	20%
West	11%	14%	19%	9%
East	24%	13%	15%	11%
North-Central	7%	15%	11%	19%
South-Central	6%	17%	16%	18%
Southwest	34%	2%	3%	0%
Southeast	6%	4%	5%	3%
Number of municipalities	*2271*	*186*	*93*	*93*

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2023).

Notes: (1) Regions are defined as follows. Northwest: Baja California, Baja California Sur, Chihuahua, Durango, Sinaloa, and Sonora. Northeast: Coahuila, Nuevo León, and Tamaulipas. West: Colima, Jalisco, Michoacán and Nayarit. East: Hidalgo, Puebla, Tlaxcala, and Veracruz. North-Central: Aguascalientes, Guanajuato, Querétaro, San Luis Potosí and Zacatecas. South-Central: Mexico City, State of Mexico, and Morelos. Southwest: Chiapas, Guerrero, and Oaxaca. Southeast: Campeche, Quintana Roo, Tabasco, and Yucatán. (2) Municipalities in the estimation sample were divided into two groups according to their maximum average level of manufacturing exposure to US tariffs on China in the two periods of analysis (2016-2017 and 2018-2021). Highly (lowly) exposed municipalities are those above (below) the median value for municipalities.

1. Introduction

The escalation of protectionist measures between the United States and China, which began in 2018, has been one of the most severe disruptions to global trade flows in recent decades. Between 2018 and 2019, the United States implemented a series of trade interventions, including the imposition of elevated tariffs and antidumping and countervailing duties on imports from China. Consequently, the average US tariff on imports from China increased from 3 percent at the end of 2017 to 20 percent by 2019. By 2019, the share of US-China trade subject to the new tariffs exceeded 50 percent.[1] These levels persisted until early 2025, when new trade barriers were introduced, escalating tensions between the two countries.

This sudden shift in trade policy disrupted bilateral trade flows between these major economies and had consequences for other countries, particularly those deeply integrated into supply chains with the United States, such as Mexico. In recent years, exports to the United States rose sharply from around US$300 billion before the trade war to US$500 billion in 2024, an increase roughly equivalent to the GDP of Peru or Finland.[2] This notable surge has sparked debate over whether the US-China trade war, at least in part, played a role in redirecting production and trade toward Mexico.

The phenomenon of "nearshoring"—the strategic reallocation of production activities from distant countries such as China to neighboring nations such as Mexico—has gained considerable traction in the policy discourse as a potential explanation for this surge (Chiquiar and Tobal, 2024). Mexico's geographic proximity to the US, combined with its established status as a trade partner under the North American Free Trade Agreement (NAFTA) and its successor, the US-Mexico-Canada Agreement (USMCA), has positioned its economy as a potential beneficiary of the US-China trade frictions. These potential benefits can materialize through at least two mechanisms. First, multinational companies outside the United States may seek to minimize exposure to geopolitical risks and supply chain disruptions by relocating production to Mexico. Second, Mexican firms may capitalize on opportunities to increase production capacity, substituting for declining Chinese exports to the United States.

While there is a growing body of literature on the aggregate economic impacts of the US-China trade war on both participating economies (see, for example, Amiti, Redding, and Weinstein, 2019; Cavallo et al., 2021; Fajgelbaum et al., 2020), empirical evidence on third-country effects is limited, particularly at the subnational level. A large body of literature demonstrates that trade shocks propagate unevenly across local labor markets. Filling this subnational gap is therefore essential for understanding the distributional consequences of the US-China trade war in third countries like Mexico. Some exceptions include Fajgelbaum et al. (2024), Freund et al. (2024), and Alfaro and Chor (2023), who find that Mexico (among other economies) was among the largest

[1] Section 2 describes these events in detail.

[2] See Figure A1 in the Appendix.

beneficiaries of the trade disruptions; and Chiquiar and Tobal (2024), who find that the US-China trade war increased Mexico's exports of the products targeted by the escalation. However, none of these studies assesses the impacts of the US-China trade war at the local level within Mexico's territory. To our knowledge, only two studies provide subnational or worker-level evidence on the labor market impacts of the recent trade diversion episode in third countries: Mayr-Dorn et al. (2026) for Viet Nam and Hayakawa and Sudsawasd (2025) for Thailand. No comparable evidence exists for Mexico, whose economy differs substantially from its Southeast Asian counterparts in its depth of integration with the United States.

This paper helps fill this gap by investigating the impacts of the 2018-2019 US-China trade war on exports and labor market outcomes at the municipal level in Mexico. We combine detailed municipal-level customs records from Mexico's Ministry of Economy — covering product-level exports disaggregated to the six-digit Harmonized System for 186 manufacturing-exporting municipalities that account for 47 percent of total manufacturing exports during 2016–2021 — with U.S. tariff schedules and labor market data from Mexico's 2015 and 2020 population censuses. We build a measure of municipality-level tariff exposure that weights U.S. ad-valorem tariffs on Chinese goods by each municipality's pre-war export basket, capturing the competitive advantage accruing to localities whose exports were already concentrated in products targeted by the tariff escalation. We then estimate an OLS model of the change in exports and labor market outcomes between the pre- (2016–2017) and post-trade war (2018–2021) periods as a function of this exposure measure, controlling for changes in U.S. tariffs on Mexico, state fixed effects, and pre-war municipal characteristics. This approach adapts the Bartik-style shift-share logic of Autor, Dorn, and Hanson (2013) to an export-growth setting and builds on prior subnational trade analyses for Mexico (Hakobyan and McLaren, 2016; Vazquez and Winkler, 2023; Rodríguez-Castelán, Vázquez, and Winkler, 2024).

Our research makes two significant contributions to this literature. First, it shows that municipalities whose exports were more concentrated in products targeted by the US tariffs on China experienced a disproportionate increase in exports to the US. In other words, the nearshoring effects measured by previous studies have been driven by municipalities whose exports were already more specialized in the targeted products. Our results suggest that the trade war increased Mexico's manufacturing exports to the US by a magnitude equivalent to 15 percent of Mexico's total manufacturing exports. This indicates that changes in the trade policies of large economies can significantly affect the geographic distribution of economic activity in a third country. In Mexico, municipalities in Northern and South-Central states benefited disproportionately from the tariff shock.

Second, to our knowledge, this is the first paper to provide evidence on the labor market impacts of nearshoring associated with the US-China trade war. Municipalities more exposed to the tariff shock saw total labor income rise by 5.6 percent for each 1 percent increase in tariff exposure, with gains concentrated among semi-skilled and unskilled workers. Employment rates among semi-skilled workers increased significantly, and labor informality — measured as the share of workers without pension or retirement benefits — fell by 0.25 percentage points. These labor market gains were driven primarily by manufacturing, with positive spillovers to services. Taken together, the findings suggest that the nearshoring dividend from the US-China trade war translated not merely into higher export volumes, but into a measurable improvement in job quality for workers in exposed municipalities.

The remainder of this paper is organized as follows. Section 2 provides an overview of the US-China trade war and its implications for third-party economies. Section 3 describes the data sources and the construction of key variables, and Section 4 outlines our empirical methodology. Section 5 presents the main results on the impact of the US-China trade war on the export performance of Mexican municipalities and their labor market outcomes. Section 6 provides a series of robustness checks to validate our main findings, and Section 7 concludes.

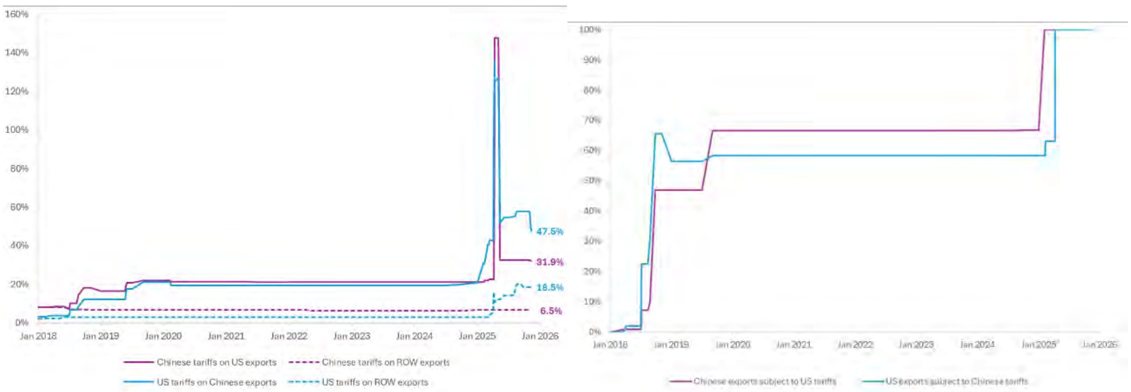
2. US-China Trade War (2018-2019)

The escalation of trade tensions between the United States and China began in 2018, when the United States imposed tariffs on appliances, solar panels, steel, and aluminum, later expanding the measures to cover a broad range of Chinese imports under Section 301 (Fajgelbaum and Khandelwal, 2022). Between 2018 and 2019, the United States implemented five rounds of tariffs affecting approximately US$350 billion of imports from China. Consequently, the average US tariff on imports from China increased from 3 percent at the end of 2017 to 20 percent by 2019 (Figure 1a). By 2019, the share of US-China trade subject to the new tariffs exceeded 50 percent (Figure 1b). China retaliated with tariffs on approximately US$100 billion of US exports, with 27 percent of the tariffs concentrated in agricultural products.

Figure 1. US-China trade war tariffs.

a. US-China tariff rates toward each other and the rest of the world (ROW)

b. Percent of US-China trade subject to trade war tariffs



Source: Chad P. Bown. 2025. US-China Trade War Tariffs: An Up-to-Date Chart (available at https://www.piie.com/research/piie-charts/us-china-trade-war-tariffs-date-chart).

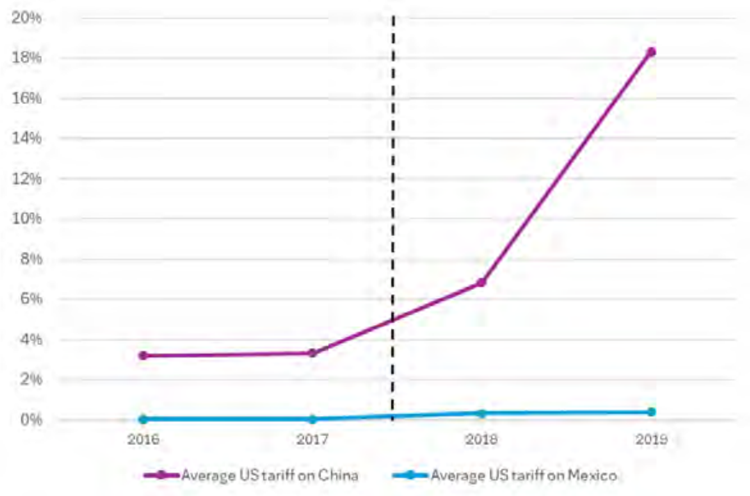
Note: Trade-weighted average tariffs computed from product-level tariffs and trade data, weighted by US exports to the world and China's exports to the world in 2017. The series is constructed by the authors using data from UN

Comtrade, Trade Map, and Market Access Map (International Trade Centre, marketanalysis.intracen.org), as well as announcements from China's Ministry of Finance and the USTR.

As a result, the average US tariff on manufacturing imports from China rose from 3.2 percent in 2016 to 18.3 percent in 2019 (Figure 2; Fajgelbaum et al., 2024). By contrast, tariffs on US imports from Mexico remained unchanged, underscoring the differential exposure of trading partners to the dispute. Although the "Phase One" deal signed in January 2020 rolled back some tariffs, most remained in place, cementing a significant shift in the global trade landscape.

The implications of these disruptions extended far beyond the two countries directly involved. A growing body of research indicates that "bystander" economies have increased their global exports of products subject to US-China tariffs, thereby gaining net trade opportunities rather than merely experiencing trade diversion (Fajgelbaum et al., 2024; Freund et al., 2024). The extent of these gains varied depending on countries' supply capacity and sectoral specialization, with Viet Nam, Thailand, the Republic of Korea, and Mexico emerging as the primary beneficiaries (Fajgelbaum et al., 2024). Strategic industries such as electronics, automotive products, and basic metals displayed notable shifts, reflecting the reallocation of demand away from the flows affected by tariffs (Freund et al., 2024; Alfaro and Chor, 2023).

Figure 2. Average US tariff on manufacturing products from China and Mexico, 2016-2019.



Source: Own elaboration based on ad-valorem tariffs on manufacturing products from Fajgelbaum et al. (2024).

Note: Manufacturing sector defined as HS chapters 16-24, 28-70, and 72-96.

Mexico stands out among these bystander economies. Recent evidence indicates that its non-motor vehicle exports to the United States were around 12 percent higher during 2018–2022 than they would have been in the absence of the trade war (Chiquiar and Tobal, 2024). Moreover, Mexico gained market share, particularly in automobiles, auto parts, and glass, iron, and steel products, with its share of US manufacturing imports increasing by 0.72 percentage points between 2017 and 2022 (Alfaro and Chor, 2023).

These findings suggest that Mexico benefited directly from reallocating US import demand away from China and became increasingly intertwined with global supply chain dynamics triggered by the trade war. This aggregate picture motivates our more granular analysis of how such global shifts translated into heterogeneous impacts across Mexican municipalities.

3. Data

We compiled a database from three primary sources: (1) detailed administrative records on exports and imports at the municipality level, provided by the Mexican Ministry of Economy; (2) data on U.S. tariffs on China and Mexico from Fajgelbaum et al. (2024); and (3) information on labor markets and demographic characteristics from population censuses and counts, along with complementary economic activity indicators from economic census data.

The data on municipal exports and imports in Mexico come from customs records collected by the Mexican Ministry of Economy and are publicly available on the DataMéxico platform.[3] These data are reported at the product level, with a level of detail valid at the municipal level up to six digits of the Harmonized System (HS), covering the period from 2006 to 2023.[4] In addition to the trade value in U.S. dollars, the dataset includes the country of origin for imports and the destination country for exports.[5]

Unlike other local trade databases that use imputation methods to assign trade values to municipalities (such as the database compiled by the Mexican Tax Authority and used in Rodríguez-Castelán, Vazquez, and Winkler, 2024), the database assembled by the Mexican Ministry of Economy provides disaggregated export data for 411 municipalities, capturing approximately 40 percent of the total export value with product-level detail at the municipal level. Among these 411 municipalities, 402 exported to the U.S. at some point, but only 315 did so during the base period (2013–2017). After restricting the sample to municipalities that exported manufactured goods to the U.S. during that period, 186 remain in our estimation sample. A map of the municipalities in the sample is shown in the appendix, along with a table comparing the characteristics of these municipalities with those of municipalities outside the sample (2,271 municipalities).[6] Generally, the sample municipalities tend to have better economic outcomes. This is expected, as participation in Global Value Chains (GVC) is typically correlated with economic benefits (World Bank, 2020).

[3] The data can be downloaded using the Viz Builder tool (https://www.economia.gob.mx/datamexico/en/vizbuilder) and selecting "Foreign trade (BCMM) by municipality."
[4] Data for the year 2024 were incomplete at the time of writing this paper.
[5] These values are later deflated to 2010 U.S. dollars using the US-CPI published by the IMF, downloaded on 06/04/2024 from https://data.imf.org.
[6] Serrano (2023) assessed the accuracy of these customs data in Mexico and validated them for use in his study of the labor market effects of industrial robot adoption in Mexico.

The data on U.S. tariffs on China and Mexico are sourced from Fajgelbaum et al. (2024).[7] The authors compiled a monthly panel dataset of U.S. statutory import tariffs at the HS-6 level from 2013 to 2019, using public schedules from the U.S. International Trade Commission (USITC). We calculate the average monthly ad valorem tariffs for each product per year, and define the period from 2016 to 2017 as the pre-trade-war period and the period from 2018 to 2019 as the post-trade-war period.[8] Our dataset includes tariff information for 5,050 products subject to U.S. import duties from China and 4,531 from Mexico.[9] The average U.S. tariff on manufacturing products from China and Mexico during these years is depicted in Figure 2.

Data from the 2020 Census of Population and Housing and the 2015 Population Count are used to construct labor market indicators and estimate the demographic characteristics of municipalities.[10] Since publicly available data from the Mexican Institute of Statistics impose restrictions on cross-tabulations and the computation of specific detailed indicators, census microdata samples from the Integrated Public Use Microdata Series (Ruggles et al., 2007) are used to estimate labor market variables. Additionally, in the robustness section, the initial median income for 2015 is calculated using the poverty mapping methodology (Elbers, Lanjouw, & Lanjouw, 2003).[11] We also incorporate economic activity data from the 2014 and 2024 Economic Censuses, compiled by INEGI through the Sistema Automatizado de Información Censal (SAIC), which provide establishment-level information at fine geographic detail. Finally, changes in COVID-19 mortality are measured based on data reported by the General Directorate of Epidemiology in Mexico for 2020–2021.

A potential limitation of our data is that the estimation sample is constrained by the use of anonymized trade data at the municipal level, as required by statistical confidentiality. This restriction excludes the smallest municipalities and goods produced by firms that are the sole or among the very few exporters in a given locality. Small trade flows—often originating from smaller municipalities or niche industries—are intentionally omitted. Therefore, the estimates primarily represent municipalities with larger export volumes and stronger labor market outcomes. While the 186 municipalities included in our sample may appear limited relative to the country's 2,457 municipalities, they accounted for roughly 47.5 percent of total manufacturing exports during 2016–2021, US$180 billion in exports to the U.S. in 2021, and over 52 percent of the Mexican

[7] These, in turn, are based on Fajgelbaum et al. (2020) and extended through the end of 2019. We downloaded the replication package from Khandelwal's webpage (https://akhandelwal8.github.io/research/) and applied the same processing steps used by the authors in the do-files z_usch.do and z_usi.do to construct datasets of unweighted U.S. tariffs on China and Mexico, respectively.

[8] Since 2020 marked the beginning of the phase-one agreement (Figure 1(a)), with almost no changes in tariffs during 2020–2021, we take the 2019 values as a valid measure for this period.

[9] While Bown (2021) provides more recent product-level U.S. tariff data for 2018–2020, we rely on Fajgelbaum et al. (2024) because their dataset, although limited to 2019, offers broader coverage of the pre–trade war period and includes U.S. tariffs on Mexico and the Rest of the World. The inclusion of tariffs on Mexico is particularly important for our analysis, as they serve as a key control variable.

[10] Although the 2015 Population Count is based on a survey, its large sample size ensures representativeness at the municipal level; see Enamorado et al. (2016).

[11] For a detailed description of the data, see Enamorado, López-Calva, Rodríguez-Castelán, & Winkler (2016).

population (according to the 2020 Census). These characteristics suggest that, despite its scope, the dataset provides a suitable basis for identifying the localized effects of trade shocks, as discussed in the next section.

4. Methodology

Our measure of municipalities' exposure to US tariffs on China is a municipality-weighted average of 1 plus the ad valorem tariff on Chinese goods, where the weights for each product are based on its share of the municipality's total exports to the US during 2013-2017. Intuitively, the effect of US-China tariff changes on municipality *m*'s economic outcomes is proportional to product *k*'s share in the municipality's export basket. A tariff-induced competitive advantage for products representing a larger share of a municipality's exports is expected to generate more substantial local economic impacts than equivalent tariff changes on products with a smaller share of exports.

Formally, the exposure of municipality m to US tariffs on China at period t ($E^{CH}_{m,t}$) is defined as:

$$E^{CH}_{m,t} = \sum_k \frac{X^{US}_{m,k,0}}{X^{US}_{m,0}} (1 + t^{CH}_{k,t})$$

where $t^{CH}_{k,t}$ is the ad-valorem tariff imposed by the US on China for product k in period t, $X^{US}_{m,k,0}$ represents the total exports of product k to the US from municipality m during the base period 0 (2013-2017), and $X^{US}_{m,0}$ denotes the total exports to the US from municipality m in the same base period 0.

We restrict our analysis to manufacturing products and focus on changes between the pre-trade-war period (2016-2017) and the post-trade-war period (2018-2021).[12] Exposure in the pre-trade war period is calculated as the average exposure in 2016 and 2017, while exposure in the post-trade war period is calculated as the average exposure in 2018 and 2019, since the ad valorem tariffs provided by Fajgelbaum et al. (2024) are only available until 2019. However, as Bown (2023) shows, the share of Chinese exports subject to US tariffs remained stagnant until January 2023. Our primary independent variable is the log change in exposure between these two periods:[13]

[12] We define the Manufacturing sector as Chapters 16-24, 28-70 and 72-96 of the Harmonized System (i.e., we exclude trade of Live Animals; Animal products (Section I), Vegetable products (Section II), Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes (Section III); Mineral products (Section V); Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin (Section XIV), and Works of art, collectors' pieces and antiques (Section XXI). See https://www.wcotradetools.org/en/harmonized-system for details.

[13] We estimate the elasticity of exports with respect to changes in tariff exposure by regressing the change in the log of exports on the change in the log of U.S. tariff exposure. Using a log-log model offers several advantages. First, it allows us to interpret the estimated coefficient as an elasticity. Second, taking logs helps reduce the influence of extreme values and heteroskedasticity, which are common in trade data where exports can vary substantially

$$\Delta \log(E_m^{CH}) = \log(E_{m,post}^{CH}) - \log\left(E_{m,pre}^{CH}\right)$$

We also construct a measure of exposure to US tariffs on Mexico using the same approach and include it as a control variable in the regressions.

We estimate how these changes in exposure affected municipality exports to the US and several labor market outcomes by estimating the following model:

$$Y_{m,post} - Y_{m,pre} = \alpha + \beta\,\Delta \log(E_m^{CH}) + \delta \Delta \log(E_m^{MX}) + \Gamma X_{m,pre} + \mu_s + \varepsilon_m$$

where $Y_{m,post}$ and $Y_{m,pre}$ are our main dependent variables for the post- and pre-trade-war periods, respectively. $\Delta \log(E_m^{MX})$ is the log change in exposure of municipality *m* to US tariffs on *Mexico*; $X_{m,pre}$ is a vector of variables in the pre-trade war period to control for different trends across municipalities; μ_s are state fixed effects and ε_m is the usual random error term. The model is estimated using OLS, weighting observations by the initial (i.e., average 2016-2017) municipality's manufacturing exports to the US.

Table A2 in the appendix presents descriptive statistics summarizing the average characteristics of municipalities in the sample over the period under analysis. The table also compares municipalities with low and high exposure to U.S. tariffs on China, covering key economic indicators such as employment rates, labor income, informality rates, and sectoral composition. Notably, highly exposed municipalities exhibit significantly higher manufacturing exports to both the U.S. and the rest of the world, greater total and average labor income across all skill levels, and lower informality rates. Given the differences across the two groups, we conduct a robustness test to assess whether our main results are biased by pre-existing trends across municipalities. Table A5 shows that the Mexican states along the US border, as well as those in the South-Central region, were the most exposed to U.S tariffs on China.

5. Results

5.1. Impact on Exports to the US

Before analyzing the effects of US tariffs on China at the municipal level, we estimate the average change in Mexico's exports to the US at the product level in response to changes in US ad valorem tariffs on China for those products. We use a model similar to the one described earlier to do this. However, instead of estimating it at the municipal level, we estimate it at the product level, following Chiquiar and Tobal (2024). The model controls for changes in US tariffs on Mexico at the product level, sector fixed effects, and the pre-existing trend in product exports.

between products or industries. This approach is standard in the literature analyzing trade flows and policy shocks (e.g., Fajgelbaum et al., 2020; Fajgelbaum et al., 2024).

The results in Table 1 show a positive relationship between US tariffs on Chinese products and Mexico's exports to the US. In our preferred specification, which includes all controls, a 1 percent increase in the average ad valorem tariff across all manufactured products is associated with a nearly 2.5 percent increase in average exports of each product from Mexico to the US.[14] Considering the actual change in US tariffs on Chinese imports during this period, the estimated effect suggests that the trade war increased Mexico's manufacturing exports to the US by 25.6 percent.[15] This evidence supports the hypothesis that Mexico experienced increased export opportunities to the United States due to the US-China trade war.

Table 1. Mexico's Exports to the US vs. US Tariffs on China at the Product Level, 2016-2017 to 2018-2021.

	Change in Log (Exports to US)		
	(1)	(2)	(3)
Log change in US tariffs on China	-0.255	2.076**	2.495***
	(0.811)	(0.998)	(0.907)
Log change in US tariffs on Mexico	YES	YES	YES
Sector FE	NO	YES	YES
Pre existing trend control	NO	NO	YES
Observations	1,552	1,552	1,440
R-squared	0.001	0.067	0.245

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of 6-digit HS product-level exports from Mexico to the United States between 2016-2017 and 2018-2021. (4) The independent variables are the log changes in one plus the ad-valorem tariff imposed on Chinese and Mexican goods by the US from 2016-2017 to 2018-2019, where the average value in each period is calculated per 6-digit HS product level. (5) Sector FE are the 2-digit HS chapter fixed effects. (6) Pre-trend controls correspond to the product-level trade growth with each destination from 2014-2015 to 2016-2017 (i.e., the lagged value of the dependent variable). (7) Sample of products restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96.

Table 2 presents the regression results of Mexico's exports to the United States on exposure to US tariffs on China at the municipal level. In this case, we estimate the effect of changes in exposure to US tariffs on China on municipality-level exports to the US, controlling for changes in exposure to US tariffs on Mexico, state fixed effects, and initial demographic and employment controls. The results show a statistically significant, positive relationship between changes in exposure to US tariffs on China and Mexico's exports to the United States. In the preferred specification (Column 3), a 1 percent

[14] With our sample, the values obtained are consistent with an elasticity of exports greater than 1 in the literature, although they are slightly more than double those reported in Chiquiar and Tobal (2024).

[15] This estimate is obtained by applying the coefficient from our preferred specification to the average US tariff increase on Chinese imports, which rose by 9.6 percentage points during the period for the 1,440 products in our final estimation sample.

increase in exposure to US tariffs on China[16] is associated with a 4.3 percent increase in municipality-level exports to the US. Considering the actual change in exposure to US-China tariffs during the period, the estimated effect suggests that the trade war increased Mexico's manufacturing exports to the US by 41 percent among the municipalities in the sample – about US$68 billion.[17] This corresponds to 15.6 percent of Mexico's total manufacturing exports, including those not captured in the municipal dataset, and indicates that municipalities more exposed to these tariff increases tend to experience higher export growth to the US, consistent with previous findings at the product level.[18]

Table 2. Mexico's Exports to the US vs. Exposure to US Tariffs on China at the Municipal Level, 2016-2017 to 2018-2021.

	Change in Log (Exports to US)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	4.951**	4.685**	4.272**
	(2.127)	(2.204)	(2.082)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	175	175	175
R-squared	0.173	0.424	0.463

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing exports from Mexico to the United States between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

[16] A 1 percent increase in exposure to US tariffs on China can result from a 1 percent increase in all ad valorem manufacturing tariffs on the products that the municipality exports to the US, or from any combination where the weighted average increase is 1 percent. For instance, if a municipality exports two products to the US—one representing 80 percent of exports in the pre-trade war period and the other 20 percent—then a 1.25 percent increase in US tariffs on China on the first product, with no change in tariffs on the second product, will suffice to produce the 1 percent increase in exposure.

[17] This estimate relies on the assumption of linear and homogeneous treatment effects and no stable unit treatment value assumption (SUTVA). It is obtained by applying the coefficient from our preferred specification to the average change in exposure to US tariffs on China, which rose by about 8 percentage points during the period across municipalities in our sample.

[18] For reference, Fajgelbaum et al. (2022) estimate that US imports from China declined by 8.5 percent during this period due to the increased tariffs. Given that China's total exports to the US reached about US$480 billion annually on average in 2017 and 2018, a back-of-the-envelope calculation suggests a decline of about US$41 billion.

5.2. Impact on Labor Outcomes

Table 3 displays the effects of US tariffs imposed on Chinese goods on labor market outcomes in Mexico at the municipal level. The results suggest that higher exposure to the US-China trade war is associated with a significant increase in total labor income (the sum of all individual labor incomes within the municipality). Specifically, a 1 percent increase in exposure is associated with a 5.6 percent increase in total labor income. This effect is particularly pronounced for semi-skilled workers, who experience a 7.2 percent increase, and for unskilled workers, who see a 5.75 percent increase, both of which are statistically significant at the 1 percent level. This increase in total labor income is largely driven by job creation rather than average earnings growth. In particular, while a 1 percent increase in exposure led to a 6.3 percent increase in the total number of employed people on average at the local level, average earnings showed no statistically significant change. This pattern is also partially explained by immigrants' attraction to municipalities more exposed to the trade war, likely drawn by a faster pace of job creation. [19]

Table 3. Labor Market Outcomes vs. Exposure to the U.S.–China Trade War (2015–2020): Total and Heterogeneous Effects by Skill

Dependent variable:	Total	By skill:		
		Unskilled	Semi-skilled	Skilled
Total employment, change (in logs)	6.342***	4.048***	7.286***	7.301***
	(1.427)	(1.332)	(1.139)	(1.588)
Employment rate, change	-2.660	-6.674	40.74**	0.570
	(8.447)	(13.36)	(15.72)	(15.30)
Total labor income, change (in logs)	5.580**	5.746***	7.155***	4.844
	(2.698)	(2.176)	(2.125)	(3.237)
Average labor income, change (in logs)	-0.128	-0.865	0.0847	0.753
	(1.535)	(0.992)	(1.425)	(1.833)
Informality rate, change	-25.38**	-55.60***	-16.97	-43.97**
	(12.45)	(19.78)	(21.01)	(21.51)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES
Observations	186	186	186	186

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Coefficients are estimated using separate regressions of 2015-2020 municipality-level changes in the employment and informality rate (0-100 scale), and the logarithm of total and average labor income (in 2010 Mexican pesos). (4) Unskilled: complete primary education or less; semi-skilled: complete secondary education; skilled: complete tertiary education. (5) Independent variable: log change in exposure to US tariffs on China, see section 4. (6) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. Log change in exposure to US tariffs on Mexico control: see section 3. (7) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70,

[19] This pattern is consistent with the findings of Rodríguez-Castelán, Vazquez, and Winkler (2024), who document that trade-induced economic expansions often attract migration, which can offset per capita income gains. Appendix Table A3 presents supporting evidence on migration patterns.

and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Exposure to the US-China trade war has no significant effect on overall employment rates. However, there is a significant impact on the employment rates of the semi-skilled: a 1 percent increase in exposure to US tariffs on China leads to a 0.41 percentage-point increase in their employment rate. Exposure to the trade war led to a decline in informality—measured as the share of employees without pension or retirement benefits—at the municipal level. Specifically, a 1 percent increase in exposure is associated with a 0.25 percentage-point reduction in the informality rate. This effect was driven by both unskilled and skilled workers, who witnessed a significant decrease in informality due to the US-China trade war.

Overall, these findings highlight the heterogeneous effects of trade policy on different skill groups. However, these impacts may also vary across sectors of economic activity, as industries respond differently to tariff-induced shocks. In particular, while changes in tariffs to manufacturing products do not directly impact the agriculture and service sectors, there could be indirect effects through input-output linkages or local spillover impacts. Table 4 explores this dimension by analyzing the labor market effects of exposure to US tariffs on Chinese manufacturing products across agriculture, manufacturing, and services in Mexican municipalities. As expected, total manufacturing employment grew in response to the shock, with statistically significant spillovers to the service sector as well. The impact on total labor income from the increase in manufacturing tariffs is primarily driven by this sector. However, there is also an effect in the service sector, although smaller and less precise. Interestingly, the reduction in overall labor informality comes from the decrease in informality in this sector. On the other hand, the agriculture sector did not benefit from the rise in US tariffs on Chinese manufacturing goods. Finally, data from the Economic Censuses 2014 and 2024 show that municipalities more exposed to the trade war did not experience any significant changes in firms' value added and fixed assets (see Table A4). This suggests that the trade war's impact on local economies primarily materialized through labor market adjustments rather than changes in productive capacity.

Table 4. Labor Market Outcomes vs. Exposure to the U.S.–China Trade War (2015–2020): Total and Heterogeneous Effects by Sector

Dependent variable:	Total	By sector:		
		Agriculture	Manufacturing	Services
Total employment, change (in logs)	6.342***	4.037	6.046***	6.215***
	(1.427)	(2.602)	(1.253)	(1.433)
Employment rate, change	-2.660	-0.685	-1.650	-0.324
	(8.447)	(1.206)	(3.918)	(9.858)
Total labor income, change (in logs)	5.580**	4.142	5.939***	5.537*
	(2.698)	(4.271)	(2.240)	(2.845)
Average labor income, change (in logs)	-0.128	-1.032	0.780	-0.240
	(1.535)	(3.145)	(1.509)	(1.566)
Informality rate, change	-25.38**	-65.46	-10.71	-37.90**
	(12.45)	(132.8)	(12.35)	(14.97)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES
Observations	186	186	186	186

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Coefficients are estimated using separate regressions of 2015-2020 municipality-level changes in the employment and informality rate (0-100 scale), and the logarithm of total and average labor income (in 2010 Mexican pesos). (4) Independent variable: log change in exposure to US tariffs on China, see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) manufacturing municipal exports to the US.

6. Robustness Checks

Impacts on Mexican exports to non-US markets

A key concern in our analysis is whether the observed effects on Mexican exports are driven by broader trends in export growth rather than the specific trade shock analyzed. In particular, if the positive impact of increased exposure to U.S. tariffs on Chinese goods merely captured a global trend in targeted exporting sectors, we would expect to observe similar effects across all export destinations. To test this, we examine whether the increase in exposure to U.S. tariffs on Chinese products also led to a rise in Mexican exports to the rest of the world (ROW). Table 5 presents the results of this robustness check.

Table 5. Mexico's Exports to Non-US Destinations vs. Exposure to US Tariffs on China at the Municipal Level.

	Change in Log (Exports to ROW)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	2.307	-1.179	-1.166
	(2.844)	(2.114)	(2.260)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	163	163	163
R-squared	0.021	0.444	0.459

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing exports from Mexico to the Rest of the World between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

The findings indicate that higher exposure to U.S. tariffs on China at the municipality level does not translate into significant growth in Mexican exports to non-U.S. destinations. Across all specifications, the coefficient associated with the change in tariff exposure remains statistically insignificant, with large standard errors. This suggests that the observed increase in Mexican exports is primarily driven by shipments to the U.S. rather than a broad-based expansion in external demand for the same products affected by the trade war.

Trade deflection

It has been argued that countries can avoid higher tariffs by rerouting goods through third-party countries and then exporting them to the final destination (Liu and Shi, 2019; Stoyanov, 2012; Iyoha et al., 2024). If this phenomenon—known as *trade deflection* or *transshipment*—took place during the US-China trade war, it would potentially challenge the interpretation of our results. This is because the increase in municipality-level exports from Mexico to the US would reflect a re-channeling of Chinese exports rather than an increase in the production of goods within Mexico that are exported to the US.

To test the *trade deflection* hypothesis at the local level, we first estimate the main specification in Table 2 but using Mexican imports from China as the dependent variable. Intuitively, if the hypothesis were true, we would find that municipalities more exposed to the US-China trade war experienced a disproportionate increase in imports from China, which would explain (in whole or in part) their estimated increase in exports to the US. If trade deflection were the primary factor driving the rise in Mexico's exports to the US, we should not expect to see significant labor market impacts.

As shown in Table 6, Mexican municipalities that were more exposed to the US-China trade war did not attract more imports from China than those that were less exposed. This suggests that the trade deflection hypothesis does not contribute to explaining the impact on exports to the US at the local level. However, this does not rule out the existence of trade deflection at the aggregate level—for example, if imports from China are transported between municipalities within Mexico and then shipped to the US.

Table 6. Mexico's Imports from China vs. Exposure to US Tariffs on China at the Municipal Level.

	Change in Log (Imports from CHN)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	2.708	1.308	1.074
	(1.707)	(1.773)	(2.111)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	165	165	165
R-squared	0.056	0.340	0.345

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the log change in the average values of municipality-level manufacturing imports from China between 2016-2017 and 2018-2021. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (7) Regressions weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Parallel trends assumption

A key assumption underlying our municipality-level estimates is that municipalities with low and high exposure to the US-China trade war exhibited similar trends in the outcome variables before the onset of the war. Otherwise, our estimates would be biased as they reflect differential pre-existing trends unrelated to the US-China war.

We test this assumption by implementing an event study using annual export data for the whole available period (2013-2023).[20] This analysis divides municipalities into two groups based on their exposure to U.S. tariffs on Chinese goods—highly exposed versus less exposed—and examines the differences in the weighted average level of manufacturing exports to the U.S. before and after the onset of the trade war in 2018.

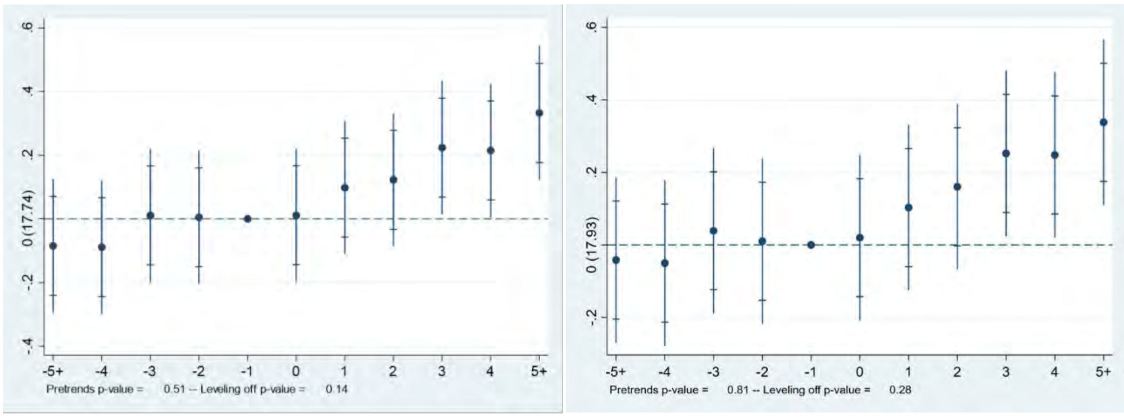
Figure 3 presents the results of this analysis, considering two alternative definitions of high exposure. In panel (a), highly exposed municipalities are those with a maximum level of manufacturing tariff exposure above the median among municipalities with

[20] We cannot implement a similar test for the labor variables because the data is not annual.

positive exposure. In panel (b), highly exposed municipalities correspond to those in the top 40 percent of the exposure distribution. In both cases, the results confirm that the observed export changes do not stem from different pre-existing trends between groups. This is because the difference in manufacturing exports between the two groups of municipalities is not statistically different from zero in any year before the start of the trade war. Such a difference becomes statistically significant only after 2020. This further supports the assumption that any post-2018 export divergence between the two groups is attributable to the trade war rather than pre-existing differential trends.

Figure 3. Weighted average difference in manufacturing exports to the US (in logs) between highly and less exposed municipalities before and after the start of the trade-war (2018), 2013-2023.

(a) Highly exposed: above the median **(b) Highly exposed: highest 40%**



Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and exports from Secretaría de Economía in Mexico.

Notes: (1) Plots obtained with Freyaldenhoven et al. (2024) methodology using as policy variable the interaction between the highly exposed municipality dummy and the trade war dummy (i.e., year>=2018), weighting observations by the average manufacturing exports to the US in the period 2016-2017, using the largest possible window with the minimum and maximum event times in the estimation sample. (2) In panel (a), Highly (less) exposed municipalities are those with maximum manufacturing exposure above (below) the median among municipalities with positive exposure. In panel (b), the cutoff is the 7th decile (≥7th for highly exposed). (3) Exposure per municipality-year is a weighted average of US tariffs on China by product-year, weighted by the share of each product in the municipality's manufacturing exports to the US in the base year (average 2013–2017). (4) Tariffs on China are from Fajgelbaum et al. (2024) for 2013-2019. (5) Exports, expressed in 2010 US dollars, are the sum of all manufacturing products at the 6-digit HS level. (6) Manufacturing includes HS chapters 16–24, 28–70, and 72–96.

Alternative specifications

Table 7 presents additional robustness checks to ensure that other confounding factors do not drive our baseline estimates. Specifically, we assess whether the estimated effects of exposure to U.S. tariffs on China remain consistent after controlling for (i) changes in COVID-19-related deaths at the municipal level over the period, (ii) initial municipal population and median income to account for differential trends in municipalities with different population sizes or income levels, and (iii) exposure to U.S.

tariffs measured in absolute levels rather than log changes, to verify that our results are not sensitive to the logarithmic transformation.

The results in Table 7 suggest that the total labor income effects observed in the baseline specification are attenuated when controlling for COVID-19 deaths and initial population size. This indicates that part of the estimated impact on total labor income may be partially explained by differential population trends—potentially due to migration—and by differences in the pandemic's effects across municipalities with varying degrees of exposure to U.S. tariffs on China. However, the estimated impacts on exports, employment, and informality remain robust across all specifications. These findings further confirm that the core labor market effects of exposure to U.S. tariffs on China are not driven by underlying demographic shifts, income disparities, or pandemic-related shocks.

Table 7. Robustness checks of the effects of Exposure to US tariffs on China.

Estimated impact of log (Exposure to US tariffs on China) change on:	Baseline	Additional control: COVID-19 deaths, change	Additional control: Total population, initial	Additional control: Median income, initial	Exposure in levels
Log (Manufacturing exports to US), change	4.272**	4.581**	4.415**	3.611*	3.844**
	(2.082)	(2.166)	(2.173)	(1.961)	(1.848)
Employment rate, change	-2.660	-2.645	-1.090	1.235	-2.760
	(8.447)	(8.814)	(8.482)	(7.360)	(7.435)
Employment rate of Unskilled, change	-6.674	-2.867	-1.376	-0.929	-5.822
	(13.36)	(15.87)	(16.33)	(14.15)	(11.97)
Employment rate of Semi-skilled, change	40.74**	47.79***	54.27***	40.91***	36.86***
	(15.72)	(15.96)	(14.46)	(15.01)	(13.58)
Employment rate of Skilled, change	0.570	-1.442	5.037	-0.501	-0.407
	(15.30)	(17.01)	(16.37)	(16.52)	(13.52)
Employment rate in Agriculture, change	-0.685	-1.223	-1.452	-0.732	-0.721
	(1.206)	(1.356)	(1.430)	(1.203)	(1.072)
Employment rate in Manufacturing, change	-1.650	1.670	3.213	-2.360	-1.695
	(3.918)	(4.444)	(4.760)	(4.371)	(3.514)
Employment rate in Services, change	-0.324	-3.091	-2.851	4.327	-0.344
	(9.858)	(11.18)	(11.23)	(8.369)	(8.839)
Total labor income, change (in logs)	5.580**	2.301	1.535	6.506***	4.929**
	(2.698)	(2.070)	(1.849)	(2.493)	(2.417)
Total labor income of Unskilled, change (in logs)	5.746***	2.638	2.148	6.422***	5.111**
	(2.176)	(1.653)	(1.526)	(2.148)	(1.967)
Total labor income of Semi-skilled, change (in logs)	7.155***	3.926**	3.194**	7.732***	6.346***
	(2.125)	(1.505)	(1.254)	(2.173)	(1.909)
Total labor income of Skilled, change (in logs)	4.844	1.867	0.862	5.895*	4.316
	(3.237)	(2.673)	(2.466)	(3.201)	(2.886)
Total labor income in Agriculture, change (in logs)	4.142	0.544	-1.032	4.177	3.643
	(4.271)	(3.810)	(3.279)	(4.335)	(3.813)
Total labor income in Manufacturing, change (in logs)	5.939***	3.653*	2.881*	6.637***	5.306***
	(2.240)	(1.948)	(1.720)	(2.180)	(2.019)
Total labor income in Services, change (in logs)	5.537*	2.024	1.173	6.595**	4.891*
	(2.845)	(2.146)	(1.905)	(2.628)	(2.546)
Average labor income, change (in logs)	-0.128	-0.743	-1.226	0.291	-0.177
	(1.535)	(1.257)	(1.163)	(1.370)	(1.346)
Average labor income of Unskilled, change (in logs)	-0.865	-1.583	-1.934*	-0.887	-0.825
	(0.992)	(1.153)	(1.100)	(1.219)	(0.878)
Average labor income of Semi-skilled, change (in logs)	0.0847	-0.536	-1.133	0.151	0.00809
	(1.425)	(1.405)	(1.264)	(1.542)	(1.260)
Average labor income of Skilled, change (in logs)	0.753	0.315	-0.155	1.436	0.647
	(1.833)	(1.457)	(1.378)	(1.721)	(1.622)
Average labor income in Agriculture, change (in logs)	-1.032	-0.784	-1.563	-0.566	-0.900
	(3.145)	(2.943)	(2.970)	(2.721)	(2.822)
Average labor income in Manufacturing, change (in logs)	0.780	0.871	0.134	1.001	0.685
	(1.509)	(1.468)	(1.339)	(1.423)	(1.351)
Average labor income in Services, change (in logs)	-0.240	-0.945	-1.416	0.193	-0.283
	(1.566)	(1.257)	(1.152)	(1.420)	(1.370)
Informality rate, change	-25.38**	-22.82*	-26.12**	-21.94*	-21.70*
	(12.45)	(13.38)	(13.01)	(12.64)	(11.07)
Informality rate of Unskilled, change	-55.60***	-42.48**	-44.65**	-45.15**	-49.24***
	(19.78)	(18.49)	(19.42)	(21.16)	(17.64)
Informality rate of Semi-skilled, change	-16.97	-37.89**	-44.43**	-23.49	-15.19
	(21.01)	(18.85)	(17.82)	(26.28)	(18.74)
Informality rate of Skilled, change	-43.97**	-42.80**	-47.74**	-35.88**	-38.78**
	(21.51)	(21.08)	(21.07)	(16.70)	(19.24)
Informality rate in Agriculture, change	-65.46	-122.7	-116.2	-93.56	-61.46
	(132.8)	(141.1)	(147.6)	(123.8)	(121.9)
Informality rate in Manufacturing, change	-10.71	-11.33	-7.567	-6.123	-9.651
	(12.35)	(16.32)	(14.77)	(16.75)	(10.71)
Informality rate in Services, change	-37.90**	-32.88**	-36.27**	-32.40**	-32.76**
	(14.97)	(15.84)	(15.19)	(14.97)	(13.23)
Log change in exposure to US tariffs on Mexico	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES
Demographic and employment controls	YES	YES	YES	YES	YES

Source: Own elaboration based on tariffs from Fajgelbaum et al. (2024) and trade flows from Secretaría de Economía in Mexico.

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Each coefficient corresponds to a separate regression of the dependent variable specified in each row on the log change in exposure to US tariffs on China (except in the last column, where the absolute change in Exposure is used instead). (4) Regressions are weighted by initial (i.e., average 2016-2017) municipality manufacturing exports to the US.

7. Conclusions

To our knowledge, this is the first paper to provide evidence on the localized impacts of the US-China trade war at the local level within a third country. We find that Mexican municipalities with export baskets more concentrated in products targeted by US tariffs on Chinese goods experienced significantly larger increases in exports to the US. These export gains translated into improved labor market outcomes, including increased total labor income (particularly for semi-skilled and unskilled workers), higher employment rates for semi-skilled workers, and a reduction in labor informality. The effects were concentrated in manufacturing with some positive spillovers to services but none to agriculture. Future research could explore the impacts of nearshoring on Foreign Direct Investment (FDI), the reallocation of multinational companies, and the long-term effects of (potentially) short-term disruptions to international trade patterns.

The findings of this paper address the broader challenge of how developing countries can leverage a positive trade shock to improve export capacity and job quality. In the case of Mexico, trade integration and geographic proximity to the US market were important enabling conditions, and pre-existing productive capacity in the tariff-targeted sectors was critical. More broadly, these findings raise the question of whether the export and labor market gains documented here represent a temporary windfall or a permanent structural shift. The World Development Report 2020 (World Bank, 2020) outlines several policies that would help achieve the latter. First, human capital investments are essential to advance beyond assembly-intensive activities toward more sophisticated forms of GVC participation that are intensive in technical and managerial capacity. Second, investments in logistics infrastructure — including customs reforms and liberalization of transport services — are necessary conditions for sustained competitiveness. Third, regulatory continuity and policy predictability are critical for GVC expansion, as uncertainty about the institutional environment prompts firms to delay investment.

References

Alfaro, L., & Chor, D. (2023). *Global supply chains: The looming "great reallocation"* (No. w31661). National Bureau of Economic Research.

Amiti, M., Redding, S. J., & Weinstein, D. E. (2019). The impact of the 2018 tariffs on prices and welfare. *Journal of Economic Perspectives*, *33*(4), 187-210.

Autor, D., Dorn, D., and Hanson, G. H. (2013). The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review*, 103(6), 2121–2168.

Bown, C. P. (2021). The US–China trade war and Phase One agreement. *Journal of Policy Modeling, 43*(4), 805–843. https://doi.org/10.1016/j.jpolmod.2021.02.009

Cavallo, A., Gopinath, G., Neiman, B., & Tang, J. (2021). Tariff pass-through at the border and at the store: Evidence from U.S. trade policy. *American Economic Review: Insights*, *3*(1), 19-34.

Chiquiar, D., & Tobal, M. (2024). Nearshoring: Possible Scenarios of its Size and Impact on Mexico's Economy. Americas Institute, Georgetown University.

Elbers, C., Lanjouw, J. O., & Lanjouw, P. (2003). Micro-level estimation of poverty and inequality. *Econometrica*, 71(1), 355–364. doi:10.1111/1468-0262.00399

Enamorado, T., López-Calva, L. F., Rodríguez-Castelán, C., & Winkler, H. (2016). Income inequality and violent crime: Evidence from Mexico's drug war. *Journal of Development Economics*, 120(May), 128–143. doi:10.1016/j.jdeveco.2015.12.004

Fajgelbaum, P., Goldberg, P., Kennedy, P. & Khandelwal, A. (2020). The Return to Protectionism. *The Quarterly Journal of Economics*, 135(1), 1–55. https://doi.org/10.1093/qje/qjz036

Fajgelbaum, P., Goldberg, P. K., Kennedy, P. J., Khandelwal, A., & Taglioni, D. (2022). How the US-China trade war affected the rest of the world. NBER Digest, April 2022. https://www.nber.org/digest/202204/how-us-china-trade-war-affected-rest-world

Fajgelbaum, P., Goldberg, P., Kennedy, P., Khandelwal, A. & Taglioni, D. (2024). The US-China Trade War and Global Reallocations. *American Economic Review: Insights*, 6 (2), 295–312. doi: 10.1257/aeri.20230094.

Freund, C., Mattoo, A., Mulabdic, A., & Ruta, M. (2024). Is US trade policy reshaping global supply chains?. *Journal of International Economics*, *152*, 104011.

Hakobyan, S. and McLaren, J. (2016). Looking for Local Labor Market Effects of NAFTA. *Review of Economics and Statistics*, 98(4), 728–741.

Hayakawa, K. and Sudsawasd, S. (2025). Impacts of Trade Diversion from China in the United States Market on Wages in a Third Country: Evidence from Thailand. *International Economics*, 183.

INEGI (2024). Producto Interno Bruto por Entidad Federativa (PIBE) 2023. Comunicado de prensa número 741/24. 6 de diciembre de 2024.

Iyoha, E., Malesky, E., Wen, J., Wu, S. J., & Feng, B. (2024). *Exports in Disguise?: Trade Rerouting during the US-China Trade War*. Harvard Business School.

Liu, X., & Shi, H. (2019). Anti-dumping duty circumvention through trade rerouting: Evidence from Chinese exporters. The World Economy, 42(5), 1427-1466.

Mayr-Dorn, K., Narciso, G., Dang, D. A., and Phan, H. (2026). Trade Diversion and Labor Market Adjustment: Vietnam and the U.S.-China Trade War. *Journal of International Economics*.

Rodríguez-Castelán, C., Vázquez, E., & Winkler, H. (2024). Exports and Income Inequality in Mexico. *The Journal of Development Studies*, *60*(7), 1131–1159. https://doi.org/10.1080/00220388.2024.2337373

Ruggles, S., Sobek, M., Alexander, J. T., Fitch, C. A., Goeken, R., Hall, P. K., King, M., & Ronnander, C. (2007). Integrated public use microdata series: Version 3.0. Machine-readable database. Minneapolis: Minnesota Population Center.

Serrano, J. (2023). Do Robots Necessarily Displace Workers? Evidence from Mexican Local Labor Markets. Job Market Paper, University of California, Los Angeles (UCLA).

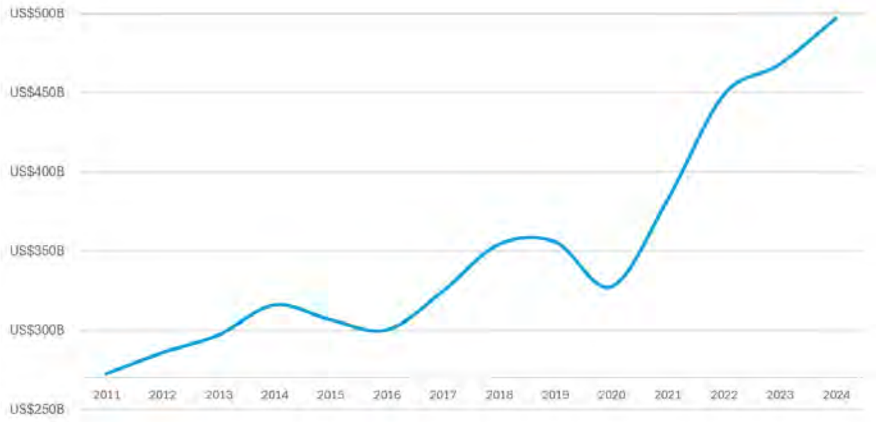
Stoyanov, A. (2012). Tariff evasion and rules of origin violations under the Canada-US Free Trade Agreement. Canadian Journal of Economics/Revue canadienne d'économique, 45(3), 879-902.

Vazquez, E. and Winkler, D. (2023). Trade and Local Labor Market Outcomes in Mexico: Disentangling the Channels and the Role of Geography, Sectors, and Trade Types. World Bank Policy Research Working Paper No. 10332.

World Bank. 2020. World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC: World Bank. doi:10.1596/978-1-4648-1457-0. License: Creative Commons Attribution CC BY 3.0 IGO

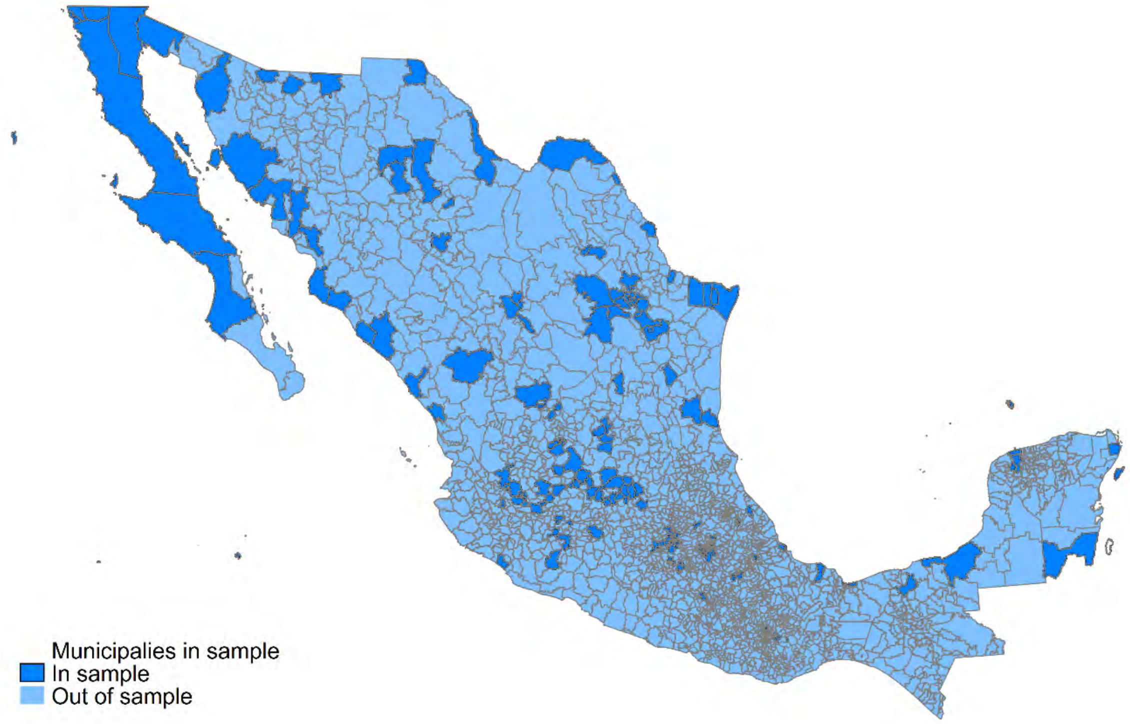
A. Appendix

Figure A1. Mexican exports to the United States, 2011-2024.



Source: INEGI – BCMM (available at https://www.economia.gob.mx/datamexico/en/profile/country/estados-unidos).

Figure A2. Map of municipalities in and out of the sample



Source: Own elaboration.

Table A1. Comparison of municipalities in and out of the sample.

Variable	In sample	Out of the sample
Employment rate	52.3	42.7
Employment rate of Unskilled	45.2	39.2
Employment rate of Semi-skilled	60.2	53.7
Employment rate of Skilled	76.7	74.0
Employment rate in Agriculture	4.3	15.2
Employment rate in Manufacturing	10.5	5.1
Employment rate in Services	36.6	21.6
Total labor income	29,680,677	4,923,142
Total labor income of Unskilled	12,026,407	2,939,030
Total labor income of Semi-skilled	8,096,464	1,229,502
Total labor income of Skilled	10,825,374	1,019,941
Total labor income in Agriculture	1,480,192	876,558
Total labor income in Manufacturing	5,402,294	648,636
Total labor income in Services	22,805,246	3,406,521
Average labor income	6,007	3,515
Average labor income of Unskilled	4,396	3,022
Average labor income of Semi-skilled	6,055	4,120
Average labor income of Skilled	10,557	6,973
Average labor income in Agriculture	6,542	2,857
Average labor income in Manufacturing	5,630	3,196
Average labor income in Services	6,141	3,939
Informality rate	47.1	82.1
Informality rate of Unskilled	59.3	89.6
Informality rate of Semi-skilled	37.3	73.2
Informality rate of Skilled	24.2	48.5
Informality rate in Agriculture	66.4	92.7
Informality rate in Manufacturing	34.8	79.8
Informality rate in Services	50.8	80.1
Share of population in rural areas, initial	0.30	0.90
Literacy rate, initial	0.96	0.88
Share of employment in agriculture, initial	0.09	0.39
Share of employment in manufacturing, initial	0.20	0.11
Share of employment in services, initial	0.71	0.50
COVID-19 deaths	1,072	46
Total population, initial	331,547	25,479
Per capita median income (in logs), initial	10.4	9.7
Number of municipalities	*186*	*2271*

Source: Own elaboration based on data from the 2020 Census of Population and Housing and the 2015 Population Count from INEGI and IPUMS, Total COVID-19 deaths reported in years 2020-2021 from Dirección General de Epidemiología in Mexico and Per capita median income from Rodríguez-Castelán et al. (2024).

Notes: (1) Per capita incomes are in 2014 Mexican pesos; average and total labor incomes are in 2015 Mexican pesos. (2) The table reports simple municipality averages for the entire period (2015–2020) when 'initial' is not specified, and for 2015 when 'initial' is specified.

Table A2. Descriptive statistics: Average characteristics of municipalities in the sample in the pre- and post-trade war period.

Variable	All municipalities in the sample	By exposure to trade war: Low	High	Difference
Exposure to US tariffs on China	1.07	1.05	1.08	0.03***
Exposure to US tariffs on Mexico	1.00	1.0001	1.0005	0.0004**
Manufacturing Exports to US (in logs)	16.3	15.3	17.2	1.9***
Manufacturing Exports to Rest of the World (in logs)	14.8	13.7	15.8	2.1***
Employment rate	52.3	52.0	52.7	0.7
Employment rate of Unskilled	45.2	45.4	44.9	-0.5
Employment rate of Semi-skilled	60.2	60.6	59.8	-0.8
Employment rate of Skilled	76.7	77.0	76.3	-0.7
Employment rate in Agriculture	4.3	5.4	3.2	-2.3***
Employment rate in Manufacturing	10.5	9.8	11.2	1.4**
Employment rate in Services	36.6	35.9	37.3	1.4*
Total labor income	29,680,677	25,517,436	33,843,919	8326483***
Total labor income of Unskilled	12,026,407	11,064,600	12,988,213	1923614**
Total labor income of Semi-skilled	8,096,464	6,991,831	9,201,097	2209266***
Total labor income of Skilled	10,825,374	8,371,851	13,278,896	4907046***
Total labor income in Agriculture	1,480,192	1,382,577	1,577,807	195,229
Total labor income in Manufacturing	5,402,294	4,526,940	6,277,648	1750707***
Total labor income in Services	22,805,246	19,614,476	25,996,016	6381540***
Average labor income	6,007	5,630	6,384	754***
Average labor income of Unskilled	4,396	4,226	4,566	340***
Average labor income of Semi-skilled	6,055	5,717	6,393	676***
Average labor income of Skilled	10,557	9,930	11,184	1254***
Average labor income in Agriculture	6,542	5,679	7,405	1726***
Average labor income in Manufacturing	5,630	5,201	6,059	859***
Average labor income in Services	6,141	5,786	6,497	710***
Informality rate	47.1	52.1	42.1	-10.1***
Informality rate of Unskilled	59.3	64.1	54.6	-9.5***
Informality rate of Semi-skilled	37.3	41.9	32.8	-9.1***
Informality rate of Skilled	24.2	26.6	21.7	-4.8***
Informality rate in Agriculture	66.4	73.7	59.2	-14.5***
Informality rate in Manufacturing	34.8	41.1	28.6	-12.5***
Informality rate in Services	50.8	55.0	46.7	-8.3***
Share of population in rural areas, initial	0.3	0.36	0.24	-0.12***
Literacy rate, initial	1.0	0.96	0.97	0.01***
Share of employment in agriculture, initial	0.09	0.11	0.06	-0.05***
Share of employment in manufacturing, initial	0.20	0.19	0.22	0.03*
Share of employment in services, initial	0.71	0.70	0.72	0.02
COVID-19 deaths	1,072	839	1,305	465**
Total population, initial	331,547	273,192	389,901	116709**
Per capita median income (in logs), initial	10.4	10.3	10.4	0.17***
Number of municipalities	*186*	*93*	*93*	

Source: Own elaboration based on IPUMS 2015 and 2020, Total COVID-19 deaths reported in years 2020-2021 from Dirección General de Epidemiología in Mexico, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Municipalities in the estimation sample were divided into two groups according to their maximum average level of manufacturing exposure to US tariffs on China in the two periods of analysis (2016-2017 and 2018-2021). Highly (lowly) exposed municipalities are those above (below) the median value for municipalities. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Per capita incomes are in 2014 Mexican pesos, average and total labor incomes are in 2015 Mexican pesos, and Exports are in 2010 US dollars.

Table A3. Regression of Local migration on Exposure to US tariffs on China at the municipality level.

	Change in Log (Working age population of immigrants)		
	(1)	(2)	(3)
Log change in exposure to US tariffs on China	3.629*	3.122*	3.090**
	(2.009)	(1.880)	(1.510)
Log change in exposure to US tariffs on Mexico	YES	YES	YES
State FE	NO	YES	YES
Demographic and employment controls	NO	NO	YES
Observations	186	186	186
R-squared	0.070	0.436	0.678

Source: Own elaboration based on Working age population of immigrants from IPUMS, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) The dependent variable is the change, from 2015 to 2020, in the logarithm of the total number of working-age (14-55) immigrants in the municipality, where immigrants are defined as residents who lived in another state of Mexico (internal immigrant) or abroad (external immigrant) 5 years before. (4) Log change in exposure to US tariffs on China and Mexico: see section 4. (5) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (6) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (6) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Table A4. Firm Employment, Value Added, and Fixed Assets vs Exposure to the U.S.–China Trade War (2013–2023)

Estimated impact of log (Exposure to US tariffs on China) change on:	OLS - weighted					
	All sectors			Manufacturing		
	(1)	(2)	(3)	(1)	(2)	(3)
Employment	2.186	0.605	0.204	2.408	0.212	-0.133
	(2.157)	(0.798)	(0.532)	(3.121)	(0.940)	(0.909)
Value added	2.969	1.895	1.261	4.732	-0.338	-1.574
	(2.713)	(2.123)	(2.046)	(3.753)	(1.581)	(1.545)
Fixed assets	-4.270	-3.662	-3.527	4.280	1.431	1.095
	(3.805)	(4.082)	(3.829)	(3.482)	(1.820)	(1.933)
State FE	NO	YES	YES	NO	YES	YES
Demographic and employment controls	NO	NO	YES	NO	NO	YES
Observations	186	186	186	186	186	186

Source: Own elaboration based on Employment, Value added, and Fixed assets from the Economic Censuses, Exports from Secretaría de Economía in Mexico, and Tariffs from Fajgelbaum et al. (2024).

Notes: (1) Robust standard errors in parentheses. (2) *** p<0.01, ** p<0.05, * p<0.1. (3) Each coefficient corresponds to a separate regression of the dependent variable specified in each row on the log change in exposure to US tariffs on China. (4) The dependent variables—Employment, Value added, and Fixed assets—are defined as the change from 2013 to 2023 in the logarithm of the corresponding municipal aggregate (considering all sectors or manufacturing only). (5) Log change in exposure to US tariffs on China and Mexico: see section 4. (6) Demographic and employment controls are the initial values (for 2015) of the share of rural population, the adult literacy rate, and the share of employment by sector of economic activity. (7) The products included in the exposure measure are restricted to the Manufacturing sector, defined as HS chapters 16-24, 28-70, and 72-96. (8) Regressions are weighted by initial (i.e., average 2016-2017) municipal manufacturing exports to the US.

Table A5. Regional distribution of municipalities by sample inclusion and exposure to the tariff shock

Region	Out of the sample	In sample	Low exposure	High exposure
Northwest	8%	17%	15%	19%
Northeast	4%	18%	15%	20%
West	11%	14%	19%	9%
East	24%	13%	15%	11%
North-Central	7%	15%	11%	19%
South-Central	6%	17%	16%	18%
Southwest	34%	2%	3%	0%
Southeast	6%	4%	5%	3%
Number of municipalities	*2271*	*186*	*93*	*93*

Source: Own elaboration based on labor market outcomes from IPUMS, exports from Secretaría de Economía in Mexico, and tariffs from Fajgelbaum et al. (2023).

Notes: (1) Regions are defined as follows. Northwest: Baja California, Baja California Sur, Chihuahua, Durango, Sinaloa, and Sonora. Northeast: Coahuila, Nuevo León, and Tamaulipas. West: Colima, Jalisco, Michoacán and Nayarit. East: Hidalgo, Puebla, Tlaxcala, and Veracruz. North-Central: Aguascalientes, Guanajuato, Querétaro, San Luis Potosí and Zacatecas. South-Central: Mexico City, State of Mexico, and Morelos. Southwest: Chiapas, Guerrero, and Oaxaca. Southeast: Campeche, Quintana Roo, Tabasco, and Yucatán. (2) Municipalities in the estimation sample were divided into two groups according to their maximum average level of manufacturing exposure to US tariffs on China in the two periods of analysis (2016-2017 and 2018-2021). Highly (lowly) exposed municipalities are those above (below) the median value for municipalities.