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ABSTRACT

This paper examines the employment effects of multinational enterprises (MNEs) in Mexico, focusing on the labor market impacts of foreign tariff increases during 2018-2019. Using data from Mexico's National Survey of Occupations and Employment (ENOE) for 2014-2023 combined with sector-level tariff exposure measures based on Fajgelbaum et al. (2024), we construct a quarterly city-sector panel distinguishing employment in MNEs and domestic firms. We analyze employment outcomes across worker characteristics (education, age, gender) and firm attributes (size and location). Results indicate a positive employment effect in MNEs within the sectors most affected by the tariff increases, particularly for highly educated workers and small establishments. In contrast, there is no clear evidence of significant effects on wages.

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1. Introduction

Multinational enterprises (MNEs) can play a central role in shaping labor market outcomes in open economies. By organizing production networks that span multiple countries, MNEs reallocate activities, capital, and labor in response to changes in trade costs, relative prices, and policy shocks (Antràs & Chor, 2022). As a result, employment and wages within MNEs may respond differently to external shocks than those in purely domestic firms. A large literature documents that MNEs differ systematically from domestic firms in terms of productivity, skill intensity, and compensation, and that these differences translate into distinct labor market outcomes for workers (Iršová & Havránek, 2013; Setzler & Tintelnot, 2021; Garetto et al., 2025).

The mechanisms through which trade policy shocks affect MNE labor demand are closely linked to their integration into global value chains (GVCs). Trade policy changes can trigger reallocations of sourcing and production stages across countries, with MNEs adjusting their global supply chains through reconfiguration of GVC linkages (Antràs, 2020a; Antràs & Chor, 2022; Antràs et al., 2024). As such, employment responses within MNEs may therefore reflect broader reconfigurations of global production networks.

Despite extensive evidence on the effects of trade liberalization on labor market outcomes (Autor et al., 2013; David H. Autor et al., 2016; Autor et al., 2025) less is known about the MNE employment effects of the large trade policy shifts that began in 2018. Recent evidence shows that foreign tariff changes led multinational firms to reorganize their global value chains (Alfaro & Chor, 2023; Fajgelbaum et al., 2024), a process that continued amid increased uncertainty over international trade policy (Alfaro & Chor, 2025; Rodríguez-Clare et al., 2025). Because these tariff increases were external to Mexico and varied across sectors, they constitute an exogenous shock that can be exploited to identify labor market effects operating through multinational production networks.

Mexico emerged as one of the main beneficiaries of this global reallocation. Recent studies document a significant increase in Mexican exports as well as the relocation of production by multinational firms into Mexican territory (Chen et al., 2025; Giraudy et al., 2025; Utar et al., 2025; Utar, 2026). These developments suggest that the trade shock operated not only through trade flows but also through multinational production and GVC reorganization, potentially affecting employment and wages within MNEs operating in Mexico.

This paper studies how this exogenous trade shocks affected employment and wages in Mexico, with a specific focus on MNEs. Using microdata from Mexico's National Survey of Occupation and Employment (ENOE) for the period 2014–2023, we construct a quarterly panel aggregated by city, 3-digit NAICS sector, and multinational status. We combine these data with sector-level tariff changes from Fajgelbaum et al. (2024). Our empirical strategy compares labor market outcomes in MNEs and domestic firms before and after the onset of the tariff increases, exploiting cross-sector variation in exposure to the shock.

The analysis focuses on two main outcomes: employment and hourly wages in the formal private sector. We further examine heterogeneity across worker characteristics—education, age, and gender—and firm characteristics such as establishment size and location. Mexico provides a particularly relevant context for this analysis. The country is deeply integrated into international production networks and its labor market is characterized by strong regional disparities and a dual structure with a large informal sector (Iacovone et al., 2021) . Previous research highlights that trade shocks and globalization processes can generate uneven labor market effects across regions and worker groups in Mexico (Vazquez & Winkler, 2023).

Our results indicate a heterogeneous employment response to the foreign tariff increases across firm types. In sectors more exposed to the trade shock, employment growth in multinational enterprises was significantly higher than in domestic firms operating in the same city–sector, with estimated increases of around 10 percent following the onset of the tariff increases. Event-study estimates show no evidence of differential pre-trends prior to 2019 and reveal that the positive employment response in MNEs emerges after the tariff shock, weakens during the COVID-19 period, and becomes more persistent in the post-pandemic years, consistent with gradual adjustment of multinational production networks. We also find evidence that these employment effects extend along production linkages: employment in MNEs supplying or purchasing from tariff-exposed sectors increases relative to domestic firms, albeit with smaller magnitudes, suggesting spillovers through upstream and downstream input–output relationships. In contrast, we find no robust evidence of systematic wage effects on average: while MNEs exhibit a baseline wage premium of about 2–6 percent—in line with the review by Garetto et al. (2025)—, wage differentials between MNEs and domestic firms do not widen significantly in response to the tariff shock, with wage adjustments appearing limited to specific contexts such as small firms.

This paper contributes to the literature on MNEs and labor markets (Alfaro-Ureña et al., 2021) by providing evidence on how employment responds to an exogenous trade shock in a developing economy. It also complements the literature on trade diversion and trade policy changes by focusing on labor market outcomes within developing countries (Mayr-Dorn et al., 2023; Rotunno et al., 2024; Calvacanti et al., 2025; Chen et al., 2025; Samaniego de la Parra et al., 2025; Utar, 2026).

This paper is related to recent work assessing the labor-market consequences of recent trade policy changes for Mexico using different data sources and levels of analysis. Chen et al. (2025) combine highly disaggregated Mexican firm-level export data with matched longitudinal employer–employee records to study workers employed by Mexican exporters during 2016–2019. They document substantial trade diversion to Mexico and show that exporters more exposed to higher foreign tariffs increased labor demand, with employment and wages rising particularly for lower-wage workers (e.g., female, younger, and less-skilled employees) and with effects concentrated in manufacturing industries. Samaniego de la Parra et al. (2025) uses establishment-level manufacturing data for 2014–2022 and a shift-share design to examine how tariff-induced changes in market access and trade policy uncertainty affected Mexican establishments, finding positive revenue and formal-employment effects. Finally, using firm- and plant-level data linking manufacturing firms to their customs record over 2014-2023, Utar (2026) finds that the higher tariffs abroad increased Mexican manufacturing output, employment, productivity, and plants, with gains driven by domestic affiliates of multinationals. Wage effects were positive but not statistically significant, a pattern that is consistent with the wage results documented in our analysis.

The remainder of the paper is organized as follows. Section 2 presents the data and descriptive evidence. Section 3 outlines the empirical methodology. Section 4 discusses the main results, and Section 5 concludes.

2. Data and Descriptive Analysis

2.1 Data

Our database draws on two main sources: the National Survey of Occupation and Employment (ENOE) conducted by Mexico's National Institute of Statistics and Geography (INEGI) and the tariff database constructed by Fajgelbaum et al. (2024)[1]. On the one hand, we use quarterly household survey data

[1] The ENOE is Mexico's regular national survey on employment and labor-force conditions. Following the suspension of field operations in April 2020 due to the COVID-19 pandemic, INEGI introduced a new edition of the survey—covering the period from July 2020 to December 2022—which combined face-to-face and telephone interviews to

covering the period from the first quarter of 2014 to the fourth quarter of 2023, which provides a symmetric window of five years before and five years after the onset of the tariff increases. These tariff changes came into effect primarily in mid-2018 and were subsequently expanded throughout 2018 and 2019.[2]

The data are aggregated at the level of the 32 self-represented cities that are consistently observed throughout the sample period, and for 3-digit North American Industry Classification System (NAICS) sectors.[3] In addition, observations are disaggregated by employer type, distinguishing between workers employed by multinational enterprises (MNEs) and those employed by domestic firms. As a result, for each city–quarter pair, there are up to two observations per 3-digit NAICS sector: one corresponding to employment in MNEs and another corresponding to domestic employment. The analysis is restricted to formal private-sector wage employees aged 15 and older, operating in business-related sectors (excluding health, education and government), in order to ensure comparability between employment in MNEs and domestic firms. Finally, data from the 2013 ENOE are used exclusively to construct control variables capturing pre-period trends in the dependent variables, and are therefore not part of the main analysis sample.[4] In addition, the wage variable is trimmed at both tails of its distribution on a quarterly basis, retaining the central 95 percent of observations prior to aggregation at the sector–city level. This

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ensure continued monitoring of labor-market conditions under pandemic-related restrictions. After this transitional period, the ENOE was resumed in January 2023, restoring its original data-collection methodology.

[2] The second quarter of 2020 is excluded because labor-force survey field operations were suspended during that period as a result of the COVID-19 pandemic. The analysis period was chosen by balancing the objective of maximizing data availability with the need to maintain a symmetric time window before and after the tariff increases. Accordingly, the sample begins in 2014, as 2013 is the first complete year in which INEGI's economic activity classification (NAICS 2007) is consistently defined. This choice allows the inclusion of five years of quarterly data both before and after the main wave of tariff increases in 2019. Although data from 2013 are used to construct pre-period trend controls, they fall outside the core analysis window.

[3] Beginning in the second quarter of 2017, additional self-represented cities were progressively incorporated into the ENOE sample, reaching a total of 39 cities by 2020. These cities are excluded from the analysis, as they are not consistently observed across all periods of the sample.

[4] In this way, we construct a panel dataset that would not be feasible using individual-level data, as respondents in the survey rotate every four quarters. Even in the best-case scenario—where individuals are observed for two quarters before and two quarters after the tariff increases—the available time window is too short to adequately capture potential labor-market effects.

procedure mitigates the influence of extreme values that may reflect measurement error and could otherwise distort the estimation results.

As shown in **Error! Reference source not found.**, in the fourth quarter of 2023, the population residing in the 32 self-represented cities (SRC) accounted for 43 percent of Mexico's total population and 43.3 percent of the population aged 15 and older. Each of these cities is located in a different federal entity, collectively covering all 32 states of the country.[5]

Table 1: Population in ENOE self-represented cities (4Q-2023)

	Total population		**15 years old and older**	
	Total	*% of Mexico*	*Total*	*% of Mexico*
Self-represented cities	46,262,620	43.0%	43,605,832	43.3%
Total México	107,485,637	100.0%	100,591,916	100.0%

Source: ENOE (INEGI).

To identify the sectors most exposed to tariff changes during the global trade policy shift, we rely on the tariff database constructed by Fajgelbaum et al. (2024). As described in Appendix A.2, this dataset reports monthly U.S. import tariff levels at the 10-digit Harmonized System (HS) level for the period 2018–2019. We complement these data with U.S.–Mexico trade records for 2017 and the official concordance between 10-digit HS codes and 6-digit NAICS classifications in order to map tariff changes to Mexican production sectors. Using the merged dataset, we first compute cumulative quarterly tariff changes for each 10-digit HS code from the second quarter of 2018 through the fourth quarter of 2019. These changes are then aggregated to the 6-digit NAICS level using export-weighted averages —as Utar et al. (2025)—, where each HS code is weighted by its share of Mexico's total exports to the United States in 2017 within the corresponding 6-digit sector. The resulting series is further aggregated to the 4- and 3-digit NAICS levels following the same weighting procedure. This process yields a sector-level measure of exposure to tariff changes, which is subsequently merged with the ENOE data aggregated by city, sector, multinational status, and quarter over the period 2014–2023. Finally, we construct a categorical indicator equal to one

[5] In the ENOE, "self-represented cities" are urban areas with sufficiently large populations to constitute independent sampling domains, meaning that their labor-market indicators are estimated directly from city-specific subsamples rather than inferred from broader regional strata. We restrict the analysis to the 32 self-represented cities that are consistently observed over the entire period from 2013 to 2023, ensuring a balanced panel with data both before and after the trade policy shifts.

if a given 3-digit NAICS sector experienced a tariff change during the mentioned 2018-2019 period, and zero otherwise.[6]

It is important to highlight the timing and sectoral coverage of tariff increases during the 2018-2019 period. Out of a total of 95 3-digit NAICS sectors, 25 were exposed to tariff increases. As shown in Table 2, 22 of these 25 sectors experienced their first tariff increase in the third quarter of 2018. Although additional tariff hikes followed, they did not affect any new 3-digit NAICS sectors. By the fourth quarter of 2019, the mean cumulative tariff increase—weighted by Mexico's exports to the United States—had reached 8 percent.

Table 2: Number of NAICS 3-digit sectors affected by the tariff increases and tariff changes

Period	Number of affected sectors	Mean cumulative tariff change
1Q-2018	0	0.00
2Q-2018	3	0.00
3Q-2018	25	0.04
4Q-2018	25	0.05
1Q-2019	25	0.05
2Q-2019	25	0.06
3Q-2019	25	0.07
4Q-2019	25	0.08

Source: Fajgelbaum et al. (2024).

2.2 MNE Characterization and Relationship with GVCs

Regarding the characterization of employment in MNEs compared to the rest of domestic employment, as shown in the Table 3 compares the characteristics of employment in MNEs with those of domestic employment. While no substantial differences are observed by gender, notable differences emerge along other dimensions. Employment in MNEs tends to be younger, more highly educated, and more concentrated in the secondary sector and in large firms, a pattern commonly documented in the literature on MNEs and labor markets (Garetto et al., 2025). Moreover, the educational gap between MNE and domestic employment has widened over time: the share of workers with higher education in MNEs

[6] The tariff database constructed by Fajgelbaum et al. (2024) identifies changes in U.S. import tariffs on goods from China as well as changes in Chinese tariffs on U.S. exports. Based on this information, we construct two separate tariff variables, one for each type of tariff change, although our analysis primarily focuses on tariff increases affecting U.S. imports from China. Appendix A.2 provides a detailed description of the processing of the tariff change database.

increased between the fourth quarter of 2014 and the fourth quarter of 2023 relative to the rest of domestic employment.

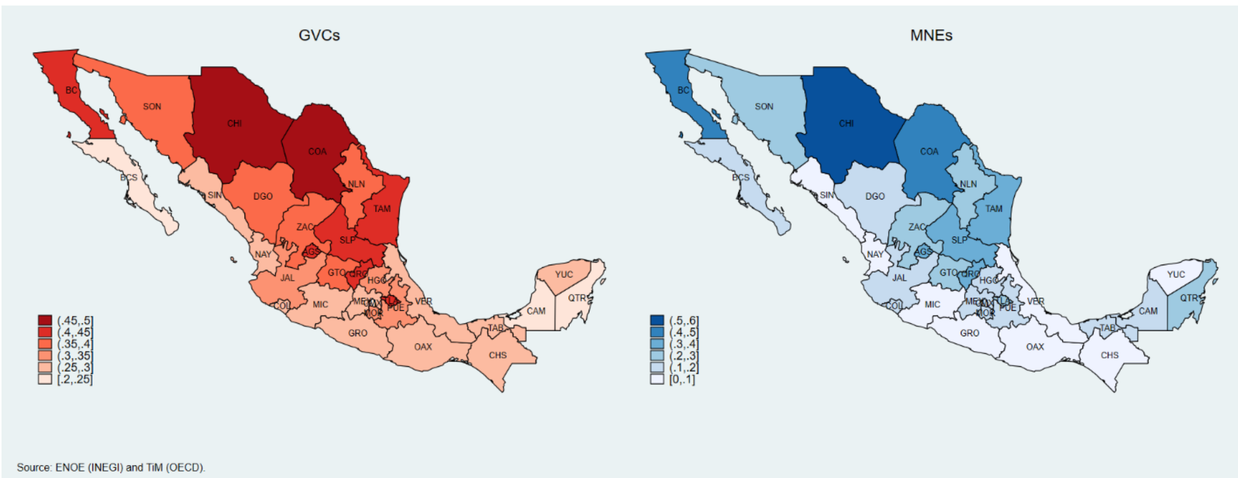
Table 3: Total formal private business employment characterization

	4Q-2014		4Q-2023	
	Non-MNEs	MNEs	Non-MNEs	MNEs
By gender				
Male	65.4%	65.4%	62.3%	62.4%
Female	34.6%	34.6%	37.7%	37.6%
By age group				
18 to 30	37.1%	39.3%	34.0%	38.0%
31 to 45	40.7%	44.4%	37.1%	40.3%
46 to 64	22.2%	16.3%	28.8%	21.7%
By level of education				
Primary	14.5%	7.9%	8.4%	3.3%
Secondary	38.9%	39.1%	32.4%	27.8%
Higher	46.7%	53.0%	59.2%	68.9%
By economic sector				
Primary	0.3%	0.0%	0.3%	0.0%
Secondary	35.2%	59.6%	30.9%	55.4%
Tertiary	64.5%	40.4%	68.9%	44.5%
By size of the firm				
Micro	8.7%	0.6%	9.9%	1.8%
Small	37.0%	7.9%	38.4%	9.9%
Medium	38.4%	25.7%	35.8%	22.8%
Big	15.8%	65.8%	15.9%	65.5%
By city size				
Small (< 300 k)	3,7%	1,9%	3,6%	2,2%
Mid	30,2%	34,7%	29,3%	37,5%
Large (> 1,000 k)	66,1%	63,4%	67,2%	60,3%

Source: ENOE (INEGI).

While our analysis focuses on employment in multinational enterprises (MNEs), the trade policy shock we study—the increase in U.S. tariffs on Chinese goods— is likely to operate through global value chains (GVCs) in which MNEs play a central role. As tariff changes can trigger reallocations of production and sourcing across countries, employment effects are likely to arise in locations integrated into these international production networks. Although the data do not directly identify whether individual workers are engaged in GVCs, they allow us to identify employment in MNEs, which can be considered an empirical proxy for GVC-related employment.[7] To provide context on the MNE-GVC link, we use sector-level information on GVC formal employment shares from the OECD Trade in Employment (TiM) database to construct an approximate measure of GVC employment intensity by city. As shown in **Error! Reference source not found.**, the resulting geographic distribution—assigning cities to their corresponding federal entity (states)—is similar to that of MNE employment. In particular, cities with higher shares of MNE employment also tend to exhibit higher estimated GVC employment intensity.

Graph 1: MNE and estimated GVC formal employment shares by federal entity (4Q-2023)



Source: ENOE (INEGI) and TiM (OECD).

Consistent with this descriptive evidence, we find a positive and statistically significant relationship between sectoral MNE employment and GVC integration, as reported in Table 4. A 10-percentage-point increase in a sector's integration into global value chains is associated with a 4.36-percentage-point increase in the MNE employment share. This is consistent with the existing literature documenting a strong link between GVC participation and the presence of multinational enterprises, whereby sectors more deeply integrated into global value chains tend to exhibit a higher concentration of MNE activity (Iršová & Havránek, 2013; Antràs, 2020). A more detailed discussion of Mexico's integration into global value chains is provided in Appendix A.1.

[7] For wage workers, the ENOE survey collects information on the geographic scope of the employer's operations, asking whether the firm operates in multiple countries, across different cities within Mexico, within a single city, or as a franchise. Presumably to improve classification accuracy and limit potential measurement error, the survey also includes an additional, non-public question that records the employer's exact company name.

Table 4: Estimation of the relation between GVC and MNE employment

Dependent variable: MNE employment share	(1) *b/(se)*	(2) *b/(se)*
GVC employment share	0.288***	0.436***
	(0.037)	(0.040)
Observations	468	468
Time FE	No	Yes

*Notes: The baseline model is $MNE_{year,s} = \beta_0 + \beta_1 GVC_{year,s} + \delta_{year} + \varepsilon_{year,s}$, where $MNE_{year,s}$ denotes the MNE employment share, $GVC_{year,s}$ the GVC employment share, and δ_{year} are year fixed effects (FE). Database constructed at 3-digit NAICS sector-year country level (from 2014 to 2023). The panel data used for this exercise is annual, reflecting the annual frequency of the GVC employment share data obtained from the OECD Trade in Employment (TiM) dataset. Universe: private business formal salaried workers older than 15 years old living in self-represented cities. Signification levels: * p<0.10, ** p<0.05, *** p<0.01.*

3. Empirical Approach

Our empirical strategy proceeds in several steps. We begin by estimating the overall changes in employment and wages in multinationals following the onset of the recent global tariff increases, without distinguishing between sectors directly affected by the trade policy changes. The estimated model is:

$$Y_{t,s,c,i} = \beta_0 + \beta_1 M_{s,c,i} + \beta_2 M_{s,c,i} \times Post18_t + \beta_3 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s,c,i} \quad (1)$$

Where $Y_{t,s,c,i}$ denotes the outcome of interest for time period t, sector s, city c and MNE condition i. The dependent variables are the natural logarithm of employment multiplied by weekly hours worked and the natural logarithm of hourly wages respectively. $M_{s,c,i}$ is a binary indicator equal to 1 for MNE employment, while $M_{s,c,i} \times Post18_t$ captures interaction effects for MNE employment since the bulk of the first major tariff increases, which began in the third quarter of 2018.

$X_{t,s,c,i}$ is a matrix of control variables, that includes the percentage of small, medium, and large enterprises by economic sector and MNE status in 2013, the percentage of people with secondary and post-secondary studies finished by city, the percentage of people with 31 to 45 years old and with 46 to 64 years old by city, and controls for preexisting trends. Controls for preexisting trends are constructed by interacting the 2013 value for the dependent variable (outside the estimation window) with time fixed effects, accounting for possible previous trends of the dependent variable, as the result could be partially the continuation of local trends beginning before the period under study (César et al., 2021). These pre-trend controls differ from standard linear time trends in that they are allowed to vary by city, sector, and MNE status, whereas standard linear trends would be common across units and therefore absorbed by time fixed effects. In all estimations, the dependent variable is weighted by the sector–city employment shares relative to total formal private-sector employment.

The terms $\delta_{c,t}$ and γ_s denote city-period and sector fixed effects, respectively. These fixed effects control for city-specific time-varying factor and time invariant sectoral factors that may affect the outcome variables. Alternative fixed-effects structures are also considered as robustness checks in the next section.

Next, we examine whether workers in MNEs operating in sectors exposed to the global trade policy shifts experienced differential effects following the tariff increases. To do so, we introduce two alternative measures of sectoral exposure:

1. A continuous measure based on cumulative tariff changes at the 3-digit NAICS level ($\Delta\tau_{t,s}$) and its interaction with MNE employment ($M_{s,c,i} \times \Delta\tau_{t,s}$).
2. A binary indicator variable ($T_{t,s}$) that takes a value equal to one if a sector experienced tariff increases during the 2018-2019 period, along with its interaction with MNE employment ($M_{s,c,i} \times T_{t,s}$).

For each exposure measure, we estimate the following specifications:

$$Y_{t,s,c,i} = \beta_0 + \beta_1 M_{s,c,i} + \beta_2 M_{s,c,i} \times \Delta\tau_{t,s} + \beta_3 \Delta\tau_{t,s} + \beta_4 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s,c,i} \quad (2)$$

$$Y_{t,s,c,i} = \beta_0 + \beta_1 M_{s,c,i} + \beta_2 M_{s,c,i} \times T_{t,s} + \beta_3 T_{t,s} + \beta_4 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s,c,i} \quad (3)$$

As a robustness check, we follow Bertrand, Duflo, and Mullainathan (2004) and aggregate the data into two periods —pre- and post 3Q-2018— and re-estimate equations (1) and (3) using the collapsed averages.

We also estimate and event-study specification to assess dynamic effects around the onset of tariff increases:

$$Y_{t,s,c,i} = \beta_0 + \beta_1 M_{s,c,i} + \sum_{\xi} \beta_{2,\xi} M_{s,c,i} \times T_s \times I(\xi) + \sum_{\xi} \beta_{3,\xi} T_s \times I(\xi) + \beta_4 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s,c,i} \quad (4)$$

Where I(ξ) is an indicator for periods before and after the treatment quarter ($\xi = 0$).

To explore potential channels, we next analyze heterogeneous effects by estimating equation (3) separately for subsamples defined by gender, age group, educational attainment, firm size, city size, and city-level intensity of MNE employment. For each dimension, we report the estimated coefficients β_2 on the interaction term capturing MNE employment in tariff-affected sectors of equation (3).

Finally, we investigate input–output linkages. Using the 2018 input–output matrix published by INEGI, we identify the three main upstream and downstream commercial partners for each 3-digit NAICS sector. For each city–period–MNE status cell, we compute the combined employment and mean wages of these partner sectors and re-estimate equations (1), (2), and (3) including these measures. Building on this analysis, we aggregate the data to a quarterly 3-digit sectoral panel to assess broader sector-level effects of tariff exposure, estimating the following adaptations of equations (2) and (3):

$$Y_{t,s,c,i} = \beta_0 + \beta_1 \Delta\tau_{t,s} + \beta_2 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s} \quad (2')$$

$$Y_{t,s,c,i} = \beta_0 + \beta_1 T_{t,s} + \beta_2 X_{t,s,c,i} + \delta_{c,t} + \gamma_s + \varepsilon_{t,s} \quad (3')$$

The set of controls ($X_{t,s,c,i}$) is the same as in the baseline specifications (equations 1 to 3), $\delta_{c,t}$ denotes city-time fixed effects, and γ_s represents 3-digit NAICS sector fixed effects.

Throughout the analysis, standard errors are clustered at the city–sector–time level to account for potential correlation in residuals within local sectoral labor markets and over time. The results presented in subsequent sections were robust to alternative clustering and fixed-effects specifications.

Table *5* reports summary statistics for the main variables used in the empirical analysis.

Table 5: Descriptive statistics

Variable	Obs.	Mean	Median	Std. dev.	Min	Max
$Log(emp_{t,s,c,m})$	123,468	10.36	10.35	1.80	0.00	16.67
$Log(wage_{t,s,c,m})$	108,544	3.15	3.18	0.55	-0.90	4.94
$M_{s,c,i}$	123,468	0.30	0.00	0.46	0.00	1.00
$M_{s,c,i} \times Post18_t$	123,468	0.15	0.00	0.36	0.00	1.00
$\Delta\tau_{t,s}$	123,468	0.01	0.00	0.03	0.00	0.15
$M_{s,c,i} \times \Delta\tau_{t,s}$	123,468	0.00	0.00	0.02	0.00	0.15
$T_{t,s}$	123,468	0.13	0.00	0.34	0.00	1.00
$M_{s,c,i} \times T_{t,s}$	123,468	0.05	0.00	0.21	0.00	1.00

4. Results

4.1 Baseline Estimates

In this subsection we present the estimation results of the empirical specifications defined in equations (1)-(3).

Table 6 reports the estimation results for employment based on Equation (1) under alternative combinations of time, city, and sector fixed effects. Across all specifications, the coefficient on the MNE indicator is negative and statistically significant, reflecting lower average employment levels in MNEs relative to domestic firms within the same city–sector cells. More importantly, the interaction between MNE employment and the post–2018 period is positive across all specifications. In columns (1) through (4), the coefficient is statistically significant at the 1 percent level, with magnitudes ranging from 0.13 to 0.14, implying that employment in MNEs increased by approximately 13 percent relative to domestic firms following the onset of tariff increases. These results are robust to controlling for alternative combinations of time, city, and sector fixed effects. In column (5), which includes city–sector–time fixed effects, identification relies exclusively on differences between MNE and domestic employment. While the estimated coefficient remains positive, its magnitude is smaller and it is no longer statistically significant, reflecting the more restrictive nature of this specification.

Overall, the results suggest that, even controlling for different factors, employment in MNE increased relative to domestic employment following the trade policy shift. One possible interpretation—emphasized in the related literature and explored more directly in the subsequent analysis—is that MNEs may have adjusted production and therefore employment to the new trade environment (Alfaro & Chor, 2023; Utar et al., 2025).

Table 6: Estimation results for employment for Equation (1)

Dependent variable: employment	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	-0.177***	-0.177***	-0.210***	-0.170***	-0.153***
	(0.026)	(0.027)	(0.031)	(0.026)	(0.031)
$M_{s,c,i} \times Post18_t$	0.138***	0.137***	0.131***	0.130***	0.062
	(0.016)	(0.016)	(0.016)	(0.019)	(0.035)
Observations	97,228	97,228	97,215	97,165	54,210
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever not collinear with fixed effects (FE): the shares of small, medium, and large enterprises by economic sector and MNE status, the share of individuals with completed secondary and post-secondary education by city, the shares of individuals age 31-45 and 46-64 by city, and controls for preexisting trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Table 7 and Table 8 report the results for equations (2) and (3), respectively, which explicitly account for sectoral exposure to the global tariff increases. Across specifications, employment in MNEs is lower on average than in domestic firms, as reflected in the negative coefficient on the MNE indicator.

At the same time, higher tariff exposure is associated with lower employment in domestic firms in the affected sectors, as indicated by the negative and statistically significant coefficient on cumulative tariff changes. This pattern may partly reflect the sectoral composition of the affected industries: nearly 99% of employment in these sectors is concentrated in manufacturing, whose share in total employment has exhibited a declining trend since 2019 in the data. The interaction between MNE employment and cumulative tariff exposure is positive and statistically significant across all specifications. Evaluated at a cumulative tariff increase of 10 percentage points, employment in MNEs increases by 9-11 percent.

Table 7: Estimation results for employment for Equation (2)

Dependent variable: employment	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	-0.111***	-0.110***	-0.149***	-0.105***	-0.126***
	(0.027)	(0.027)	(0.032)	(0.025)	(0.030)
$\Delta\tau_{t,s}$	-0.971***	-1.072***	-1.122***	-	-
	(0.154)	(0.161)	(0.157)	-	-
$M_{s,c,i} \times \Delta\tau_{t,s}$	1.932***	1.932***	2.199***	1.600***	1.651***
	(0.269)	(0.272)	(0.268)	(0.298)	(0.338)
Observations	97,228	97,228	97,215	97,165	54,210
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

On the other hand, as shown in Table 8, similar results are found when estimating equation (3): Consistent with the findings in Table 7, sectors affected by tariff increases experienced a decline in domestic employment of about 9-11 percent. In contrast, the interaction term for MNE employment is positive and statistically significant, with coefficients between 0.19 and 0.22, implying that employment in MNEs in affected sectors increased by roughly 8–12 percent on net relative to domestic firms. These findings point to a differential employment response across firm types in sectors exposed to the trade policy shock.

These results align with Chen et al. (2025), who find an increase in labor demand among Mexican exporters exposed to global tariff increases, and also with Samaniego de la Parra et al. (2025) and Utar (2026) with similar results for manufacturing firms.

Table 8: Estimation results for employment for Equation (3)

Dependent variable: employment	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	-0.116***	-0.116***	-0.158***	-0.109***	-0.132***
	(0.026)	(0.026)	(0.031)	(0.025)	(0.029)
$T_{t,s}$	-0.093***	-0.103***	-0.107***	-	-
	(0.012)	(0.012)	(0.012)	-	-
$M_{s,c,i} \times T_{t,s}$	0.193***	0.199***	0.223***	0.155***	0.185***
	(0.022)	(0.023)	(0.022)	(0.026)	(0.029)
Observations	97,228	97,228	97,215	97,165	54,210
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Tables 8, 9, and 10 report the estimation results for hourly wages using equations (1), (2), and (3), respectively. Across specifications, the coefficient on the MNE indicator is generally positive, with magnitudes ranging between 2 and 6 percent, suggesting that workers employed by MNEs tend to earn higher hourly wages than those employed by domestic firms. This range is aligned with estimates of the MNE wage-premium documented in the literature which typically fall between 2 and 7 percent using matched employer-employee data (Garetto et al., 2025).

When examining changes over time, Table 8 provides some evidence of higher wage growth in MNEs following the onset of the tariff increases, as reflected in the positive interaction between MNE employment and the post-2018 period in several specifications. However, this effect becomes weaker and less precisely estimated once the analysis explicitly conditions on sectoral exposure to tariff increases. In

Table 9: Estimation results for hourly wages for Equation (1)

Dependent variable: hourly wages	(1) b/(se)	(2) b/(se)	(3) b/(se)	(4) b/(se)	(5) b/(se)
$M_{s,c,i}$	0.040	0.041	0.028	0.045*	0.021
	(0.022)	(0.022)	(0.023)	(0.022)	(0.025)
$M_{s,c,i} \times Post18_t$	0.048***	0.045***	0.048***	0.033*	0.032
	(0.013)	(0.014)	(0.013)	(0.016)	(0.018)
Observations	86,402	86,402	86,382	86,313	42,702
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Tables 9 and 10, which focus on tariff-exposed sectors using continuous and categorical measures of exposure, the interaction terms are generally small and statistically insignificant.

Overall, the results suggest that while MNEs tend to pay higher wages on average, there is limited evidence that wage differentials between MNEs and domestic firms widened systematically in sectors more exposed to the trade policy shifts. This contrasts with the clearer employment responses documented earlier and is consistent with prior findings for Mexico suggesting that wage adjustments may be more muted than employment adjustments in response to trade-related shocks (Blyde et al., 2023; Vazquez & Winkler, 2023). Our results also align with Utar (2026), who finds no statistically significant firm-level wage effects to the 2018-19 global tariff changes. On the other hand, Chen et al. (2025), using employer-employee monthly data for 2016-2019, document positive wage effects of the same trade policy changes on workers of more exposed sectors, suggesting that such effects may be concentrated in the short run. In addition, using firm-level data, the same study also documents null or negative wage effects in some specifications, which they interpret as being consistent with composition effects whereby employment expansion is accompanied by the hiring of relatively lower-wage workers.

Table 10: Estimation results for hourly wages for Equation (2)

Dependent variable: hourly wages	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	0.066**	0.065**	0.054*	0.064**	0.039
	(0.021)	(0.021)	(0.022)	(0.021)	(0.023)
$\Delta\tau_{t,s}$	-0.075	-0.185	-0.066	-	-
	(0.151)	(0.150)	(0.156)	-	-
$M_{s,c,i} \times \Delta\tau_{t,s}$	0.159	0.096	0.199	-0.147	-0.229
	(0.218)	(0.226)	(0.227)	(0.262)	(0.318)
Observations	86,402	86,402	86,382	86,313	42,702
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Table 11: Estimation results for hourly wages for Equation (3)

Dependent variable: hourly wages	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	0.066**	0.065**	0.055*	0.063**	0.039
	(0.021)	(0.021)	(0.022)	(0.021)	(0.023)
$T_{t,s}$	-0.001	-0.015	0.000	-	-
	(0.011)	(0.011)	(0.011)	-	-
$M_{s,c,i} \times T_{t,s}$	0.010	0.011	0.012	-0.008	-0.013
	(0.015)	(0.016)	(0.016)	(0.018)	(0.021)
Observations	86,402	86,402	86,382	86,313	42,702
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Altogether, while the broader literature documents that trade shocks can affect both employment and earnings/wages (Autor et al., 2013, 2016, 2025) and can alter wage inequality through firm and worker heterogeneity (Helpman et al., 2017), our estimates suggest that in this setting the adjustment operated more clearly through employment than through average hourly wages, with wage responses appearing limited or concentrated in specific subgroups.

4.2. Robustness

This subsection presents a series of robustness checks aimed at assessing the sensitivity of the main results to alternative specifications. Specifically, we examine the robustness of our findings to alternative measures of tariff exposure, address concerns related to serial correlation in difference-in-differences settings, analyze the dynamic effects using an event-study specification, explore heterogeneous responses across worker, firm, and location characteristics, and investigate potential employment and wage adjustments along upstream and downstream input–output linkages. Together, these exercises provide a comprehensive assessment of the stability and interpretation of the baseline results.

Tariff Measures

Fajgelbaum et al. (2024) identify the tariff changes affecting global trade. The results presented above are based on the tariff changes applied to U.S. imports. As a robustness check, Appendix A.3 reports the estimation results using tariff changes on U.S. exports as the basis to construct the exposure measure. The results are qualitatively unchanged, indicating that the findings are not sensitive to whether tariff exposure is defined using import or export tariff changes. This result aligns with Samaniego de la Parra et al. (2025) who only detect sizable effect of global retaliatory tariffs.

Collapsed Estimates

Following Bertrand et al. (2004), we collapse the panel data into two periods by averaging outcomes over a pre-treatment period (2014–2018) and a post-treatment period (2019–2023). This approach mitigates concerns related to serial correlation in Difference-in-Differences settings, reduces the influence of short-run noise and measurement errors, and provides a simplified framework to assess the average treatment effect. The results from this exercise serve as a robustness check for the baseline specifications.

Table 12 reports the results for employment using the collapsed specifications of equations (1) and (3) and two alternative city and sector fixed effects structures. The findings are consistent with the baseline estimates. First, employment in multinational enterprises increased in the post-2018 period relative to domestic firms (columns 1 and 2). Second, employment growth was more pronounced in tariff-exposed sectors within MNEs following the trade policy changes (columns 3 and 4).

Table 12: Collapsed estimation results for employment

Dependent variable: employment	(1) *b/se*	(2) *b/se*	(3) *b/se*	(4) *b/se*
$M_{s,c,i}$	-0.170	-0.255	-0.121	-0.216
	(0.107)	(0.139)	(0.109)	(0.137)
$Post18_t$	0.288*	0.287*	0.345**	0.336**
	(0.117)	(0.115)	(0.119)	(0.119)
$M_{s,c,i} \times Post18_t$	0.131***	0.124***	-	-
	(0.034)	(0.034)	-	-
$T_{t,s}$	-	-	-0.116***	-0.131***
	-	-	(0.030)	(0.027)
$M_{s,c,i} \times T_{t,s}$	-	-	0.232**	0.271***
	-	-	(0.082)	(0.071)
Observations	6,606	6,572	6,606	6,572
Sector FE	Yes	No	Yes	No
City FE	Yes	No	Yes	No
Sector-city FE	No	Yes	No	Yes

*Notes: All the specifications include the following controls whenever not collinear with the fixed effects (FE): the share of small, medium, and large enterprises by economic sector and MNE status, the share of individuals with completed secondary and post-secondary education by city, the shares of individuals age 31-45 and 46-64 by city, and controls for preexisting trends. A constant term is included in all four models. Standard errors are clustered at the 3-digit NAICS sector level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Turning to wages, Table 13 shows that hourly wages in MNEs did not increase significantly since 3Q-2018 period (columns 1 and 2), consistent with the weaker and less precise wage effects documented in the baseline specifications. Similarly, when focusing on tariff-exposed sectors, the estimated wage effects within MNEs are small and statistically insignificant (columns 3 and 4). Overall, the collapsed estimates provide no robust evidence of systematic wage increases associated with tariff exposure, reinforcing the conclusion that wage adjustments were more muted than employment responses.

Table 13: Collapsed estimation results for hourly wages

Dependent variable: wages	(1) b/se	(2) b/se	(3) b/se	(4) b/se
$M_{s,c,i}$	0.003	0.008	0.019	0.025
	(0.038)	(0.035)	(0.036)	(0.033)
$Post18_t$	0.136	0.144	0.138	0.147
	(0.138)	(0.136)	(0.139)	(0.137)
$M_{s,c,i} \times Post18_t$	0.030	0.033	-	-
	(0.019)	(0.019)	-	-
$T_{t,s}$	-	-	-0.015	-0.015
	-	-	(0.013)	(0.012)
$M_{s,c,i} \times T_{t,s}$	-	-	0.007	0.012
	-	-	(0.018)	(0.017)
Observations	6,519	6,487	6,519	6,487
Sector FE	Yes	No	Yes	No
City FE	Yes	No	Yes	No
Sector-city FE	No	Yes	No	Yes

*Notes: All the specifications include the following controls whenever not collinear with the fixed effects (FE): the share of small, medium, and large enterprises by economic sector and MNE status, the share of individuals with completed secondary and post-secondary education by city, the shares of individuals age 31-45 and 46-64 by city, and controls for preexisting trends. A constant term is included in all four models. Standard errors are clustered at the 3-digit NAICS sector level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Event study

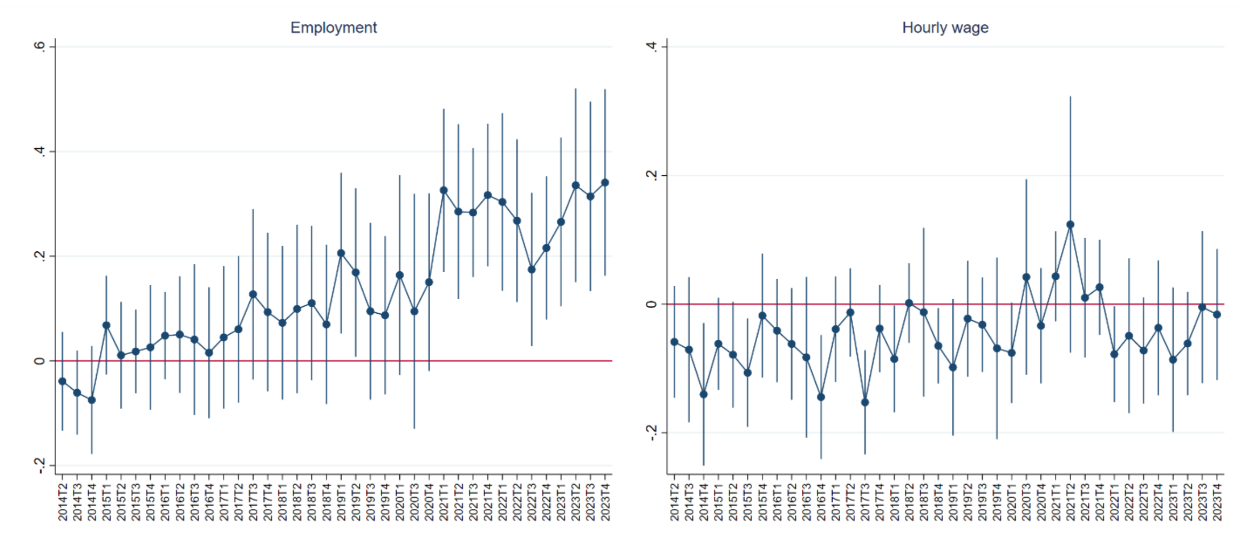
As a further robustness exercise, we estimate an event-study specification based on equation (3), as described in the previous section, including city-time and sector fixed effects. This approach serves several purposes: it allows us to assess the plausibility of the parallel trends assumption by examining pre-treatment dynamics, to evaluate the timing and persistence of treatment effects, and to explore potential anticipation effects associated with earlier announcements of tariff changes.

Graph 2 presents the estimated dynamic effects of the global tariff increases on employment and wages in MNE. For employment, the interaction coefficients in the pre-treatment period (prior to 2019) are not statistically significant and are estimated with relatively wide confidence intervals, indicating no evidence of differential pre-trends or anticipation effects. This finding supports the validity of the parallel trends assumption.

Starting in 2019, the estimated employment effects turn positive and become statistically significant in the first two quarters following the tariff increases, suggesting a short-run employment response in MNEs operating in exposed sectors. The estimates subsequently lose precision during late 2019 and 2020, a period marked by substantial labor-market disruptions associated with the COVID-19 pandemic. From 2021 onward, the coefficients become consistently positive and statistically significant, indicating a more sustained differential employment response in the post-pandemic period.

In contrast, the event-study estimates for wages show no statistically significant effects throughout the sample period. This pattern suggests that, while employment adjusted dynamically in response to the trade policy changes, wage responses were more limited, consistent with slower adjustment of compensation relative to employment levels.

Graph 2: Event study results



Notes: confidence intervals at 95%.

Heterogeneous effects

To explore heterogeneous effects, we estimate equation (3) separately for subsamples defined by worker, firm, and location characteristics. Specifically, we consider heterogeneity by gender (male and female), age group (18–30, 31–45, and 46–64), education level (low, medium, and high), firm size (micro, small, medium, and large), city size (small, medium, and large), and city-level intensity of MNE employment (low, medium, and high), as well as selected interactions across these dimensions. This approach allows us to assess whether the employment and wage responses to tariff exposure vary systematically across groups. This subgroup analysis addresses the possibility that the trade policy shifts may not have affected all workers uniformly, as in César et al. (2021). That is; by disaggregating the sample, we aim to capture the differentiated responses that might be masked in aggregate results which could help our understanding of the main results.

Table 14 reports the estimation results for employment and wages within tariff-affected sectors. Focusing first on employment, the results indicate statistically significant employment increases in MNEs relative to domestic firms for both men and women following 2019, with similar magnitudes across gender groups. Positive and significant employment effects are also observed across all age categories. In terms of education, the largest employment gains in MNEs are concentrated among workers with higher educational attainment, suggesting that employment expansion in exposed MNEs was relatively more skill intensive. Across firm size categories, employment increases are evident in small, medium, and large firms, with the strongest effects observed among small firms. In addition, employment gains in MNEs relative to domestic firms are more pronounced in smaller cities.

Turning to wages, the results largely confirm the absence of systematic changes in MNE wage premia across most subgroups. In particular, no statistically significant wage premium adjustments are observed by gender or age group, consistent with the aggregate wage results. However, workers with medium levels of education experience a statistically significant decline in the MNE wage premium following the tariff increases, while wage premia for low- and high-education workers remain unchanged. With respect to firm size, positive and statistically significant wage premium effects are observed in small firms, whereas no significant wage adjustments are detected in large firms, despite their sizable employment gains. By city size, statistically significant wage premium increases are found only in medium-sized cities.

Our results complement those of Chen et al. (2025). While they find that wages increased among female, unskilled, and younger workers employed by exporters exposed to the tariff changes, we find no evidence that wage premia in multinational enterprises operating in the most affected sectors systematically favored these groups.

Table 14. Heterogeneous effects - Equation (3)

	Employment	*Wages*
Gender		
Women	0.223***	-0.006
Men	0.212***	0.002
Age group		
18-30	0.237***	0.013
31-45	0.202***	0.014
46-64	0.246***	-0.056*
Education level		
Low	0.129**	0.015
Mid	0.123***	-0.051***
High	0.237***	0.034
Firm size		
Micro	0.03	0.218
Small	0.396***	0.337***
Medium	0.144***	0.045
Large	0.180***	-0.041*
City size		
Small	0.452***	-0.019
Mid	0.310***	0.034***
Large	0.111***	0.005

*Notes: All the specifications include time-city and sector fixed effects (FE) along with the following controls whenever possible: the shares of small, medium, and large enterprises by economic sector and MNE status, and controls for preexisting trends. A constant term is included in all models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Overall, the heterogeneous effects analysis suggests that while tariff exposure was associated with broad-based employment gains in MNEs, wage adjustments were more uneven and limited to specific groups. In particular, employment expansion in MNEs appears to have been more pronounced among higher-skilled workers and in smaller firms and cities, whereas wage premia remained largely unchanged for most workers.

Input-output linkages

As a final robustness exercise, we explore whether the employment and wage responses observed in tariff-exposed sectors extended to their main upstream and downstream production partners. To this end, we re-estimate equations (1), (2), and (3) using as dependent variables the corresponding outcomes for the top three upstream and downstream sectoral partners, identified using input–output data[8].

[8] See www.inegi.org.mx/temas/mip/ for details on the input-output matrix for Mexico.

Table 15 reports the results for employment. The estimates indicate positive but smaller employment responses in MNEs operating in upstream and downstream partner sectors following the tariff increases. In our preferred specification, which includes city–time and sector fixed effects, employment in upstream partner sectors affected by the tariff increases declined by approximately 2.8 percent in domestic firms, while it increased by about 1.4 percent in MNEs. For downstream partners, domestic employment experienced a more moderate decline (around 2.0 percent), whereas employment in MNEs increased by approximately 3.2 percent. These findings suggest that employment adjustments in response to tariff exposure were not confined to directly affected sectors but also propagated along production linkages, with differential responses across firm types.

Table 15: Estimation results for employment in first 3 sectorial partners

Dependent variable: employment	Upstream			Downstream		
	Eq. (1) *b/(se)*	Eq. (2) *b/(se)*	Eq. (3) *b/(se)*	Eq. (1) *b/(se)*	Eq. (2) *b/(se)*	Eq. (3) *b/(se)*
$M_{s,c,i}$	-0.222***	-0.210***	-0.211***	-0.089***	-0.092***	-0.093***
	(0.013)	(0.012)	(0.012)	(0.009)	(0.008)	(0.008)
$M_{s,c,i} \times Post18_t$	0.030***			0.010		
	(0.010)			(0.007)		
$\Delta\tau_{t,s}$		-0.301***			-0.337***	
		(0.088)			(0.043)	
$M_{s,c,i} \times \Delta\tau_{t,s}$		0.687***			0.914***	
		(0.103)			(0.078)	
$T_{t,s}$			-0.028***			-0.020***
			(0.007)			(0.004)
$M_{s,c,i} \times T_{t,s}$			0.042***			0.051***
			(0.009)			(0.008)
Observations	77,574	77,574	77,574	76,106	76,106	76,106

*Notes: All the specifications include city-time and sector fixed effects (FE) along with the following controls whenever not collinear with FE: the shares of small, medium, and large enterprises by economic sector and MNE status, the share of individuals with completed secondary and post-secondary education by city, the shares of individuals age 31-45 and 46-64 by city, and controls for preexisting trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

When estimating the impact on commercial partners wages, we find that there was no statistically significant impact of global tariffs increases neither on domestic firms nor in MNEs. These results are presented in Table 16.

Table 16: Estimation results for wages in first 3 sector partners

Dependent variable: wages	Upstream			Downstream		
	Eq. (1) *b/(se)*	Eq. (2) *b/(se)*	Eq. (3) *b/(se)*	Eq. (1) *b/(se)*	Eq. (2) *b/(se)*	Eq. (3) *b/(se)*
$M_{s,c,i}$	0.133***	0.111***	0.112***	0.056***	0.056***	0.057***
	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)
$M_{s,c,i} \times Post18_t$	-0.040***			0.005		
	(0.012)			(0.009)		
$\Delta\tau_{t,s}$		-0.184			-0.139*	
		(0.151)			(0.079)	
$M_{s,c,i} \times \Delta\tau_{t,s}$		-0.103			0.246**	
		(0.197)			(0.105)	
$T_{t,s}$			-0.006			0.000
			(0.012)			(0.008)
$M_{s,c,i} \times T_{t,s}$			-0.007			0.011
			(0.016)			(0.010)
Observations	74,396	74,396	74,396	73,503	73,503	73,503

*Notes: All the specifications include city-time and sector fixed effects (FE) along with the following controls whenever not collinear with FE: the shares of small, medium, and large enterprises by economic sector and MNE status, the share of individuals with completed secondary and post-secondary education by city, the shares of individuals age 31-45 and 46-64 by city, and controls for preexisting trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

5. Conclusion

This study examines the impact of a major exogenous shock—the 2018-2019 global trade policy shifts—on Mexico's labor market with a focus on MNE employment. By combining microdata from Mexico's National Survey of Occupation and Employment (ENOE) with sector-level tariff changes from Fajgelbaum et al. (2024), we constructed a quarterly panel covering 2014-2023 at the city-sector level, distinguishing between MNE and domestic firms.

Our first main finding is that employment in MNEs increased significantly in sectors most exposed to foreign tariff increases, relative to domestic firms operating in the same local labor markets. These effects emerge after 2019, weaken during the COVID-19 period, and become more persistent in the post-pandemic years, consistent with gradual adjustment of global value chains. In contrast, we find no robust evidence that the MNE wage premia widened systematically in response to the trade shock, despite the presence of a baseline MNE wage premium.

Second, the employment response within MNEs is broad-based across gender and age groups but stronger for highly educated workers, small establishments, and firms located in smaller cities. These patterns suggest that post-shock employment expansion was relatively skill-intensive and geographically uneven, while wage adjustments remained limited or concentrated in specific subgroups.

Third, employment effects were not confined to directly exposed sectors. MNE employment also increased in upstream and downstream partner sectors, indicating that the labor-market adjustments propagated along production linkages. As in the directly affected sectors, wage effects in these related activities were small and statistically insignificant.

Taken together, these findings suggest that in the context of the analyzed trade policy shifts, adjustment in Mexico's labor market operated primarily through employment rather than wages, particularly within multinational enterprises. These results contribute to the literature on MNEs and labor markets by highlighting the role of global value chain reorganization as a channel through which trade policy shocks affect employment in developing economies.

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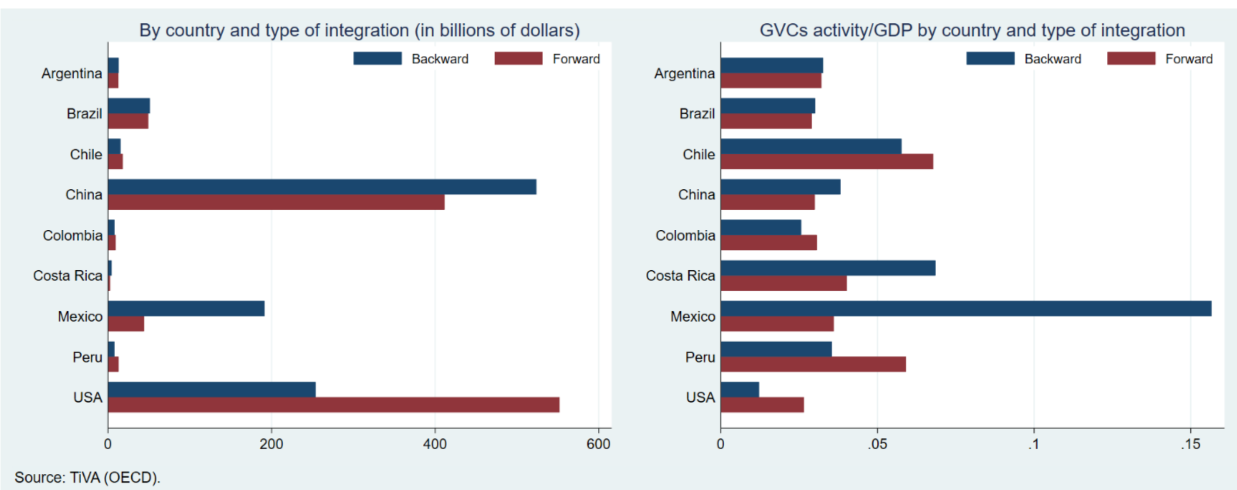
Appendix

A.1. Mexico's GVC integration

Firms may integrate into GVCs by exporting intermediate goods (forward linkages) or importing inputs to produce exportable goods (backward linkages). Mexico is highly integrated into GVCs. This is illustrated in **Error! Reference source not found.**, which depicts the levels of backward and forward integration for major countries in Latin America, alongside the United States and China in 2019. The left panel of the graph measures GVC-related activity in billions of dollars, while the right panel expresses it as a percentage of GDP.

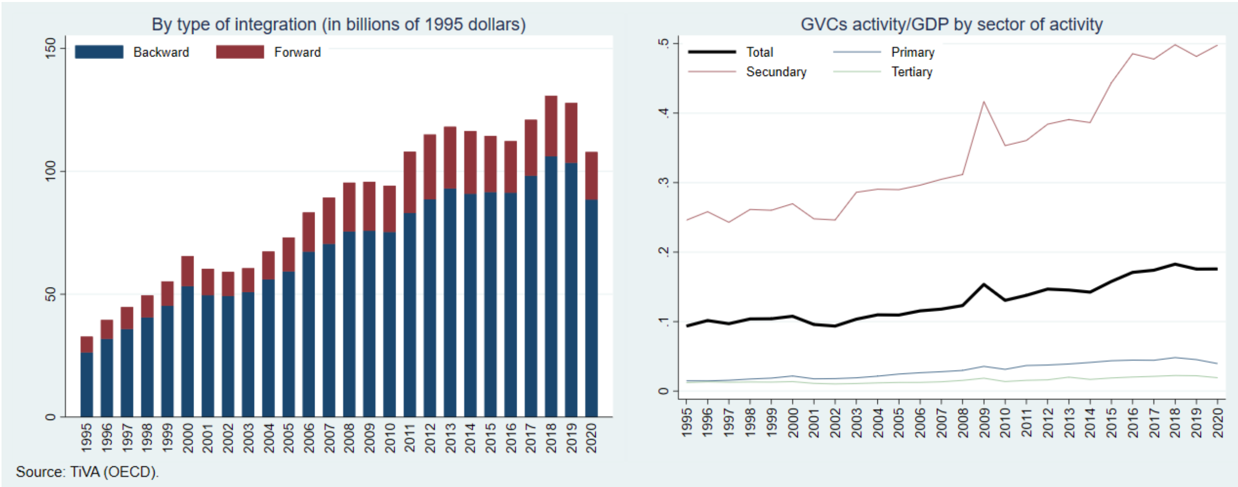
When measuring GVC activity in absolute terms (dollars), it is unsurprising that the United States and China dominate, given the sheer size of their economies. However, Mexico's level of integration into backward GVCs stands out, coming close to that of the United States. When adjusting for economic size, the data reveals that Mexico leads among large Latin American countries in GVC integration, primarily through its backward linkages. This integration accounts for just over 15% of Mexico's GDP, more than double that of Costa Rica, the second-highest country in terms of backward GVC activity relative to GDP.

Graph A. 1: Mexico GVC integration compared to other countries in 2019



On the other hand, **Error! Reference source not found.** illustrates that Mexico's GVC activity nearly tripled between 1995 and 2020. However, this aggregate growth is primarily driven by the expansion of GVC activity up to 2011, after which it shows signs of relative stagnation. Analyzing Mexico's GVC integration by industry reveals a strong concentration in the secondary sector, particularly in manufacturing.

Graph A. 2: Evolution of Mexico GVC integration



That said, it is worth highlighting some additional peculiarities of Mexico's GVC integration, as noted by Iacovone et al., (2021). First, the country has a relatively small number of medium and large enterprises, with the majority of businesses being micro-enterprises or self-employed individuals. Second, changes in employment are primarily driven by the entry and exit of firms, as well as by young firms, with less contribution from established firms that remain in the market, a trend particularly pronounced in the service sector. Lastly, employment within GVCs by small and medium-sized enterprises (SMEs) accounts for less than 20% of total employment. This is largely because SMEs in the manufacturing sector contribute only 8% of exports, while in the service sector, they represent around 35% of exports.

A.2. Sectors affected by global tariff increases

To quantify the average tariff change in each 3-digit NAICS sector, we used the database from Fajgelbaum (2024), where the authors have monthly tariff levels of USA imports coming from China for each 10-digit Harmonized System (HS) code in which there was at least one transaction between the USA and China between 2018 and 2019. Additionally, in supplementary databases, the authors provide the exports and imports between the USA and Mexico for each 10-digit HS code in 2017, along with the correspondence of the 10-digit HS code with the 6-digit NAICS code. Using this information, we merged the databases to have a single dataset containing the tariff level for each 10-digit HS code with trade between the USA and China in each month between 2018 and 2019, its correspondence with the 6-digit NAICS code, and the value of Mexico's exports to the US (also for each 10-digit HS code).

Next, we calculated the quarterly cumulative tariff change for each code from the second quarter of 2018 until the fourth quarter of 2019. Then, we converted from the 10-digit HS code to the 6-digit NAICS code.

Since the 10-digit HS code is more detailed, we performed a weighted sum from each 10-digit code to its corresponding 6-digit NAICS code. The weight used was the export balance of Mexico to the US in 2017 for each 10-digit HS sector divided by the total export balance of Mexico to the US in 2017 for each 6-digit NAICS sector.

Once we had the weighted average tariff changes for each 6-digit NAICS code, we aggregated them first to 4-digit and then to 3-digit NAICS codes using the same weighting method. After this, we merged this dataset with the large microdata base that contains the stacked ENOE data from the first quarter of 2014 to the fourth quarter of 2023. Finally, we aggregated the data by city, sector, MNE status, and quarter.

A.3. Estimations with alternative tariff measures

In this Appendix we show the estimation results using the tariff change on US exports instead of the tariff change on US imports to calculate our exposure measures. Table A. 1 presents the descriptive statistics of the exposure variables obtained using this alternative tariff change variant, while in Table A. 2 and Table A. 3 we present the corresponding estimation results for employment. As can be observed in the tables, the results are qualitatively the same and quantitively very similar to the ones presented in the text.

Table A. 1: Alternative exposure measures descriptive statistics

Variable	Obs.	Mean	Median	Std. dev.	Min	Max
$\Delta\tau_{t,s}$	123,468	0.01	0.00	0.03	0.00	0.14
$M_{s,c,i} \times \Delta\tau_{t,s}$	123,468	0.00	0.00	0.02	0.00	0.14
$T_{t,s}$	123,468	0.15	0.00	0.35	0.00	1.00
$M_{s,c,i} \times T_{t,s}$	123,468	0.05	0.00	0.21	0.00	1.00

Table A. 2: Estimation results for employment for Equation (2) using an alternative exposure measure

Dependent variable: employment	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	-0.114***	-0.114***	-0.155***	-0.108***	-0.130***
	(0.027)	(0.027)	(0.031)	(0.025)	(0.029)
$T_{t,s}$	-1.197***	-1.326***	-1.405***		
	(0.200)	(0.208)	(0.205)		
$M_{s,c,i} \times T_{t,s}$	2.502***	2.529***	2.842***	2.083***	2.274***
	(0.333)	(0.337)	(0.333)	(0.369)	(0.427)
Observations	97,228	97,228	97,215	97,165	54,210
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Table A. 3: Estimation results for employment for Equation (3) using an alternative exposure measure

Dependent variable: employment	(1) *b/(se)*	(2) *b/(se)*	(3) *b/(se)*	(4) *b/(se)*	(5) *b/(se)*
$M_{s,c,i}$	-0.116***	-0.116***	-0.157***	-0.109***	-0.132***
	(0.026)	(0.026)	(0.031)	(0.025)	(0.029)
$T_{t,s}$	-0.092***	-0.102***	-0.106***		
	(0.012)	(0.012)	(0.012)		
$M_{s,c,i} \times T_{t,s}$	0.192***	0.198***	0.222***	0.153***	0.183***
	(0.022)	(0.023)	(0.022)	(0.026)	(0.029)
Observations	97,228	97,228	97,215	97,165	54,210
Time FE	Yes	No	Yes	No	No
City FE	Yes	No	No	Yes	No
Sector FE	Yes	Yes	No	No	No
City-time FE	No	Yes	No	No	No
City-sector FE	No	No	Yes	No	No
Time-Sector FE	No	No	No	Yes	No
City-time-sector FE	No	No	No	No	Yes

*Notes: All the specifications include the following controls whenever they are not collinear with the fixed effects (FE): the shares of small, medium, and large firms by economic sector and MNE status; the share of individuals with completed secondary and post-secondary education by city; the shares of individuals aged 31–45 and 46–64 by city; and controls for pre-existing trends. A constant term is included in all five models. Standard errors are clustered at the 3-digit NAICS sectors-quarter level. Results are robust to alternative clustering schemes. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*