INTERNATIONAL MONETARY FUND

Trade Policy and Jobs in Vietnam: The Unintended Consequences of US-China Trade Tensions

Lorenzo Rotunno, Sanchari Roy, Anri Sakakibara and Pierre-Louis Vezina

WP/24/263

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2024
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WORKING PAPER

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IMF Working Paper
Strategy, Policy & Review

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Prepared by Lorenzo Rotunno, Sanchari Roy, Anri Sakakibara and Pierre-Louis Vezina*

Authorized for distribution by Martin Sommer
December 2024

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ABSTRACT: We use the US-China tariffs of 2018-19 as an exogenous shock to export opportunities in Vietnam to identify how trade policy affects job creation. Using a difference-in-differences framework, we first show that US tariffs on China increased the range of products exported by Vietnam to the US in the two years after the hikes. We then show using firm level data that this expansion in export opportunities led to job creation. Around 5% extra jobs were created in firms hit with average tariffs above 15%. Results point towards this effect being driven mostly by female employment.

JEL Classification Numbers:	F14, F16
Keywords:	Vietnam; US-China trade tensions; trade policy; exports; employment.
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* We thank Richard Baldwin, Jason Garred, Daniele Girardi, Brian McCaig, Sang Hyun Park, Nina Pavcnik, Martin Sommer and seminar participants at the 2022 Hitotsubashi-Gakushuin workshop, at UCL (SSEES), at the Geneva Trade and Development Workshop (GTDW), at the IMF, Keio University, Nottingham (CITP), at the IEA meeting in Medellin, the CAED conference at Penn State, and at the Patras Applied Micro workshop in Olympia for helpful suggestions. This paper is a substantially revised and updated version of the QPE Working Paper 2023-56 published under the title ``Trade Policy and Jobs in Vietnam: The Unintended Consequences of Trump's Trade War''. The views expressed in this paper are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management. This paper was supported by a British Academy/Leverhulme Small Research Grant. We thank Anthony Senior at King's for all his help.

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The Unintended Consequences of US-China Trade Tensions

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November 19, 2024

Abstract

We use the US-China tariffs of 2018-19 as an exogenous shock to export opportunities in Vietnam to identify how trade policy affects job creation. Using a difference-in-differences framework, we first show that US tariffs on China increased the range of products exported by Vietnam to the US in the two years after the hikes. We then show using firm level data that this expansion in export opportunities led to job creation. Around 5% extra jobs were created in firms hit with average tariffs above 15%. Results point towards this effect being driven mostly by female employment.

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1 Introduction

Understanding the effects of trade policy is of particular importance to developing economies, where exposure to international markets can shape livelihoods through labor market opportunities (Caliendo and Parro, 2022). Identifying the impact of trade policy is challenging however, as policies affecting openness are typically endogenous – they often target specific sectors or regions likely to benefit from trade, or are the result of export success rather than its cause. Free Trade Agreements (FTAs), for example, often result from lobbying by large multinationals (Blanga-Gubbay et al., 2024).

We use the emergence of US-China trade tensions as an exogenous shock to export opportunities in Vietnam to identify the effect of trade policy on job creation. The tariff hikes imposed on China by the US administration in 2018 and 2019 affected about two thirds of all products, covered $250 billion of Chinese goods and caused large declines in US imports (Amiti et al., 2019; Fajgelbaum et al., 2019). As a result, the US became relatively more open to exports from other countries. Since US tariffs were targeted at China and not at Vietnam, as well as being mostly politically-motivated (Lake and Nie, 2023; Autor et al., 2023), we argue that this constitutes a natural experiment whereby the timing and the product coverage of the tariffs provide exogenous variation in Vietnam's export opportunities.

Existing evidence suggest that the US-China tariffs caused US importers to substitute Chinese goods with goods from other countries, identifying Vietnam and Mexico among the countries whose exports increased the most (Alfaro and Chor, 2023; Bown, 2022; Fajgelbaum et al., 2024; Freund et al., 2024; Utar et al., 2023; Gopinath et al., 2024). Anecdotal evidence also suggests Vietnam's exports may have risen in response to US-China trade tensions.[1]

[1]For example, The Financial Times for ran the headline "US-China trade war gives Vietnam a

We first revisit the evidence on whether Vietnam's exports benefited from US tariffs on China using difference-in-differences methods. We compare Vietnam's exports to the US of products targeted by US tariffs on China with those of other products, before and after the tariff hikes. We find that tariffs on Chinese goods led to an expansion of Vietnam's exports to the US, driven by new export varieties. Our results suggest that the US-China trade tensions in 2018-19 led to an acceleration of the shift of manufacturing exports away from China and towards other emerging economies, first documented by Hanson (2020).[2]

We then go one step further and estimate the impact of US-China tariff hikes on jobs in Vietnam using the Vietnamese Enterprise Survey (VES), exploiting variation in exposure to tariffs across around 30,000 firms from 2014 to 2020. We find that around 5% extra jobs were created in firms hit with average tariffs above 15%. The direction of the effect is confirmed when exploiting variation across industries using data from Labor Force Survey (LFS) – employment in industries affected by US-China tariffs has increased 10% more than in other industries.

We then investigate whether women were differently affected compared to men. Recent reports by the WTO and World Bank (2021) and OECD (2019) put gender aspects at the forefront of policy work on trade as it may have important development implications through female empowerment (Duflo, 2012). We find that employment growth at the firm level due to US tariffs on Chinese products is mostly driven by women, as treated firms created 8% more jobs for women.

The positive trade and labor effects are increasing over a period of three (for labor outcomes) and five (for exports) years after the rise of US-China trade tensions

winning streak"(https://www.ft.com/content/4bce1f3c-8dda-11e9-a1c1-51bf8f989972); and the New York Times suggested that "Your next iPhone might be made in Vietnam. Thank the Trade War."(https://www.nytimes.com/2019/07/30/technology/trump-trade-war-vietnam.html).

[2]Xue (2023) finds that countries like Vietnam that are most exposed to the trade diversion effects of US-China tariffs are also the ones that receive the highest increase in FDI. This complementary between exports and FDI effects highlights further the unique position of Vietnam to gain competitiveness from the rise of US-China trade tensions.

in 2018. How they will evolve in the years to come however remains an open question. As the major economies maintain or intensify trade restrictions, also third countries like Vietnam are poised to suffer from significant trade, investments and welfare losses (Bolhuis et al., 2023).

Our paper contributes to three strands of the literature on trade policy and labor markets in developing countries. First, it extends a growing literature on the impacts of the rising US-China trade tensions, specifically that on bystander countries cited above, by focusing on employment effects. Our paper here adds to concurrent work that also examines the effect of the US-China tariffs on employment in Vietnam. Nguyen and Lim (2023) show that the tariff hikes imposed by the US on China led to structural transformation across Vietnamese provinces, while Mayr-Dorn et al. (2023) show it led to job and wage gains exploiting geographic variation in exposure to US-China tariffs using employment shares across industries and districts. We instead use product-level production data to exploit variation in exposure to US-China tariff hikes across firms. Our findings that exposure to US tariffs on China led to higher employment in Vietnam are consistent with the results of these papers.[3]

The finding that US-China trade tensions led to export-driven employment reallocation in Vietnam is consistent with evidence indicating that the expansion of Vietnam's exports follows trade reallocation rather than a mere rerouting of China's exports with little value added en route. Iyoha et al. (2024) exploit firm- and product-level export and import data to show that export flows of products also imported from China in the same quarter account for only 1.8% of total Vietnam's exports to the US. Schulze and Xin (2024) find that Vietnam domestic value added in its exports of strategic sectors (arguably the most affected by US-China tariffs) to the US has increased as the US-China trade tensions rose, hinting at significant domestic production

[3]Wu (2024) also uses firm-level data yet exploits variation in exposure to US-China tariffs across industries to examine the welfare implications of the US-China tariffs in Vietnam when foreign-owned manufacturers repatriate their profits.

supporting the rise in Vietnam's exports.[4]

Secondly, our paper contributes to the literature on the causal impact of trade policy on labor markets (e.g., Dix-Carneiro and Kovak (2019) and Hakobyan and McLaren (2016)). In the case of Vietnam, McCaig (2011), McCaig and Pavcnik (2018), and (McCaig et al., 2022) use the US-Vietnam Bilateral Trade Agreement in 2001 as a shock to the Vietnamese export sector. They find that greater export opportunities led to increased foreign direct investment (FDI) and formal manufacturing jobs, moving people out of poverty and out of the informal sector. We extend this body of research by looking at a more recent trade policy shock, and one that did not target Vietnam directly.

Finally, our paper ties into the literature on trade and gender. Existing studies have shown that trade can reduce gender-based discrimination (e.g. Black and Brainerd (2004); Juhn et al. (2013)). In the case of Vietnam, Pham and Jinjarak (2023) suggests that integration in global value chains is correlated with higher female employment across small and medium firms in Vietnam, and that this is driven by unskilled workers. In contrast, Berik et al. (2004) and Menon and Rodgers (2009) suggest that greater exposure to trade has increased the gender wage gap in Taiwan Province of China, South Korea, and India. Our paper adds to this literature, showing that new export opportunities in Vietnam created jobs for women.

The rest of the paper is organized in two main sections. Section 2 establishes the magnitude of the effect of US-China tariffs on export creation in Vietnam. Section 3 discusses job creation for Vietnamese workers. Section 4 concludes.

[4] IMF (2024) highlights how Vietnamese authorities have enhanced monitoring to avoid serving as a connector country to reroute Chinese goods to the US to circumvent the tariffs.

2 Exports

This section examines how the US tariffs imposed on China since 2018 have affected Vietnam's exports to the US. We look at how Vietnam export performance differed across products depending on whether these were hit or not by US tariffs on China.

2.1 Data

We use data on the value of US imports from Vietnam at the 10-digit level of the Harmonized System (HS) classification from Schott (2008), originally from the US International Trade Commission (USITC). To gauge the extent to which goods were affected by US-China trade tensions, we use data on US tariff hikes in 2018 and 2019 for each 10-digit product from Fajgelbaum et al. (2019). The US tariff hikes on Chinese imported products were pervasive. As shown in Figure A.1 in Appendix, in 2018 about 7,000 product lines our of 19,000 were hit by 10% tariffs, and about 2,000 were hit with tariffs of 25%. By 2019, two thirds of the product lines were affected by tariffs of 15% or 25%.[5]

Figure A.3 in the Appendix shows that during the same period, US imports of tariff-hit products grew much faster than imports of other products from Vietnam, both in levels and in shares of total US imports. Vietnam share of US imports in tariff-hit products almost doubled between 2017 and 2022 (it increased by 33% during 2014-17, before US-China trade tensions emerged). In other products, Vietnam share in US imports was 33% higher in 2022 than in 2017 – a percent increase similar to that observed over 2014-2017. Net product introductions contributed to this differential increase – of the 7,000 tariff-hit products imported from Vietnam, around 40% were

[5] Across broad HS sections, US tariff hikes on China's exports were the highest (around 22 percentage points) in the plastic, metals and machinery industries (see Figure A.2 in Appendix). Chart (b) of the same Figure shows that Vietnam's exports to US grew faster in sectors where US tariff increases were higher, especially during the rise of US-China trade tensions – in the previous period (2014-2017), there is no significant correlation between export growth and US-China tariff changes across sectors.

introduced during 2019-22. We investigate this pattern further in the next sub-section.

2.2 Empirical Strategy and Results

We use a standard difference-in-differences model. The treatment is defined at the product level as being targeted by increases in US tariffs on China. The treatment period starts in 2018 or 2019, when the tariff changes were implemented, and extends until 2022. We use annual data from 2014 to 2022, and we take into account the latest developments in the estimation of dynamic event-study specification with staggered treatment and heterogeneous effects across cohorts (Sun and Abraham, 2021; Callaway and Sant'Anna, 2021; Dube et al., 2023).[6] We estimate the following event-study regression:

$$(1) \quad X_{pt} = \sum_{j=-5}^{-2} \beta_j D_{pt}^j + \sum_{j=0}^{4} \beta_j D_{pt}^j + \mu_p + \lambda_t + \epsilon_{pt}$$

where X_{pt} are Vietnam exports of product p to the US in year t. The D_{pt} terms are dummies for leads and lags of the treatment (i.e., being hit by US-China tariffs) – e.g., D_{pt}^{-4} is a dummy equal to 1 if the product is hit by a tariff 4 years later. The terms μ_p and λ_t are product and year fixed effects, and ϵ_{pt} is the error term. We thus exploit differences across products p (targeted vs. non-targeted) and differences across years t (before vs. after the implementation of the tariffs). When looking at the effects on new export varieties (the extensive margin), the variable X_{pt} is a dummy variable indicating whether Vietnam exports the product p (defined at the HS-10 digit level)

[6] The recent literature on difference-in-difference models with two-way (unit and time) fixed effects has shown that OLS estimates can be biased when effects are heterogeneous across units and over time, and treatment is staggered (see deChaisemartin and D'Haultfoeuille (2022) and Roth et al. (2023) for surveys of the literature). In our setting, there are two treatment groups: products targeted by US-China tariffs for the first time in 2018, and products treated for the first time in 2019. We thus use different estimators that correct the TWFE one from biases and interpretation issues.

to the US in year t. To estimate the impact on the intensive margin of exporting, X_{pt} is the log of export values.

The results of the event study specification (1) are illustrated in Figure 1. The point estimates show the treatment effects in the year of the treatment (at time zero, which corresponds to 2018 or 2019) as well as in the following years. This captures the difference-in-differences in exports compared to the pre-treatment year (-1). We find positive and significant effects whether we measure exports taking logs or using a dummy. The size of the impact increases over time. Two years after the tariff hits, the export probability increased by around 5 percentage points more than for non-hit products – one sixth of the average probability of exporting a product from Vietnam to US over 2014-2022 (see Table A.1 in Appendix for summary statistics). The estimated pre-treatment effects suggest statistically insignificant differences in trends between treated and control products in the years before the US-China tariffs were introduced. When looking at the extensive margin, we find similar effects across different estimators. In Figure A.7 in the Appendix we show that our results are also robust to randomization inference.[7]

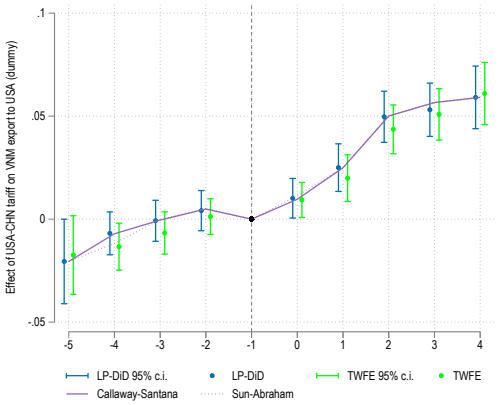
The results at the intensive margin appear 3-4 years after the treatment, and suggest that among products that were previously exported, those that were hit by tariffs grew by around 30% more than non-targeted products. We also estimate the effect of tariffs as a continuous variable, using both TWFE and the local projection approach of Dube et al. (2023) and find very similar effects (Table A.4 in the Appendix).[8] In the next section we examine whether the export creation effect of US tariffs on Chinese imports translated into job creation in Vietnam.

[7]Note that the extensive margin effects refer to Vietnam's exports to the US only. When looking at Vietnam's exports to *all* destinations, almost all HS 6-digit products are exported.

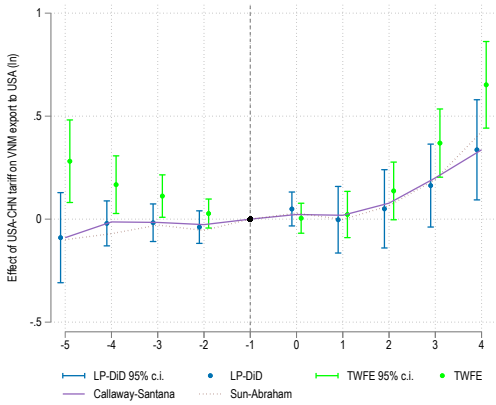
[8]We also estimate triple difference-in-differences models, comparing Vietnam's exports to the US not only across products but also with that of other countries. Section A in the Appendix discusses the specification and results. We find that Vietnam is the country whose extensive margin of exports to the US was most affected by US tariffs on Chinese products. Other countries that have seen large export growth in treated products include Malaysia, Thailand, Poland, and Turkey, confirming the results of Fajgelbaum et al. (2024).

Figure 1: The effect of US-China tariffs on Vietnam's exports

(a) Extensive margin



(b) Intensive margin



Notes: The dots show diff-in-diff estimates of eq (1) and measure the effect of tariff hikes on Vietnam exports to the US across years and products. Right-hand side is a treatment dummy indicating whether a product has been targeted by US tariffs on China. LP-DiD is the local projection approach of Dube et al. (2023). Data on US imports at the 10 digit level from Schott (2008). Data on tariff hikes from Fajgelbaum et al. (2019).

3 Jobs

In this section we explore the effect of US-China tariffs on jobs in Vietnam. A possible concern is that the export creation was simply due to Chinese firms rerouting their exports, repackaging or relabeling products, which would not lead to new production capacity and jobs in Vietnam (Iyoha et al., 2024). Our aim here is to understand whether these export opportunities translated into higher employment for both men and women.

3.1 Data

We examine the impact of the US-China tariff hikes on job creation in Vietnam using two datasets. In our baseline analysis, we use firm-level data from the Vietnamese

Enterprise Survey (VES), collected by the General Statistic Office (GSO) of Vietnam, which allows us to examine whether firms most affected by tariff hikes on China increased employment. The VES is a yearly census covering all firms with at least 10 workers, and for a sample of around 30,000 manufacturing firms it also provides data on product-level production (see Doan (2019)) which allows us to define tariff hits and thus treatment at the firm-level, based on pre-treatment production.[9,10]

As a robustness check, we also use data from the Vietnamese Labor Force Survey (LFS) to examine the impact of the tariff hikes on job creation across industries (≈ 400 industries defined at the 4-digit level in the International Standard Industrial Classification (ISIC)). The LFS contains a nationally representative sample of approximately 68,000 individuals for each monthly survey wave. We focus on the total number of workers across industries, i.e. those who report working in an industry and receive a wage in the last 7 days. An industry is considered exposed to tariff hikes if at least one of its HS-10 products was targeted by the tariffs. Out of the 233 industries in agriculture, mining and manufacturing, 169 were hit by US tariffs on China.

We use data from 2014 to 2020 (inclusive), covering 4 years before the occurrence of the first tariff hike and 2 years after. Importantly, both datasets allow us to explore job creation across genders.

3.2 Empirical Strategy and Results

To estimate the Vietnamese job creation effect of US-China trade tensions, we follow our previous event-study specification (1) but now exploit differences in employment across firms i (treated vs non-treated). Consistent with the trade specification, firms' exposure to US-China tariffs is based on product information. As almost all firms for

[9] Utar et al. (2023) adopts a similar empirical approach to measure exposure of Mexican firms to US-Chian tariffs.

[10] To match tariff data with product level production we use the GSO concordance table between Vietnam's product level classification at the 8-digit level, MASP, which extends on Vietnam's Standard Industry Classification (VSIC), and HS2007 6-digit codes.

which we have product-level data produce at least one product targeted by US-China tariffs, we define treated firms as those with an average firm-level tariff hike above 15%, based on 2014-17 production and on 2018-19 tariffs.[11]. We focus on firms that existed in any year between 2014-2017, to define the treatment, and in 2019, resulting in a quasi-balanced panel of around 22,000 treated firms and 10,000 control firms. Our specification takes the following form:

$$(2) \quad Y_{it} = \sum_{j=-5}^{-2} \beta_j D_{it}^j + \sum_{j=0}^{2} \beta_j D_{it}^j + \mu_i + \lambda_t + \epsilon_{it}$$

where Y_{it} captures employment (in logs) in firm i and year t, μ_i and λ_t are firm and year fixed effects, j are the numbers of included yearly leads and lags of the event indicator of a firm being affected by US-China tariffs, D_{it}, which takes the value of 1 in post-treatment years if firm i was hit by a production-weighted tariff above 15%. ϵ_{it} is the error term clustered at the firm level. We thus exploit differences across firms i (targeted vs non-targeted) and differences across years t (before vs. after being hit by the tariffs).

As in our trade analysis, we estimate eq (2) with a standard TWFE estimator and alternative difference-in-difference estimation methods (Sun and Abraham, 2021; Callaway and Sant'Anna, 2021; Dube et al., 2023).

Results in Figure 2 show that, 2 years after treatment, jobs grew by around 5% more in firms affected intensively by US-China tariffs. This is robust across estimators as well as to using a continuous measure of treatment (the production-weighted average tariffs at the firm level, panel b). Panel b of Figure A.7 in the Appendix shows that this result is also robust to randomization inference. When we look at employment across genders, we find the effect to be mostly on women's jobs. Two years after treatment,

[11]The 15% threshold is the average tariff hike across product (see Table A.1 in Appendix). Using a 25% threshold or a continuous tariff treatment lead to similar results

employment for women increased by around 8% more in treated firms (panel d in Figure 2). These results thus suggest that the tariffs the US imposed on China created jobs in Vietnam, and especially so for women.

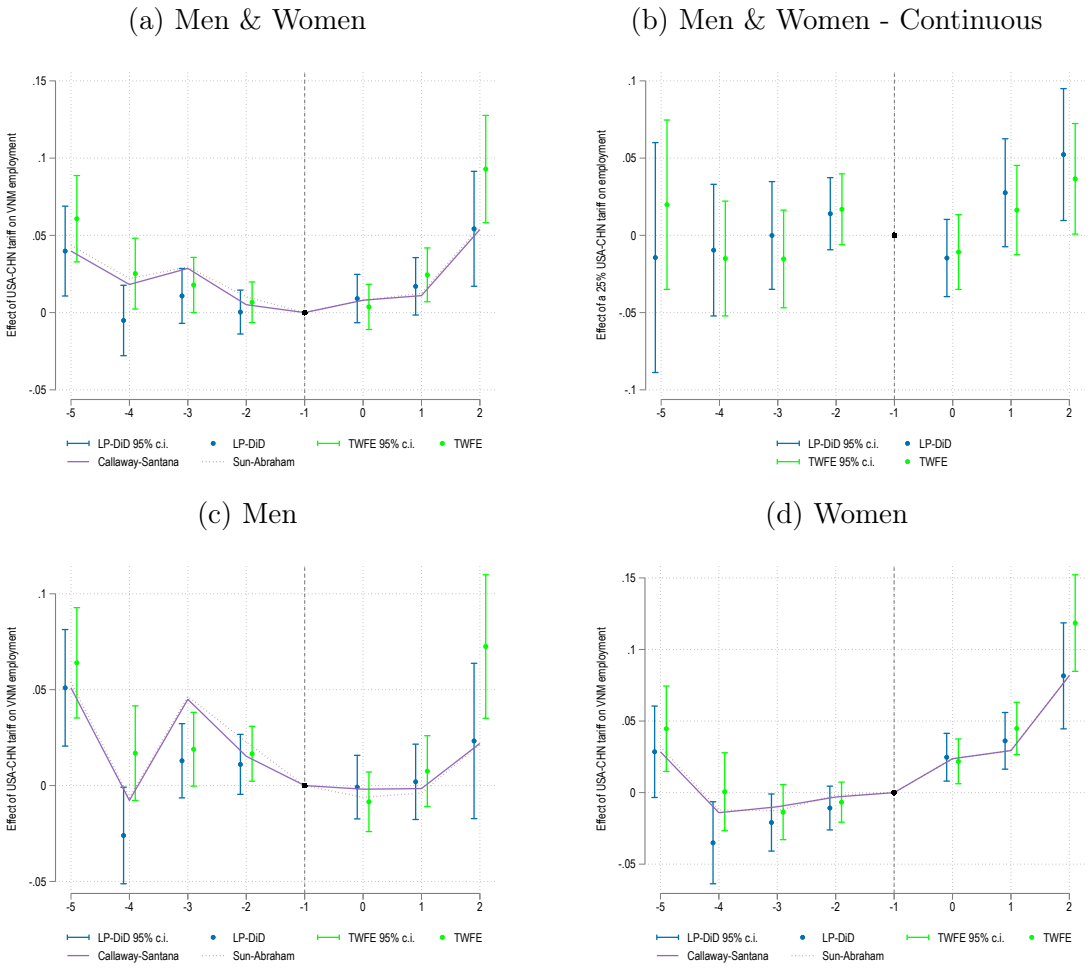
It is important to note that our difference-in-difference estimates do not tell us about aggregate employment growth in Vietnam, nor about the relative employment performance of different sectors of the economy. Rather, they compare the relative performance of manufacturing firms impacted differently by the US-China tariffs, in a period affected by the COVID pandemic. Indeed, formal employment in Vietnam went down by 21.1 thousand people in 2020 compared to 2019. Our results suggests that treated firms – those who gained most export opportunities from US-China tariffs – did better in terms of employment growth in 2020, relative to other firms and compared to 2017.

The results indicate that the relative growth of treated firms is particularly strong in terms of female employment. This may be attributed to the tendency of women to be the first to lose jobs during economic downturns (Dang et al., 2020), yet also among the first hired in firms with greater export opportunities, likely due to their higher availability and lower wages.[12] The combination of lower wages and utilization rates may explain how treated firms retained or hired women in 2020. This aligns with findings from Mayr-Dorn et al. (2023), which suggest that US-China tariffs decreased the likelihood of informal employment for women. It is also consistent with women experiencing a more pronounced reallocation of employment than men in 2020, with a 15.3 percentage point reduction in agricultural employment, and increases in employment in industry and services of comparable magnitudes (General Statistics Office of Vietnam, 2020). Reallocation of female employment is more likely to explain our result than higher growth in firms more exposed to US-China tariffs, as these firms are

[12]The 2020 Vietnamese Labor Force Survey Report (General Statistics Office of Vietnam, 2020) notes that women earn around 11 percent less than men on average in Vietnam, and that this gender pay gap exists across all occupations and sectors. It also notes that in 2020, labor underutilization of female workers was at 5.5 percent, higher than that of male workers at 4.6 percent.

if anything less intensive in female labor than less exposed firms – see Figure **??** in the Appendix.

Figure 2: The effect of US-China tariffs on jobs across firms



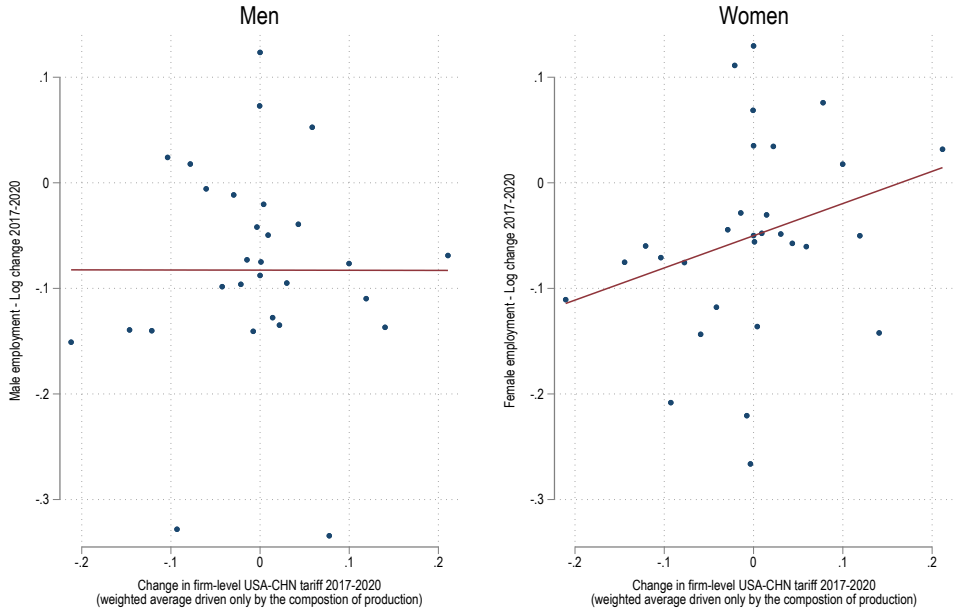
Notes: The dots show diff-in-diff estimates of the effect of tariff hikes on jobs (eq (2)). Right-hand side is continuous treatment (tariff). LP-DiD is the local projection approach of Dube et al. (2023). Data on firms are from Vietnam's VES. Data on tariff hikes from Fajgelbaum et al. (2019).

One limitation of the approach above, which relies on pre-treatment production to define treated firms, is that it does not capture the job creation that takes place in firms that did not produce any targeted products in 2014-2017 but switched to those during the period of trade tensions. These are considered as part of the control group in the

previous regression, but could be considered as the extensive margin of the treatment effect. To include these firms in our treatment and examine whether firms shifting their production towards hit products created more jobs than other firms, we use a weighted average of US-China tariffs at the firm level that varies over time only via the composition of production from 2017 to 2020. For each firm and year, time-varying production values by product are used as weights when averaging US-China tariff hikes fixed at their 2019 values.

Figure 3 shows that firms that switched to producing more of the goods hit by US-China tariffs saw more female employment growth. This is strikingly different for male employment, which did not evolve differently across the different groups of firms. This is in line with our previous result that the US-China tariffs created jobs for women in Vietnam. We estimate the magnitude of this effect by regressing firm-level employment on time-varying production-weighted firm-level US-China tariffs and their interaction with a post-treatment dummy over 2018-2020. The results in Table 1 show that total employment increased with production exposure to higher US-China tariff hikes, but only in post-treatment years. This effect is largely driven by increases in female workers. An increase in average firm-level tariff of 0.15 – which is equivalent to switching all production from non-targeted products to products hit by a 15% tariff – is associated with a 2.5% increase in female employment.

Figure 3: The effect of US-China tariffs on jobs across firms



Notes: Data on firms are from Vietnam's VES. Data on tariff hikes from Fajgelbaum et al. (2019).

Table 1: The effect of shifting production towards tariff-hit products on jobs

	(1) Workers	(2) Male Workers	(3) Female Workers
Product-weighted firm-level USA-CHN tariff	0.038	0.088	-0.024
	(0.083)	(0.090)	(0.089)
× post-treatment dummy	0.148**	0.008	0.192***
	(0.059)	(0.064)	(0.064)
$\beta\_1 + \beta\_2$	0.186**	0.096	0.169*
	(0.085)	(0.092)	(0.091)
N	92142	91386	89283
R-sq	0.94	0.92	0.94

Note: The table shows the effects of shifting production towards products hit by US-China tariffs on the number of workers druing 2014-2020. The left-hand side variable is the log of workers. All regressions include firm and year fixed effects. Robust standard errors clustered by firm in parenthesis.

The job creation effect of the US-China tariffs in Vietnam is confirmed when we

exploit industry-level variation from the LFS data.[13] The results of the difference-in-difference specification discussed in Appendix section C show that employment increased 10% more in industries where products were targeted by US-China tariffs, which corresponds to around 1,000 additional jobs in each treated industry starting from the average employment in the sample.

4 Conclusion

In this paper, we examine how the rise of the US-China trade tensions, which caused tariff hikes on numerous Chinese products, had unintended consequences on Vietnam. We show that the US-China tariffs caused significant increases in Vietnam exports to the US in products impacted by the tariffs. We also show that new export opportunities arising US-China tariffs affected Vietnam's labor market. Employment in Vietnamese firms that were most affected by the tariffs increased. In assessing the differential effects of export opportunities on male and female workers, we find that US-China tariffs created jobs mostly for female workers. These new export opportunities created in Vietnam's manufacturing sector in the wake of US-China trade tensions may have helped reduce gender inequalities in Vietnam.[14]

Our empirical analysis, while highlighting the positive trade and labor market effects of the 2018-19 US-China tariffs on Vietnam in the aftermath of the trade tensions, remains silent on the possible effects in the long-run. Model simulations find that the persistence and deepening of geoeconomic fragmentation between major economies can have substantial negative trade and welfare effects on third countries, including emerging economies like Vietnam (Bolhuis et al., 2023).

[13] While the subsample of the VES that we use in the firm-level regressions might not be representative, the LFS data are representative of Vietnam's national labor market.

[14] In Vietnam, although female labor force participation is quite high at 70%, women are still more likely to be unemployed, earn lower wages, work longer hours and are less educated than men (General Statistics Office of Vietnam, 2020; Ha and Francois, 2019).

References

Alfaro, L. and D. Chor (2023). Global supply chains: The looming "great reallocation". Technical report, National Bureau of Economic Research.

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

Autor, D., A. Beck, D. Dorn, and G. Hanson (2023). Help for the Heartland? The Employment and Electoral Effects of the Trump Tariffs in the United States. *CEPR Discussion Paper* (18202).

Berik, G., Y. v. d. M. Rodgers, and J. E. Zveglich (2004). International Trade and Gender Wage Discrimination: Evidence from East Asia. *Review of Development Economics 8*(2), 237–254.

Black, S. E. and E. Brainerd (2004). Importing equality? The impact of globalization on gender discrimination. *ILR Review 57*(4), 540–559.

Blanga-Gubbay, M., P. Conconi, and M. Parenti (2024). Lobbying for globalisation. *The Economic Journal*.

Bolhuis, M. A., M. J. Chen, and B. R. Kett (2023). Fragmentation in global trade: Accounting for commodities. *International Monetary Fund Working Paper*.

Bown, C. P. (2022). Four years into the trade war, are the US and China decoupling? Peterson Institute for International Economics.

Caliendo, L. and F. Parro (2022). Chapter 4 - Trade policy. Volume 5 of *Handbook of International Economics*, pp. 219–295.

Callaway, B. and P. H. Sant'Anna (2021). Difference-in-Differences with multiple time periods. *Journal of Econometrics 225*(2), 200–230.

Dang, A. K., X. T. T. Le, H. T. Le, et al. (2020). Evidence of COVID-19 Impacts on Occupations During the First Vietnamese National Lockdown. *Annals of Global Health 86*(1), 112. Published 2020 Sep 3.

deChaisemartin, C. and X. D'Haultfoeuille (2022). Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: a survey. *The Econometrics Journal*.

Dix-Carneiro, R. and B. K. Kovak (2019). Margins of labor market adjustment to trade. *Journal of International Economics 117*, 125–142.

Doan, H. T. T. (2019). Multi-product firms, tariff liberalization, and product churning in Vietnamese manufacturing. *ADBI Working Paper 918 (2019)*.

Dube, A., D. Girardi, O. Jorda, and A. Taylor (2023). A local projections approach to difference-in-differences. NBER Working Papers 31184, National Bureau of Economic Research, Inc.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature 50*(4), 1051–79.

Fajgelbaum, P., P. Goldberg, P. Kennedy, A. Khandelwal, and D. Taglioni (2024). The us-china trade war and global reallocations. *American Economic Review: Insights 6*(2), 295–312.

Fajgelbaum, P. D., P. K. Goldberg, P. J. Kennedy, and A. K. Khandelwal (2019). The Return to Protectionism. *The Quarterly Journal of Economics 135*(1), 1–55.

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

General Statistics Office of Vietnam (2020). Report on Labor Force Survey 2020. Technical report, General Statistics Office of Vietnam.

Gopinath, M. G., P.-O. Gourinchas, A. Presbitero, and P. Topalova (2024). Changing global linkages: A new Cold War? *IMF Working Paper*.

Ha, T. and M. Francois (2019). Advancing gender equality in Vietnam: A crucial balancing act. *McKinsey and Company*.

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

Hanson, G. H. (2020). Who Will Fill China's Shoes? The Global Evolution of Labor-Intensive Manufacturing. Working Paper 28313, National Bureau of Economic Research.

IMF (2024). *Vietnam: 2024 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Vietnam.* IMF Staff Country Reports. International Monetary Fund.

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

Juhn, C., G. Ujhelyi, and C. Villegas-Sanchez (2013). Trade liberalization and gender inequality. *American Economic Review 103*(3), 269–73.

Lake, J. and J. Nie (2023). The 2020 US Presidential election and Trump's wars on trade and health insurance. *European Journal of Political Economy 78*, 102338.

Mayr-Dorn, K., G. Narciso, D. A. Dang, and H. Phan (2023). Trade diversion and labor market adjustment: Vietnam and the U.S.-China trade war. Trinity Economics Papers tep0923, Trinity College Dublin, Department of Economics.

McCaig, B. (2011). Exporting out of poverty: Provincial poverty in Vietnam and U.S. market access. *Journal of International Economics 85*(1), 102–113.

McCaig, B. and N. Pavcnik (2018). Export markets and labor allocation in a low-income country. *American Economic Review 108*(7), 1899–1941.

McCaig, B., N. Pavcnik, and W. F. Wong (2022). FDI Inflows and Domestic Firms: Adjustments to New Export Opportunities. Working Paper 30729, National Bureau of Economic Research.

Menon, N. and Y. v. d. M. Rodgers (2009). International Trade and the Gender Wage Gap: New Evidence from India's Manufacturing Sector. *World Development 37*(5), 965–981.

Nguyen, A. and S. Lim (2023). Structural Transformation in the Era of Trade Protectionism. Technical report. Available at SSRN: https://ssrn.com/abstract=4426955 or http://dx.doi.org/10.2139/ssrn.4426955.

OECD (2019). Making Trade Work for Gender Equality. *OECD Publishing*.

Pham, L. T. and Y. Jinjarak (2023). Global value chains and female employment: The evidence from Vietnam. *The World Economy 46*(3), 726–757.

Roth, J., P. H. Sant'Anna, A. Bilinski, and J. Poe (2023). What's trending in difference-in-differences? A synthesis of the recent econometrics literature. *Journal of Econometrics 235*(2), 2218–2244.

Schott, P. K. (2008). The relative sophistication of Chinese exports. *Economic Policy 23*(53), 6–49.

Schulze, T. and W. Xin (2024). Demystifying Trade Patterns In A Fragmenting World. *IMF Working Paper*.

Sun, L. and S. Abraham (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics 225*(2), 175–199.

Utar, H., A. C. Zurita, L. T. Ruiz, and H. Utar (2023). The US-China Trade War and Relocation of Global Value Chains to Mexico. *CESifo WP 10638*.

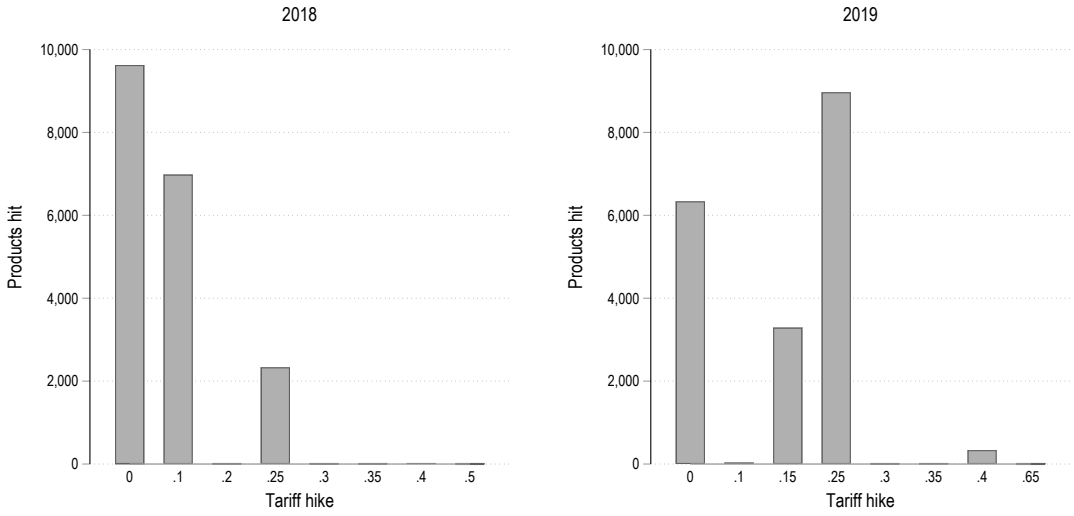
WTO and World Bank (2021). Women and Trade: The Role of Trade in Promoting Women's Equality.

Wu, S.-J. (2024). Foreign Profit Shifting and The Welfare Responses to The US–China Trade War: Evidence from Manufacturers in Vietnam. Technical report.

Xue, S. (2023). Trade Wars with FDI Diversion. Technical report.

ONLINE APPENDIX

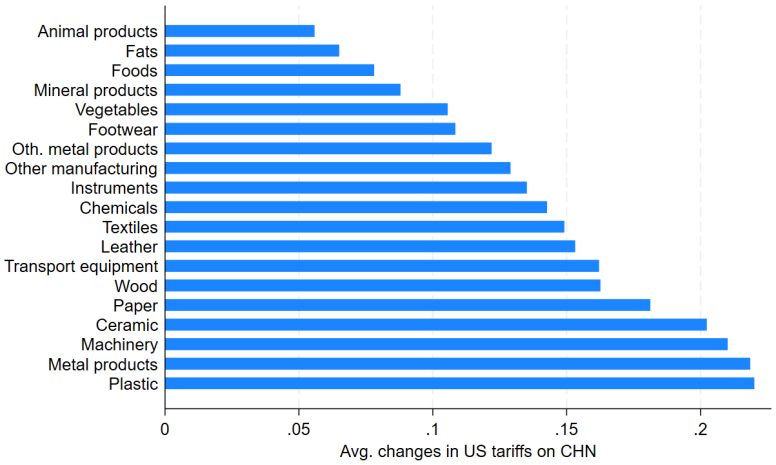
Figure A.1: Distribution of US-China tariff changes



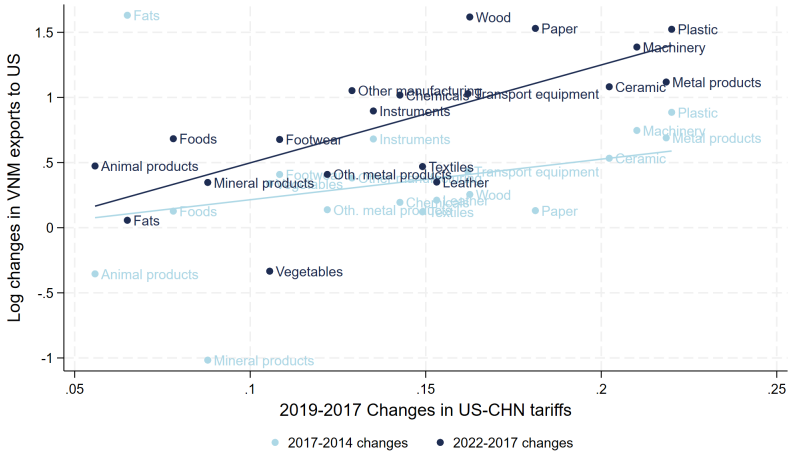
Notes: Products are defined at the 10-digit level of the Harmonized System (HS) classification. Tariff hikes are relative to 2017. Source: Fajgelbaum et al. (2019).

Figure A.2: Changes in US-China tariffs and Vietnam exports to the US across sectors

(a) Tariff changes



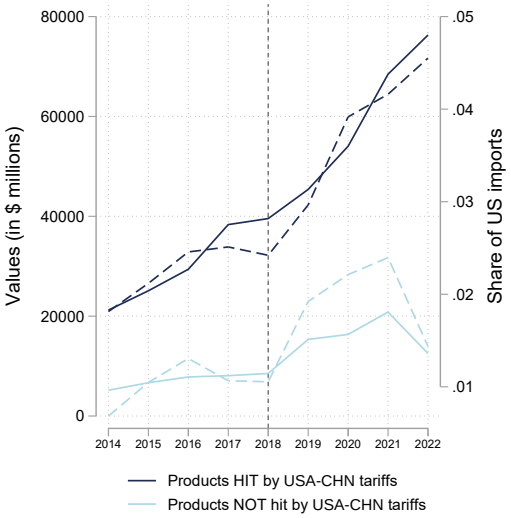
(b) Tariff changes and export growth



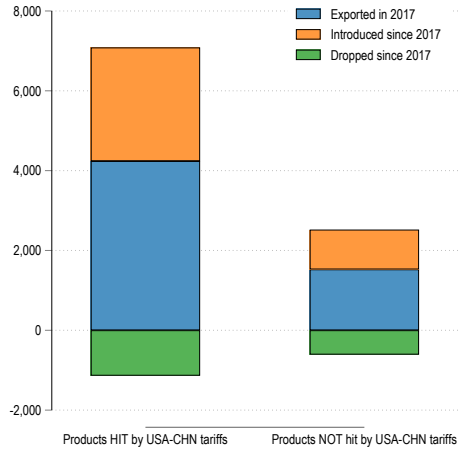
Notes: Averages of 2019-2017 changes in US tariff on Chinese products and log differences in Vietnam exports to US between 2017 and 2014 and 2022 and 2017 by HS section.

Figure A.3: Trends in US imports from Vietnam

(a) Values and shares



(b) Number of products - 2019-2022



Notes: Data on US imports from Schott (2008). Product groups based on tariff data from Fajgelbaum et al. (2019).

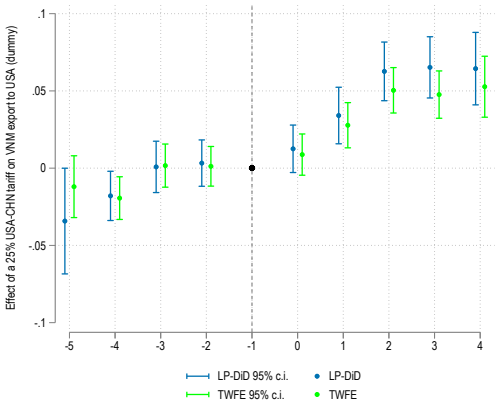
Table A.1: Summary statistics for variables used in the trade analysis

	Obs	Mean	25th perc.	75th perc.	Min	Max
$\ln(X_{pt})$	31450	12.001	9.76	14.14	5.53	23.08
$1(X_{pt} > 0)$	104524	0.301	0.00	1.00	0.00	1.00
$\Delta t_{pt}^{USA,CHN}$	18982	0.15	0.00	0.25	0.00	0.65
$1(\Delta t_{pt}^{USA,CHN} > 0)$	18982	0.666	0.00	1.00	0.00	1.00

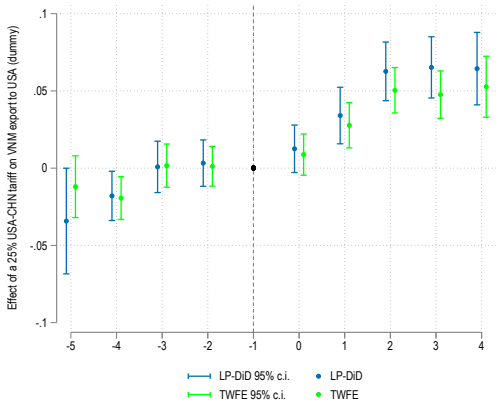
Note: Summary statistics for variables used in the difference-in-difference model (1). For the tariff variables, each observation correspond to a HS-10 digit tariff line. The trade data is from Schott (2008) and the tariff data from Fajgelbaum et al. (2019).

Figure A.4: The effect of US-China tariffs on Vietnam's exports – continuous tariff hikes

(a) Extensive margin

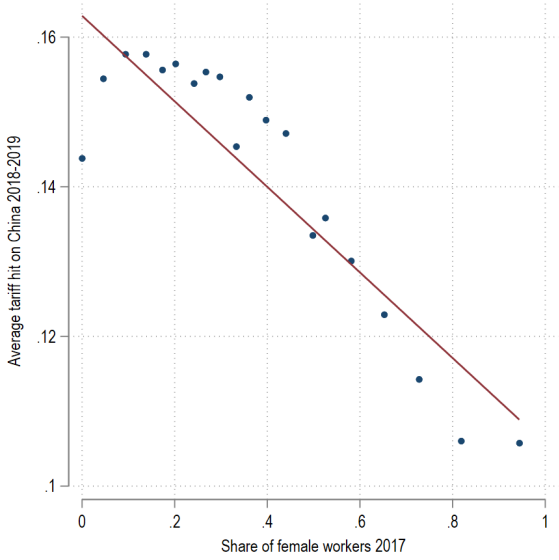


(b) Intensive margin



Notes: The dots show diff-in-diff estimates and measure the effect of tariff hikes on Vietnam exports to the US across years and products. Right-hand side is a variable measuring the change in tariffs by the US on imports from China during 2018-19, interacted with dummies for leads and lags of the treatment. LP-DiD is the local projection approach of Dube et al. (2023). Data on US imports at the 10 digit level from Schott (2008). Data on tariff hikes from Fajgelbaum et al. (2019).

Figure A.5: Firms exposure to US-China tariffs and female share of employment in 2017



Notes: Each dot denotes an equally-sized bin (20 in total) of the female share of employment across firms in 2017.

A Effects of US-China tariffs across countries

In this section, we examine how the effect of US-China tariffs on Vietnam exports to the US that we document in Figure 1 compares with the effect on exports from other countries (excluding China). Our objective is to verify that Vietnam was one of the main beneficiaries in terms of export growth from the US tariffs on China, as anecdotal evidence suggests (cited in the section 1 of the paper) and Fajgelbaum et al. (2024) find in their structural empirical analysis. Our exercise consists in estimating the following extension of our baseline event-study specification (see eq (1) in the main text:

$$X_{pct} = \sum_{c=1}^{49} \sum_{j=-5}^{-2} \beta_{jc} \left(D_{pt}^{j} \times \alpha_c \right) + \sum_{c=1}^{49} \sum_{j=0}^{2} \beta_{jc} \left(D_{pt}^{j} \times \alpha_c \right) + \mu_{pc} + \lambda_{pt} + \gamma_{ct} + \epsilon_{pct} \quad \text{(A.1)}$$

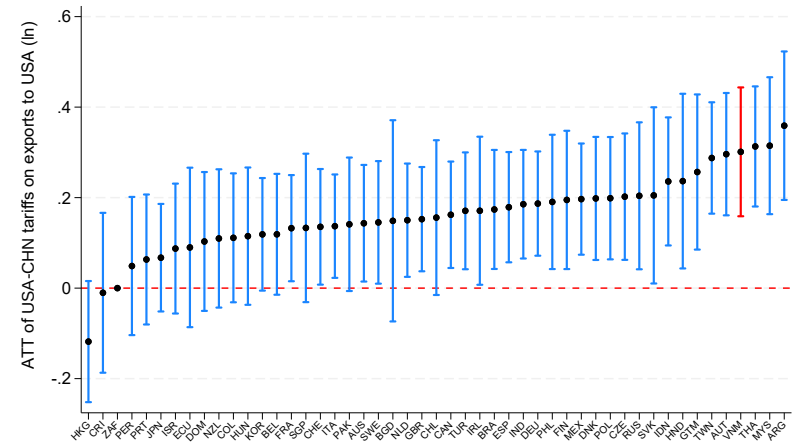
where the dependent variable is an export outcome (log-transformed or an export dummy) from country c to the US in product p (defined at the 10-digit HS level) and year t. We restrict the sample to the 50 largest exporters to the US (excluding China and oil-exporting economies, and including Vietnam) over the 2014-2020 period. Crucially, the pre- and post-treatment effects are allowed to vary by exporter. Our focus is on the β_{jc} coefficients on the interactions between pre- and post-treatment dummies (D_{pt}) and export dummies (α_c). We control for the most exhaustive list of fixed effects: product-exporter, product-year, and exporter-year fixed effects. The product-year fixed effects are of particular importance. A concern with our baseline results is that the effect of the US tariffs on China in our Vietnam-only baseline specification in (1) might overlap with that of global shifts that happen to vary by product and year (e.g., productivity changes, adjustments in global supply chains). The product-year fixed effects absorb these confounding effects. Because of the set of fixed-effects, the β_{jc} are identified relative to a reference category – we exclude the interactions with the exporter dummy for South Africa.

Figure A.6 shows the average across the post-treatment effects (β_{0c}, β_{1c} and β_{2c} in eq (A.1)) and the associated confidence interval by country. Vietnam is the country whose exports to the US increased the most as a result of US tariffs on China. This differential effect is most visible when we include (and focus on) the extensive margin. The variation in the estimated effects across exporters is consistent with the evidence from Fajgelbaum et al. (2024) showing that countries like Vietnam, Malaysia and Thailand have experienced large increases in exports of tariff-hit products to the US and other markets.[15] In their model, these patterns are suggestive of the exporter's product being gross substitutes for Chinese products (explaining the positive effect on exports to US). Being a large exporter and having strong supply chain linkages with China have been found to correlate with the capacity to substitute for Chinese products

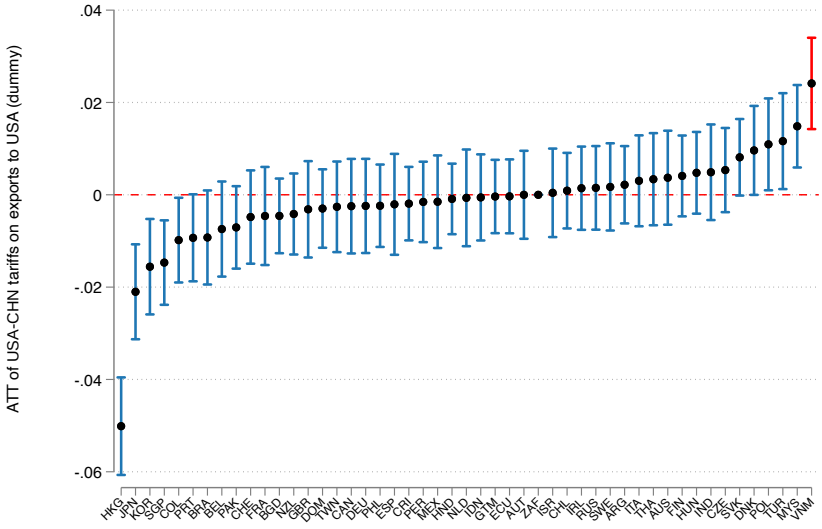
[15]For other exporters like Argentina and Austria, the positive response in exports to the US is accompanied by a relative contraction in exports to other destinations (see Figure 4 in Fajgelbaum et al. (2024)).

in the US market in response to US-China trade tensions (Freund et al., 2024).

Figure A.6: The effect of US-China tariffs on exports across countries



(a) ln



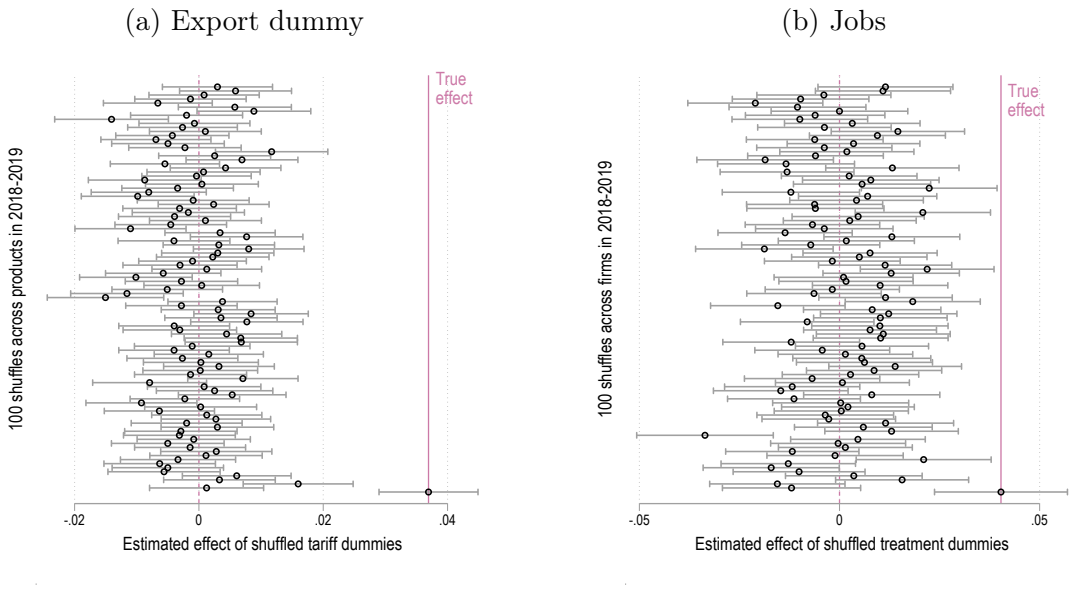
(b) Export dummy

Notes: The dots show TWFE diff-in-diff ATT estimates of the effect of tariff hikes on exports to the US by country, across years and products and relative to South Africa (the β_{jc}'s from eq (A.1)). Standard errors are clustered at the HS 8-digit level. Data on US imports at the 10 digit level from Schott (2008). Data on tariff hikes from Fajgelbaum et al. (2024).

B Robustness to randomized placebo treatment dummies

In this section we show that our main results are robust to using randomization inference. We create placebo treatment dummies by shuffling tariff hikes in 2018 and 2019 across products randomly, but keeping the timing as in the real world, i.e. shuffling hikes in 2018 and shuffling only extra hikes in 2019. We keep this timing structure as well to shuffle treatment dummies across firms. The results in Figure A.7 confirm that the true effects of US-China tariffs on the probability of exports and on firm-level employment are unlikely to be driven by chance or simply by the timing of the treatment. The estimated effects of 100 placebo treatments are close to zero and statistically insignificant in more than 95% of cases, and the true effects are large in comparison, thus unlikely to be random.

Figure A.7: Robustness to randomized placebo treatment dummies



Notes: The dots show TWFE diff-in-diff ATT estimates of eq (1)) (a) and eq (2) (b) using placebo treatment dummies. Panel a) shows the effect of placebo tariff dummies on the probability of export across products. Panel b) shows the effect of placebo treatment dummies on jobs across firms. Standard errors are clustered at the HS 8-digit level (a) and at the firm level (b). The capped lines show 90% confidence intervals. The vertical red line shows the true effect. Placebo treatments are obtained by shuffling randomly the real treatment dummies across products or firms. We keep the timing of the treatment as in the real world, i.e. shuffling tariff hikes in 2018 and shuffling only extra hikes in 2019. Data on US imports at the 10 digit level from Schott (2008). Data on tariff hikes from Fajgelbaum et al. (2024). Data on firm is form the Vietnamese Enterprise Census.

C Effects of US-China tariffs on Vietnam labor market across industries

The firm-level data used in the baseline analysis permit us to identify exposure to US-China tariff at a highly detailed level. The required information on product-level production is however available only for a subset of Vietnamese firms. We thus verify our labor market results using industry-level data from the LFS (see also Mayr-Dorn et al. (2023)). Our identification strategy when using LFS data relies on comparing changes in the number of jobs in industries exposed to the trade policy shock relative

to industries that were not exposed. We again use an event-study specification similar to that in the first part of the paper (see eq (1)):

$$\text{(A.2)}\quad Y_{imt} = \sum_{j=-5}^{-2} \beta_j D_{imt}^j + \sum_{j=0}^{2} \beta_j D_{imt}^j + \mu_{im} + \lambda_t + \epsilon_{imt}$$

where Y_{imt} captures the total number of jobs in industry i, month m and year t . μ_{im} and λ_t are industry-month and year fixed effects, j are the numbers of included yearly leads and lags of the event indicator of an industry being hit by US-China tariffs, D_{imt}, which takes the value of 1 if sector i had at least 1 product that was hit in month m in year t. ϵ_{imt} is the error term clustered at the industry level. We thus exploit differences across industries i (targeted vs non-targeted) and differences across years t (before vs. after being hit by US-China tariffs). The inclusion of industry-month fixed effects allows us to look at year-on-year changes in labor market outcomes in every industry for every month of the year. This approach nets out the influence of seasonality patterns and allows us to compare our results with the firm-level results. Also, the monthly data allows us to take into account that different industries were hit by tariffs in different months in 2018 and 2019.

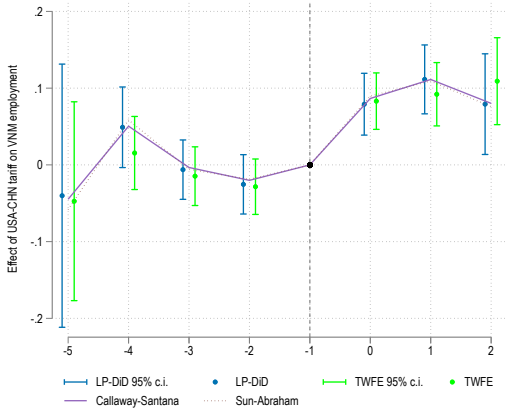
As in our trade and firm-level analysis, we estimate (A.2) with a standard TWFE estimator and alternative difference-in-difference estimation models (Sun and Abraham, 2021; Callaway and Sant'Anna, 2021; Dube et al., 2023).

The difference-in-difference results confirm the job creation effects of the US-China tariffs in Vietnam. The estimates are shown in Figure A.8. The number of jobs increased by as much as 10% more in industries affected by US-China tariffs, which corresponds to around 1,000 extra jobs in each treated industry starting from the average employment in the sample. The results are consistent across the different estimators and when using a continuous measure of treatment (panel b). The results by gender (panels c and d) suggest similar effects for men and women. These results

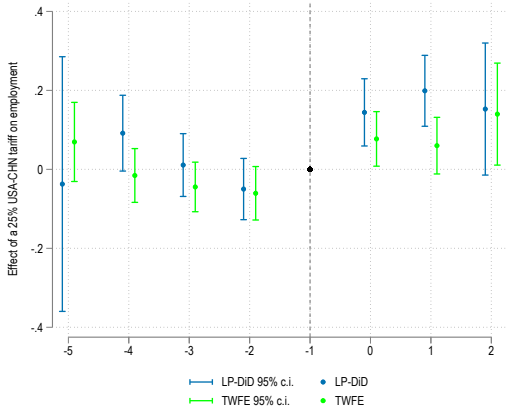
differ from those at the firm level (see Figure 2) possibly due to the different control group, which includes service industries here.

Figure A.8: The effect of US-China tariffs on Vietnam's labor markets

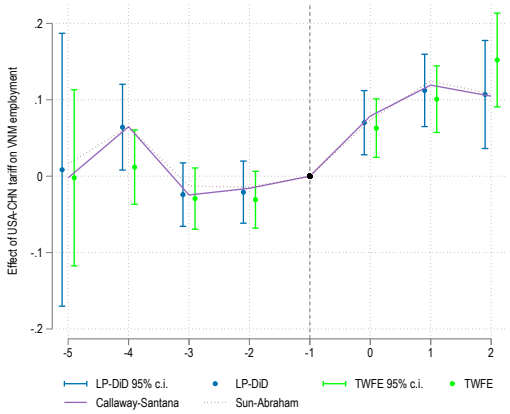
(a) Men and women



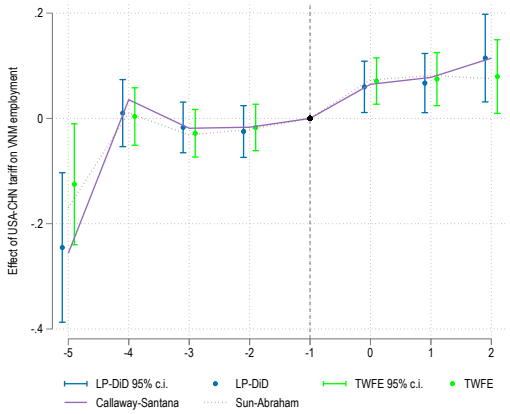
(b) Men and women - Continuous



(c) Men



(d) Women



Notes: The dots show diff-in-diff estimates of eq (A.2) and measure the effect of tariff hikes on jobs across years and industries. LP-DiD is the local projection approach of Dube et al. (2023). Data on labor markets are from Vietnam's LFS. Data on tariff hikes from Fajgelbaum et al. (2019).