Trading Places: How Trade Policy Is Reshaping Multinational Firms' Location*

Alejandro G. Graziano
University of Nottingham, CESifo, and CITP

Monika Sztajerowska
Paris School of Economics

Christian Volpe Martincus
IDB and CESifo

This version: March 2025

Abstract

Recent changes in trade policy have significantly impacted trade flows. Have firms modified the spatial organization of their multinational production to circumvent these changes? In this paper, we provide new evidence on whether such a tariff-induced shift in the location patterns of multinational firms took place by exploiting changes in U.S. import tariffs in 2018-2019. The evidence indicates that firms have indeed responded to these new tariffs by adjusting the extensive margin of their multinational production across countries and that both structural factors and trade agreements played an important role in shaping these adjustments. We also show evidence of anticipatory effects in 2016-2017 by exploiting the positive correlation between the 2018-2019 U.S. tariff changes and the difference between the U.S. MFN tariffs and those that the country could impose on imports from China before the accession of the latter to the WTO.
Keywords: Multinational Firms, Foreign Direct Investment, Trade Policy, Tariffs
JEL-Codes: F13, F21, F23

* We would like to thank Sebastián Velasquez for his excellent research assistance. The views and interpretations in this paper are strictly those of the authors and should not be attributed to the Inter-American Development Bank, their executive directors, or their member countries. Other usual disclaimers also apply.
Contact: alejandro.graziano@nottingham.ac.uk; monika.sztajerowska@psemail.eu; christianv@iadb.org

1. Introduction

The global economy has recently witnessed a major shift in the trade policy stance. Thus, starting in 2018, the U.S. gradually implemented several increases in tariffs on imports of selected products and from specific countries (Fajgelbaum et al., 2020). These policy changes are economically important: the new U.S. tariffs on imports from China covered about USD 350 billion in trade (Fajgelbaum and Khandelwal, 2022) and significantly affected bilateral trade between U.S. and China and with bystander countries (Fajgelbaum et al., 2024, Alfaro and Chor, 2023, Freund et al., 2024).

Such policies can also have non-trivial effects on other related, important economic activities. This is particularly the case with multinational production. Thus, as multinational firms adapt their supply chains and re-optimize buying and selling decisions in response to higher trade costs, they may adjust their networks of foreign affiliates across host countries. More specifically, trade policy changes between large economies can potentially generate spillover effects as firms affected by increased bilateral trade costs can attempt to reduce their incidence by expanding in third countries that provide favorable conditions to serve the destination in question. This leads to a number of policy relevant questions. Have location patterns of multinational firms been altered by the new U.S. tariffs in line with this conjecture? To what extent have these trade policy changes affected differentially the expansion of networks of firms' foreign affiliates in certain countries with specific characteristics? What are these characteristics? This paper aims to address these questions. In so doing, we use the introduction of new U.S. tariffs on imports from China (hereafter, "U.S. tariffs" for simplicity) as a natural experiment to study the effects of trade policy changes on multinational activity in third countries.

There is anecdotal evidence of the reallocation of multinational activity taking place following the trade policy changes in the U.S.. While the number of cross-border investment projects announced in China dropped by 44.0% in 2017-2022 relative to 2011-2016, such announcements in Mexico increased by 21.0%,

rising the country's global market share by 0.4 percentage points.[1] The share of such announcements by Chinese firms in some countries has also skyrocketed: increasing by 165% in Mexico and 162% in Vietnam. Yet, announcements of investment projects may not accurately capture the reallocation of firms' global operations. There is an ongoing heated debate –among governments and international organizations[2], and in academia[3], business circles[4], and the press[5]– on the effects of the new tariffs on cross-border investment and the ability of firms to circumvent these trade barriers through establishment of foreign affiliates in countries that are not, or less, subject to them. Yet, so far, to the best of our knowledge, there is no thorough cross-country evidence on the effects of tariff-induced changes on the location of multinational enterprises (MNEs).

In this paper, we assess the effects of the new U.S. tariffs on the location patterns of foreign affiliates of Chinese MNEs.[6] More specifically, we use the introduction of such tariffs as a shock to explore whether and to what extent these firms increased their foreign affiliates in third countries in response to such tariffs and the mechanisms through which this adjustment took place, including those associated with structural and policy factors.

In so doing, we utilize the theoretical framework proposed by and the respective theory-based estimates reported in Fajgelbaum et al. (2024) as a starting point. They allow for establishing key characteristics of countries that would likely benefit most from the new U.S. tariffs. Consistent with these framework

[1] Data on announcements of cross-border investments sourced from the FT's fDi Markets.

[2] For example, on September 17, 2024, several U.S. senators wrote a letter to the President in light of increased trade and investment of Chinese firms in Mexico as "(...) *Chinese firms are exploiting this nearshoring trend to avoid paying tariffs on goods they export to the U.S. market*." The share of words devoted to the coverage of U.S.-China trade tensions in the IMF country reports spiked after 2017 (IMF, 2023).

[3] According to Scopus, there are 725 articles in Economics, Econometrics and Finance in 2016-2024 identified searching for "trade war" compared to 39 in 2000-2015. While 214 articles in 2016-2024 study the effects of U.S-China trade war on trade (i.e., "trade war" AND "effects" AND "trade"), 7 consider the effects on foreign direct investment (i.e. "trade war" AND "effects" AND "foreign direct investment").

[4] For example, the number of keywords related to reshoring, nearshoring, onshoring, nearshoring, and related terms mentioned in firms' earning calls (i.e., conference calls to discuss firms' financial results) more than tripled in 2018-2023 (Gopinath et al., 2024)

[5] According to Factiva, a global news monitoring service, the number of press articles on the trade war in 2016-24 was 13 times higher than in 2000-15, and those mentioning investment 25-fold higher.

[6] In robustness check exercises, we examine whether multinational firms from other home countries have also reacted to the changes in U.s. tariffs on imports from China (see Section 4 below).

and estimates, we examine the extent to which Chinese MNEs expanded more in countries that i) are substitutes to China, i.e., they are similar to China in terms of economic structure; and ii) operate along a downward-sloping supply curve/with economies of scale, i.e., they could profitably expand exports to third countries once production is reallocated to serve the US. In addition, we consider the role of trade agreements, which have been argued to be a channel permitting MNEs to shift their activities to locations from which they can benefit from tariff-free trade with the U.S.

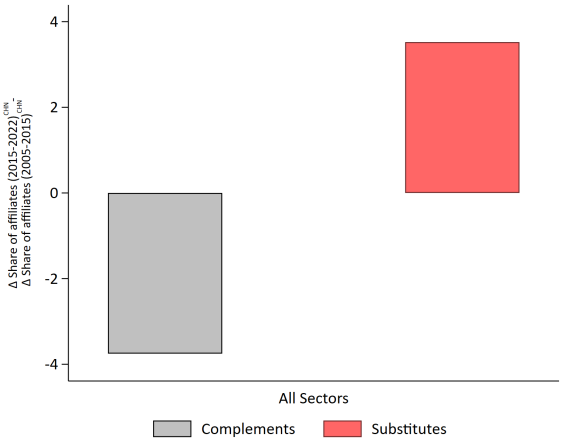
To implement this empirical approach, we first build a dataset that combines several databases including data on: (i) location of foreign affiliates of multinational firms globally from the Dun & Bradstreet's *WorldBase*, allowing us to study MNE reallocation patterns across nearly 50 host and home countries by manufacturing sub-sector over time; (ii) countries' categorization in substitute or complete to China and operating along a downward-sloping supply or an upward-sloping supply curve from Fajgelbaum et al. (2024); (iii) measures of sectoral exposure to the new U.S. tariffs, which are constructed using the data on the increase in US tariffs to China on specific products from Fajgelbaum et al. (2020) after 2018; (iv) trade agreements from the Office of the United States Trade Representative (USTR) and the World Trade Organization (WTO); and (iv) tariff levels that U.S. threatened to impose on China before the country's WTO accession in 2001 from Handley and Limão (2017c) to capture potential anticipation.

The raw data is indicative of patterns of reallocation of MNE activity towards countries that can serve as China's substitutes, especially when they operate along a downward-sloping supply curve (Figure 1). To more formally test whether this has been the case, we estimate a gravity-based specification that relates the number of multinational firms' foreign affiliates at the country-pair-sector-year level with relevant country attributes (i.e., being substitute or complement to China and operating along with a downward- or upward-sloping supply curve) and sector characteristics (i.e., being more or less exposed to U.S. tariff increases) using Poisson Pseudo Maximum Likelihood (PPML). We control for confounding factors at the country-pair-sector, home-country-sector-year,

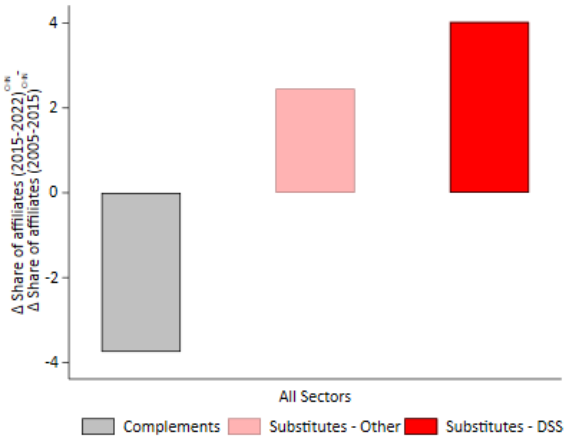
and host-country-sector-year levels through fixed effects and the country-pair-year level through country-pair linear trends and a binary indicator that captures time-variant bilateral coverage by trade agreements. Robust standard errors are clustered at the country-pair level.

Figure 1: Reallocation of MNE Activity Across Types of Countries

(a): The Role of Substitutability of China



(b): The Role of Supply Curve



Note: The figure shows the mean difference between the change in the share of affiliates of multinational firms from China in 2015-2022 and the change in the share of affiliates of multinational firms from China in 2005-2015 across countries within the following groups: Complements, Substitutes, Substitutes with downward-sloping supply curve (DSS) following the classifications from Fajgelbaum et al. (2024).

Admittedly, changes in U.S. tariffs may have been anticipated and even endogenous to the location patterns of Chinese multinational firms. We account for these potential anticipation effects and endogeneity bias by estimating a reduced-form equation whereby sectoral exposure to actual tariffs is replaced by exposure to the tariffs that the U.S. could impose on imports from China before the country accessed the WTO in 2001 (i.e., so-called "Column 2" tariffs). We show that the pre-accession Column 2-MFN tariff margin at the sectoral level contains information about how U.S. tariffs on Chinese imports deviated from MFN in 2018-2020. Employing the Column 2-MFN tariff margins from the year 2000 also reduces concerns on endogenous trade policy, given that they correspond to a period in which China barely had multinational firms with foreign

affiliates.

We find that countries that are substitutes to China and those that operate along a downward-sloping supply curve experienced a statistically significant increase in the number of foreign affiliates of Chinese MNEs they host relative to other countries in response to the new U.S. tariffs. This result is in line with the empirical results in Fajgelbaum et al. (2024) in the context of multinational production. The adjustment has been particularly notable for the sectors highly exposed to the new U.S. tariffs. More precisely, estimates suggest that third countries that are substitutes to China and operate along a downward-sloping supply curve attracted 14.0% more foreign affiliates from Chinese MNEs in the sectors highly exposed to the new U.S. tariffs relative to other countries after these tariffs were introduced.

Our results also reveal that there seems to have been anticipation effects, whereby Chinese multinational firms already started establishing foreign affiliates in countries that are substitutes to China and operate along a downward-slopping supply curve before the actual change in U.S. trade policy. This was particularly the case in sectors that later experienced more tariff increases in the U.S. *and* sectors which could have faced higher U.S. tariffs before accessing the WTO. Moreover, once anticipation effects are accounted for and conditional on the prevalence of these favorable structural factors, countries covered by trade agreements with the U.S. experienced a stronger expansion of Chinese MNEs than countries without such agreements in the most tariff-exposed sectors. The opposite is also true: conditional on the presence of a trade agreement with the United States, host countries with favorable structural conditions experienced a statistically significantly stronger expansion of Chinese MNEs than their counterparts without such characteristics. Further, countries covered by a PTA with the United States but lacking auspicious structural conditions did not experience a statistically significant rise in multinational activity after the new U.S. tariffs were imposed. Finally, all our results hold when we use the tariffs that the U.S. could have applied on Chinese imports before China joined the WTO instead of the U.S. actual tariffs to capture sectoral exposure.

This study contributes to three main streams of the literature. First, it is related to a large number of papers that examine factors influencing MNE activity and patterns of foreign direct investment (FDI), synthesized in seminal reviews by Blonigen (2005), Blonigen and Piger (2014), and Antràs and Yeaple (2014).[7] Studies highlight the links between multinational firms' production location decisions and trade (Head and Mayer, 2019, Flaaen et al., 2020, Antràs et al., 2023). A sub-stream of this literature considers the role of policies in influencing MNE activity, including the effects of trade and other policies, such as preferential trade agreements (Chen, 2009), whose role we also study here, and FDI promotion (Harding and Javorcik, 2011). For example, several studies find theoretical and empirical evidence of tariff-jumping FDI (e.g., Brainard, 1997, Blonigen and Feenstra, 1997, Blonigen, 2002, Feinberg and Keane, 2006).[8] More recently, Alfaro et al. (2016) exploit tariff variation to study their impact on firm boundaries.[9] Yet, Antràs and Chor (2022) argue that the empirical literature on the effect of trade policies on the location of production and global value chains is still undeveloped. We contribute to this literature by exploiting the new tariffs imposed by U.S. in 2018-2019 as a natural experiment to study the effects of trade policy changes on location decisions of MNEs from affected home countries abroad.

Second, this paper is directly linked to the rich literature studying the consequences of the 2018-2019 U.S.-China trade policy tensions, including the effects of the tariff hikes on trade patterns, prices and welfare.[10] Several studies look at the effect of those tariffs on trade reallocation towards bystander countries (Alfaro and Chor, 2023, Freund et al., 2024, Fajgelbaum et al., 2024, Iyoha et al., 2024). They find that the drops in the U.S. import share from China were asso-

[7] See, e.g., Carr et al. (2001b), Helpman et al. (2004), Ramondo and Rodriguez-Clare (2013), Alfaro and Chen (2014), Ramondo et al. (2015), Conconi et al. (2016), Tintelnot (2017), Garetto et al. (2019), Antràs et al. (2022).

[8] There is also related literature on endogeneity of trade policy to FDI (e.g., Blanchard and Matschke, 2015).

[9] In turn, McCaig et al. (2022) study the effect of tariff reduction on trade, employment and entry of MNEs.

[10] See Fajgelbaum and Khandelwal (2022) for a review. The evidence points to large drops in U.S. imports and exports (Amiti et al., 2019, Fajgelbaum et al., 2020, Handley et al., 2023), a high pass-through of tariffs to importer prices (Cavallo et al., 2021, Amiti et al., 2020, Flaaen et al., 2020), and negative effects on U.S. welfare (Amiti et al., 2019, 2020, Fajgelbaum et al., 2020, Grossman et al., 2024), employment (Flaaen and Pierce, 2019, Javorcik et al., 2022), real wages (Fajgelbaum et al., 2020), stock prices (Amiti et al., 2021), and political outcomes (Blanchard et al., 2024, Autor et al., 2024), among others.

ciated with gains by other countries (Alfaro and Chor, 2023, Freund et al., 2024; and that their exports increased to the United States and elsewhere (Fajgelbaum et al., 2024). Other scholars also shed light on the effects of other U.S. trade policies on trade (Conconi et al., 2018, 2021, Corsetti et al., 2024). In particular, evidence on Mexico indicates that the effects have been strongest in products most exposed to US-China tariffs and for firms engaged in global value chains, which are mostly foreign-owned (Utar et al., 2023).[11] These findings could be suggestive of potential tariff-induced pick-up in FDI activity in bystander countries.[12] Yet, to the best of our knowledge, the relationship between the new U.S. tariffs and adjustments in MNE location has not been explicitly examined in a cross-country setting.

Third, this paper is also linked to a wider literature on the role of uncertainty in cross-broader trade and investment. While we do not primarily focus on this channel, some of our results are suggestive of the possible effect of uncertainty prior to the enactment of the new U.S. tariffs. Existing studies investigate the impact of exogenous changes in trade policy uncertainty surrounding specific events, including China's entry into the WTO (Handley and Limão, 2017b, 2022), Brexit (Graziano et al., 2020), and the U.S.-China tariff hikes (e.g., Benguria et al., 2022). This paper considers the effects of a major specific trade-policy event on global MNE activity patterns taking into account possible anticipation by using a measure inspired by this literature.

The remainder of the paper is structured as follows: Section 2 briefly outlines the U.S. new tariff policy towards China. Section 3 introduces the data used in the empirical analysis. Section 4 examines the role of country structural factors and sectoral exposure to tariffs in the reallocation of multinational activity. Section 5 turns into the role played by trade agreements. Section 6 studies anticipation effects. Section 7 concludes.

[11] Xue (2024) studies the link between U.S. tariffs, trade and FDI using a model of trade and FDI diversion.
[12] Several papers explore changes in cross-border trade and FDI in response to broad geopolitical shifts (e.g., Gopinath et al., 2024, Aiyar et al., 2024, Blanchard et al., 2021).

2. The Changes in U.S. Tariffs

The imposition of tariffs by the U.S. in 2018-2019 marked a sharp departure from the earlier trend of low and stable tariffs in the U.S. (Fajgelbaum et al., 2020). Tariff increases were first limited to few import items (e.g., aluminum, steel, washing machines, solar panels) in early 2018 and were then subsequently extended to cover a broader range of imported products. In particular, average tariffs increased from 3.7% to 25.8% and raised tariffs on import transactions corresponded to about 2.6% of GDP (Fajgelbaum and Khandelwal, 2022).[13]

Importantly, this shock was largely asymmetric across origin countries (Mattoo and Staiger, 2019).[14] Such an event therefore offers a unique experiment consisting of an important trade cost shock that can impact location of MNEs. More specifically, affected firms may increase their foreign affiliates' presence in third countries that may serve as alternatives to China and offer lower trade costs with the United States as means of reducing the negative effect of new U.S. tariffs on their activities.

3. Data

We build a rich dataset that combines three main types of data from various sources:

- **Multinational Activity:** We use data on MNE global networks of foreign affiliates from Dun & Bradstreet's (D&B) *WorldBase*, which covers private and public firms in over 200 countries and territories and allows us to compute the number of MNEs' foreign affiliates by country-pair-sector in a given year over the period 2005-2022.[15] In particular, we focus on manufacturing and observe 27 3-digit level NAICS sectors across 2,400 country

[13] In January 2020, the U.S. and China signed the so-called Phase-One Agreement with the aim to de-escalate the measures, but bilateral tariffs remained high.
[14] Due to its nature, the shock has been referred to firms' input shock (Grossman et al., 2024).
[15] This data has been extensively in the empirical literature on multinational activity and firm boundaries (e.g., Alfaro and Charlton, 2009, Acemoglu et al., 2016, Alfaro et al., 2019, 2024).

pairs. This level of aggregation allows us to analyze reallocation of MNE activity in different manufacturing sectors across countries in ways that would be impossible with the official cross-country FDI data that remain highly aggregated.[16]

- **Trade Policy Change:** We build on prior studies that identify a shift in the U.S. trade policy associated with the introduction (and threats) of tariffs targeting specific countries in 2018-2019 (e.g., Mattoo and Staiger, 2019, Fajgelbaum and Khandelwal, 2022). In our analysis, 2018-2022 corresponds to the period of policy treatment used to study the effects of changes in tariffs on the reallocation of multinational activity in third countries. In addition, building on the insights in Handley and Limão (2017a, 2022), we identify the period of 2016-2017, covering the U.S. presidential campaign and the start of the term of the new administration, as the anticipation period. We discuss those two periods in Section 6.

- **Country Characteristics:** We adopt the theory-based empirical classification of countries that serve as China's substitutes or complements and that plausibly operate with downward-sloping supply curves from Fajgelbaum et al. (2024). We complement it with the data on countries' coverage by a PTA with the United States from the Office of the United States Trade Representative (USTR)[17] and on bilateral coverage by other PTAs from the WTO. Table A1.1 in the Appendix provides the list of countries in the different categories.

- **Sector Characteristics:** We also construct metrics of sector-(country-)-level exposure to the new U.S. tariffs. Specifically, using tariff data from Fajgelbaum et al. (2020), we calculate the share of Chinese export products

[16] Among others, NAICS 3-digit level sectors include 334 - Computer and Electronic Product Manufacturing, 335 - Electrical Equipment, Appliance, and Component Manufacturing; 336 - Transportation Equipment Manufacturing; while FDI statistics are reported for the manufacturing as a whole (i.e. 311-339 NAICS level sectors). In addition, it has been argued that FDI data do not accurately capture the spatial patterns of multinational production (e.g., Lipsey, 2010, Tørsløv et al., 2022).

[17] The data is publicly available on the USTR website [last accessed on October, 6, 2024].

affected by U.S. import tariff increases within each (3-digit NAICS) sector. Sectors are considered as highly exposed if they have above the median share of products affected by tariff hikes (see Appendix Table A1.2). In the last section on anticipation effects, we also exploit the data on tariff levels that U.S. threatened to impose on China before the country's WTO accession in 2001, which we obtain from Handley and Limão (2017c).

Our combined dataset is a panel with a country-pair-sector-year as the unit of observation. The data covers 48 host and home countries (28 of which are China's substitutes and 20 China's complements) plus China and the U.S. as home countries for the years 2005-2022.[18] In Appendix Table A1.3, we present the count of Chinese multinationals by the country and sector characteristics used in the analysis.

4. Did Chinese Multinationals Enter Countries with Favorable Structural Characteristics?

To answer this question, we examine whether the reallocation of Chinese multinational activity into third countries is consistent with the structural characteristics of these countries as captured through estimates of changes in trade flows due to the 2018-2019 changes in tariffs. More precisely, we use the theory-based estimates of the tariff elasticity of exports to the U.S. and third countries from Fajgelbaum et al. (2024) to identify: (i) whether a country's exports substitute or complement those of China, as determined by their relative production and trade structures, and (ii) whether a country operates along a downward- or upward-sloping supply curve, as determined by the nature of its supply capacity and specifically the possibility to profitably expand production and trade to third countries. This framework offers an attractive starting point to study patterns of adjustment of multinational firms for two main reasons. First, the ability

[18] These countries jointly account for 96% of the MNEs worldwide. Our sample starts in 2005 to cover at least a decade prior to the start of the U.S. administration that enacted the tariffs and to avoid conflating the effects of China's WTO accession. We cannot extend the sample period beyond 2022 because we lack the data on MNEs' network of foreign affiliates beyond 2022.

to substitute exports from China and do it along a downward-slopping supply curve reveals comparative advantages of a given location. Second, multinational firms account for a large share of global trade.

To consistently guide our empirical investigation of the changes in multinational firms' networks in response to the new U.S. tariffs, we develop the following testable hypotheses:

Hypothesis 1 *Chinese MNEs expanded their foreign affiliates in countries that can serve as China's substitutes due to their structural similarities.*

Hypothesis 2 *Chinese MNEs expanded their foreign affiliates in countries that can serve as China's substitutes and operate along a downward-sloping supply curve.*

Hypothesis 3 *The expansion of Chinese MNEs in countries with favorable structural factors (i.e., being a substitute for China and operating along a downward-slopping supply curve) has been larger in sectors with higher exposure to tariff increases.*

To empirically test Hypotheses 1 and 2, we estimate, respectively, the following equations at the country-pair-sector-year level using PPML:

$$N_{ijkt} = \exp\left\{\beta \mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1\} + \alpha PTA_{ijt} + \mathbf{FE}\right\} + v_{ijkt} \quad (1)$$

where the dependent variable (N_{ijt}) is the number of MNEs' foreign affiliates from a given home country i in the host country j in sector k in the time t. The indicator $\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1\}$ takes a value of 1 if four conditions are fulfilled. First, it captures the activity of multinational firms whose home country is China (i.e., $\Omega_i = \mathbb{1}\{i = CN\}$ where CN denotes China) in third-countries other than China and the United States.[19] Second, s_j identifies host countries that can serve as substitutes for China's imports (as opposed to complements). Third, d_j identifies those host countries with a downward-sloping supply curve and can thus raise sales to the rest of the world. Both s_j and d_j

[19] We exclude the U.S. and China (i.e., $j \neq \{CN, US\}$) as host countries since we are interested in the effects of tariffs on multinational activity in third countries.

come from the classification of countries resulting from the theory-based estimation of the trade effects of U.S. tariffs by Fajgelbaum et al. (2024).[20] Fourth, $\eta_t = 1$ corresponds to the period in which the new U.S. tariffs were in place, i.e. $t = \{2018, ..., 2022\}$. β is the main coefficient of interest and captures the differential effect of the U.S. tariffs on the establishment of foreign affiliates by Chinese multinationals in third countries with certain structural characteristics. Specifically, if $\beta > 0$, then Chinese multinationals have expanded their activity relatively more in countries with those structural characteristics following the enactment of the new U.S. tariffs.

The rest of the terms are controls and fixed effects. In particular, PTA_{ijt} is a binary indicator that takes the value of 1 if there is a preferential trade agreement between a given country pair in time t, and $\mathbf{FE} \equiv \delta_{ijk}^{IJK} + \delta_{ikt}^{IKT} + \delta_{jkt}^{JKT} + \delta_{ij}^{IJ,trend} \times t$ where δ_{ijk}^{IJK} is a set of country-pair-sector fixed effects, δ_{ikt}^{IKT} is set of home-country-sector-year effects, δ_{jkt}^{JKT} is a set of host-country-sector-year fixed effects, and $\delta_{ij}^{IJ,trend} \times t$ are country-pair linear trends. The country-pair-sector fixed effects (δ_{ijk}^{IJK}) control for time-invariant factors related to country-, country-pair- or sector-characteristics that may affect MNE activity, including distance, common language, cultural ties, country comparative advantages related to natural resource endowments, or standard knowledge-capital model determinants of multinational activity (Carr et al., 2001a).[21] The home-country-sector-year fixed effects (δ_{ikt}^{IKT}) account for any time-variant characteristics of the home country and the sector of the investor, including national and sectoral public initiatives to promote outward investment, investment protection guarantees, industrial policies, or overall market dynamics in the sector of the MNE. The host-country-sector-year fixed effects (δ_{jkt}^{JKT}) control for any analogous time-variant characteristics of the host country and sector in which MNE can locate its foreign affiliates. These can include national or sectoral inward investment promotion programs or other national or sector-level policies or economic factors. Country-pair linear time trends additionally account for potentially omitted FDI bilateral pre-trends

[20] See Table A1.1 in the Annex for the full list.
[21] For example, differences in real GDP and differences in human capital between a country pair.

correlated with structural determinants in the receiving country, such as those arising from bilateral investment cooperation.[22] These sets of fixed effects and linear trends imply that identification comes from within country-pair-sector variations that deviate from bilateral trends, including investment trends before the US imposed tariffs on China in 2018. Finally, we cluster standard errors at the country-pair level.

To test Hypothesis 3 and explore potential heterogeneous effects across sectors with differential exposure to the increase in U.S. tariffs, we slightly modify the estimation equation above. More specifically, we redefine the indicator variable to include an additional term (τ_k^h) that takes a value of 1 for sectors with high tariff exposure (i.e., if a sector has above the median share of products affected by the increase in U.S. tariffs), or 0 otherwise; and allow the coefficient β to vary depending on sector's tariff exposure (β_κ) where κ is the type of sector.[23] This results in the following equation:

$$N_{ijkt} = \exp\left\{ \sum_{\kappa=0}^{1} \beta_\kappa \mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = \kappa\} + \alpha PTA_{ijt} + \mathbf{FE} \right\} + v_{ijkt} \quad (2)$$

The estimation results are presented in Table 1 with Columns 1-2 corresponding to Equation 1 and Hypothesis 1-2 and results in Column 3 to Equation 2 and Hypothesis 3.

First, we find evidence in line with Hypotheses 1-2: Countries that are substitutes to China (Column 1) and those that, additionally, operate along a downward-sloping supply curve (Column 2) experienced a statistically significant increase in the number of foreign affiliates of Chinese multinational firms relative to other countries in response to the U.S. tariffs. Second, Chinese multinational firms expanded their activity especially in sectors with high U.S. tariff exposure

[22] Linear trends also help control for the secular increase of trade between countries and the secular expansion of multinational production across countries.

[23] In robustness check exercises, we consider alternative measures of exposure. Results are in line with the baseline (see below).

Table 1: Differential Effects of the New U.S. Tariffs across Countries and Sectors

	(1)	(2)	(3)
	China's Substitutes	**China's DSS Substitutes**	**Sector Exposure**
$\mathbb{1}\{\Omega_i = 1, s_j = 1, \eta_t = 1\}$	0.136***		
	(0.046)		
$\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1\}$		0.115**	
		(0.047)	
$\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = 1\}$			0.131***
			(0.044)
$\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = 0\}$			0.078
			(0.074)
Fixed Effects, Linear Trends, and Controls:			
Country-Pair-Sector	✓	✓	✓
Host-Country-Sector-Year	✓	✓	✓
Home-Country-Sector-Year	✓	✓	✓
Country-Pair Time Trend	✓	✓	✓
Country-Pair Controls	✓	✓	✓
Observations	188,291	188,291	188,291

Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States. $s_j = 1$ identifies host countries that are substitutes to China, and $d_j = 1$ identifies countries that are substitutes to China and operate along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. $\eta_t = 1$ corresponds to the period in which the new U.S. tariffs were in place, i.e. $t = \{2018, ..., 2022\}$. $\tau_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $\tau_k^h = 0$ those with low exposure (below the median). Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

in those countries compared to other countries, providing supporting evidence for Hypothesis 3. Overall, estimates suggest that third countries that can serve as China's substitutes and operate along downward-sloping supplies attracted an average of 14.0% more foreign affiliates from Chinese MNEs in the sectors highly exposed to the new U.S. tariffs relative to other countries after these tariffs were introduced.[24]

We perform several robustness tests to the baseline specification whose estimates are reported in Column 3 of Table 1. First, in this baseline estimation, we define the sector based on the foreign affiliate. In several cases, the sector of the Chinese headquarters is different from that of the affiliates.[25] In Appendix Table A1.4, we present the results when we replicate the estimations employing instead the headquarters' sector to construct the sample. Consistent with our baselines, the effect is positive and significant for sectors with high exposure to U.S. tariffs and insignificant for sectors with low exposure.

Second, in our reference specification, the tariff exposure measure is based on the share of products within a sector that are subject to the new U.S. tariffs. We examine whether the estimates are robust to using different definitions of this measure. In Appendix Table A1.5, we report estimation results obtained with two alternative definitions, whereby the average and the median tariff within sectors are used to define high and low exposure based on the median across sectors. In both cases, the baseline result holds. In Appendix Figure A1.1, we show that the effect on sectors with high exposure does not depend on a particular country or sector by presenting the distribution of estimated coefficients when each host country and sector is excluded at a time.

Third, MNEs from home countries other than China may have also responded to changes in U.S tariffs on imports on goods from China by expanding their presence in countries with favorable conditions. This could be potentially the case if these MNEs are exposed to the trade policy shock through their network of foreign affiliates (e.g., they have a relatively large number of foreign affili-

[24] The percent change is calculated as $[(exp(\beta) - 1)100]\%$, where β represents the estimated coefficient.
[25] More than 85% of the total number of Chinese foreign affiliates have a sector different from their parent.

ates in China). In Appendix Figure A1.2, we show the distribution of t-stats of estimates of our baseline specification alternatively assuming that each home country in the sample is affected by U.S. tariff changes instead of China. This figure shows that, contrary to those of China, in most countries the estimated coefficient for sectors with high exposure to U.S. tariffs is not positive and significant.[26] Further, the estimated effect on sectors with low exposure to U.S. tariffs is insignificant in the vast majority of countries, including China.[27]

Fourth, U.S. tariffs may have increased in sectors in which the U.S. share in Chinese exports was small, in which case adjustments along the extensive margin of multinational production would have been less likely. In Appendix Table A1.6, we present estimates of a modified specification in which we consider both high exposure to tariff changes and a meaningful U.S. share in Chinese sectoral exports ((above 10%). These estimates are similar to the baseline reported in Column 3 of Table 1.

We now turn to explore the role of other country characteristics that could affect the differential patterns in the creation of foreign affiliates of Chinese MNEs across host economies following the rise in U.S. tariffs. In so doing, we will focus on trade agreements.

5. Did Trade Agreements Affect the Adjustment of Multinational Activity?

By allowing duty-free access to the U.S. market for products that otherwise would have to pay increased tariffs, preferential trade agreements (PTA) can magnify the effects of countries' structural characteristics and incentivize stronger expansion of Chinese multinationals wishing to reduce their trading costs.[28] We accordingly formulate additional hypotheses to guide our analysis of the potential role of trade agreements:

[26] These results may reflect the fact that foreign MNEs operating in China tend to export to other destinations. Calculations using the data from BEA (2021) and OECD (2024) confirm that this is the case.

[27] Our baseline estimates are robust to excluding home countries identified as tax havens by Tørsløv et al. (2022). These alternative results are available upon request.

[28] PTA can act as a form of insurance to tariff hike threats, making some export destinations more attractive and thus potentially attracting multinational investment (Carballo et al., 2022).

Hypothesis 4a: *Conditional on being a substitute for China and operating along a downward-slopping supply curve, countries with a PTA with the United States experienced a larger expansion of Chinese MNEs than those without a PTA.*

Hypothesis 4b: *Conditional on having a PTA with the United States, countries that are substitutes for China and operate along a downward-slopping supply curve experienced a larger expansion of Chinese MNEs than those without such characteristics.*

Hypothesis 5: *The expansion of Chinese MNEs in countries with favoring structural factors (i.e., being a substitute for China and operating along a downward-slopping supply curve) and a PTA with the US has been larger in sectors with higher exposure to tariff increases.*

To test these hypotheses, we adopt the following general specification:

$$N_{ijkt} = \exp\left\{ \sum_{\kappa=0}^{1}\sum_{\ell=0}^{1} \beta_{\kappa,\ell} \mathbb{1}\Big\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, \tau_k = \kappa, PTA_{jt}^{US} = \ell\Big\} + \right.$$
$$\left. + \alpha PTA_{ijt} + \mathbf{FE} \right\} + v_{ijkt} \quad (3)$$

where Ω_i is defined as above (see Equation 1) and Ψj is a binary indicator that takes a value of 1 when the host country is China's substitute *and* operates along a downward-sloping supply curve (i.e., $\Psi j = \mathbb{1}\{s_j = 1, d_j = 1\}$). We also add an additional condition ($PTA_{jt}^{US} = \ell$) and allow the coefficient β to vary depending on whether the host country has a trade agreement with the United States or not (where ℓ identifies the presence of an agreement). The rest of the terms and controls are the same as in Equation 2.

Results are presented in Table 2 with the top panel corresponding to Hypothesis 4a-b and the bottom panel to Hypothesis 5. Comparing the coefficients in the first and second row in Column 1 reveals that, conditional on country structural characteristics, trade agreements with the U.S. appear to have a small and non-significant additional effect on the expansion of Chinese multinationals after the new U.S. tariffs were imposed (p=0.11). The same holds within the set of highly tariff-exposed sectors, as shown in Column 2 (p=0.115). As such, we do

Table 2: Differential Effects of the New U.S. Tariffs by Trade Agreement Status

	(1)	(2)
	Role of Agreements	**Sector Exposure**
Panel A. Country Characteristics		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, PTA_{jt}^{US} = 1\}$	0.160***	
	(0.053)	
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, PTA_{jt}^{US} = 0\}$	0.110**	
	(0.054)	
$\mathbb{1}\{(\Omega_i = 1, \Psi_j = 0, PTA_{jt}^{US} = 1\}$	-0.011	
	(0.054)	
Panel B. Country Characteristics and Sector Exposure		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h = 1, PTA_{jt}^{US} = 1\}$		0.184***
		(0.057)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h = 1, PTA_{jt}^{US} = 0\}$		0.113**
		(0.051)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tau_k^h = 1, PTA_{jt}^{US} = 1\}$		-0.078
		(0.073)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h = 0, PTA_{jt}^{US} = 1\}$		0.128*
		(0.075)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h = 0, PTA_{jt}^{US} = 0\}$		0.098
		(0.080)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tau_k^h = 0, PTA_{jt}^{US} = 1\}$		0.095
		(0.068)
Fixed Effects, Linear Trends, and Controls:		
Country-Pair-Sector	✓	✓
Host-Country-Sector-Year	✓	✓
Home-Country-Sector-Year	✓	✓
Country-Pair Time Trend	✓	✓
Country-Pair Controls	✓	✓
Observations	188,291	188,291

Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States, $\Psi_j = 1$ identifies if the host country is China's substitute *and* operates along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. $\tau_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $\tau_k^h = 0$ those with low exposure (below the median). $PTA_{jt}^{US} = 1$ when a country is covered by a preferential trade agreement with the United States in the given year, or zero otherwise. Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

not find strong evidence for Hypothesis 4a. Meanwhile, comparing the coefficients in the first and third row provides support for Hypothesis 4b: conditional on the presence of a trade agreement with the United States, host countries that are China's substitutes and operate with a downward-sloping supply curve experienced statistically significantly stronger expansion of Chinese multinational firms' than the countries with such trade agreements but without the structural conditions (p=0.0002).

In turn, countries covered by a PTA with the United States but lacking auspicious structural conditions did not experience a statistically significant rise in multinational activity. This is shown in the third row in Column 1 and in rows 3 and 6 in Column 2 by tariff exposure.

Finally, Column 2 in Table 2 provides suggestive evidence in favor of Hypothesis 5. Comparing rows 1 to 4, the effect is concentrated in sectors with high exposure to tariffs, but the difference between the two is insignificant.[29] We next explore whether these results remain the same once we account for possible anticipation effects by MNEs.

6. Have There Been Anticipation Effects?

The implementation of the new tariffs has represented a break from the previous long-term U.S. policy and implied a shock to firms.[30] Yet, some firms may have anticipated changes to the U.S. trade policy prior to the introduction of the new tariffs in 2018. This is because trade-related announcements – including tariff increases – featured prominently in the program of the winning presidential candidate during the electoral campaign in 2016 and several visible actions were taken shortly after assuming the office in 2017 as discussed in Han-

[29] This result is robust to defining the sector based on the headquarters (Appendix Table A1.4), the alternative tariff exposure definitions (Appendix Table A1.5) and considering the sector-specific U.S. relative importance in Chinese exports (Appendix Table A1.6).

[30] Prior to 2018, tariffs were imposed only 74 times under the mechanism used by the U.S. administration to introduce such tariffs and in one-quarter of those cases the President was given the authority and applied tariffs (Bown, 2018). As highlighted by Grossman et al. (2024): "*After a long period of stable trade policies, the tariff hikes came as a shock to firms that had forged relationships with suppliers in China*."

dley and Limão (2017a).[31] This is reflected in the U.S. news-based Trade Policy Uncertainty (TPU) Index by Caldara et al. (2020), which first started increasing after the proposal of a 45% tariff on China was made in January 2016, and shot up further after the introduction of the first tariffs in January 2018 (see Figure 2(a)).[32]

In addition, besides the general possibility of a rise in tariffs on imports from China, firms also had a possible indication regarding the products that could be exposed to the tariff increases. This is because prior to China's WTO entry, the United States was not limited by the WTO's MFN discipline, having thus the possibility of imposing tariffs on imports from China above the MFN tariff bounds. More specifically, before the WTO accession, Chinese exports risked facing increased tariffs if an annual review by the US Congress did not extend the MFN status (Handley and Limão, 2017b, 2022). The respective product lines and (higher) tariffs were listed in the U.S. schedule called "Column 2".

In Figure 2(b), we show that the margin between Column 2 and MFN tariffs may have provided early information about the sectors that would be targeted later in 2018-2019, when US tariffs on Chinese goods were effectively raised. The left graph shows the relationship between the average change in U.S. tariffs on China post-2018 and the Column 2-MFN tariff margins in 2000, whereas the right graph correlates the share of products subject to positive changes in U.S. tariffs on China between 2018-2022 and the previous period and the share of products with positive Column 2-MFN margin. In both cases, the correlation is positive and significant.

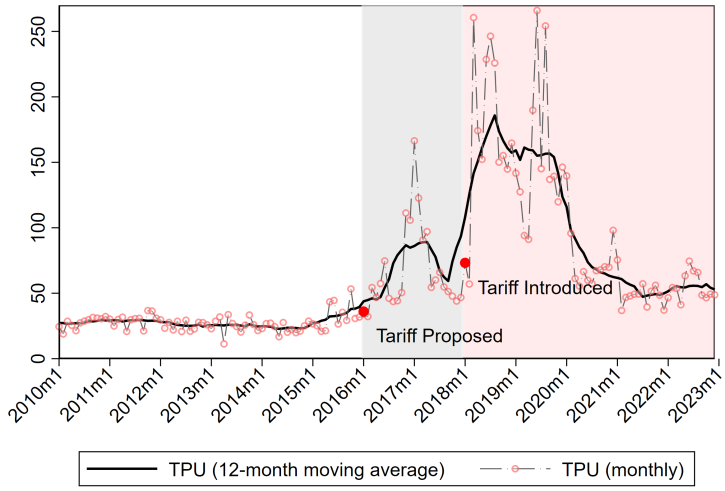
Taking these two facts together –i.e., that at least some firms could have anticipated an eventual increase in U.S. tariffs on imports from China and the products and thus sector likely to be affected–, we formulate two additional hypotheses:

Hypothesis 6a: *Conditional on structural factors, sectors in which potential tariffs*

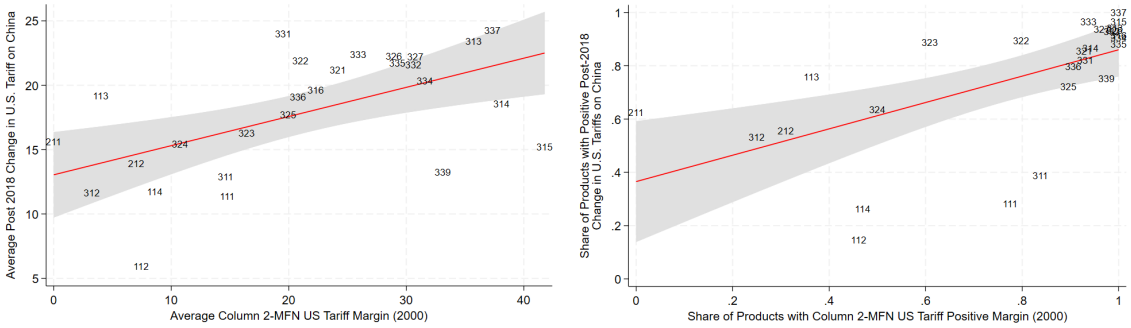
[31] These actions included, for instance, withdrawal from the Trans-Pacific Partnership (TPP).
[32] The index tracks the fraction of newspaper articles on trade policy that also refer to TPU.

Figure 2: A Possible Anticipation of U.S. Tariffs on China

(a): Trade Policy Uncertainty in the U.S. over Time



(b): New U.S. Tariffs vs. Pre-WTO Accession U.S. Tariffs



Source: Panel 2(a) shows the evolution of the monthly news-based U.S. trade policy uncertainty index (TPU) based on the data from Caldara et al. (2020) along with information tariff events from Handley and Limão (2017a) and Bown (2018). *Tariff Proposed* refers to the announcement of a tariff to be imposed on China by the eventually winning presidential candidate in January 2016 and *Tariff Introduced* refers to the first tariff hike applied to products on China in January 2018. Panel 2(b) shows the sectoral (3-digit NAICS) correlation between the average post 2018 change in U.S. tariff on China and the Column 2-MFN tariff margin in 2000 (left graph) and the share of products with a positive change in U.S. tariffs on China between 2018-2022 and the previous period and the share of products with positive Column 2-MFN margin (right graph).

were higher experienced a stronger expansion of Chinese multinational firms before the introduction of tariffs, and such expansion was lower than when they were effectively introduced.

Hypothesis 6b: *Conditional on structural factors, the expansion of Chinese multinational production was stronger in countries with a PTA with the United States and sectors in which potential tariffs were higher before the introduction of tariffs, and such expansion was lower than when they were effectively introduced.*

To test empirically these hypotheses, we estimate the following equation:

$$N_{ijkt} = \exp\left\{ \sum_{\kappa=0}^{1}\sum_{\ell=0}^{1} \beta_{\kappa,\ell}^{\eta,\tau} \mathbb{1}\left\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = \kappa, PTA_{jt}^{US} = \ell\right\} + \right.$$
$$+ \sum_{\kappa=0}^{1}\sum_{\ell=0}^{1} \beta_{\kappa,\ell}^{\tilde{\eta},\tau} \mathbb{1}\left\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = \kappa, PTA_{jt}^{US} = \ell\right\}$$
$$\left. + \alpha PTA_{ijt} + \mathbf{FE} \right\} + v_{ijkt} \quad (4)$$

where $\tilde{\eta}_t = 1$ corresponds to the anticipation period, i.e., the two years immediately before the new U.S. tariffs became in place (i.e., $t = \{2016, 2017\}$, and T^h is the sectoral high tariff exposure defined by using alternatively (i) the new US tariffs on China (τ_k^h) and (ii) the Column 2-MFN tariff margin in 2000 ($\tilde{\tau}_k^h$).[33]

Table 3 presents the estimation results. We first report results differentiating the effect depending on the countries' structural characteristics and sector exposure only (Panel A). Second, we additionally allow the impact to vary depending on whether the country is covered by a trade agreement with the U.S. or not (Panel B).

[33] Specifcally, T_k^h is an indicator that takes the value of 1 if the sector has above the median share of products affected by the increase in US tariffs on China (τ_k^h) and the Column 2-MFN positive margin ($\tilde{\tau}_k^h$), respectively.

Table 3: Differential Effects of the New U.S. Tariffs with Anticipation

Panel A. The Role of Country Characteristics and Sector Exposure		
	(1)	(2)
	$T_k^h = \tau_k^h$	$T_k^h = \tilde{\tau}_k^h$
New Trade Policy Period (2018-2022)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1\}$	0.170***	0.164***
	(0.051)	(0.051)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0\}$	0.110	0.115
	(0.087)	(0.087)
Anticipation (2016-2017)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1\}$	0.055***	0.055***
	(0.020)	(0.020)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0\}$	0.028	0.024
	(0.043)	(0.046)
Fixed Effects, Linear Trends, and Controls:		
Country-Pair-Sector	✓	✓
Host-Country-Sector-Year	✓	✓
Home-Country-Sector-Year	✓	✓
Country-Pair Time Trend	✓	✓
Country-Pair Controls	✓	✓
Observations	188,291	188,291

Table 3: Differential Effects of the New U.S. Tariffs with Anticipation (*ctd.*)

Panel B. The Additional Role of Trade Agreements		
	(1)	(2)
	$T_k^h = \tau_k^h$	$T_k^h = \tilde{\tau}_k^h$
New Trade Policy Period (2018-2022)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$	0.301***	0.338***
	(0.064)	(0.066)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$	0.140**	0.138**
	(0.058)	(0.059)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$	-0.104	-0.070
	(0.099)	(0.077)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$	0.210**	0.165*
	(0.089)	(0.087)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$	0.131	0.136
	(0.094)	(0.092)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$	0.107	0.093
	(0.068)	(0.074)
Anticipation (2016-2017)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$	0.210***	0.223***
	(0.040)	(0.031)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$	0.030	0.030
	(0.018)	(0.019)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$	-0.078	-0.070**
	(0.052)	(0.035)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$	0.044	0.026
	(0.055)	(0.049)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$	0.051	0.055
	(0.042)	(0.043)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$	0.090***	0.119***
	(0.024)	(0.039)
Fixed Effects, Linear Trends, and Controls:		
Country-Pair-Sector	✓	✓
Host-Country-Sector-Year	✓	✓
Home-Country-Sector-Year	✓	✓
Country-Pair Time Trend	✓	✓
Country-Pair Controls	✓	✓
Observations	188,291	188,291

Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States, $\Psi_j = 1$ identifies if the host country is China's substitute *and* operates along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. $\eta_t = 1$ corresponds to the period in which the new U.S. tariffs were in place, i.e. $t = \{2018, ..., 2022\}$ and $\tilde{\eta}_t = 1$ corresponds to the anticipation period, i.e., the two years immediately before the new U.S. tariffs became in place (i.e., $t = \{2016, 2017\}$. $T_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $T_k^h = 0$ those with low exposure (below the median). Column 1 uses the U.S. post 2018 tariff (τ_k^h) and Column 2 uses the column 2-MFN tariff margin in 2000 ($\tilde{\tau}_k^h$) to construct T_k^h. Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The estimates indicate a positive and statistically significant anticipation effect in years 2016-2017. Thus, during these year, Chinese MNEs appear to have already started to increase the number of their foreign affiliates in countries with favorable underlying supply conditions. However, as it could be expected, this effect is weaker than the effect observed once the new U.S. tariffs were actually introduced. The difference between the two coefficients is statistically significant (p=0.015). When we use instead the exposure criteria based on the Column 2-MFN 2000 tariff margin ($\tilde{\tau}_k$) the result remains virtually identical, as shown in Column 2. As such, we find supportive evidence for Hypothesis 6a.[34,35]

In addition, the effect of the change in U.S. trade policy on the location of Chinese MNEs' activities in sectors highly exposed to tariffs is significantly stronger after the new U.S. tariffs were imposed relative to the anticipation period in the case of countries with structural predisposition regardless of their coverage by a PTA with the United States (p=0.069 and p=0.032 for countries with and without PTAs with the US, respectively).

Compared to the period prior to 2016 and conditional on having favorable structural factors, countries with a PTA with the U.S. already experienced a stronger expansion of Chinese multinational firms in the most exposed sectors than countries with similar structural characteristics but without a trade agreement with the U.S. in the period directly preceding the imposition of the new U.S. tariffs (p= 0.006 for τ_k and p= 0.0004 for $\tilde{\tau}_k$). This could suggest an order of market entry: during increased uncertainty firms may have started entering first countries with appropriate structural conditions and the option value of having duty-free access to the U.S. market. Once the tariffs were introduced, expansion took place both in the countries covered by PTAs and those not covered,

[34] These results are robust to defining the sector based on the headquarters (Appendix Table A1.4) and the alternative tariff exposure definitions (Appendix Table A1.5).

[35] The significant anticipatory effect in 2016-2017 could be also capturing deviations from pre-trends before 2016 in specific sector-countries. In Appendix Table A1.7, we present results in Table 3 Panel A including also an interaction for the period preceding the 2016 electoral campaign (2014-2015). Results show no increase in Chinese foreign affiliates in 2014-2015 in countries with favorable conditions and high potential tariffs, and robust results in the baseline and anticipation periods. These results are also robust to defining alternatively such pre-anticipation period as 2013-2015 and 2010-2015. Results are available upon request.

potentially as supply had to be ramped up quickly to substitute for China. This observation provides support for Hypothesis 6b.

Finally, even after controlling for the anticipation effects, there was no statistically significant increase in the number of Chinese MNEs' foreign affiliates in the countries covered by agreements but lacking favorable structural conditions (regardless of the sectoral tariff exposure).

7. Concluding Remarks

This paper examines whether and how the shift in U.S. trade policy marked by the imposition of new tariffs on China in 2018-2019 contributed to shaping the patterns of multinational firms' activity in third countries. Specifically, we examine whether affected multinational firms adapted the networks of their foreign affiliates in response to the tariff changes and in which economies have they expanded most. To do so, we use the framework proposed by Fajgelbaum et al. (2024) along with their estimates as a starting point and accordingly consider the role of structural factors, i.e., countries' degree of structural substitutability with China and the nature of their supply capabilities. In addition, we investigate whether trade agreements with the U.S. have a magnifying effect and there were anticipatory effects from tariff hike threats before tariffs were effectively enacted.

We find that Chinese MNEs expanded relatively more into countries with fundamentals that allowed them to serve as China's substitutes and operate under a downward-sloping curve, especially in sectors more exposed to the new U.S. tariffs. In addition, our estimation results suggest that, conditional on the existence of those structural factors, countries covered by trade agreements experienced a stronger expansion of Chinese multinational firms than countries without such agreements in the most tariff-exposed sectors once anticipation effects are accounted for. This may indicate that when Chinese multinational firms faced the possibility of a tariff increase, they expanded more in those countries first. The sheer presence of an agreement without the underlying structural conditions, however, is not found to be associated with a stronger expansion of

Chinese multinational firms.

These initial findings are consistent with the insights from the broader literature on U.S.-China tensions. They complement them by suggesting that MNEs have adjusted their network of foreign affiliates in third countries to adapt to the new global business context. In so doing, they highlight the importance of considering potential spillover effects on third countries through multinational production when designing trade policies. They also shed light on the role that structural conditions and trade agreements can play in this regard.

References

Daron Acemoglu, Simon Johnson, Amir Kermani, James Kwak, and Todd Mitton. The value of connections in turbulent times: Evidence from the united states. *Journal of Financial Economics*, 121(2):368–391, 2016. URL https://EconPapers.repec.org/RePEc:eee:jfinec:v:121:y:2016:i:2:p:368-391.

Shekhar Aiyar, Davide Malacrino, and Andrea F. Presbitero. Investing in friends: The role of geopolitical alignment in fdi flows. *European Journal of Political Economy*, 2024.

Laura Alfaro and Andrew Charlton. Intra-industry foreign direct investment. *American Economic Review*, 99(5):2096–2119, December 2009. doi: 10.1257/aer.99.5.2096. URL https://www.aeaweb.org/articles?id=10.1257/aer.99.5.2096.

Laura Alfaro and Maggie Xiaoyang Chen. The global agglomeration of multinational firms. *Journal of International Economics*, 94(2):263–276, 2014.

Laura Alfaro and Davin Chor. Global Supply Chains: The Looming "Great Reallocation". NBER Working Papers 31661, National Bureau of Economic Research, Inc, September 2023. URL https://ideas.repec.org/p/nbr/nberwo/31661.html.

Laura Alfaro, Paola Conconi, Harald Fadinger, and Andrew F. Newman. Do prices determine vertical integration? *The Review of Economic Studies*, 83(3 (296)):855–888, 2016. ISSN 00346527, 1467937X. URL http://www.jstor.org/stable/43869555.

Laura Alfaro, Pol Antràs, Davin Chor, and Paola Conconi. Internalizing Global Value Chains: A Firm-Level Analysis. *Journal of Political Economy*, 127(2):508–559, 2019. doi: 10.1086/700935. URL https://ideas.repec.org/a/ucp/jpolec/doi10.1086-700935.html.

Laura Alfaro, Nick Bloom, Paola Conconi, Harald Fadinger, Patrick Legros, Andrew F Newman, Raffaella Sadun, and John Van Reenen. Come Together: Firm Boundaries and Delegation. *Journal of the European Economic Association*, 22(1):34–72, 2024. URL https://ideas.repec.org/a/oup/jeurec/v22y2024i1p34-72..html.

Mary Amiti, Stephen J. Redding, and David E. Weinstein. The impact of the 2018 tariffs on prices and welfare. *Journal of Economic Perspectives*, 33(4):187–210, November 2019. doi: 10.1257/jep.33.4.187. URL https://www.aeaweb.org/articles?id=10.1257/jep.33.4.187.

Mary Amiti, Stephen J. Redding, and David E. Weinstein. Who's paying for the us tariffs? a longer-term perspective. *AEA Papers and Proceedings*, 110:541–46, May 2020. doi: 10.1257/pandp.20201018. URL https://www.aeaweb.org/articles?id=10.1257/pandp.20201018.

Mary Amiti, Matthieu Gomez, Sang Hoon Kong, and David Weinstein. Trade Protection, Stock-Market Returns, and Welfare. NBER Working Papers 28758, National Bureau of Economic Research, Inc, May 2021. URL https://ideas.repec.org/p/nbr/nberwo/28758.html.

Pol Antràs and Davin Chor. Global value chains. In Gita Gopinath, Elhanan Helpman, and Kenneth Rogoff, editors, *Handbook of International Economics: International Trade, Volume 5*, volume 5 of *Handbook of International Economics*, pages 297–376. Elsevier, 2022.

Pol Antràs and Stephen R. Yeaple. Multinational Firms and the Structure of International Trade. In G. Gopinath, . Helpman, and K. Rogoff, editors, *Handbook of International Economics*, volume 4 of *Handbook of International Economics*, chapter 0, pages 55–130. Elsevier, 2014. doi: 10.1016/B978-0-444-54314-. URL https://ideas.repec.org/h/eee/intchp/4-55.html.

Pol Antràs, Evgenii Fadeev, Teresa C. Fort, and Felix Tintelnot. Global Sourcing and Multinational Activity: A Unified Approach. NBER Working Papers 30450, National Bureau of Economic Research, Inc, September 2022. URL https://ideas.repec.org/p/nbr/nberwo/30450.html.

Pol Antràs, Evgenii Fadeev, Teresa C. Fort, and Felix Tintelnot. Exporting, Global Sourcing, and Multinational Activity: Theory and Evidence from the United States. NBER Working Papers 31488, National Bureau of Economic Research, Inc, July 2023. URL https://ideas.repec.org/p/nbr/nberwo/31488.html.

David Autor, Anne Beck, David Dorn, and Gordon H Hanson. Help for the heartland? the

employment and electoral effects of the trump tariffs in the united states. Working Paper 32082, National Bureau of Economic Research, January 2024. URL http://www.nber.org/papers/w32082.

BEA (2021). Worldwide Activities of U.S. Multinational Enterprises: Revised 2021 Statistics. URL https://www.bea.gov/worldwide-activities-us-multinational-enterprises-revised-2021-statistics. Bureau of Eocnomic Analysis.

Felipe Benguria, Jaerim Choi, Deborah L. Swenson, and Mingzhi (Jimmy) Xu. Anxiety or pain? the impact of tariffs and uncertainty on chinese firms in the trade war. *Journal of International Economics*, 137:103608, 2022. ISSN 0022-1996. doi: https://doi.org/10.1016/j.jinteco.2022.103608. URL https://www.sciencedirect.com/science/article/pii/S002219962200040X.

Emily Blanchard and Xenia Matschke. U.S. Multinationals and Preferential Market Access. *The Review of Economics and Statistics*, 97(4):839–854, October 2015. URL https://ideas.repec.org/a/tpr/restat/v97y2015i4p839-854.html.

Emily Blanchard, Amelia U. Santos-Paulino, Claudia Trentini, and Emanuel Milet. Implications of rising trade tensions for FDI projects. *UNCTAD Transnational Corporations Journal*, 2021. URL https://ideas.repec.org/a/unc/tncjou/71.html.

Emily J. Blanchard, Chad P. Bown, and Davin Chor. Did Trump's trade war impact the 2018 election? *Journal of International Economics*, 148(C), 2024. doi: 10.1016/j.jinteco.2024.10. URL https://ideas.repec.org/a/eee/inecon/v148y2024ics0022199624000151.html.

Bruce Blonigen. A Review of the Empirical Literature on FDI Determinants. *Atlantic Economic Journal*, 33(4):383–403, December 2005. doi: 10.1007/s11293-005-2868-9. URL https://ideas.repec.org/a/kap/atlecj/v33y2005i4p383-403.html.

Bruce A. Blonigen. Tariff-jumping antidumping duties. *Journal of International Economics*, 57(1):31–49, June 2002. URL https://ideas.repec.org/a/eee/inecon/v57y2002i1p31-49.html.

Bruce A. Blonigen and Robert C. Feenstra. Protectionist Threats and Foreign Direct Investment. In *The Effects of US Trade Protection and Promotion Policies*, NBER Chapters, pages 55–80. National Bureau of Economic Research, Inc, 1997. URL https://ideas.repec.org/h/nbr/nberch/0309.html.

Bruce A. Blonigen and Jeremy Piger. Determinants of foreign direct investment. *Canadian Journal of Economics*, 47(3):775–812, August 2014. doi: 10.1111/caje.12091. URL https://ideas.repec.org/a/cje/issued/v47y2014i3p775-812.html.

Chad P. Bown. Donald trump's solar and washer tariffs may have now opened the floodgates of protectionism. Technical report, Peterson Institute for International Economics (PIIE), 2018.

Lael S. Brainard. An empirical assessment of the proximity-concentration trade-off between multinational sales and trade. *The American Economic Review*, 87(4):520–544, 1997. ISSN 00028282. URL http://www.jstor.org/stable/2951362.

Dario Caldara, Matteo Iacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo. The economic effects of trade policy uncertainty. *Journal of Monetary Economics*, (109):38–59, 2020.

Jeronimo Carballo, Kyle Handley, and Nuno Limão. Economic and policy uncertainty: Aggregate export dynamics and the value of agreements. *Journal of International Economics*, 139 (C), 2022. doi: 10.1016/j.jinteco.2022.10. URL https://ideas.repec.org/a/eee/inecon/v139y2022ics0022199622000939.html.

David L. Carr, James R. Markusen, and Keith E. Maskus. Estimating the knowledge-capital model of the multinational enterprise. *The American Economic Review*, 91(3):693–708, 2001a. ISSN 00028282. URL http://www.jstor.org/stable/2677888.

David L. Carr, James R. Markusen, and Keith E. Maskus. Estimating the knowledge-capital model of the multinational enterprise. *American Economic Review*, 91(3):693–708, June 2001b. doi: 10.1257/aer.91.3.693. URL https://www.aeaweb.org/articles?id=10.1257/aer.91.3.693.

Alberto Cavallo, Gita Gopinath, Brent Neiman, and Jenny Tang. Tariff Pass-Through at the

Border and at the Store: Evidence from US Trade Policy. *American Economic Review: Insights*, 3(1):19–34, March 2021. doi: 10.1257/aeri.20190536. URL https://ideas.repec.org/a/aea/aerins/v3y2021i1p19-34.html.

Maggie X. Chen. Regional economic integration and geographic concentration of multinational firms. *European Economic Review*, 53(3):355–375, April 2009. URL https://ideas.repec.org/a/eee/eecrev/v53y2009i3p355-375.html.

Paola Conconi, André Sapir, and Maurizio Zanardi. The internationalization process of firms: From exports to FDI. *Journal of International Economics*, 99(C):16–30, 2016. doi: 10.1016/j.jinteco.2015.12. URL https://ideas.repec.org/a/eee/inecon/v99y2016icp16-30.html.

Paola Conconi, Manuel García-Santana, Laura Puccio, and Roberto Venturini. From final goods to inputs: The protectionist effect of rules of origin. *American Economic Review*, 108(8):2335–65, August 2018. doi: 10.1257/aer.20161151. URL https://www.aeaweb.org/articles?id=10.1257/aer.20161151.

Paola Conconi, Chad Bown, Aksel Erbahar, and Lorenzo Trimarchi. Trade Protection Along Supply Chains. CEPR Discussion Papers 15648, C.E.P.R. Discussion Papers, January 2021. URL https://ideas.repec.org/p/cpr/ceprdp/15648.html.

Giancarlo Corsetti, , Banu Demir, and Beata Javorcik. Trading around geopolitics. Technical report, University of Oxford, 2024.

Pablo Fajgelbaum, Pinelopi Goldberg, Patrick Kennedy, Amit Khandelwal, and Daria Taglioni. The us-china trade war and global reallocations. *American Economic Review: Insights*, 6(2):295–312, June 2024. doi: 10.1257/aeri.20230094. URL https://www.aeaweb.org/articles?id=10.1257/aeri.20230094.

Pablo D. Fajgelbaum and Amit K. Khandelwal. The economic impacts of the us–china trade war. *Annual Review of Economics*, 14(Volume 14, 2022):205–228, 2022. ISSN 1941-1391. doi: https://doi.org/10.1146/annurev-economics-051420-110410. URL https://www.annualreviews.org/content/journals/10.1146/annurev-economics-051420-110410.

Pablo D Fajgelbaum, Pinelopi K Goldberg, Patrick J Kennedy, and Amit K Khandelwal. The Return to Protectionism. *The Quarterly Journal of Economics*, 135(1):1–55, 11 2020. ISSN 0033-5533. doi: 10.1093/qje/qjz036. URL https://doi.org/10.1093/qje/qjz036.

Susan E. Feinberg and Michael P. Keane. Accounting for the Growth of MNC-Based Trade Using a Structural Model of U.S. MNCs. *American Economic Review*, 96(5):1515–1558, December 2006. URL https://ideas.repec.org/a/aea/aecrev/v96y2006i5p1515-1558.html.

Aaron Flaaen and Justin R. Pierce. Disentangling the Effects of the 2018-2019 Tariffs on a Globally Connected U.S. Manufacturing Sector. Finance and Economics Discussion Series 2019-086, Board of Governors of the Federal Reserve System (U.S.), December 2019. URL https://ideas.repec.org/p/fip/fedgfe/2019-86.html.

Aaron Flaaen, Ali Hortaçsu, and Felix Tintelnot. The production relocation and price effects of us trade policy: The case of washing machines. *American Economic Review*, 110(7):2103–27, July 2020. doi: 10.1257/aer.20190611. URL https://www.aeaweb.org/articles?id=10.1257/aer.20190611.

Caroline Freund, Aaditya Mattoo, Michele Ruta, and Alen Mulabdic. Is us trade policy reshaping global supply chains? *Journal of International Economics*, 2024.

Stefania Garetto, Lindsay Oldenski, and Natalia Ramondo. Multinational expansion in time and space. Working Paper 25804, National Bureau of Economic Research, May 2019.

Gita Gopinath, Pierre-Olivier Gourinchas, Anrea Presbitero, and Petia Topalova. Changing global linkages: A new cold war? Imf working paper no. 2024/76, International Monetary Fund, 2024.

Alejandro G Graziano, Kyle Handley, and Nuno Limão. Brexit Uncertainty and Trade Disintegration. *The Economic Journal*, 131(635):1150–1185, 09 2020. ISSN 0013-0133. doi: 10.1093/ej/ueaa113. URL https://doi.org/10.1093/ej/ueaa113.

Gene M. Grossman, Elhanan Helpman, and Stephen J. Redding. When tariffs disrupt global sup-

ply chains. *American Economic Review*, 114(4):988–1029, April 2024. doi: 10.1257/aer.20211519. URL https://www.aeaweb.org/articles?id=10.1257/aer.20211519.

Kyle Handley and Nuno Limão. *Trade under T.R.U.M.P. policies*, chapter 13. CEPR, 2017a.

Kyle Handley and Nuno Limão. Policy uncertainty, trade, and welfare: Theory and evidence for china and the united states. *American Economic Review*, 107(9):2731–83, September 2017b. doi: 10.1257/aer.20141419. URL https://www.aeaweb.org/articles?id=10.1257/aer.20141419.

Kyle Handley and Nuno Limão. Policy uncertainty, trade, and welfare: Theory and evidence for china and the united states. *American Economic Review*, 107(9):2731–83, September 2017c. doi: 10.1257/aer.20141419. URL https://www.aeaweb.org/articles?id=10.1257/aer.20141419.

Kyle Handley and Nuno Limão. Trade Policy Uncertainty. *Annual Review of Economics*, 14(1): 363–395, August 2022. doi: 10.1146/annurev-economics. URL https://ideas.repec.org/a/anr/reveco/v14y2022p363-395.html.

Kyle Handley, Fariha Kamal, and Ryan Monarch. Supply Chain Adjustments to Tariff Shocks: Evidence from Firm Trade Linkages in the 2018-2019 U.S. Trade War. NBER Working Papers 31602, National Bureau of Economic Research, Inc, August 2023. URL https://ideas.repec.org/p/nbr/nberwo/31602.html.

Torfinn Harding and Beata S. Javorcik. Roll Out the Red Carpet and They Will Come: Investment Promotion and FDI Inflows. *Economic Journal*, 121(557):1445–1476, December 2011. doi: j.1468-0297.2011.02454.x. URL https://ideas.repec.org/a/ecj/econjl/v121y2011i557p1445-1476.html.

Keith Head and Thierry Mayer. Brands in motion: How frictions shape multinational production. *American Economic Review*, 109(9):3073–3124, September 2019. doi: 10.1257/aer.20161345. URL https://www.aeaweb.org/articles?id=10.1257/aer.20161345.

Elhanan Helpman, Marc J. Melitz, and Stephen R. Yeaple. Export Versus FDI with Heterogeneous Firms. *American Economic Review*, 94(1):300–316, March 2004.

Ebehi Iyoha, Edmund J. Malesky, Jaya Y. Wen, Sung-Ju Wu, and Bo Feng. Exports in Disguise: Trade Re-Routing During the U.S.-China Trade War. Harvard Business School Working Paper 24-072, Harvard Business School, May 2024. URL https://ideas.repec.org/p/cpr/ceprdp/17739.html.

Beata Javorcik, Ben Kett, Katherine Stapleton, and Layla O'Kane. Did the 2018 Trade War Improve Job Opportunities for US Workers? CEPR Discussion Papers 17739, C.E.P.R. Discussion Papers, December 2022. URL https://ideas.repec.org/p/cpr/ceprdp/17739.html.

Robert E. Lipsey. Measuring the location of production in a world of intangible productive assets, fdi, and intrafirm trade. *Review of Income and Wealth*, 56(s1):S99–S110, 2010. doi: https://doi.org/10.1111/j.1475-4991.2010.00385.x. URL https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1475-4991.2010.00385.x.

Aaditya Mattoo and Robert W. Staiger. Trade Wars : What Do They Mean ? Why Are They Happening Now ? What Are the Costs ? Policy Research Working Paper Series 8829, The World Bank, April 2019. URL https://ideas.repec.org/p/wbk/wbrwps/8829.html.

Brian McCaig, Nina Pavcnik, and Woan Foong Wong. FDI Inflows and Domestic Firms: Adjustments to New Export Opportunities. NBER Working Papers 30729, National Bureau of Economic Research, Inc, December 2022. URL https://ideas.repec.org/p/nbr/nberwo/30729.html.

OECD (2024). Analytical Activities of MNEs (AMNE) database. URL https://www.oecd.org/en/data/datasets/multinational-enterprises-and-global-value-chains.html. Organisation for Economic Co-operation and Development.

Natalia Ramondo and Andres Rodriguez-Clare. Trade, multinational production, and the gains from openness. *Journal of Political Economy*, 121(2):273 – 322, 2013.

Natalia Ramondo, Andres Rodrıíguez-Claré, and Felix Tintelnot. Multinational Production: Data and Stylized Facts. *American Economic Review*, 105(5):530–36, 5 2015.

Felix Tintelnot. Global production with export platforms. *The Quarterly Journal of Economics*, 132

(1):157–209, 2017.

Thomas Tørsløv, Ludvig Wier, and Gabriel Zucman. The missing profits of nations. *The Review of Economic Studies*, 90(3):1499–1534, 07 2022. ISSN 0034-6527. doi: 10.1093/restud/rdac049.

Hâle Utar, Alfonso Cebreros Zurita, Luis Bernardo Torres Ruiz, and Hale Utar. The US-China Trade War and the Relocation of Global Value Chains to Mexico. CESifo Working Paper Series 10638, CESifo, 2023. URL https://ideas.repec.org/p/ces/ceswps/_10638.html.

Sifan Xue. Trade wars with fdi diversion. 2024.

Appendix

Table A1.1: China's Substitutes and Complements and Nature of Supply Curve

China Substitutes - DSS	**China Substitutes - USS**	**China Complements - DSS**	**China Complements - USS**
Belgium	Argentina	Australia*	Brazil
Bulgaria	Austria	Colombia*	Egypt
Czech Republic	Bangladesh	Ireland	Greece
Finland	Canada*	Sweden	Hong Kong
France	Chile*		Indonesia
Germany	Denmark		Israel*
Hungary	Slovakia		Japan
India	Spain		New Zealand
Italy	Switzerland		Peru*
Malaysia			Philippines
Mexico*			Romania
Netherlands			Singapore*
Poland			South Africa
Portugal			Slovenia
South Korea*			Turkey
Taiwan			Ukraine
Thailand			
United Kingdom			
Vietnam			

Note: DSS=downward-sloping supply curve. USS=upward-sloping supply curve. Country classification based on Fajgelbaum et al. (2024). Countries are listed in an alphabetical order. *Denotes countries that have a Preferential Trade Agreement in place with the United States.

Table A1.2: Sectors by Exposure to New US Trade Policy

NAICS Code (3 digits)	Description
High Exposure	
313	Textile Mills
314	Textile Product Mills
315	Apparel Manufacturing
316	Leather and Allied Product Manufacturing
321	Wood Product Manufacturing
322	Paper Manufacturing
323	Printing and Related Support Activities
326	Plastics and Rubber Products Manufacturing
327	Nonmetallic Mineral Product Manufacturing
332	Fabricated Metal Product Manufacturing
333	Machinery Manufacturing
334	Computer and Electronic Product Manufacturing
335	Electrical Equipment, Appliance, and Component Manufacturing
337	Furniture and Related Product Manufacturing
Low Exposure	
111	Crop Production
112	Animal Production and Aquaculture
113	Forestry and Logging
114	Fishing, Hunting and Trapping
211	Oil and Gas Extraction
212	Mining (except Oil and Gas)
311	Food Manufacturing
312	Beverage Manufacturing
324	Petroleum and Coal Products Manufacturing
325	Chemical Manufacturing
331	Primary Metal Manufacturing
336	Transportation Equipment Manufacturing
339	Miscellaneous Manufacturing

Note: Table lists 3-digit level NAICS sectors that score above the median in terms of the pre-policy exposure of Chinese exports to the U.S. market and change in tariffs imposed on Chinese products.

Table A1.3: Number of Chinese Foreign Affiliates by Type of Host Country and Exposure to New US Tariffs. 2005-22

Year	(a) Total	(b) Substitutes-DSS countries	% in Total (b)/(a)	(c) Sectors with high exposure to new tariffs	% in Substitutes-DSS countries (c)/(b)	(d) Substitutes-DSS countries with PTA with the US	% in Total (d)/(a)	(e) Sectors with high exposure to new tariffs	% in Substitutes-DSS countries with PTA with the US (c)/(b)
2005	2,010	1,046	52.0%	739	70.7%	93	4.6%	49	52.7%
2006	2,103	1,081	51.4%	763	70.6%	94	4.5%	50	53.2%
2007	2,256	1,139	50.5%	802	70.4%	96	4.3%	52	54.2%
2008	2,435	1,207	49.6%	845	70.0%	101	4.1%	56	55.4%
2009	2,606	1,296	49.7%	895	69.1%	104	4.0%	57	54.8%
2010	2,824	1,376	48.7%	941	68.4%	105	3.7%	58	55.2%
2011	3,086	1,484	48.1%	1,013	68.3%	108	3.5%	60	55.6%
2012	3,361	1,598	47.5%	1,100	68.8%	123	3.7%	66	53.7%
2013	3,621	1,721	47.5%	1,184	68.8%	126	3.5%	68	54.0%
2014	3,922	1,864	47.5%	1,277	68.5%	137	3.5%	72	52.6%
2015	4,208	1,998	47.5%	1,376	68.9%	145	3.4%	76	52.4%
2016	4,559	2,177	47.8%	1,500	68.9%	163	3.6%	88	54.0%
2017	4,908	2,361	48.1%	1,622	68.7%	174	3.5%	92	52.9%
2018	5,305	2,583	48.7%	1,769	68.5%	181	3.4%	94	51.9%
2019	5,654	2,792	49.4%	1,918	68.7%	182	3.2%	94	51.6%
2020	5,889	2,956	50.2%	2,036	68.9%	188	3.2%	94	50.0%
2021	6,055	3,080	50.9%	2,122	68.9%	192	3.2%	96	50.0%
2022	6,093	3,110	51.0%	2,140	68.8%	193	3.2%	96	49.7%

Note: Number of Chinese foreign affiliates in host countries included in the analysis by Substitute-DSS status and exposure to new trade policy. See Table A1.1 for the list and classification of host countries and table A1.2 for sectors classified as having high exposure to new trade policy.

Table A1.4: Tariff Exposure by MNE Headquarters' Sector.

	(1)	(2)	(3)
Panel A. The Role of Country Characteristics			
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1\}$	0.096**		
	0.042		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, \}$	-0.062		
	0.057		
Panel B. The Additional Role of Trade Agreements			
New Trade Policy Period (2018-2022)			
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$		0.170***	0.233***
		(0.055)	(0.068)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$		0.081	0.074
		(0.052)	(0.067)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$		-0.035	-0.048
		(0.046)	(0.054)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$		-0.044	-0.011
		(0.063)	(0.077)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$		-0.113	-0.136
		(0.074)	(0.090)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$		-0.165*	-0.176*
		(0.085)	(0.104)
Anticipation (2016-2017)			
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$			0.136***
			(0.050)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$			0.015
			(0.041)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$			-0.020
			(0.039)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$			-0.000
			(0.047)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$			-0.056
			(0.044)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$			-0.003
			(0.060)
Fixed Effects, Linear Trends, and Controls:			
Country-Pair-Sector	✓	✓	✓
Host-Country-Sector-Year	✓	✓	✓
Home-Country-Sector-Year	✓	✓	✓
Country-Pair Time Trend	✓	✓	✓
Country-Pair Controls	✓	✓	✓
Observations	237,313	237,313	237,313

Note: Number of Chinese foreign affiliates in host countries included in the analysis by Substitute-DSS status and exposure to new trade policy. See Table A1.1 for the list and classification of host countries and table A1.2 for sectors classified as having high exposure to new trade policy.

Table A1.5: Alternative Exposure Measures to New US Tariffs.

	(1)	(2)	(3)	(4)	(5)	(6)
	Average Tariff	**Median Tariff**	**Average Tariff**	**Median Tariff**	**Average Tariff**	**Median Tariff**
Panel A. The Role of Country Characteristics						
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1\}$	0.122***	0.120***				
	(0.045)	(0.044)				
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, \}$	0.085	0.060				
	(0.084)	(0.136)				
Panel B. The Additional Role of Trade Agreements						
New Trade Policy Period (2018-2022)						
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$			0.163***	0.152***	0.264***	0.250***
			(0.053)	(0.052)	(0.060)	(0.059)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$			0.116**	0.113**	0.147**	0.143**
			(0.052)	(0.052)	(0.060)	(0.059)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$			-0.014	-0.021	-0.033	-0.037
			(0.062)	(0.055)	(0.081)	(0.073)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$			0.161	0.767	0.229*	0.907
			(0.106)	(0.707)	(0.124)	(0.857)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$			0.081	0.061	0.101	0.073
			(0.095)	(0.140)	(0.112)	(0.169)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \eta_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$			-0.007	0.089	-0.001	0.119
			(0.064)	(0.076)	(0.074)	(0.092)
Anticipation (2016-2017)						
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$					0.142***	0.131***
					(0.021)	(0.020)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 0\}$					0.044***	0.041***
					(0.017)	(0.016)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 1, PTA_{jt}^{US} = 1\}$					-0.046	-0.030
					(0.037)	(0.035)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$					-0.020	0.309
					(0.070)	(0.584)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 0\}$					0.003	-0.022
					(0.057)	(0.109)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tilde{\eta}_t = 1, T_k^h = 0, PTA_{jt}^{US} = 1\}$					0.058	0.140**
					(0.038)	(0.058)
Fixed Effects, Linear Trends, and Controls:						
Country-Pair-Sector	✓	✓	✓	✓	✓	✓
Host-Country-Sector-Year	✓	✓	✓	✓	✓	✓
Home-Country-Sector-Year	✓	✓	✓	✓	✓	✓
Country-Pair Time Trend	✓	✓	✓	✓	✓	✓
Country-Pair Controls	✓	✓	✓	✓	✓	✓
Observations	188,291	188,291	188,291	188,291	188,291	188,291

Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States. $\Psi_j = 1$ identifies if the host country is China's substitute *and* operates along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. $\eta_t = 1$ corresponds to the period in which the new U.S. tariffs were in place, i.e. $t = \{2018, ..., 2022\}$. $\tau_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $\tau_k^h = 0$ those with low exposure (below the median). $PTA_{jt}^{US} = 1$ when a country is covered by a preferential trade agreement with the United States in the given year, or zero otherwise. Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A1.6: Tariff Exposure and the Role of US Importance in Chinese Exports

	(1)	(2)
Panel A. The Role of Country Characteristics		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 1\}$	0.124***	
	(0.044)	
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 0\}$	0.096	
	(0.077)	
Panel B. The Additional Role of Trade Agreements		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 1, PTA_{jt}^{US} = 1\}$		0.176***
		(0.055)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 1, PTA_{jt}^{US} = 0\}$		0.104**
		(0.050)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tau_k^h \times m_k^{US} = 1, PTA_{jt}^{US} = 1\}$		-0.086
		(0.075)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 0, PTA_{jt}^{US} = 1\}$		0.145*
		(0.075)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tau_k^h \times m_k^{US} = 0, PTA_{jt}^{US} = 0\}$		0.119
		(0.082)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 0, \tau_k^h \times m_k^{US} = 0, PTA_{jt}^{US} = 1\}$		0.108
		(0.068)
Fixed Effects, Linear Trends, and Controls:		
Country-Pair-Sector	✓	✓
Host-Country-Sector-Year	✓	✓
Home-Country-Sector-Year	✓	✓
Country-Pair Time Trend	✓	✓
Country-Pair Controls	✓	✓
Observations	188,291	188,291

Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States, Ψ_j identifies if the host country is China's substitute *and* operates along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. See Table A1.1 in the Annex for the full list. $\tau_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $\tau_k^h = 0$ those with low exposure (below the median). $m_k^{US} = 1$ identifies sectors with a meaningful 2015 US share in Chinese exports (above 10 per cent, 70% of sectors) and $m_k^{US} = 0$ those with a non-meaningful low US share in Chinese exports (below 10 per cent, 30% of sectors). Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

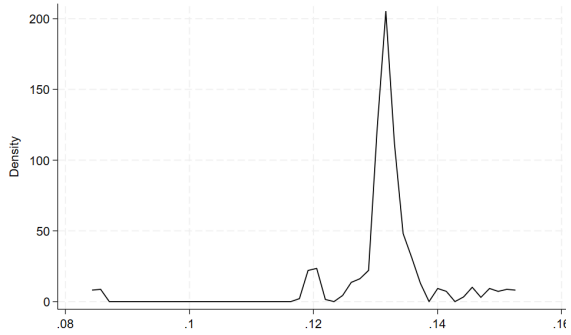
Table A1.7: The Role of Anticipation and Pre-Anticipation Periods

	(1)	(2)
	$T_k^h = \tau_k^h$	$T_k^h = \tilde{\tau}_k^h$
New Trade Policy Period (2018-2022)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 1\}$	0.186***	0.179***
	(0.047)	(0.045)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \eta_t = 1, T_k^h = 0\}$	0.126	0.134
	(0.086)	(0.087)
Anticipation (2016-2017)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 1\}$	0.067*	0.066**
	(0.035)	(0.033)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_t = 1, T_k^h = 0\}$	0.039	0.038
	(0.051)	(0.055)
Pre-Anticipation (2014-2015)		
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_{t-s} = 1, T_k^h = 1\}$	0.017	0.014
	(0.036)	(0.034)
$\mathbb{1}\{\Omega_i = 1, \Psi_j = 1, \tilde{\eta}_{t-s} = 1, T_k^h = 0\}$	0.016	0.024
	(0.038)	(0.043)
Fixed Effects, Linear Trends, and Controls:		
Country-Pair-Sector	✓	✓
Host-Country-Sector-Year	✓	✓
Home-Country-Sector-Year	✓	✓
Country-Pair Time Trend	✓	✓
Country-Pair Controls	✓	✓
Observations	188,291	188,291

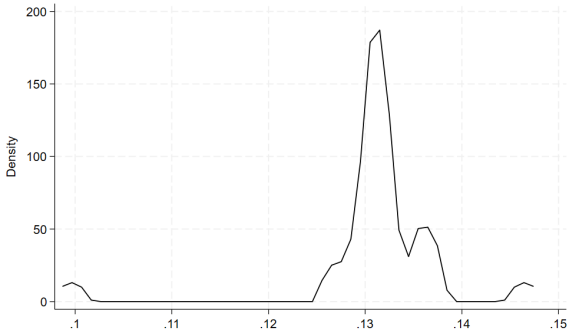
Note: $\Omega_{ijt} = 1$ identifies country pairs where the home country is China and the host country is a third country other than China and the United States, $\Psi_j = 1$ identifies if the host country is China's substitute *and* operates along a downward-sloping supply curve according to the classification by Fajgelbaum et al. (2024). See Table A1.1 in the Annex for the full list. $T_k^h = 1$ identifies sectors with high exposure to increases in tariffs (above the median) and $T_k^h = 0$ those with low exposure (below the median). Column 1 uses the post-2018 change in US tariff (τ_k^h) and Column 2 uses the column 2-MFN tariff margin in 2000 ($\tilde{\tau}_k^h$) to construct T_k^h. Standard errors clustered by country-pair are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure A1.1: Differential Effects of the New U.S. Tariffs on Host Countries with Structural Factors Excluding Each Country and Sector at a Time

(a): Distribution Excluding Host Countries



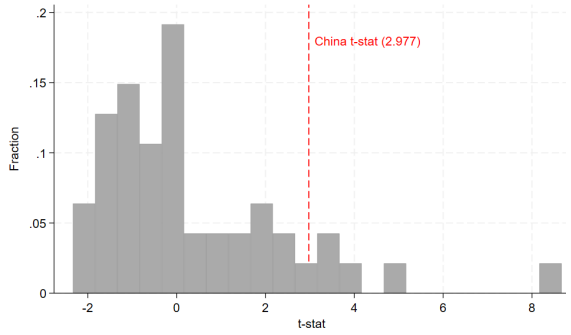
(b): Distribution Excluding Sectors



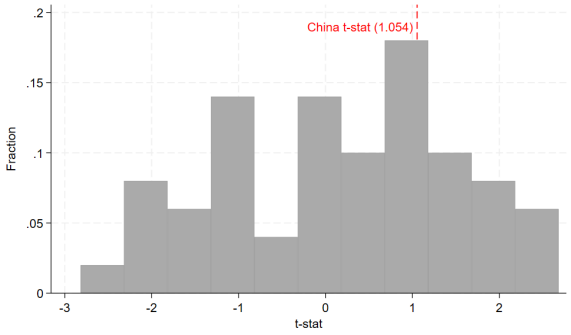
Note: The figure shows the distribution of the estimated coefficient of $\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = 1\}$ in Table 1 Column (3) when: (a) one host country is excluded from the sample at a time, and (b) one sector is excluded from the sample at a time. Please see the note in Table 1 for the estimation details.

Figure A1.2: Distribution of t-Statistics of the Effect of the New U.S. Tariffs on Host Countries with Structural Factors by Home Country

(a): Sectors with High Exposure



(b): Sectors with Low Exposure



Note: The figure shows the distribution of the t-stat of $\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = 1\}$ (left) and $\mathbb{1}\{\Omega_i = 1, s_j = 1, d_j = 1, \eta_t = 1, \tau_k^h = 0\}$ (right) as in Table 1 Column (3) alternatively assuming that each home country is China. Please see the note in Table 1 for the estimation details.