Trade Deflection: The Spillover Effects of U.S. Tariffs on Import Prices in Bystander Countries *

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Abstract

Even as U.S. imports from China have fallen sharply since tariffs starting in 2018, Chinese exports have continued to expand globally. Yet despite the relevance of this redirected trade for firms and consumers, globally, there is little systematic evidence on how import prices have responded in "bystander" countries. We show that Chinese products targeted by U.S. tariffs experience persistent declines in import prices in bystander markets, and that these declines are concentrated in emerging markets, especially in Southeast Asia, markets where China was already an established supplier, and products for which the U.S. was an important pre-tariff destination for Chinese exports. These findings are novel given the lack of price adjustment for Chinese imports documented in the U.S., the country that imposed the tariffs.

Keywords: trade deflection, tariffs, import prices, U.S.-China trade war, emerging markets

JEL classifications: F14, F16, F62

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1 Introduction

Since 2018, the United States has pursued a historic increase in trade barriers, with China being a particular target of new tariffs. A literature has quickly sprung up in which a series of influential papers have examined the effects of these tariffs on import prices, economic activity, and welfare in the U.S. and China. However, while the tariffs have been linked to massive shifts in trade flows, there is much less evidence on the spillover effects of this reallocation for countries *other than* the U.S. and China, particularly regarding effects on import prices. Despite the importance of this channel for firms, consumers, and policymakers, there is, to our knowledge, no global empirical evidence about its relevance.

In this paper, we provide the first comprehensive empirical evidence on the effects of U.S. tariffs on China for import prices in bystander countries. We find that U.S. tariffs have led to a systematic and persistent fall in prices of tariffed Chinese products, relative to non-tariffed products, in other destination countries. This decline is accompanied by widespread redirection of Chinese export volumes toward the same destinations, a combination that points to a shift in Chinese export supply rather than to changes in destination-market demand.

These findings are notable, and they contrast with estimates from the literature focused on effects of tariffs on U.S. import prices, in which foundational papers have documented full pass-through (i.e. no reductions in import prices due to tariffs). In this sense, they uncover a puzzle regarding why Chinese export prices would adjust in third-country markets when they do not for trade with the U.S. In addition, we find that the price response is highly uneven across destinations, and while much of the concern about the potential effects of deflected Chinese goods has arisen from high-income countries ("advanced economies" or "AEs"), the largest and most persistent price declines are observed in lower-income ("emerging market" or "EM") countries and member countries of the Association of Southeast Asian Nations (ASEAN).[1]

The economic importance of the U.S. trade actions and the resulting reallocation of trade flows that we study is readily apparent in aggregate data (Figure 1). At the end of 2017, on the eve of the tariff increases we study, the share of U.S. imports sourced from China was over 22 percent. By December 2024, that share had plunged to 13 percent, with further declines to come as additional tariffs were put in place. The reallocation of Chinese exports across destination countries was similarly dramatic, with the share of China's exports destined for the U.S. falling sharply as the U.S. imposed tariffs. But despite these new barriers, China's total global exports rose by over 50 percent from 2017 to 2024, indicating that goods that might have otherwise been sent to the U.S. have been redirected elsewhere, a process known as "trade deflection" (Bown and Crowley, 2007). These aggregate shifts establish that redirection occurred on a large scale, but are silent on the terms of that redirection, which is the focus of this paper.

How this deflection might show up in prices is not obvious ex ante. If bystander markets absorb additional Chinese goods along a downward-sloping demand curve, prices should fall, and by more where demand is less elastic or where China's established position leaves little room to expand at unchanged terms. But it is possible that redirection may not lead to price declines. For example, the need for Chinese exporters to cover the fixed costs associated with redirecting goods to a new markets could boost prices in those markets. Alternatively, the U.S. may be an unimportant destination for some Chinese export products, meaning that deflection and price effects are minimal. Price effects may also be determined by the nature of the redirection of export volumes, which is also not clear, ex ante. On one hand, deflected exports might flow disproportionately to countries that are similar to the U.S., such as other advanced economies. China was already exporting intensively to some of these markets, suggesting established demand and distribution

[1] Media coverage, particularly in Europe, has raised the possibility of a surge in low-priced imports from China following U.S. tariffs, with concerns about effects on domestic producers. Examples include, "With Trump's tariffs, Europe fears a flood of cheap goods from China," (Swanson and Smialek, 2025), "China reroutes clothes exports to Europe after U.S. tariffs upset trade" (Hancock, 2025) and "Pressure grows on Europe to act on Chinese import surge" (Martinez, Reid and Blenkinsop, 2025).

networks. On the other hand, the demand structure of emerging markets may align more closely with China's export basket, particularly if Chinese producers respond to U.S. tariffs by shifting toward goods with greater appeal in price-sensitive markets (Schott, 2008).

To conduct our baseline analysis of how the redirection of Chinese exports has affected import prices in bystander countries, we use six-digit HS import data for all available countries in the United Nations' Comtrade database covering the years 2017-2021. Measuring prices in these data is not straightforward, and this difficulty is likely a large part of why the evidence we provide has previously been unavailable. The presence of changing units of quantity (e.g. from kilograms to units) meant that average unit values were subject to spurious large swings from year to year. Our paper includes a contribution in economic measurement via an algorithm that yields consistent units of quantity over time in Comtrade international trade data. This algorithm will be useful in a wide range of international trade applications requiring cross-country product-level data. With these consistent quantity data in hand, we calculate each product's exposure to the 2018-19 U.S. tariffs on China and employ a difference-in-differences approach to estimate the spillover effects of the tariffs on bystander countries' import prices, as well as quantities and values.[2]

Our central result concerns import prices. We provide the first evidence of how trade deflection of Chinese exports affects import prices in a wide range of bystander countries.[3] We find that, globally, U.S. tariffs are associated with statistically significant declines in bystander countries' prices, as measured by unit values, for imports from China. By 2021, prices for tariffed Chinese products have declined 4.4 percent relative to non-tariffed products, an economically significant amount with relevance to consumers, domestic producers, and policymakers in bystander countries. These effects are not uniform across country groups, and they depart from conventional expectations. In particular, despite extensive media coverage, the relationship between tariffs and import prices is weaker and relatively short-lived for advanced economies in general, and the EU in particular. The most prominent effects, rather, are for emerging markets, where the negative association with prices is precisely estimated and increasing in magnitude over time, especially for the Asian countries that make up ASEAN. Given our empirical strategy, the decline in import prices we find is not due solely to low-priced Chinese imports capturing a greater share of the market, but rather to a further decline in Chinese import prices relative to pre-tariff levels.

Next, we examine characteristics of importing countries and Chinese exports that mitigate or exacerbate the average responses just described. This analysis helps identify destinations and products that face the largest shifts in import competition due to trade deflection and speaks to explanations for why import prices decline with the trade deflection we document. We find that products for which the U.S. was an important export destination for China and markets where China was already an established supplier see larger declines in import prices due to U.S. tariffs. These results suggest the presence of economies of scale in China—leading to an incentive to maintain production as U.S. exports shrink—as well as the relevance of destination-specific fixed costs of exporting.

We note that as with other papers examining tariff pass-through (Amiti, Redding and Weinstein, 2019; Fajgelbaum et al., 2019), our proxy for import prices is an average unit value, i.e. value divided by quantity for a particular exporter-importer-HS6-year trade flow. Thus, while we refer to these average unit values as "import prices" or "unit prices," it is important to note that they can be affected by changes in the composition of individual varieties within a given HS6, unlike the transaction-level price measures considered in papers such as Ganapati and Hottman (2026) or Flaaen et al. (2025). While concerns about composition and measurement issues will always be present in all but the most specialized datasets, we perform an additional exercise to explore their potential economic significance: We redo our analysis using data for the

[2] We explore alternative empirical strategies including event study and local projections in robustness checks.

[3] As discussed further below, Emlinger et al. (2026) consider effects on EU import prices in the 15 months after tariffs are imposed and find no effect.

European Union, which are available at a finer level of product disaggregation (CN8). Results are highly similar to our baseline, suggesting that our importer-exporter-HS6-year-level analysis provides meaningful estimates of the relationship between tariffs and import prices. We also note that the results in this paper necessarily relate to the implications of the 2018-19 tariffs, and the deflection effects of more recent tariffs could be different, especially because they cover a broad set of countries, leaving few true "bystander" countries.

Our baseline estimates are based on a sample covering the years 2017-2021 due to changes in HS6 product codes by the World Customs Organization prior and subsequent to the sample. However, given our use of a difference-in-differences strategy, we would also like to evaluate the validity of the parallel trends assumption inherent in that approach, which requires additional pre-tariff years of data. To complete this evaluation, we focus on the set of product codes that remain unchanged across the 2012 and 2017 HS vintages, which account for 88 percent of the products in the baseline analysis, and include data for the years 2015 and 2016. Results using this extended sample show no statistically significant relationship between tariffs and import prices in pre-tariff years for the global sample, indicating that the parallel trends assumption holds in this setting.

The tariff-associated price declines we document are also accompanied by a reallocation of Chinese export volumes toward the same destination countries. We find that the U.S. tariffs are associated with statistically significant increases in the quantities of bystander countries' imports from China. These effects are widespread across countries, and the magnitudes are economically significant, with quantities of tariffed products imported from China rising by 8 percent in 2019, on average, relative to non-tariffed products.[4]. By contrast, we find that responses for import values are smaller and more imprecisely estimated, highlighting the importance of using a harmonized dataset that allows examination of quantities and prices. In terms of the existing literature, while several papers have examined the reallocation of U.S. imports across source countries (Nicita, 2019; Bown, 2022; Freund et al., 2024; Alfaro and Chor, 2023; Handley, Kamal and Monarch, 2024), and others have examined the ability of bystander countries to increase their own exports (Fajgelbaum et al., 2024), the information we provide on the reallocation of Chinese exports to other destinations had been previously lacking.

Our baseline results are robust to a range of robustness checks, including weighting by import values in the destination country and using a continuous measure of tariff exposure based on the share of import value covered. In addition, while we use a difference-in-differences approach as in Flaaen and Pierce (2024) to present our main results, we show that we obtain similar estimates using two alternative strategies: an event study *à la* Fajgelbaum et al. (2019) and local projections as in Jordà (2005). These approaches address the staggered timing of tariffs across products and dynamic responses to tariffs, respectively.

This paper contributes to the rapidly growing literature on the economic effects of massive recent tariffs. Substantial attention has been devoted to the effect of tariffs on U.S. import prices (Amiti, Redding and Weinstein, 2019; Fajgelbaum et al., 2019; Flaaen, Hortaçsu and Tintelnot, 2020; Cavallo et al., 2021; Cavallo, Llamas and Vazquez, 2025; Minton and Somale, 2025), U.S. employment and manufacturing activity (Flaaen and Pierce, 2024), U.S. export growth (Handley, Kamal and Monarch, 2025), U.S. sourcing patterns (Bown, 2022; Alfaro and Chor, 2023; Javorcik, Pierce and Wisniewski, 2025), and U.S. welfare when tariffs are interacted with industrial policy (Ju et al., 2024). Chor and Li (2024) examine the effects of U.S. tariffs on economic activity in China.

However, despite the massive shifts in global trade since 2018, less attention has been devoted to the spillover effects of tariffs to countries beyond the U.S. and China, and almost none to prices in those countries. Papers that do consider such spillovers tend to focus on the potential for bystander countries to replace

[4]We note that, unlike our main results relating to import prices, we do find evidence of pre-existing trends in import volumes, as described in Appendix Section C.3.2

China as a source of U.S. imports (Freund et al., 2024; Alfaro and Chor, 2023), or to increase exports globally (Fajgelbaum et al., 2024), rather than focusing on imports and import prices in those bystander countries. Another example is Utar, Zurita and Torres (2025), who document an increase in net exports by Mexican firms associated with U.S.-China tariffs, particularly for foreign-owned multinationals that produce high-tech goods using imported inputs.[5] Alfaro et al. (2025) and Correa et al. (2025) highlight the relevance of financing in aiding the expansion of third-country exporters as they attempt to expand shipments to the U.S.[6] Our contribution is to provide what is, to our knowledge, the first comprehensive empirical estimates of the effects of the 2018-19 U.S. import tariffs on Chinese exports to alternative destinations, especially their effects on import prices, and an examination of country and product characteristics that influence the extent of trade deflection.

Recent research using dynamic general equilibrium trade models provides frameworks that support our analysis. In the model presented in Hoang and Mix (2026), China faces two tariff-related shocks to its exports: a negative demand shock from U.S. tariffs that lowers prices and wages in China, and a supply shock from Chinese retaliatory tariffs on U.S. imports, which raises costs for Chinese exporters. In their model and empirical results, the demand shock dominates, so that China experiences a terms of trade deterioration and the world's imports from China increase. Here, we provide the first empirical evidence that this shift in trade is associated with a relative decline in global import prices. Reyes-Heroles, Traiberman and Van Leemput (2020) provide a dynamic general equilibrium trade model that captures features of trade between Emerging Markets and Advanced Economies. They conduct simulations of several scenarios involving higher trade costs, including the U.S.-China trade tensions of 2018-19, and find that EMs experience gains in GDP and welfare, partially due to lower prices on imported capital goods. Each of these papers provides a theoretical justification for the types of channels we investigate empirically in this paper.

Our paper also builds on the important work of Bown and Crowley (2007), who provided the first detailed study of the type of trade deflection we examine here, focusing on the effects of antidumping duties. In particular, Bown and Crowley (2007) were the first to explicitly consider the differing reactions of exports to discriminatory tariffs (applied by an importer against one of its import source countries), versus nondiscriminatory tariffs (applied against all source countries).[7] They propose a three-country Cournot model, in which goods are strategic substitutes and marginal costs are increasing in production, and obtain theoretical predictions of adjustments in trade flows under the two types of tariffs. Most relevantly for our setting, they find that the average antidumping duty imposed by the U.S. against Japan led to a 5-7 percent increase in deflected Japanese exports of the affected product to third countries. Building on this work, Grant and Anders (2010) find trade deflection effects arising from U.S. non-tariff barriers on seafood imports, and Crowley, Meng and Song (2018) show that trade policy uncertainty arising from antidumping investigations can lead to similar trade deflection effects. Here, we consider the potential effects of trade deflection—including effects on import prices, which this literature does not examine—following the start of a historically large increase in tariffs on a broad range of products, imposed by the world's largest importer against the world's largest exporter.

Highlighting the relevance of this topic to policymakers, a series of policy pieces—typically focused on the EU as a potential destination for Chinese exports—have examined the possibility of a surge of imports from China, and some aspects of the trade deflection we consider. Al-Haschimi et al. (2025) examine causes for strong global Chinese export growth and find a role for state investments in the manufacturing sector that have lowered export prices, along with weak domestic demand. Boeckelmann et al. (2025) derive estimates

[5] The reliance on Chinese inputs among bystander countries increasing exports to the U.S. has also been noted by others including Alfaro and Chor (2023) and Hoang and Lewis (2024).

[6] Xu (2022) highlights the relevance of trade financing in trade flows in a historical context.

[7] As they note, their work also draws on insights regarding trade diversion effects going back to Viner (1950), with subsequent theoretical work on the topic by Bond and Syropoulos (1996), Bagwell and Staiger (1997), and McLaren (2002).

of potential increases in euro area imports of Chinese goods, estimate effects on import prices with a VAR, and translate that impact to a potential decrease in headline inflation of 15 basis points in 2026. Gunnella, Stamato and Kobayashi (2025) consider the effects of U.S. tariffs imposed in the first Trump administration on the redirection of trade volumes (but not prices), and argue that some redirection of Chinese exports to the EU occurred.[8] Relatedly, Emlinger et al. (2026) perform a detailed empirical analysis of the implications of U.S. tariffs for the EU, using a staggered difference-in-differences analysis to estimate the reallocation of trade flows in the 15 months after tariffs are imposed.[9] Here, we provide analysis that looks beyond the euro area, use a different empirical approach covering a longer period after tariffs, and provide evidence for a key outcome—import prices—that is not considered at all in most of these pieces and is never considered for destinations other than the EU, which we find to be most affected.

Lastly, a related literature examines the role of geopolitical factors in realigning trade flows between, and across, blocs of countries. Gopinath et al. (2025) find that more geopolitically distant countries—as measured by UN General Assembly voting—have seen decreases in trade, FDI, and portfolio flows following the Russian invasion of Ukraine in 2022. These forces could offer an explanation for why Chinese export prices adjust in third-country markets, but not in the U.S. While papers including Fernández-Villaverde, Mineyama and Song (2024) and Javorcik et al. (2024) show that this "fragmentation" can harm the global economy, Bonadio et al. (2025) argue that this need not be the case. In the latter's quantitative model, as countries move toward a U.S.- or China-centric bloc, the median country experiences real income gains. Here, we provide novel evidence on the impact of one of the driving forces behind shifting U.S. and Chinese trade —tariffs— and document effects on import prices, which can feed through to changes in real incomes.

The remainder of the paper is structured as follows. Section 2 describes the data used and our definition of exposure to tariffs. Section 3 outlines the empirical strategy, while Section 4 presents the results. Section 5 discusses robustness checks, and Section 6 concludes.

2 Data

2.1 Data Source Description

Our study relies on two main data sources. First, we gather information on U.S. tariffs on Chinese imports from the U.S. International Trade Commission (USITC). The dataset provides information on tariffs and U.S. import values at the eight-digit and ten-digit level of the Harmonized Tariff Schedule (HS), at a monthly frequency for the years 2017–2021. We complement tariff information from the USITC with exemptions granted on a small set of ten-digit HS codes.

The second source provides import data for the bystander countries (i.e., not the U.S. or China) that are the focus of our analysis. Our baseline analysis employs data from UN Comtrade (2025) on import values[10] and quantities at the HS six-digit product level between 2017 and 2021.[11] We construct a dataset of import values, quantities, and unit prices for 69 economies.

Figure 1, constructed from IMF Direction of Trade data, displays the drastic decline in U.S. imports from China alongside a steady increase in Chinese exports to other destinations.

As discussed above, throughout the paper, we construct unit prices as import values divided by quantities at the HS six-digit product level. Because these unit values are averages over the varieties shipped within

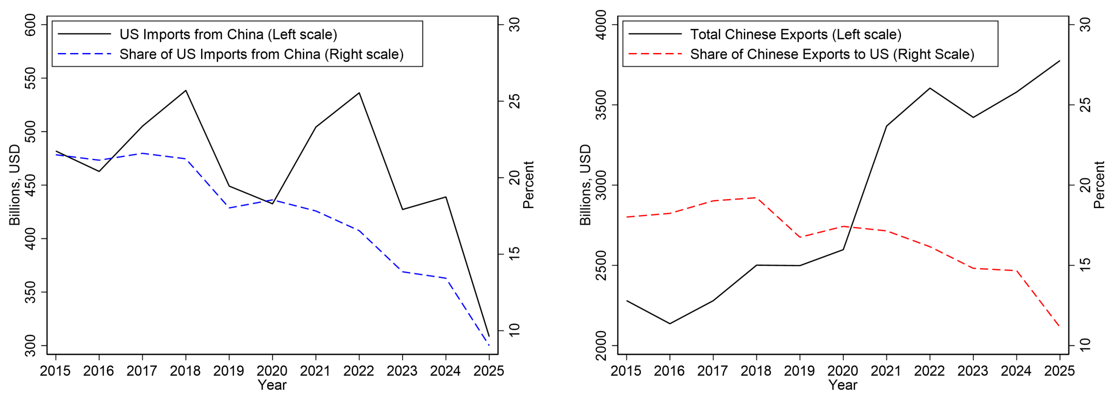
[8] Ropele (2026) reports on results of a survey of Italian firms' expectations of the effects of Chinese rerouting and indicates that the most exposed firms (primarily manufacturers) expect downward pressure on both input and output prices.

[9] Emlinger et al. (2026) examine some responses of trade values to tariffs in other countries, but they do not consider effects on quantities or prices for those countries. In addition, our analysis uses import data from 69 economies, which allows us to control for source-economy-specific factors, which is not possible using only Chinese export data as in Emlinger et al. (2026).

[10] We use CIF (Cost, Insurance, and Freight) values when available and FOB (Free On Board) values otherwise.

[11] We provide the list of available destination countries in Appendix A.

Figure 1: U.S. and China Trade Flows



Sources: IMF Direction of Trade via Haver Analytics; authors' calculations.
Notes: Left panel displays total U.S. import values from China on the left scale and the share of U.S. imports from China on the right scale. Right panel displays total value of China exports to the world on the left scale and the share of Chinese exports to the U.S. on the right scale.

a product category, we note that they reflect both the prices of individual varieties and the composition of varieties within the category. We use the terms unit value and price interchangeably in what follows, and we conduct an exercise to evaluate measurement issues related to use of unit values in Section 5.4. Inclusion in our sample of importing countries is based on availability of import data covering the entire sample period from 2017–2021 and reporting of data in time-consistent six-digit HS codes. We also use 2017 Chinese export values from UN Comtrade for our analysis measuring the pre-trade-war market structure.

Additional import data for the European Union for the years 2017–2021 come from Eurostat (2025), which provides information on trade flow values and quantities imported from each trading partner at a more granular product level, the eight-digit Combined Nomenclature (CN).[12] The first six digits of the eight-digit CN classification is identical to the six-digit HS classification, thus allowing us to link U.S. tariff rates to European import values and quantities.

2.2 Quantities Harmonization

In order to study the effects of tariffs on bystander countries, we construct a novel dataset encompassing import values, quantities, and unit prices for over 5,000 six-digit Harmonized System products for 69 economies between 2017–2021. A key challenge in constructing consistent trade quantity measures from the data is the heterogeneity and inconsistency of quantity units reported across countries, products, and time. UN Comtrade provides two quantity measures: a primary quantity and an alternative quantity, each with associated unit codes. However, these unit codes may change within the same origin-destination-product group across years or contain missing observations. Such inconsistency inhibits studying changes in quantities and unit prices across many countries over time.

To enable study of these trends, we construct a time-consistent quantity variable by applying an algorithm we develop to the primary and alternative quantity variables provided by UN Comtrade. This algorithm and quantity measure are critical for our study, as they permit examination of unit values across countries, products, and time. The previous unavailability of this information has also limited the ability of researchers to perform a variety of cross-product-country analyses using Comtrade data. In our replication directory, we will provide the code necessary for other researchers to apply the algorithm to Comtrade data, thus yielding what we expect to be a highly useful contribution in terms of economic measurement for future empirical

[12]The eight-digit CN product category is used for intra-EU and extra-EU trade; however, our analysis focuses on extra-EU imports.

trade research.

For a given origin-destination-product group, our algorithm constructs the time-consistent quantity variable to preserve as many observations with the same unit of quantity as possible. The algorithm sorts the origin-destination-product groups into cases hierarchically, to determine time-consistent quantity units as follows. The algorithm first identifies groups for which the primary or alternative unit code is identical for an origin-destination-product triplet over the entire sample period (cases 0–3); then finds groups where both variables can be combined to construct a fully consistent quantity code (cases 4–5); and finally tags groups where it is only possible to construct a consistent unit of quantity code for a subset of years (cases 6–9). The sorting algorithm is as follows:

- Case 0: Primary unit code and alternative unit code are fully consistent and match each other.
- Case 1: Primary unit code is fully consistent.
- Case 2: Primary unit code is always missing while alternative unit code is fully consistent.
- Case 3: Primary unit code changes over the years while alternative unit code is fully consistent.
- Case 4: Primary unit code changes, but the alternative unit code is equal to the non-missing modal primary unit code for observations when the primary unit code is not the modal code.
- Case 5: Alternative unit code changes, but the primary unit code is equal to the non-missing modal alternative unit code when alternative unit code is not the modal code.
- Case 6: Primary unit code alternates between a non-missing and missing code, and the alternative unit code matches the non-missing primary unit code in some years when the primary unit code is missing.
- Case 7: Primary and alternative unit codes both alternate between missing and non-missing unit codes.
- Case 8: Primary unit code alternates between a missing and non-missing code, while alternative unit code alternates between two non-missing codes or 3+ codes.
- Case 9: Alternative unit code alternates between a missing and non-missing unit code, while primary unit code alternates between 2 non-missing or 3+ codes.
- Groups that cannot be cleanly categorized by any of the above rules are flagged, and their quantities are treated as missing while preserving the associated trade values.

For origin-destination-product groups that fall into cases 0–3, we take the full consistent quantity variable that UN Comtrade provides (either primary or alternative). In cases 4–5, we combine the primary and alternative quantities to construct a new quantity that is consistent across our analysis period. In cases 6–9, we combine the two variables to produce consistent quantity unit codes for as many years in the analysis period as possible. Table 1 provides the share of the origin-destination-products that fall into each group.

Table 1: Share of Origin-Destination-Product by Case

Case 0	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Missing
60.7	28.3	3.3	.7	.08	.005	.03	1.5	1.4	2.2	1.7

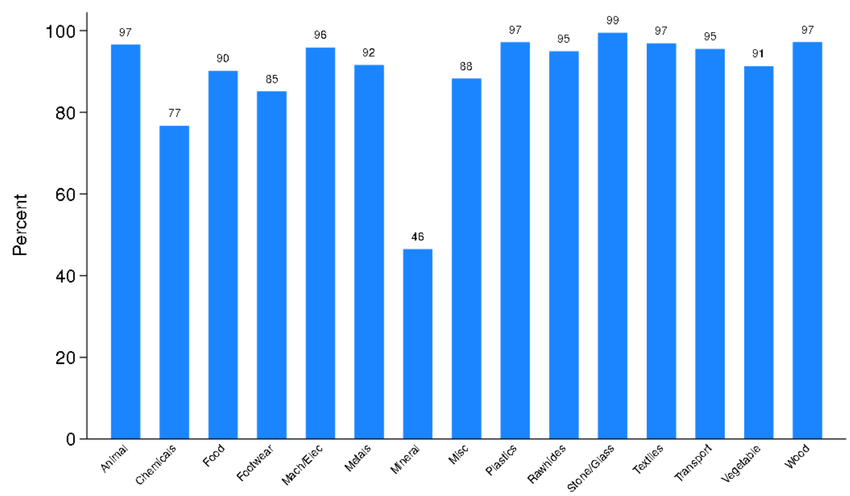
Sources: UN Comtrade; authors' calculations.
Notes: 92% of the origin-destination-product combinations have consistent primary or alternative quantity units over the entire sample period.

2.3 Product-Level Tariff Exposure

The 2018–19 U.S. tariffs on Chinese imports were applied to eight and ten-digit HS codes. HS codes are harmonized globally only up to six digits. Thus, in order to study the effects of the U.S.-China trade war on third-party countries, we construct a measure of tariff exposure defined at the six-digit HS code. We define our baseline tariff exposure measure to be a dummy variable for tariff status at the six-digit level, which is equal to one if at least one eight- or ten-digit HS code within the broader six-digit product category is tariffed. We use a binary variable as the baseline exposure indicator in our analysis, as in Fajgelbaum et al. (2019), but in Section 5.2 we show that our results are robust to using a continuous value of tariff exposure based on the share of US imports within an HS6 being tariffed.

We provide a visual representation of the distribution of tariffed products by aggregate sectors known as HS Sections in Figure 2.[13] As shown in the Figure, by 2021, tariffs affect most of the products that the U.S. imports from China, but with substantial variation across HS Sections. Only "Minerals" (which includes oil and petroleum products) is affected by tariffs for less than 50 percent of products, while "Stone/Glass" faces tariffs on almost all products within the HS Section.

Figure 2: Share of Products Subject to U.S. Tariffs on Imports from China



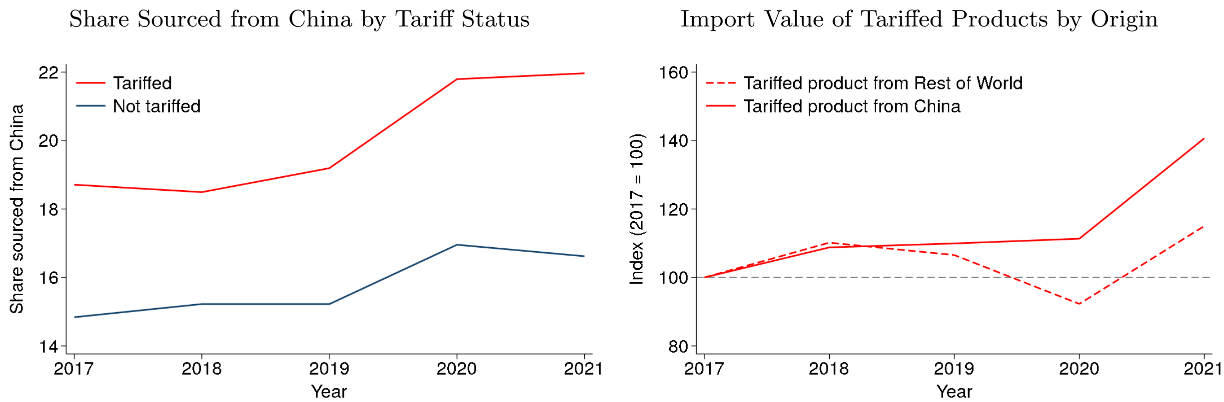
Sources: U.S. International Trade Commission (USITC); U.S. Census; authors' calculations.
Notes: Figure displays the share of products that are tariffed as of 2021 on U.S. imports from China by two-digit product grouping, according to our baseline tariff exposure measure. Shares in percent are reported above each bar.

The left panel of Figure 3 reports the share of world imports from China (excluding the U.S.) of tariffed and non-tariffed six-digit products. There is a slight step up in the China share for tariffed products beginning in 2019—the year following the U.S. tariffs implementation—relative to imports of non-tariffed products, which is amplified in 2020 and persists in the following year. A natural concern is that tariffed products may exhibit distinct trends unrelated to trade diversion, such as common demand shocks affecting these product categories regardless of origin. The right panel of Figure 3 explores this alternative explanation by displaying imports of tariffed products by country of origin. The data reveal a widening gap between tariffed Chinese products (solid red line) and tariffed products from other countries (dashed red line) after 2018, pointing to potential China-specific trade diversion rather than category-specific import trends.[14]

[13]HS Sections are defined in the U.S. Harmonized Tariff Schedule (https://hts.usitc.gov/). As an example, HS Section VI "Products of the Chemical or Allied Industries" includes HTS Chapters 28-38, with products such as organic and inorganic chemicals, pharmaceuticals, fertilizers, and explosives.

[14]As shown in Figure 14, imports sourced from China of non-tariffed products also increase relative to imports from rest of

Figure 3: Value Share of Third-Country Market Imports by Tariff Status and Source



Sources: UN Comtrade; authors' calculations.
Notes: The left panel displays the value share of world (excluding U.S.) imports sourced from China for each year separately for products that are affected by tariffs and products that are not affected by tariffs. The right panel displays the average import value of tariffed products by origin. Values are weighted by the 2017 import value for each origin-destination-product group.

Table 2 provides summary statistics on the key dependent and independent variables in our sample.

Table 2: Basic Summary Statistics for the Third-Country Market Sample: 2017-2021

	count	mean	sd	min	max
Basic tariff status	19,768,403	0.05	0.22	0	1
Basic tariff status (China only)	1,087,972	0.89	0.32	0	1
Value (ln)	19,768,350	9.34	3.35	-7	25
Quantity (ln)	18,869,811	6.29	4.07	-7	31
Unit price (ln)	18,869,769	3.05	2.40	-18	23

Sources: UN Comtrade; authors' calculations.
Notes: Table shows summary statistics for the tariff variable and the three main outcome variables for the world sample. Tariff status is 1 if the observation is from China and in a six-digit HS code that receives a tariff during the trade war, and 0 otherwise. The data is at the origin-destination-product-year level, with destination economy being each of the 69 economies in our data and product being defined at a six-digit HS code. The sample excludes both U.S. and Chinese imports. There are 53 observations with missing value (ln) and 898,592 observations with missing quantity (ln), resulting in 898,634 observations for which we cannot recover unit price.

3 Empirical Strategy

Our empirical strategy exploits a simple yet powerful source of variation: The U.S.–China trade war created differential tariff treatment across products, while leaving Chinese exports to other destinations unaffected by U.S. policy. This allows us to compare the export performance of tariffed versus non-tariffed Chinese products in third-country markets, holding constant a rich set of confounding factors.

The logic is straightforward. If U.S. tariffs on Chinese goods lead Chinese exporters to divert shipments toward alternative markets, we should observe differential growth in Chinese exports of tariffed products relative to non-tariffed products in destinations outside the United States. Moreover, if this trade diversion puts downward pressure on prices in third markets, we should see larger declines in unit values for products facing higher U.S. tariffs.

the world. Our origin-year FE capture policies and shocks that affect all products coming from China.

We build our baseline approach on the recent literature analyzing pass-through of the 2018-19 tariffs to U.S. import prices (Amiti, Redding and Weinstein, 2019; Fajgelbaum et al., 2019). However, whereas those papers focus on the direct effects of tariffs in the U.S. market, we examine the spillovers to countries not involved in the trade dispute. We adopt a difference-in-differences design as our primary specification and verify robustness using an event study approach that accommodates the staggered timing of tariff implementation and a local projections approach that accounts for longer-run changes and dynamic responses in Section 5.

We begin with a generalized difference-in-differences design that interacts an indicator for exposure to tariffs with the full set of year dummies. Our baseline specification is:

$$\ln y_{odgt} = \alpha_{og} + \alpha_{gt} + \alpha_{ot} + \alpha_{dg} + \alpha_{dt} + \alpha_{od} + \sum_{j=2018}^{2021} \beta_j \text{ tariffed}_{og} \times \mathbf{I}(t = j) + \varepsilon_{odgt} \tag{1}$$

where y_{odgt} measures the value, quantity, or unit value of six-digit HS product g exported from origin o to destination d in year t, all in logs. The treatment indicator tariffed$_{og}$ equals one when product g from China ($o =$ China) is subject to U.S. tariffs as of 2021, and zero otherwise.[15] Because tariff waves arrived at different dates during the 2018–19 period, this fixed 2021 definition averages over products tariffed at different times; the event-study specification in Section 5 accounts explicitly for the staggered timing. By construction, tariffed$_{og}$ takes a value of zero for all trading partners other than China. We interact this treatment indicator with year dummies $\mathbf{I}(t = j)$ to trace out the dynamic response, with 2017 serving as the baseline year.

The specification includes a comprehensive battery of fixed effects: origin–product (α_{og}), product–time (α_{gt}), origin–time (α_{ot}), destination–product (α_{dg}), destination–time (α_{dt}), and origin–destination (α_{od}). These six sets of fixed effects absorb stable bilateral trading relationships as well as any shocks specific to products, origins, destinations, or years. Given this rich structure, β_j captures how Chinese exports of tariffed products evolve differently than non-tariffed products within the same origin–destination pair and year. In other words, we compare trade of tariffed versus non-tariffed goods from China to, say, Canada in 2019, while controlling for factors common to all products exported from China to Canada in that year, factors common to all products imported by Canada in that year, and factors common to all products exported by China in that year. This within-pair-year comparison accounts for alternative explanations such as aggregate trade diversion toward particular destinations, shocks to particular product categories, or policies or shocks in particular origin countries, including China. We two-way cluster standard errors at the origin and product level to account for correlation in the error term across destinations and years for a given origin and product, which aligns with the level at which treatment is assigned.

4 Results

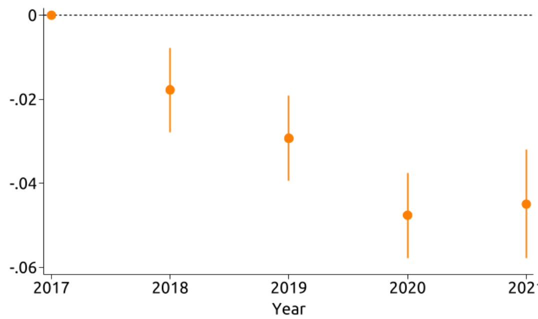
This section provides the main results of our analysis. In most cases, we display results visually, with the estimated β_j coefficients of Equation 1, which capture the effects of tariffs on the noted dependent variables, along with the associated 95% confidence intervals. Figure 4 shows the relationship between tariffs imposed by the U.S. and unit prices on imports from China observed in other countries.[16]

As is clear in the figure, products subject to U.S. tariffs and imported from China see systematic relative declines in unit prices in third-country markets. The price drop appears immediately in 2018, the year the first tariffs take effect, and persists through 2021. By the end of the sample period, prices for tariffed

[15] Over time, some products received exemptions from tariffs, and those with exemptions in effect as of 2021 have a tariffed$_{og}$ value of zero.

[16] The regression table with full estimates for this specification is shown in Table 4 in Appendix C.

Figure 4: Import Price Response of Tariffed Chinese Goods in Third-Country Markets



Sources: UN Comtrade; authors' calculations.
Notes: The figure displays coefficient estimates of a difference-in-differences regression of logged unit price on interactions of a treated indicator and year dummies, in the world sample, which excludes the U.S. and China as importers. The regression includes origin–product, product–time, origin–time, destination–product, destination–time, origin–destination fixed effects. Estimates are unweighted and standard errors are clustered by origin country and six-digit HS product level. Error bars show 95% confidence intervals.

products have declined roughly 4.4 percent relative to non-tariffed products in the same markets.[17] This price reduction is both economically meaningful and statistically significant, consistent with Chinese exporters reducing prices as they redirect shipments away from the United States.

It is worth considering the interpretation of these results in the context of the rich set of fixed effects included in the estimating equation. Importantly, the negative and significant coefficients are not driven by potentially low-priced Chinese imports increasing their market share in destination markets while holding prices constant. Such an effect would be captured by the origin-product fixed effects. Rather, our results indicate that Chinese export prices for a given tariffed product in a given destination decline relative to pre-tariff levels. We explore some of the factors that drive the tariff-driven changes in prices for bystander countries, focusing on heterogeneity across markets and products, in Section 4.2.

This result is novel when compared with canonical estimates that find complete pass-through of tariffs—i.e. no change in unit prices—to Chinese import prices in the U.S., the country that imposed the tariffs (Amiti, Redding and Weinstein, 2019; Fajgelbaum et al., 2019).[18] One possibility for why Chinese exporters may lower prices in bystander countries, but not the U.S., can be found in the results of of Gopinath et al. (2025), who document reductions in trade and investment between geopolitically distant countries, such as the U.S. and China. Geopolitical tensions, attempts to diversify sources of demand, or uncertainty about future U.S. tariffs may lead Chinese exporters to seek to expand exports to other countries, even at lower prices.

4.1 Effects by Country Group

These pooled results aggregate across countries with widely differing economic structures, geographic positions and trade relationships. An important question is whether the price effects of deflected Chinese exports are larger for countries whose composition of import demand is similar to the U.S.—i.e. other advanced economies—or for emerging markets whose demand may align more closely with products in which China has a comparative advantage (Schott, 2008).

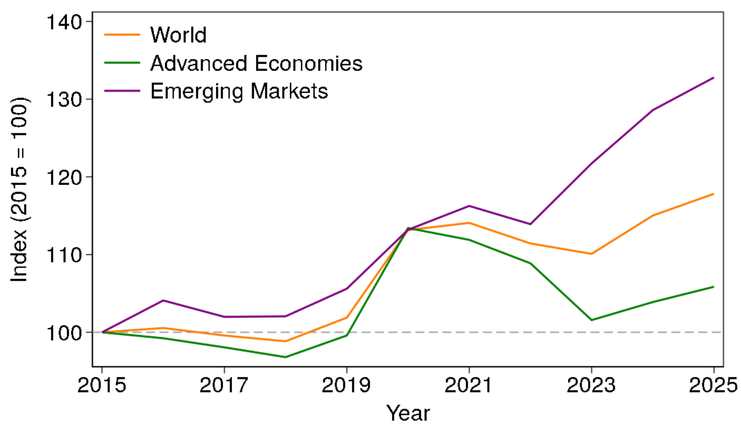
Aggregate data shows that a shift in Chinese export destinations, while massive, masks important heterogeneity across country groups. Figure 5 displays indexed import shares from China over the period 2015–2025

[17] $\widehat{\beta}_{2021} = -0.045$, which implies an effect of $(\exp(-0.045) - 1) * 100 = 4.4\%$.

[18] In Section C.4, we estimate the relationship between tariffs and U.S. import prices, as in those papers, and replicate their finding of zero pass-through in 2018 and 2019 using our empirical strategy. This exercise increases confidence that our findings of price reductions in bystander countries are not due to differences in data aggregation or empirical strategy.

for countries at different income levels. Emerging markets stand out: Their import share from China has grown by more than 30 percent over the last decade, substantially outpacing the more modest increase observed in advanced economies. While this descriptive evidence extends beyond our estimation window, this divergence raises the question of whether different country groups experience different degrees of exposure to redirected Chinese exports when trade barriers rise. We therefore next document how responses vary across groups of countries organized by income or geography.

Figure 5: Import Share from China Over Time, by Region



Sources: IMF Direction of Trade via Haver Analytics; authors' calculations.
Notes: Regions are defined by IMF classifications and the data availability for our main analysis.

4.1.1 Estimates by Country Income Groups

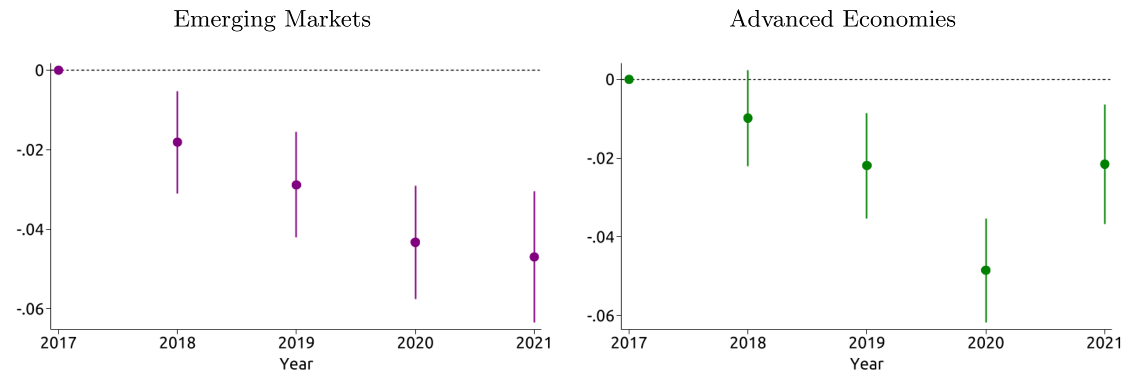
As mentioned above, it's unclear, *ex-ante*, whether the effects of U.S. tariffs on import prices would be larger for EMs or AEs. On the one hand, EMs are natural candidates for absorbing diverted Chinese exports. Many EMs had already become major destinations for Chinese exports in the early 2010s (Brandt and Lim, 2024), establishing trade relationships and distribution networks that could facilitate rapid expansion when U.S. tariffs made that market less profitable. Moreover, EMs may have more elastic demand for Chinese products if consumers are more price-sensitive than in advanced economies.

The left panel of Figure 6 presents import price results for the 56 EMs in our sample.[19] The figure indicates that EMs see relative declines in prices on imports from China associated with U.S. tariffs, and that the magnitude of this effect continues to cumulate through the end of our sample. While results for AEs also indicate a negative relationship between U.S. tariffs and Chinese import prices, the effect begins to attenuate in 2021. As a result, the magnitude of the estimated relationship with import prices at the end of our sample is more than twice as large for EMs (a relative 4.8 percent decline) than for AEs (2.2 percent).

These magnitudes confirm that EMs play a substantial role in absorbing Chinese goods that face higher costs of accessing the U.S. market. Furthermore, the price declines are consistent with theoretical predictions by Reyes-Heroles, Traiberman and Van Leemput (2020), who show that third countries—EMs in particular—can experience welfare gains from trade diversion through lower import prices.

[19] Full regression results for this specification are shown in Table 5 in Appendix C, with results for advanced economies shown in Table 6.

Figure 6: Import Price Response by Income Group



Sources: UN Comtrade; authors' calculations.
Notes: Each panel displays the estimates of separate difference-in-differences regressions of log unit price on interactions of a treated indicator and year dummies for either emerging markets or advanced economies. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Estimates are unweighted and standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

4.1.2 Estimates by Region

In this subsection, we examine heterogeneity by region in the import price effects of U.S. tariffs on bystander countries.

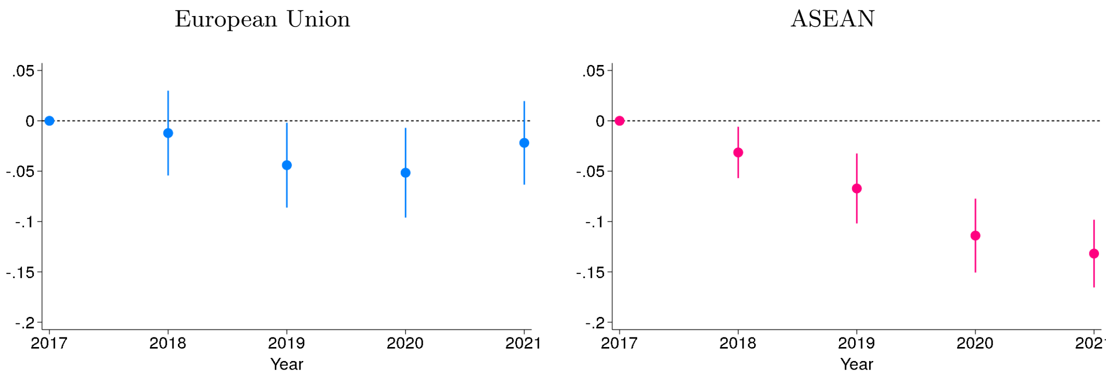
European Union Countries The potential for trade diversion to Europe has attracted considerable media and policy attention. News coverage has raised concerns about surges in Chinese imports and declining prices that could harm European producers.[20] In addition, the European Central Bank devoted an alternative scenario in its September 2025 Macroeconomic Projections to analyzing the potential effects of lower Chinese export prices (Bank, 2025).

While recent concerns focus on the second Trump administration's tariffs, we can narrow our focus on the 2018–2019 episode, which also featured massive U.S. tariffs that were, in that case, overwhelmingly targeted against China. Figure 7 reveals a nuanced pattern: Unit prices decline, but the estimates are statistically significant only in 2019 and 2020. By 2021, there is no statistically significant relationship between U.S. tariffs and Chinese import prices for the European Union.[21] Thus, while there is evidence that the 2018-19 U.S. tariffs led to lower-priced Chinese imports entering the EU, our examination suggests that effects were short-lived.[22]

ASEAN Countries By contrast, results in the right panel of Figure 7 show that ASEAN countries experience relative price declines that are much larger and more persistent than those observed for the EU, or the world more generally. For ASEAN countries, tariff exposure is associated with a relative fall in unit prices of around 12 percent in 2020 and 2021, nearly three times larger than the estimated global effect in the same years. These estimates for ASEAN countries contrast even more sharply with those for the EU, which sees no change in prices in 2021. Since ASEAN members are themselves emerging markets, these results also shed light on the composition of the EM effect documented in Section 4.1.1: The large and persistent price decline in Southeast Asia contributes to the cumulating EM response. Combined, the results in Figure 7

[20]See "With Trump's Tariffs, Europe Fears a Flood of Cheap Goods from China." (Swanson and Smialek, 2025) https://www.nytimes.com/2025/04/14/world/europe/europe-china-dumping-tariffs.html
[21]Full regression results are presented in Table 7 in Appendix C, with results for ASEAN in Table 8.
[22]Naturally, the effects of the 2025-26 tariffs could differ from those we estimate for the earlier period, for the EU and for other bystander countries.

Figure 7: Import Price Response by Geographic Region



Sources: UN Comtrade; authors' calculations.
Notes: Each panel displays the estimates of separate difference-in-differences regressions of log unit price on interactions of a treated indicator and year dummies for either EU or ASEAN countries. Regressions include origin–product, product–time, and origin–time fixed effects. Estimates are unweighted and standard errors are clustered by origin country and six-digit HS product level. Error bars show 95% confidence intervals.

indicate that while much of the concern related to low-priced Chinese imports has been expressed in Europe, we find that emerging markets, and ASEAN countries in particular, see the largest and clearest effects.

4.2 Exploring Product- and Market-Specific Drivers of Trade Deflection

Trade deflection from U.S. tariffs need not affect all third-country markets uniformly. In the previous subsection, we show that the effects of trade deflection change based on geographic location and level of development. At the same time, Chinese exporters facing tariff barriers may redirect toward destinations where they hold established market positions or favorable demand characteristics. In this subsection, we examine two dimensions of heterogeneity that capture pre-trade-war market structure to help explain why the extent and implications of deflection of Chinese exports have differed across markets. We employ a triple difference-in-differences specification to isolate how these features condition trade diversion responses, differencing out common shocks and product-specific trends.

We construct two indicators of heterogeneity to characterize destination-product pairs and capture how relevant a market or a product was for Chinese exporters pre-tariff. First, $\mathbf{I}(\text{US\_important})$ identifies products where the 2017 U.S. share of Chinese exports exceeds the median export share across all other destinations, capturing products for which the U.S. was an important pre-tariff destination for Chinese exports. These products may require larger redirection when tariffs hit, necessitating more aggressive pricing to penetrate alternative markets. Second, $\mathbf{I}(\text{CN\_established})$ equals one when a destination imported an above-median share of China's 2017 exports of product g, where the median is taken across all destinations importing that product, thus identifying established Chinese markets. These markets were well-suited to Chinese exports and offer existing distribution networks, potentially facilitating faster or easier volume expansion.

The triple interaction $\text{tariffed}_{og} \times \mathbf{I}(t) \times \mathbf{I}(\text{dimension})$ tests whether tariff effects vary systematically with these pre-existing market characteristics. The appropriate specification depends on the level at which each indicator varies. $\mathbf{I}(\text{US\_important})$ varies at the product level, so its interactions with year are absorbed by the product–year fixed effects, and its interaction with tariffed_{og} is absorbed by the origin–product fixed effects; the specification is therefore identical to the baseline in Equation 1. Because the other indicator varies at the destination–product level, and its lower-order interactions are not absorbed by the fixed effects, for this heterogeneity dimension, we include $\mathbf{I}(t) \times \mathbf{I}(\text{dimension})$ and $\text{tariffed}_{og} \times \mathbf{I}(\text{dimension})$ as additional regressors. This structure differences out all time-invariant bilateral, product-specific, destination, and origin characteristics, as well as common time trends within each dimension. The triple interaction is identified by residual variation in how tariff exposure affects trade flows differentially across our two heterogeneity dimensions, conditional on this rich set of controls. Standard errors are two-way clustered at the origin and product levels to account for correlation in shocks within these groups.

Table 3 presents estimates for the two measures of market heterogeneity. The baseline treatment effects for U.S.-focused products (column 1) show modest but statistically significant import price reductions in bystander markets, ranging from 1.5 to 4.3 percent across 2018–2020. The triple interaction coefficients reveal additional price compression: U.S.-focused products—i.e. those products for which the U.S. was an important destination for Chinese exports prior to tariffs—experience *further* declines of 0.5 percentage points in 2018, rising to 1 percentage point in 2020 and 2.2 percentage points by 2021. These findings indicate that products heavily reliant on the U.S. market require increasingly aggressive pricing to redirect exports successfully, consistent with costs of penetrating markets where they previously held limited share. They are also consistent with the presence of economies of scale in Chinese production: Rather than scaling down output of U.S.-focused products, producers have an incentive to maintain production levels and re-route displaced volume to alternative markets.

When considering heterogeneity in terms of Chinese market presence prior to tariffs (column 2), we find that relative price declines are concentrated in markets where China was an established supplier. For destinations that absorbed a below-median share of Chinese exports of a product, tariffed products show no significant price response in 2018 and declines of roughly 3 percent in 2019–2021. Established Chinese markets experience additional declines of 0.6 percentage points in 2018 and 1.7 in 2019, widening to 1.5 to 2.0 percentage points in the later years. These additional reductions lead to an overall relative decline in prices of tariffed products in these markets of 5.5 percent by 2021.[23] These results indicate that established Chinese markets face intense price competition when absorbing redirected exports. In other words, while existing distribution networks facilitate volume expansion, they do not insulate these destinations from price pressures generated by large inflows of redirected Chinese goods.

The heterogeneous trade deflection patterns documented above are not driven by composition effects across destination types. We obtain qualitatively similar results when restricting the sample separately to advanced economy destinations and emerging market destinations. Triple interaction coefficients maintain comparable signs, statistical significance, and economic magnitudes across both subsamples. This consistency indicates that redirection costs, established market absorption dynamics, and price positioning constraints operate through similar mechanisms regardless of destination development level (Table 10 and Table 11 in Appendix C).

In sum, the heterogeneous responses reveal two mechanisms shaping trade deflection. First, redirection costs vary with pre-trade-war export concentration. U.S.-dependent products face steeper price cuts to access alternative markets, quantifying the costs of geographic concentration. Second, price pressure concentrates where Chinese exporters were already well established. These markets see price declines roughly twice as large as elsewhere, which may indicate that further increases in volumes beyond pre-tariff levels must be matched with lower prices.

4.3 Extended Sample and Pre-Trend Analysis

An identifying assumption of the difference-in-differences specification in Equation 1 is that the “treated” and “control” products would have followed similar trends in the absence of tariffs. To examine whether this assumption is supported by the data, we would like to check that the products exhibit parallel trends in the years preceding the imposition of tariffs, but regular revisions to HS codes complicate consistent tracking of

[23] The total effect is the sum of the baseline and the triple-interaction coefficients. For 2021, that is $-0.0393 + (-0.0149) = -0.0542$.

Table 3: World - Market Concentration

	(1) Price (ln)	(2) Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.0148***	-0.0152***
	(0.00543)	(0.00527)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	-0.0311***	-0.0310***
	(0.00581)	(0.00531)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.0425***	-0.0394***
	(0.00572)	(0.00538)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.0331***	-0.0393***
	(0.00679)	(0.00684)
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{US\_important})$	-0.00552*	
	(0.00330)	
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{US\_important})$	0.00329	
	(0.00415)	
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{US\_important})$	-0.00924**	
	(0.00444)	
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{US\_important})$	-0.0216***	
	(0.00479)	
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{CN\_established})$		-0.00663***
		(0.00247)
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{CN\_established})$		0.00277
		(0.00359)
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{CN\_established})$		-0.0205***
		(0.00332)
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{CN\_established})$		-0.0149***
		(0.00360)
N	18,743,236	18,743,236
Adj. R^2	0.743	0.743

Sources: UN Comtrade; authors' calculations.

Notes: Table shows estimated coefficients for the triple difference-in-differences specification. The data is at the origin-destination-year-product level, with destination country being each of the 69 economies in our data and product being defined as a six-digit HS code. The dependent variable is (ln) price of imports. Column (1) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(US)}$, where I(US) identifies products where the 2017 US share of Chinese exports exceeded the median export share across all other destinations. Column (2) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(CN)}$, where I(CN) identifies destination-product pairs where the importer received an above-median share of Chinese exports for that product in 2017. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, origin–destination fixed effects. Estimates are unweighted and standard errors are clustered at the origin country and six-digit HS product level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

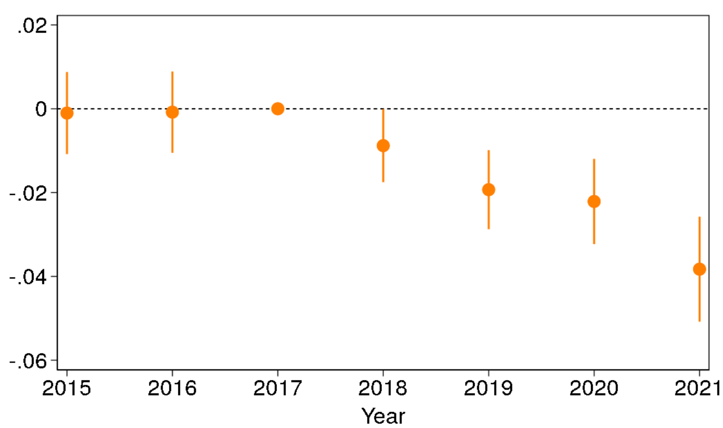
products over time. The 2018-19 tariffs apply to products according to the 2017 World Customs Organization revision of the HS codes, so our ability to compare trends of the tariffed and untariffed products before this 2017 update is limited.

To mitigate this limitation and assess whether the parallel-trends assumption holds, we restrict attention to HS codes that remain unchanged between the 2012 and 2017 revision. Using data from 2015–2021, we construct consistent quantities and unit prices using the same hierarchical algorithm in the main analysis. This approach allows us to extend the pre-tariff period by two additional years and examine whether tariffed and non-tariffed products exhibit statistically similar trends prior to the introduction of U.S. tariffs. A drawback of this approach is that omitting codes subject to reclassifications may exclude products experiencing the most substantial changes, which are potentially related to the effects of tariffs. In addition, this approach will necessarily ignore changes in the composition of six-digit HS codes that are determined at the destination country level, such as moving some eight-digit HS codes from one HS to another. Therefore, results based on this selected sample should be interpreted with caution.

On the other hand, this approach preserves 88 percent of product codes, with an additional benefit of significantly expanding the set of countries in our sample. By allowing for data between 2015 and 2021 to be reported in either HS 2012 or HS 2017, we can include an additional 42 economies in our data, bringing our total number of economies to 111. Extended sample results for values and quantities and results that include only the 69 economies included in our main analysis can be found in Appendix C.3.2 and C.3.3.

Figure 8 shows the estimated coefficients for extending the time horizon for the full sample. The pre-treatment coefficients cluster tightly around zero and then move down immediately following the imposition of tariffs. This pattern provides reassuring evidence that the parallel trends assumption underlying our difference-in-differences design is satisfied with respect to average unit values. The post-treatment effects we document appear to be genuine responses to tariffs rather than pre-existing differential trends between tariffed and non-tariffed products.

Figure 8: World Unit Price of Tariffed Chinese Goods Imports with Extended Sample



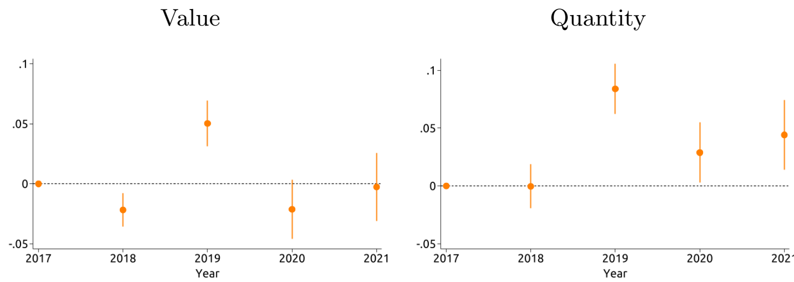
Sources: UN Comtrade; authors' calculations.
Notes: The figure displays the estimates of difference-in-differences regression for the log of unit price on interactions of a treated indicator and year dummies for the world sample which excludes the U.S. and China as importers. The regression includes origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Estimates are unweighted and standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals. We provide a list of the additional countries in the extended sample in Appendix A.

4.4 Trade Volumes

Lastly, we decompose the global changes in unit prices into changes in values and quantities, with results presented in Figure 9. The figure shows that the relative declines in world import prices associated with U.S. tariffs are driven initially by lower values (with quantities little-changed in 2018) and then by persistent relative increases in quantity. This increase in quantity in later years of the sample is consistent with trade deflection due to U.S. tariffs, as in Bown and Crowley (2007).

The figure reveals another important message: Focusing only on trade values—as much research has done due to data limitations—obscures much of the trade deflection and its effects that we document. In particular, only 2019 sees a statistically significant relative increase in value associated with tariffs, which might lead one to conclude that there was minimal trade deflection in response to tariffs. Because we undertake the quantity harmonization procedure described in Section 2.2, we are able to uncover both a relative increase in trade quantities, as well as the associated decline in import prices.

Figure 9: Trade Volumes of Tariffed Chinese Goods Imports in Third-Country Markets



Sources: UN Comtrade; authors' calculations.
Notes: The panels displays the estimates of difference-in-differences regressions of log value or log quantity on interactions of a treated indicator and year dummies for the world sample. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Estimates are unweighted and standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

We show in Appendix C.3.2 that the extended sample results for value and quantity exhibit upward pre-trends, meaning that goods tariffed by the U.S. were already seeing increases in third-country imports from China prior to taking effect. Notably, however, these pre-trends are of similar magnitude for values and quantities: The two series co-move ahead of the onset of tariffs, so that their ratio, the unit value, exhibits no different pre-trend. The parallel-trends assumption is therefore satisfied for our central outcome of interest. While the trends in trade volumes may be driven by non-tariff factors, such as global demand or Chinese supply shocks, the clear break in trend for unit prices in Figure 8 shows that the tariffs are associated with an economically meaningful and statistically significant change in market conditions.

5 Robustness

This section describes a series of robustness checks that validate our baseline results along four dimensions: how we weight observations across heterogeneous trade flows, how we measure tariff exposure, how we model the timing and dynamics of tariff effects, and whether our results are conflated with product reallocation within six-digit HS categories.

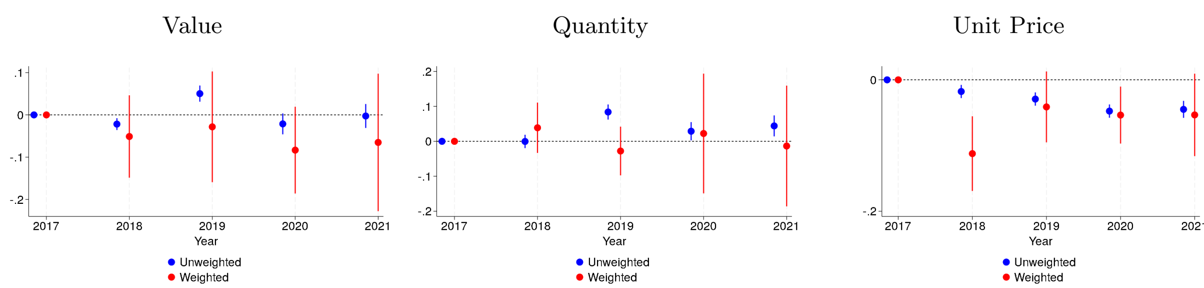
5.1 Weighted versus Unweighted Results

We first examine whether our results are sensitive to how we aggregate across the heterogeneous trade flows in our data. The baseline estimates in Section 4 are unweighted, meaning that they give effects for the average origin-destination-product triplet. In this robustness check, we weight each observation by the destination's 2017 import value for that origin-destination-product combination.[24] This weighting scheme estimates the effect on the average dollar of imports from China and ensures our estimates reflect economically important flows rather than treating all products equally regardless of their market size. The weighted specification thus provides policy-relevant estimates of aggregate impacts and reveals whether tariff effects are broad-based or concentrated in high-volume flows. If the estimates are similar, the effects operate consistently across large and small trade flows. If they diverge, it signals important heterogeneity.

Figure 10 presents the weighted results. The coefficients for value and quantity are estimated much less precisely than in the baseline. This loss of precision stems from a mechanical issue: Weighting observations while clustering standard errors at the origin and product level creates an effective mismatch. Some clusters receive very little weight while others are heavily weighted, which in practice reduces the effective number of independent clusters and inflates standard errors. Estimates for unit price, however, continue to indicate a negative and statistically significant relationship with tariffs, with some loss of precision, but with weighted estimates being larger in magnitude, especially in 2018. The similar effects on unit values, whether unweighted or weighted, indicate that the price response to U.S. tariffs in other destination countries is robust to weighting approach. This consistency is reassuring: The price effects appear robust to how we aggregate across heterogeneous products and destinations.

The contrast between value or quantity and price results has a natural interpretation. Price changes reflect market-wide competitive pressures that may operate similarly across large and small markets. Trade diversion in values and quantities, however, may be easier to detect in smaller, more flexible trade flows where the signal is not dominated by other shocks affecting high-volume products. The unweighted results, by giving equal voice to all products, pick up these pervasive but individually small responses that the weighted specification averages out.

Figure 10: Weighted versus Unweighted Difference-in-Differences - World Sample



Sources: UN Comtrade; authors' calculations.
Notes: Each panel displays the estimates of separate difference-in-differences regressions for the noted log of the dependent variables on interactions of a treated indicator and year dummies. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Results are weighted by the 2017 import value for each origin-destination-product group. Standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

[24]For products that are not imported by a destination in 2017, we take the minimum destination-product import value as the weight.

5.2 Tariff Share

Our baseline specification uses a binary tariff exposure indicator: A product is either tariffed or not. This simplifies the analysis but discards potentially useful information. In reality, tariffs varied across products, both in their timing and intensity. Moreover, the harmonized system creates a practical challenge: The U.S. applied tariffs at the eight- and ten-digit HS level, but trade data for third countries are only consistently available at the six-digit level where HS codes are globally harmonized. This aggregation problem means that within a single six-digit category, some finely-defined products faced tariffs while others did not. Collapsing this variation into a binary indicator requires choosing an arbitrary threshold.

In this robustness check, we avoid this arbitrariness by defining a continuous measure of tariff exposure. Our tariff-share variable captures the fraction of U.S. import value within each six-digit HS code that faced tariffs:

$$\text{tariff-share}_g = \sum_{p \in g} \frac{\mathbf{I}(\text{tariff}_p) \times \text{Import}_{p,2017}}{\text{Import}_{g,2017}} \tag{2}$$

where $\mathbf{I}(\text{tariff}_p)$ indicates whether the ten-digit product p faced a tariff at the end of our sample period, and $\text{Import}_{p,2017}$ is the value of 2017 U.S. imports from China for ten-digit HS product p. This weighting scheme reflects economic importance: If 80% of the value of U.S. imports in a six-digit category faced tariffs, that category experienced more intense treatment than one where only 20% of imports were tariffed.

Using this continuous measure, we estimate a tariff-share version of our baseline DiD:

$$\ln y_{odgt} = \alpha_{og} + \alpha_{gt} + \alpha_{ot} + \alpha_{dg} + \alpha_{dt} + \alpha_{od} + \sum_{j=2018}^{2021} \beta_j \ \text{tariff-share}_{og} \times \mathbf{I}(t = j) + \varepsilon_{odgt} \tag{3}$$

where tariff-share_{og} corresponds to the tariff share applied to a six-digit HS code, defined in Equation 2, which can only be non-zero for imports originating from China.

The interpretation of the coefficients, β_j's, shifts from tariffed versus non-tariffed to more tariffed versus less tariffed. The coefficient β_j now measures the proportional change in Chinese exports to third countries associated with a one percentage point increase in tariff exposure in year j. This specification exploits more variation in the data and provides a cleaner test of whether trade diversion scales with tariff intensity: We would expect products facing more intense tariff treatment to exhibit larger relative price declines in third markets.

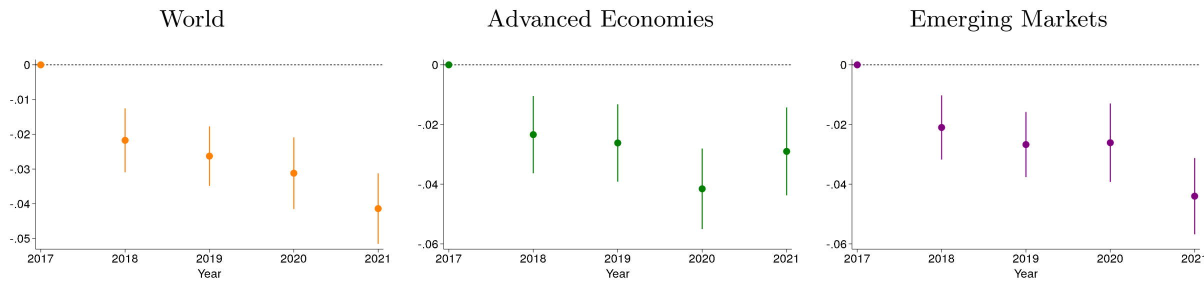
Figure 11 presents the estimated effects on unit prices for all countries, AEs, and EMs. All three groups show negative effects on unit prices, confirming that higher tariff exposure leads to systematically lower prices in third-country markets. As in the baseline results, the pattern is clearest for emerging markets, where the effects are persistent and cumulate throughout the sample period. By 2021, the coefficient for emerging markets moves below -0.04, implying a ten percentage point increase in tariff exposure leads to a relative reduction in import prices of more than 4 percent. For advanced economies, unit prices decrease in the aftermath of the tariffs, but begin to recover in 2021.

These tariff-share results verify that the binary treatment findings are not artifacts of how we aggregate finely-defined tariffs to the six-digit level. The consistency between binary and continuous treatment specifications strengthens confidence in the main results.

5.3 Alternative Empirical Strategies

We explore two alternative empirical strategies for estimating the effect of tariffs on Chinese exports to bystander countries that offer different ways to capture the timing and dynamic effects of tariffs: An event study as in Fajgelbaum et al. (2019) and local projections as in Jordà (2005).

Figure 11: Unit Prices of Chinese Imports using Tariff Share



Sources: UN Comtrade; authors' calculations.
Notes: Each panel displays the estimates of separate difference-in-differences regressions of the noted log of unit price on the tariff share measure interacted with year dummies. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Estimates are unweighted and standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

5.3.1 Event Study

The U.S.-China trade war unfolded in waves, rather than a single shock. The first tariffs took effect in the summer of 2018, but 22 percent of tariffed products were tariffed only in 2019. Products hit by the first wave had experienced tariffs for more than one year in 2019, while products added in later rounds had shorter exposure. Our baseline difference-in-differences specification in Section 4 tracks differential responses for tariffed versus untariffed products over time, but does not distinguish products with different tariff start dates.

Here, we adopt an event study design that addresses this timing heterogeneity by aligning each product to its own treatment year. Instead of using calendar years, we measure time in years relative to when tariffs actually took effect for each product. Following Fajgelbaum et al. (2019), we estimate:

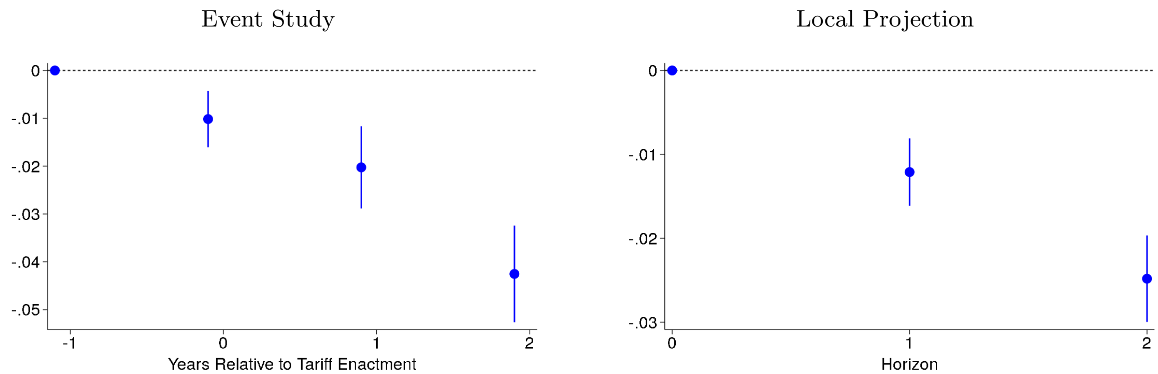
$$\ln y_{odgt} = \alpha_{og} + \alpha_{gt} + \alpha_{ot} + \alpha_{dg} + \alpha_{dt} + \alpha_{od} + \sum_{j=0}^{3} \beta_j \text{ tariffed}_{og} \times \mathbf{I}(\text{event}_{odgt} = j) + \varepsilon_{odgt} \tag{4}$$

where tariffed$_{og}$ is the tariff indicator defined in the baseline difference-in-differences approach. The event time indicator $\mathbf{I}(\text{event}_{odgt} = j)$ tracks years since tariffs were first applied to product g from China, with the year before tariffs serving as the excluded comparison period. By construction, $\mathbf{I}(\text{event}_{odgt} = j)$ equals zero for all goods from origins other than China. This design offers an alternative visualization of how import prices evolve around the tariff shock. The coefficients β_j trace out the trajectory relative to the pre-tariff year, revealing whether effects emerge immediately upon tariff implementation or accumulate over time. This matters for understanding the adjustment process: Immediate effects suggest rapid trade diversion, while gradual effects point to search frictions or contracts that take time to unwind. The fixed effects structure remains identical to Equation 1, ensuring that identification continues to rely on variation across products within the same origin–destination–year cell. Standard errors are again two-way clustered at the origin and product level.

The left panel of Figure 12 shows the event study estimates β_j and corresponding 95% confidence intervals for unit prices. Unit prices decline steadily starting in the year following tariff implementation. The pattern aligns closely with our baseline difference-in-differences results from Section 4, providing reassurance that the main findings are not artifacts of how we handle treatment timing.

Comparing the event study to our baseline difference-in-differences, the event study framework provides an alternative lens for understanding dynamics because it synchronizes products to their actual treatment dates. However, the substantive conclusions remain the same: Tariffs trigger trade diversion accompanied by systematic price reductions that persist and deepen over time.

Figure 12: Unit Price Regressions with Alternative Empirical Strategies - World Sample



Sources: UN Comtrade; authors' calculations.
Notes: Each panel displays the estimates of separate regressions for logged unit price. The event study includes origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. The local projection includes origin, destination, product, and time fixed effects. Results are unweighted. Standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

5.3.2 Local Projections

Next, we consider estimates based on the local projections technique of Jordà (2005), which we estimate in levels, with lagged values of the dependent variable and treatment indicator, as well as product, destination, importer, and year fixed effects:

$$(\ln y_{odgt+h} - \ln y_{odgt}) = \alpha_o + \alpha_d + \alpha_g + \alpha_t + \text{tariffed}_{odgt} + \ln y_{odgt-1} + \text{tariffed}_{odgt-1} + \varepsilon_{odgt} \tag{5}$$

Impulse responses for log average unit value for the world sample are displayed in the right panel of Figure 12.[25] The figure indicates a step down in the destination country's import unit values following tariffs that is precisely estimated and at its largest magnitude two years after the imposition of tariffs. This finding is broadly consistent with the baseline difference-in-difference results presented in Section 4.

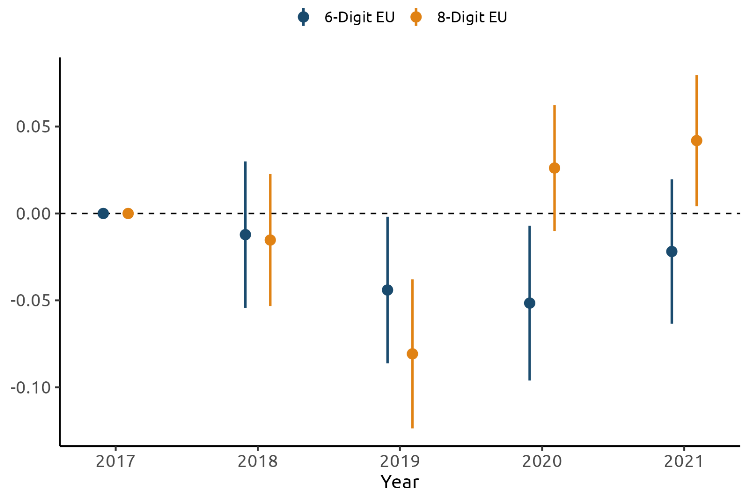
5.4 Assessing Unit Values with More Disaggregated Data

A remaining concern with the results above is that unit values at the six-digit HS level conflate prices and product composition: A decline in the unit value of a product category may reflect lower prices for given varieties, a shift toward less expensive varieties within the category, or both. Ideally, we would address this concern by examining trade flows at a finer level of product disaggregation, to determine if doing so changes our reported estimates, but such detailed data is not available for all trading partners. The European Union is an exception: Eurostat reports extra-EU imports at the eight-digit Combined Nomenclature (CN) level, whose first six digits coincide with the six-digit HS classification. Narrower product categories leave less scope for compositional shifts across varieties, so if the unit value changes we document were driven primarily by within-category composition, estimates at the eight-digit level should be attenuated.

We repeat our analysis on eight-digit level Eurostat data and compare the results to the six-digit Comtrade estimates for the EU from Section 4.1.2. As shown in Figure 13, the two sets of results do not differ significantly in any period, and they exhibit a similar unit price response path, first falling and then returning close to zero. Overall, our analysis at the more granular eight-digit product level corroborates the main findings for unit price responses obtained with the more aggregate six-digit HS codes, providing additional

[25]Estimates extend through a horizon period of two years as the lagged treatment variable cannot be separately identified beyond that horizon.

Figure 13: EU Import Price Response: Eight-Digit CN versus Six-Digit Comtrade



Sources: Comtrade; Eurostat; authors' calculations.
Notes: The panel displays the estimates of difference-in-differences regressions of the log of unit price on interactions of a treated indicator and year dummies at both the 6- and 8-digit levels. Regressions include origin–product, product–time, and origin–time fixed effects. Error bars show 95% confidence intervals. Estimates are unweighted and standard errors continue to be clustered at the six-digit HS code and year level, reflecting the fact that treatment varies at the HS-6 product group, as we cannot track tariff changes at the finer product level.

confidence that our unit value results are not driven by shifts toward less expensive varieties within the HS-6 digit categories.

In Appendix C.4, we present an additional check for product composition effects by applying our analysis method to the U.S. import volume and price responses at the six-digit HS level and comparing the results to those put forth in Amiti, Redding and Weinstein (2019) and Fajgelbaum et al. (2019) using more granular ten-digit HS data. As shown in the appendix, we replicate the results in those papers, finding no relationship between tariffs and U.S. import prices in 2018 and 2019, increasing confidence that our results for bystander countries are not driven by changes in product composition.

6 Conclusion

While a growing number of papers have studied the effects of the U.S.–China trade war on those two countries, much less is known about the implications for other bystander countries. One topic that has received considerable attention, recently, is the possibility that U.S. tariffs might lead to a redirection of low-priced Chinese exports to other countries. Comprehensive empirical evidence of any such effects, however, has been lacking.

This paper analyzes the impact of the U.S.–China trade war on bystander economies, contributing to a broader discussion of the spillover effects of this bilateral shock on other economies. Using a difference-in-differences specification, we estimate the relationship between U.S. tariffs on imports from China and Chinese import prices in bystander countries. This focus on import prices is only possible due to a contribution in economic measurement that allows us to harmonize units of quantity over time in Comtrade international trade data, and we further decompose changes in import prices into changes in quantity and value.

We provide the first global evidence that as U.S. imports from China fall sharply following the imposition of tariffs, prices on Chinese imports in other destinations fall. These effects are widespread across country groups, but they are not largest in the advanced economies where concerns about low-priced imports have been highly publicized, but rather in other emerging economies, particularly ASEAN members. Our findings are robust to weighting observations across heterogeneous trade flows, using alternative measures of tariff intensity, and different estimation strategies.

We also explore the role of product and market characteristics that determine heterogeneous responses to the U.S. tariffs. We find that effects of tariffs are larger for products in which the U.S. was an important pre-tariff destination for Chinese exports—meaning that there was more trade to deflect—and in markets where China was already an established supplier. These results provide information on the products and markets that might expect to see larger effects of new round of U.S. tariffs imposed since 2025, though we note that the effects of the 2025-2026 tariffs could be different than those we estimate here, particularly given their much broader country coverage and different magnitudes. These triple differences estimates also provide economic intuition for the responses to the tariffs 2018-19 tariffs we document.

Our results provide new information that is relevant to local producers in destination countries, as well as to monetary policymakers. On the one hand, our findings indicate that goods producers and their workers in countries seeing increases in low-priced imports from China may experience disruption due to deflected trade. On the other hand, the greater availability of low-priced goods suggests a channel through which consumers in bystander countries may benefit from this bilateral trade dispute. These potential effects on economic activity and prices provide novel information to policymakers as they consider appropriate responses.

For researchers, our estimates provide novel empirical evidence for assessing the spillover effects of U.S. tariffs to bystander countries. This information is relevant for considering effects on import-competing firms in those countries, but also for considering effects on prices and real incomes. Our finding that U.S. tariffs are associated with relative reductions in Chinese export prices in other markets also contrasts with the literature on tariff pass-through in the U.S., which finds complete pass-through.

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A Country Details

We consider 69 economies for our analysis. Each region consists of the following importing countries:

Advanced Economies (AE): Andorra, Australia, Canada, European Union, Iceland, Israel, Japan, New Zealand, Norway, Rep. of Korea, Switzerland, Taiwan, United Kingdom.

Emerging Market (EM): Albania, Armenia, Bahrain, Belarus, Bermuda, Bolivia (Plurinational State of), Bosnia Herzegovina, Brazil, Brunei Darussalam, Burkina Faso, Cambodia, Chile, Colombia, Costa Rica, Dominican Rep., Ecuador, El Salvador, Eswatini, Fiji, Georgia, Guatemala, Honduras, India, Indonesia, Iran, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lao People's Dem. Rep., Liberia, Madagascar, Malaysia, Maldives, Mauritius, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nicaragua, North Macedonia, Oman, Pakistan, Panama, Paraguay, Peru, Russian Federation, Serbia, South Africa, Thailand, Türkiye, United Rep. of Tanzania, Uruguay, Zambia.

European Union Member Countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

We exclude the United Kingdom from the EU importer group, as it formally left the European Union in January 2020 (Brexit) and therefore does not maintain EU membership throughout the full analysis period.

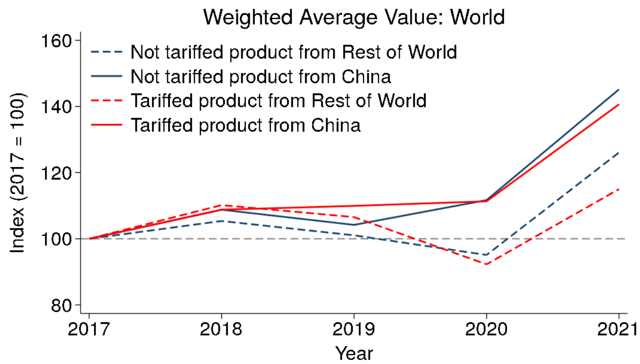
ASEAN Member Countries: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.

Extended analysis: For the extended analysis, our data goes back to 2015 and include the the previous revision (HS2012) of the Harmonized System. We add 42 more importing countries: Angola, Argentina, Aruba, Azerbaijan, Bahamas, Belize, Benin, Botswana, Burundi, Cabo Verde, Cameroon, Comoros, Congo, Côte d'Ivoire, Dem. Rep. of the Congo, Egypt, Ethiopia, French Polynesia, Grenada, Jamaica, Kenya, Lebanon, Lesotho, Malawai, Mexico, Nepal, Niger, Nigeria, Qatar, Rep. of Moldova, Rwanada, Saudi Arabia, Senegal, Singapore, State of Palestine, Togo, Tunisia, Uganda, Ukraine, United Arab Emirates, Viet Nam, Zimbabwe.

B Additional Motivational Figures

This section presents additional motivational figures.

Figure 14: Weighted Import Index by Tariff Status and Origin



Sources: UN Comtrade; authors' calculations.

Notes: Figure displays the weighted average import value of tariffed and untariffed products by source for the 95 destination countries in our main world sample. Values are weighted by the 2017 import value for each origin-destination-product group.

C Additional Results and Robustness Checks

C.1 Tables for Main Difference-in-Differences Results

This section reports tables for the main difference-in-differences results presented in Section 4.

Table 4: Main DiD Results - World Imports

	(1) Value (ln)	(2) Quantity (ln)	(3) Unit Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.022***	-0.000	-0.018***
	(0.007)	(0.010)	(0.005)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	0.050***	0.084***	-0.029***
	(0.010)	(0.011)	(0.005)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.021*	0.029**	-0.048***
	(0.013)	(0.013)	(0.005)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.003	0.044***	-0.045***
	(0.014)	(0.015)	(0.007)
Adj. R^2	0.632	0.674	0.743
Observations	19,642,721	18,743,279	18,743,236

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Sources: UN Comtrade; author's calculations.

Notes: Table 4, Table 5, and Table 6 show the estimated coefficients for the difference-in-differences design in Equation 1. The data is at the origin-destination-year-product level, with destination country being each of the 69 economies for Table 4, 56 countries for Table 5, and 13 economies for Table 6. Product is defined as a six-digit HS code. The dependent variable is (ln) value in column (1), (ln) quantity in column (2), and (ln) unit prices in column (3). All specifications include product-time, origin-time, origin-product, destination-product, destination-time, and origin-destination fixed effects. Standard errors are in parentheses and clustered at the six-digit HS code and origin level.

Table 5: Main DiD Results - Emerging Markets Imports

	(1) Value (ln)	(2) Quantity (ln)	(3) Unit Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.010	0.015	-0.018***
	(0.009)	(0.012)	(0.007)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	0.066***	0.101***	-0.029***
	(0.013)	(0.014)	(0.007)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.013	0.030**	-0.043***
	(0.014)	(0.014)	(0.007)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	0.004	0.055***	-0.047***
	(0.015)	(0.016)	(0.008)
Adj. R^2	0.612	0.664	0.729
Observations	13,194,428	12,680,057	12,680,016

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Main DiD Results - Advanced Economies Imports

	(1) Value (ln)	(2) Quantity (ln)	(3) Unit Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.043***	-0.039***	-0.010
	(0.011)	(0.013)	(0.006)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	0.002	0.024	-0.022***
	(0.012)	(0.015)	(0.007)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.039**	0.016	-0.048***
	(0.016)	(0.017)	(0.007)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.028	-0.009	-0.022***
	(0.023)	(0.024)	(0.008)
Adj. R^2	0.707	0.738	0.795
Observations	6,352,339	5,967,594	5,967,594

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Main DiD Results - ASEAN Imports

	(1) Value (ln)	(2) Quantity (ln)	(3) Unit Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	0.058***	0.093***	-0.031**
	(0.022)	(0.025)	(0.013)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	0.091***	0.160***	-0.067***
	(0.031)	(0.034)	(0.018)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.039	0.058	-0.114***
	(0.033)	(0.038)	(0.019)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.027	0.087**	-0.132***
	(0.033)	(0.040)	(0.017)
Adj. R^2	0.680	0.731	0.737

Table 7: Main DiD Results - European Union Imports

	(1) Value (ln)	(2) Quantity (ln)	(3) Unit Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.038	-0.017	-0.012
	(0.030)	(0.036)	(0.021)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	-0.003	0.063	-0.044^{**}
	(0.035)	(0.038)	(0.021)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.080^{**}	-0.016	-0.052^{**}
	(0.032)	(0.040)	(0.023)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.144^{**}	-0.118^{*}	-0.022
	(0.059)	(0.067)	(0.021)
Adj. R^2	0.859	0.867	0.821
Observations	948,055	929,961	929,961

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Sources: UN Comtrade; author's calculations.
Notes: Table 7 and Table 8 show the estimated coefficients for the difference-in-differences design in Equation 1. The data is at the origin-destination-year-product level, with destination being the European Union or ASEAN aggregate for Table 7 and Table 8, respectively. Product is defined as a six-digit HS code. The dependent variable is (ln) value in column (1), (ln) quantity in column (2), and (ln) unit prices in column (3). The specifications include product-time, origin-time, and origin-product fixed effects. Standard errors are in parentheses and clustered at the six-digit HS code and origin level.

C.2 Additional Heterogeneous Responses Results

This section reports tables corresponding to the triple difference-in-differences specification shown in Section 4.2. We report value and quantity results for the full sample, as well as price results for advanced economies and emerging markets separately.

Table 9: World - Market Concentration

	(1) Value (ln)	(2) Quantity (ln)	(3) Value (ln)	(4) Quantity (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.0331***	-0.0163	0.00520	0.0288***
	(0.00771)	(0.0106)	(0.00737)	(0.0103)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	0.0582***	0.0905***	0.0884***	0.134***
	(0.0104)	(0.0119)	(0.0103)	(0.0122)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.0310**	0.0109	0.0236*	0.0759***
	(0.0128)	(0.0139)	(0.0134)	(0.0145)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.00478	0.0278*	0.0343**	0.0880***
	(0.0148)	(0.0163)	(0.0144)	(0.0162)
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{US\_important})$	0.0204***	0.0292***		
	(0.00416)	(0.00512)		
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{US\_important})$	-0.0143***	-0.0120*		
	(0.00549)	(0.00619)		
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{US\_important})$	0.0176***	0.0327***		
	(0.00584)	(0.00602)		
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{US\_important})$	0.00391	0.0298***		
	(0.00684)	(0.00883)		
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{CN\_established})$			-0.0573***	-0.0572***
			(0.00452)	(0.00544)
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{CN\_established})$			-0.0771***	-0.0917***
			(0.00645)	(0.00767)
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{CN\_established})$			-0.0882***	-0.0795***
			(0.00690)	(0.00754)
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{CN\_established})$			-0.0681***	-0.0683***
			(0.00747)	(0.00756)
N	18,743,236	18,743,236	18,743,236	18,743,236
Adj. R^2	0.743	0.743	0.743	0.743

Sources: UN Comtrade; authors' calculations.

Notes: Table shows estimated coefficients for the triple difference-in-differences specification. The data is at the origin-destination-year-product level, with destination country being each of the 69 economies in our data and product being defined as a six-digit HS code. The dependent variable is (ln) value of imports in columns (1) and (3), and (ln) quantity in columns (2) and (4). Columns (1) and (2) present the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(US)}$, where I(US) identifies products where the 2017 US share of Chinese exports exceeded the median export share across all other destinations. Columns (3) and (4) present the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(CN)}$, where I(CN) identifies destination-product pairs where the importer received an above-median share of Chinese exports for that product in 2017. Results are unweighted. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Emerging Markets - Market Concentration

	(1) Price (ln)	(2) Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.0162**	-0.0104
	(0.00695)	(0.00691)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	-0.0302***	-0.0295***
	(0.00748)	(0.00700)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.0364***	-0.0337***
	(0.00788)	(0.00771)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.0304***	-0.0402***
	(0.00853)	(0.00845)
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{US\_important})$	-0.00352	
	(0.00405)	
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{US\_important})$	0.00250	
	(0.00537)	
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{US\_important})$	-0.0124**	
	(0.00541)	
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{US\_important})$	-0.0295***	
	(0.00616)	
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{CN\_established})$		-0.0194***
		(0.00313)
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{CN\_established})$		0.000506
		(0.00469)
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{CN\_established})$		-0.0255***
		(0.00446)
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{CN\_established})$		-0.0183***
		(0.00488)
N	12,680,016	12,680,016
Adj. R^2	0.729	0.729

Sources: UN Comtrade; authors' calculations.

Notes: Table shows estimated coefficients for the triple difference-in-differences specification. The data is at the origin-destination-year-product level, with destination country being each of the emerging markets in our data and product being defined as a six-digit HS code. The dependent variable is (ln) price of imports. Column (1) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(US)}$, where I(US) identifies products where the 2017 US share of Chinese exports exceeded the median export share across all other destinations. Column (2) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(CN)}$, where I(CN) identifies destination-product pairs where the importer received an above-median share of Chinese exports for that product in 2017. Results are unweighted. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Advanced Economies - Market Concentration

	(1) Price (ln)	(2) Price (ln)
$\text{tariffed}_{og} \times \mathbf{I}(2018)$	-0.00714	-0.0270***
	(0.00628)	(0.00697)
$\text{tariffed}_{og} \times \mathbf{I}(2019)$	-0.0282***	-0.0234***
	(0.00704)	(0.00774)
$\text{tariffed}_{og} \times \mathbf{I}(2020)$	-0.0530***	-0.0422***
	(0.00691)	(0.00747)
$\text{tariffed}_{og} \times \mathbf{I}(2021)$	-0.0300***	-0.00323
	(0.00809)	(0.00913)
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{US\_important})$	-0.00531	
	(0.00440)	
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{US\_important})$	0.0123***	
	(0.00386)	
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{US\_important})$	0.00868*	
	(0.00450)	
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{US\_important})$	0.0164***	
	(0.00483)	
$\text{tariffed}_{og} \times \mathbf{I}(2018) \times \mathbf{I}(\text{CN\_established})$		0.0307***
		(0.00480)
$\text{tariffed}_{og} \times \mathbf{I}(2019) \times \mathbf{I}(\text{CN\_established})$		0.00221
		(0.00419)
$\text{tariffed}_{og} \times \mathbf{I}(2020) \times \mathbf{I}(\text{CN\_established})$		-0.0124***
		(0.00430)
$\text{tariffed}_{og} \times \mathbf{I}(2021) \times \mathbf{I}(\text{CN\_established})$		-0.0348***
		(0.00586)
N	5,967,594	5,967,594
Adj. R^2	0.795	0.795

Sources: UN Comtrade; authors' calculations.

Notes: Table shows estimated coefficients for the triple difference-in-differences specification. The data is at the origin-destination-year-product level, with destination country being each of the advanced economies in our data and product being defined as a six-digit HS code. The dependent variable is (ln) price of imports. Column (1) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(US)}$, where I(US) identifies products where the 2017 US share of Chinese exports exceeded the median export share across all other destinations. Column (2) presents the triple interaction $\text{tariffed}_{og} \times \text{I}(t) \times \text{I(CN)}$, where I(CN) identifies destination-product pairs where the importer received an above-median share of Chinese exports for that product in 2017. Results are unweighted. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.3 Additional Extended Sample Results

C.3.1 Basic Summary Statistics for the Extended Sample

Table 12 provides summary statistics on the key dependent and independent variables in our extended sample.

Table 12: Basic Summary Statistics for the Extended World Sample: 2015-2021

	count	mean	sd	min	max
Basic tariff status	33,403,644	0.05	0.23	0	1
Basic tariff status (China only)	2,017,970	0.89	0.31	0	1
Value (ln)	33,403,599	9.22	3.31	-7	25
Quantity (ln)	31,302,642	6.41	4.01	-7	32
Unit price (ln)	31,302,607	2.80	2.35	-18	23

Sources: UN Comtrade; author's calculations.
Notes: Table shows summary statistics for the basic tariff variable and the three main outcome variables for the full extended world sample. Basic tariff status is 1 if the observation is from China and in a six-digit HS code that receives a tariff during the trade war, and 0 otherwise. The data is at the origin-destination-year-product level, with destination country being each of the 111 economies in our data and product being defined at a six-digit HS code. 47 observations have missing value (ln) and 2,101,004 observations have missing quantity (ln), resulting in 2,101,039 observations for which we cannot construct unit price.

C.3.2 Value and Quantity Results for the Extended Sample

This section reports the value and quantity extended analysis results for the expanded set of 111 importing economies. The unit price results are reported in Section 4. In contrast to the unit price results, we do see clear evidence of upward pre-trends in both value and quantity across the world, AE, and EM results. Importantly, however, these pre-trends are comparable in magnitude for both values and quantities: The two sets of estimates move in parallel prior to tariff implementation, such that results for unit values — their ratio — show no differential pre-trend. This validates the parallel-trends assumption for our primary outcome of interest. In addition, breaks in trend for the quantity and value estimates are apparent after 2019, following the largest rounds of tariff increases.

Figure 15: Extended Sample DiD - World, Expanded Sample

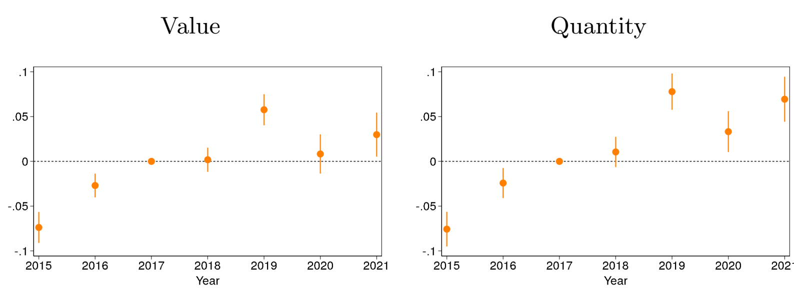


Figure 16: Extended Sample DiD - Emerging Markets, Expanded Sample

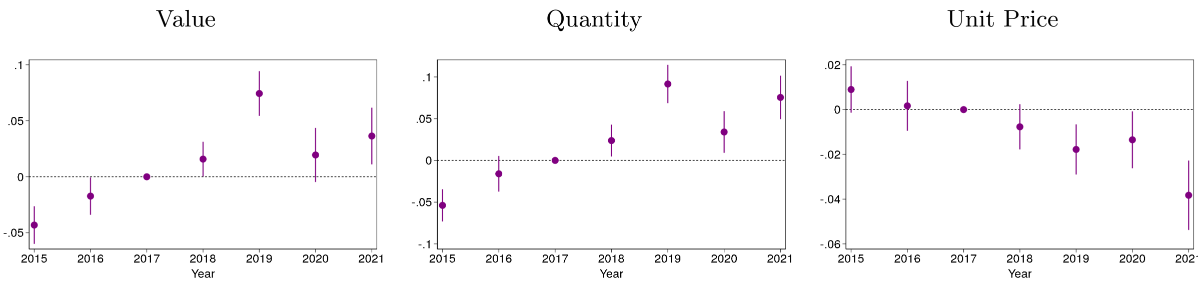
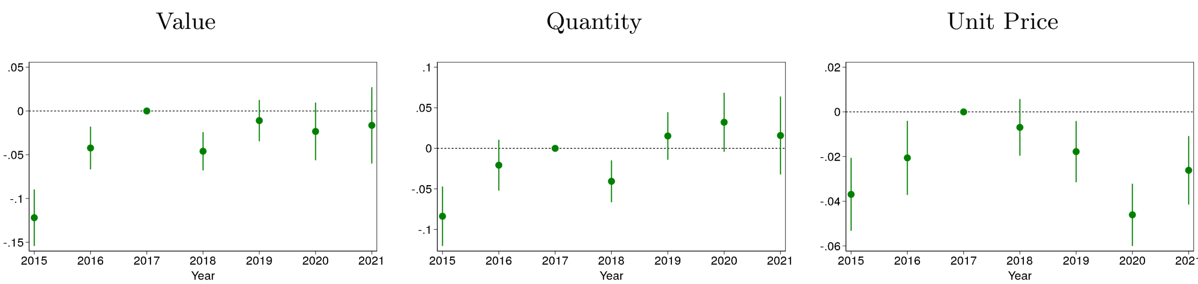


Figure 17: Extended Sample DiD - Advanced Economies, Expanded Sample



Sources: UN Comtrade; authors' calculations.

Notes: Each panel displays the estimates of separate difference-in-differences regressions for the noted log of the dependent variables. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals. We provide a list of the additional countries in the extended sample in Appendix A.

C.3.3 Extended Time-Frame DiD Results with Main Analysis Countries

This section reports the extended analysis difference-in-differences results for the set of 69 importing economies included in our main analysis. The results displayed here do not differ importantly from the results reported in Section 4 which employ the same empirical strategy but with an expanded set of 111 economies.

Figure 18: Extended Sample DiD - World, Main Sample

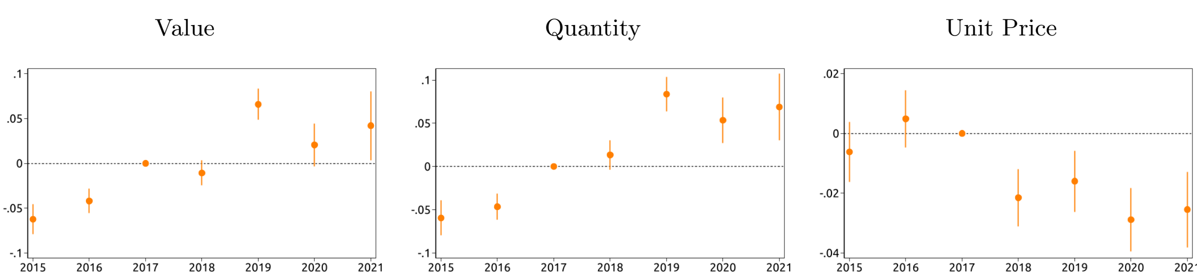


Figure 19: Extended Sample DiD - Emerging Markets, Main Sample

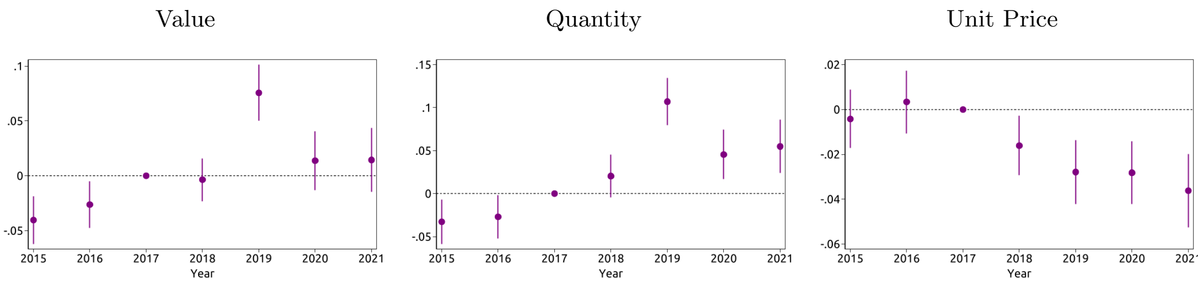
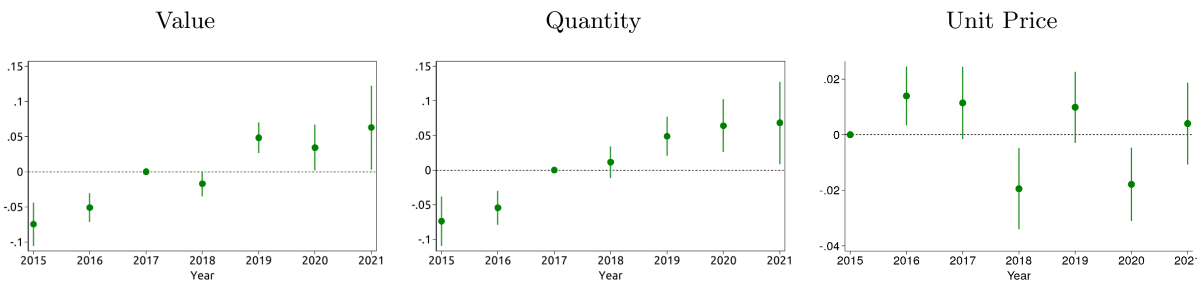


Figure 20: Extended Sample DiD - Advanced Economies, Main Sample



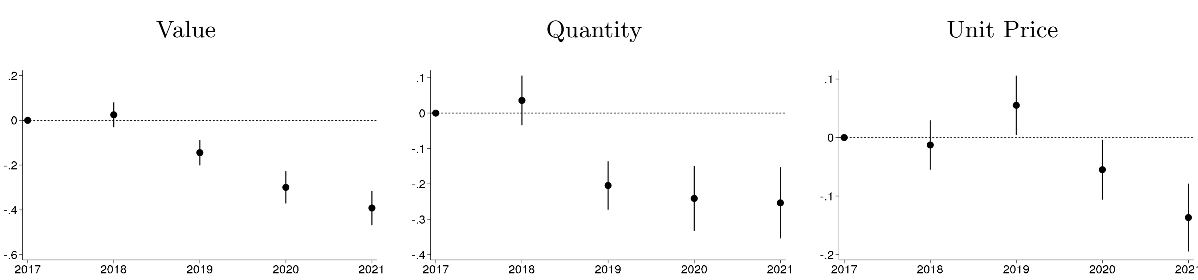
Sources: UN Comtrade; authors' calculations.

Notes: Each panel displays the estimates of separate difference-in-differences regressions for the noted log of the dependent variables. Regressions include origin–product, product–time, origin–time, destination–product, destination–time, and origin–destination fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.

C.4 U.S. Import Response

Fajgelbaum et al. (2019) characterizes the U.S. import volume and price response to the 2018-19 tariffs using granular data at the HS-10 level. To provide an additional check for whether product composition within six-digit HS categories is driving our unit price results, we apply our standard methodology to the case of U.S. imports at the six-digit level and compare the results to the more granular results presented in Fajgelbaum et al. (2019). They find large declines in import values and quantities through the end of 2019, declining on average by 20% and 23% respectively. Value and quantity results from employing our methodology, shown in Figure 21, are quantitatively similar, revealing declines in value and quantity of 14% and 20% on average in 2019. Unit price remains close to zero, increasing slightly in 2019 in both our results and Fajgelbaum et al. (2019). Overall, the similarity of the results using our method with less granular data to the Fajgelbaum et al. (2019) results boosts our confidence that our main results are not driven primarily by product composition changes.

Figure 21: U.S. Import Response



Sources: UN Comtrade; authors' calculations.

Notes: Each panel displays the estimates of separate difference-in-differences regressions for the noted log of the dependent variables for the United States. Regressions include origin–product, product–time, and origin–time fixed effects. Standard errors are clustered at the origin country and six-digit HS product level. Error bars show 95% confidence intervals.