Winners and Losers from the US-China Trade War

Alicia H. Dang,* Kala Krishna† and Yingyan Zhao ‡

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Abstract

We investigate the phenomenon of trade reallocations across countries as a result of the U.S.-China trade war. Using monthly data on US imports, we find evidence, as do others, of trade diversion in a range of industries and products, including products not targeted by US tariffs on China. We are however the first to ask what seems to drive these trade reallocation activities. First, we show that they seem to be driven by differences in comparative advantage across countries: countries with a greater revealed comparative advantage in a product are the beneficiaries (in terms of exports to the US) from US tariffs on China. Second, we show that there is evidence of spillovers to similar non-targeted products: that is, products in similar industries (as defined by their HS codes) are also similarly affected. This is consistent co-location effects. Third, our findings also suggest that bystander countries with greater capital abundance are more impacted in capital intensive industries, suggesting that a higher proportion of more flexible or transferable assets provides flexibility to alter production to respond to new trade opportunities. Finally, we show that the countries that export more to the US as a result of the tariffs on China also export more to other countries. This suggests that firms are entering these countries and once there, export not just to the US but everywhere.

*Department of Economics, Union College, 807 Union Street, Schenectady, NY 12308, USA. E-mail: dangh@union.edu.

†Department of Economics, Pennsylvania State University, 403 Kern Building, Pennsylvania State University, University Park, PA 16802, USA. Tel: (814) 865-1106. E-mail: kmk4@psu.edu.

‡Department of Economics, George Washington University, 2115 G St NW Suite 340, Washington, DC 20052, USA. Tel: (202) 994-6150. E-mail: Yingyan_Zhao@gwu.edu.

1 Introduction

Global trade experienced an unprecedented shock when two major economic powers, the United States and China, decided to engage in a head-on trade war with each other in early 2018. Most studies on the topic have focused on the impact of the trade war on the US and China themselves. A smaller body of literature (to which this paper belongs) has documented patterns of substantial global trade reallocations as a result of this event. Most prominently, (Nicita, 2019; Fajgelbaum et al., 2021), have found that trade was diverted towards a number of bystander countries (i.e. countries other than the US and China) including Mexico, the European Union and Vietnam. They provide ample evidence of the trade war's spillover effects.

Our paper contributes to this growing body of literature by exploring the *mechanisms* through which trade is diverted towards these bystander countries. We use monthly data on detailed (at the ten digit SIC code level) product-level imports into the US from 30 countries from January 2016 to May 2019, as well as UN Comtrade data. We uncover a number of new patterns. First, we show that not only is there significant diversion towards other countries, but that the pattern of diversion follows revealed comparative advantage. We find that countries with a greater revealed comparative advantage in a product are able to export more to the US as a result of the tariffs on China.[1] Moreover, this is more so when a product is intensive the country's abundant factor. Second, we find that there seem to be positive spillover effects on products that are similar (in terms of being in the same 4 digit SIC codes) to those on which tariffs are imposed. We attribute these co-location effects to production externalities across related products. Third, our results could help explain the mixed results found in the literature to date regarding trade diversion to other countries. For example, Cigna et al. (2022) do not find significant evidence of trade diversion towards third countries, though they do find a strong negative relationship between US tariffs and US imports from China. In contrast, Nicita (2019) and Fajgelbaum et al. (2021) find strong evidence of such diversion. Fajgelbaum et al. (2021) find that the pattern of this diversion is heterogeneous across countries. In response to US tariffs on China, some countries (Mexico) export more to the US and more to the rest of the world (ROW) while others (Canada) export more to the US and less to the ROW. Some countries export less to the US and more to the ROW (Turkey), while a few export less to both the US and ROW (Sweden). The same kind of heterogeneity is found in terms of responses to Chinese tariffs on the US. As far as the heterogeneous response of countries goes, they suggest that Countries with higher FDI

[1] This makes economic sense: countries that have costs that make them un-competitive are not likely to be able to take advantage of the opportunities created by US tariffs on China.

stocks and a larger share of exports covered by trade agreements responded with stronger export growth as a result of the trade wars.

The trade war between the US and China has already generated a large literature. As might be expected, it has been found to have negative effects on both the US and China. Flaaen et al. (2020) looks into the trade war's effect on the price of the two particular products: washers and dryers. They found that in response to the 2018 tariffs, the price of washers, which are subject to tariffs, increased by 12 percent while the price of dryers, not subject to tariffs, also increased by the same amount. They attribute this to complementarities between washers and dryers. [2] They emphasize the difference in the effects of tariffs on a small subset of exporting countries (which allows firms to avoid the tariffs by relocation to non targeted countries) and tariffs on all imports where such measures are not useful.

Jiao et al. (2021) go one step further to look into firm-level responses to the trade war. They use transaction-level export and firm-level domestic sales data with all exporting firms coming from a single Chinese prefecture from January 2017 to April 2019 to examine Chinese exporters' responses to U.S. tariffs in terms of price and sales. They find that Chinese exporters reduce exports to the US but are able to fully make up for the loss by exporting to the rest of the world. They found that the surges in U.S. tariffs on Chinese exports did not affect the price of Chinese exports. Rather, these tariffs have had a redistributive effect on the exporting pattern of Chinese producers: while their exports to the U.S. have notably declined, they have exported more to the ROW. Their finding of the lack of change in FOB prices is in line with the findings of complete pass-through of tariff rates on U.S. consumers that have been shown in Amiti et al. (2020), Cavallo et al. (2021) and Fajgelbaum et al. (2020).

There are a number of reasons why we might see (or mistakenly think we see) complete pass through. First, if products were homogeneous and transport costs non existent, the only effect of a tariff on a single trading partner (as opposed to one imposed on all trading partners) would be to reallocate exports globally (even without firms relocating production) and leave FOB prices and the level of trade with the world unaffected. However, existing estimates of elasticities between goods that come from different countries are far from infinite, see for example, example,Fajgelbaum et al. (2020). As a consequence, one would expect the usual effect on world prices of Chinese exports hit by a tariff: namely that they fall.

Second, we might see what looks like complete pass through due to mis-measurement of prices for a given quality. Suppose tariffs raise quality, and hence price, but this quality increase is not accounted for. Then it is possible for unit values to remain unchanged, while price adjusted for quality upgrading falls. A problem with this argument comes from the fact

[2] However, they do not provide a formal model.

that the tariffs imposed during the trade war were ad-valorem in nature. Simple theory, see for example, Krishna (198-) predicts that while specific tariffs would raise quality, ad-valorem ones would not.

Finally, it could be that there is heterogeneity in the response of prices: the world price of some goods may fall, while others may fall by little or even rise. Amiti et al. (2022) make such an argument. They suggest that this pattern is driven by trade in the large number of products which make up a small fraction of the value of trade. Goods with large trade values tend to show the expected pattern: namely falling FOB prices.

Benguria et al. (2022) also use firm-level data to explore the impact of the trade war on Chinese firms' performance. They find that the trade war has raised the level of trade policy uncertainty measured using textual analysis on listed firms' annual reports. Morover, they document a negative relationship between measured firm-level trade policy uncertainty and firm performance in terms of firm-level investment, R&D expenditures and profits.

Huang et al. (2019) use data on firm's stock prices to looks at the impact of global supply chain disruptions due to the trade war. They find that US firms' indirect exposure to trade with China via domestic supply chains has an economically larger negative effect on their stock market performance than their direct trade exposure does.

Reallocation and redistribution effects of the trade war at a more aggregate level, i.e., in terms of employment across counties and sectors within the US and China are also studied. Flaaen and Pierce (2019) look at employment reallocation across sectors within the US; Waugh (2019) looks at US county-level employment in response to retaliatory tariffs imposed by China retaliation. Chor and Li (2021) consider the spatial impact of the trade war by examining changes in nightlight intensity against regional exposure to tariffs, and their findings also suggest significant heterogeneities in impacts across geographical locations in China.

Grossman et al. (2021) provide the theoretical framework for analyzing changes to global supply chains in response to tariffs. Other studies have also used general equilibrium or computable general equilibrium (CGE) models to estimate the reallocation effects of the trade war. Devarajan et al. (2021) develop a multi-country, multi-sector computable general equilibrium (CGE) model of global trade to explore how developing countries should respond to the US-China trade war. Their findings suggest that there would be significant reallocation of trade in favor of developing countries through mostly the channel of trade diversion in response to the tariff spikes between the US and China, so developing countries would be able to reap substantial gains without having to resort to any action. Bolt et al. (2019) confirm this trade diversion effect via an extended multi-regional, general equilibrium model (EAGLE) to explore consequences from the scenarios of US tariffs into China and Chinese tariffs into the US. They found that despite contraction in global output, third parties or the European Union in this case, stand to benefit from this trade war. Balistreri et al. (2018) also use a multi-regional, multi-sector general-equilibrium model to analyze the effects of the bilateral tariffs and found similar results: while the trade war would be costly for both the US and China, other regions e.g. Europe, stand to gain from the diversion effect. In addition, they find that at the industry level there are winners and losers within the US industry itself e.g. steel and some manufacturing industries would gain while the agriculture, motor vehicle and services sectors would lose in terms of income for factors of production and land.

Fajgelbaum et al. (2021) examine how third countries reacts to the US-China trade war. They find that in response to US tariffs on China, many bystander countries export more not only to the US but also to the ROW. They rationalize the result with a downward sloping supply curve. All other combinations of responses (export more to the US and less to the ROW, less to the US and more to the ROW and less to both) are also present for at least some bystander countries. Some of the heterogeneity in response across countries is due to countries with higher FDI stocks and a larger share of exports covered by trade agreements responding with stronger export growth as a result of the trade war. In all their analyses, they assume a *common response* across all goods to tariffs. This finding makes sense in a Melitz type model with free entry. A tariff on China by the US shifts up the ex-ante expected profits in competitor countries, and more so for those countries with a comparative advantage in the good. This would raise entry. These new firms would export not just to the US, but to other profitable countries as found by Fajgelbaum et al. (2021). Bekkers and Schroeter (2020) use both empirical analyses and simulations to demonstrate the trade diversion effect for other countries and the costliness of the trade war for both the US and China. Nicita (2019) find that although the US tariffs on China resulted in a decline of 25 percent in the volume of imports of the tariffed products, other countries including Taiwan, Mexico, the European Union and Vietnam have been able to benefit. They also found preliminary evidence that Chinese firms absorb part of the cost of the tariffs by lowering their export prices. Mao and Görg (2020) estimate the impact of the trade war on bystander countries via global supply chains, i.e. the way tariffs affect the imports of intermediate goods to the US from China and consequently the import of final goods made from those intermediate goods from the US to third countries. Via this channel, they find that bystander countries such as the EU, Canada and Mexico also suffer from losses in absolute terms due to increased US tariffs on Chinese goods.

The remainder of our paper is organized as follows. Section 2 presents the overall patterns of the changes in US imports from China and the ROW in both targeted and non-targeted products. Section 3 presents the empirical framework for our analyses as well as our empirical findings. Section 4 explores potential underlying mechanisms of the diversion effects. Section 5 concludes.

2 Overall Patterns

We first document some patterns derived from aggregate level data (US import data and UN Comtrade data) to demonstrate significant diversion effects in terms of trade flows in both targeted and non-targeted products between countries. These broad patterns help provide context to our subsequent empirical framework and analyses.

Industries are categorized into 18 categories as listed in Table 1. Product codes following the Harmonized System (HS) are also grouped into relevant industries according to the same classifications in subsequent analyses.[3]

Table 2 presents the total number of products, number of products targeted during the trade war as well as the breakdown of targeted products by the level of the tariff (15% or 25%) imposed on China by the US in 2018 and 2019 respectively.

[3]The 18th category "Works of Art, Collectors' Pieces and Antiques" only accounts for a tiny fraction of the observations so we exclude it from our analyses

Table 1: The Industry List

Industry	Explanation
1	Processed Food
2	Mineral Products
3	Products of the Chemical or Allied Industries
4	Raw Hides and Skins, Leather, Furskins and Articles Thereof; Saddlery and Harness; Travel Goods, Handbags and Similar Containers; Articles of Animal Gut (Other Than Silkworm Gut)
5	Plastics and Articles Thereof Rubber and Articles Thereof
6	Wood and Articles of Wood;
7	Textile
8	Apparel and Textile Articles
9	Footwear, Headgear, Umbrellas, Sun Umbrellas, Walking Sticks, Seatsticks, Whips, Riding-Crops and Parts Thereof; Prepared Feathers and Articles Made Therewith; Artificial Flowers; Articles of Human Hair
10	Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware; Natural or Cultured Pearls, Precious or Semiprecious Stones, Precious Metals, Metals Clad With Precious Metal, and Articles Thereof; Imitation Jewelry; Coin
11	Base Metals and Articles of Base Metal
12	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
13	Electrical machinery and equipment and parts thereof
14	Vehicles, Aircraft, Vessels and Associated Transport Equipment
15	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments and Apparatus; Clocks and Watches; Musical Instruments; Parts and Accessories Thereof
16	Furniture
17	Toys, games and sports requisites; parts and accessories thereof; Miscellaneous manufactured articles
18	Works of Art, Collectors' Pieces and Antiques

Table 2: Tariff During the US-China Trade War

Industry	Total HS 8-digit	Year = 2018				Year = 2019			
	# Products	# Targeted	Tariff		# Non-Targeted	# Targeted	Tariff		# Non-Targeted
			10%	25%			15%	25%	
1	790	330	330	0	460	788	457	331	2
2	204	160	157	3	44	170	13	157	34
3	1804	1304	1298	6	500	1469	171	1298	335
4	376	325	177	148	51	224	47	177	152
5	231	186	186	0	45	228	42	186	3
6	574	513	513	0	61	574	58	516	0
7	935	917	917	0	18	935	18	917	0
8	746	0	0	0	746	745	745	0	1
9	197	28	28	0	169	197	169	28	0
10	422	274	273	1	148	421	148	273	1
11	988	501	493	8	487	930	437	493	58
12	797	644	196	448	153	344	148	196	453
13	586	435	213	222	151	363	150	213	223
14	272	251	135	116	21	152	17	135	120
15	423	226	81	145	197	244	163	81	179
16	91	77	77	0	14	89	12	77	2
17	204	24	24	0	180	204	180	24	0
18	7	0	0	0	7	7	7	0	0

Figure 1 shows the impact of US-China trade war on the US aggregate import value by industry. For each industry, we calculate the difference of the (log) import value of all targeted products between the first half of 2018 and first half of 2019 and arrange them in the corresponding columns with the exception of the last column showing the same statistic for all non-targeted products. It can be seen that there was a significant overall increase in the import values of non-targeted products while the import values of most targeted products experienced a decrease with the exception of those in a handful of industries experiencing an increase that is smaller than that among non-targeted products. The figure suggests that the tariff surges between the US and China indeed reduced the total value of import from China by the US.

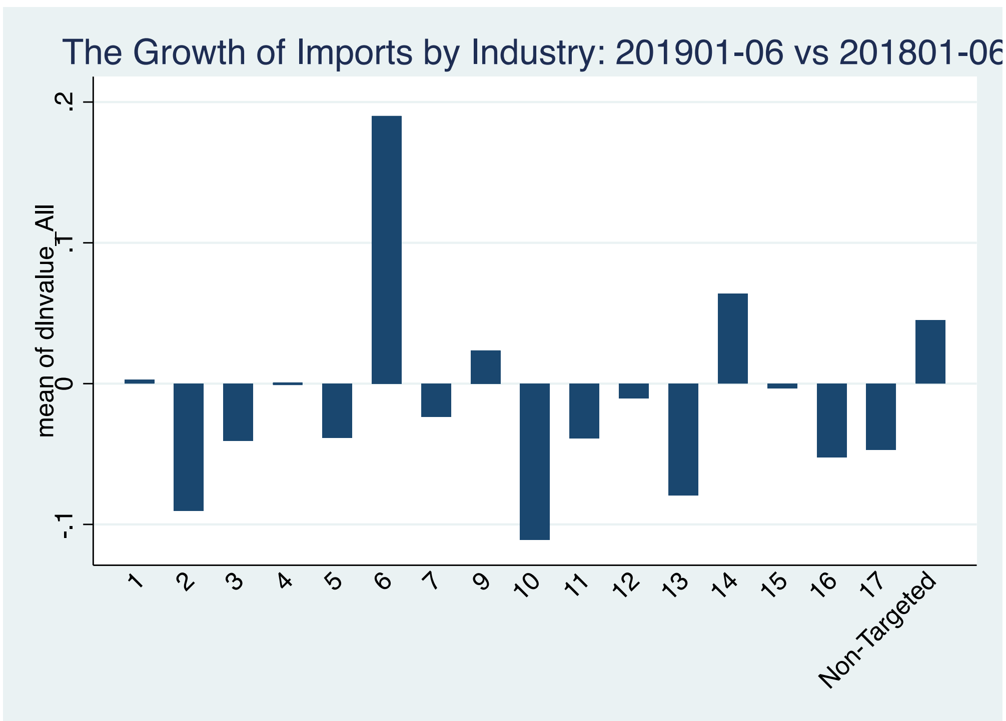


Figure 1: Changes in US Imports between First Half of 2019 and First Half of 2018

In Figure 2 explores the potential trade diversion effects of the trade war by juxtaposing the differences in the values of (i) targeted products in each industry (first 17 columns) and (ii) all of non-targeted products (last column) that the US imported between the first six months of 2019 and the first six months of 2018 from China with that from the rest of the world (ROW) in the targeted products in each industry and also among non-targeted products. The following observations can be made: (i) Comparing the targeted and non-targeted imports from China, the US saw a huge reduction of the targeted imports from China; (ii) The US imports more targeted imports from the ROW, which indicates trade diversion; and (iii) Comparing the targeted and non-targeted imports from the ROW, the US imported more in both categories of targeted and non-targeted products - this tells us that the trade war has a spillover effects on the non-targeted products.

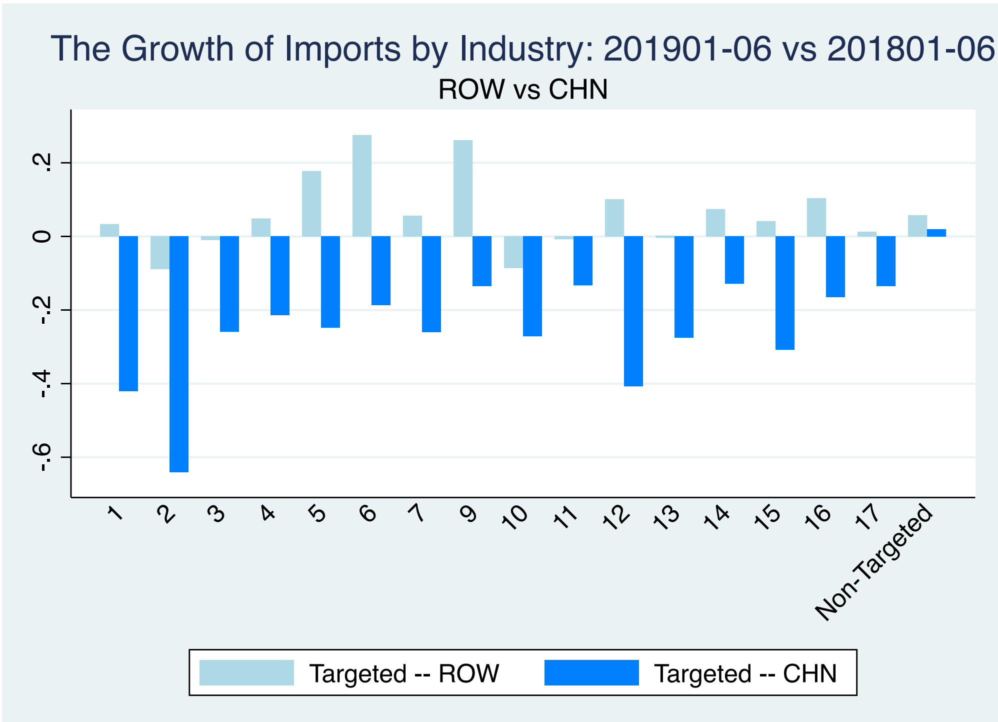
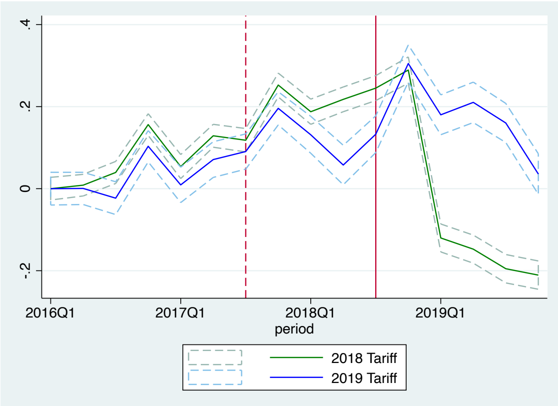


Figure 2: Changes in US Imports from China and ROW between First Half of 2019 and First Half of 2018

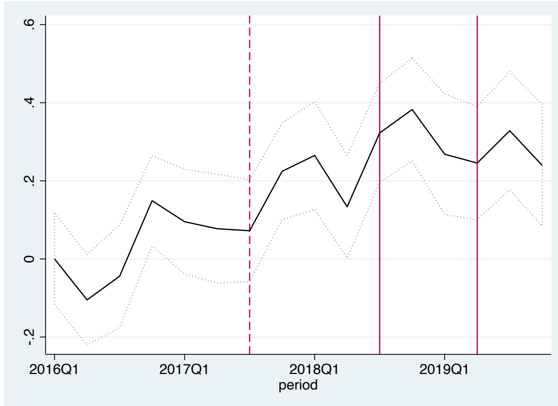
We then explore the variation of these diversion effects over time by performing a simple regression of the log of US imports in a given category of product (targeted vs. non-targeted) from a given country (China vs. ROW) on four different dummy variables over time. These dummy variables represent targeted products from China, non-targeted products from China, targeted products from ROW and non-targeted products from ROW respectively. Country-product fixed effects and product-month fixed effects controlling for seasonal adjustment are included. The values of the coefficients on the four dummy variables over time are represented in Figure 3 below.

These coefficients represent the difference in US imports of the corresponding product category from the corresponding country from the rest of the products in a given time period which, in this case, is in terms of quarter. We also identify important milestones of the trade war on the graph over time: the dashed red line marks the start of the Office of the United States Trade Representative's (USTR) investigation on China's economic practices; the first solid red line indicates the start of the tariff in 2018, while the second solid red line indicates the start of the tariff in 2019.

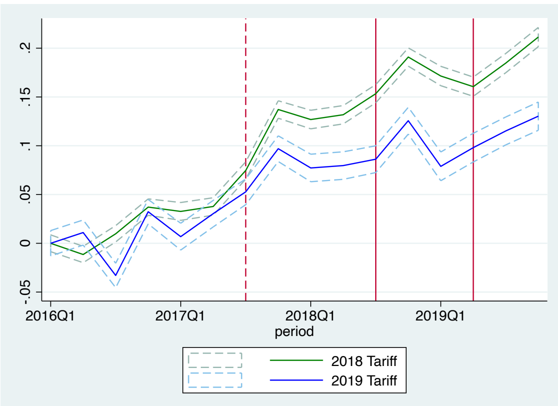
Figure 3: The Trend of US Imports from China



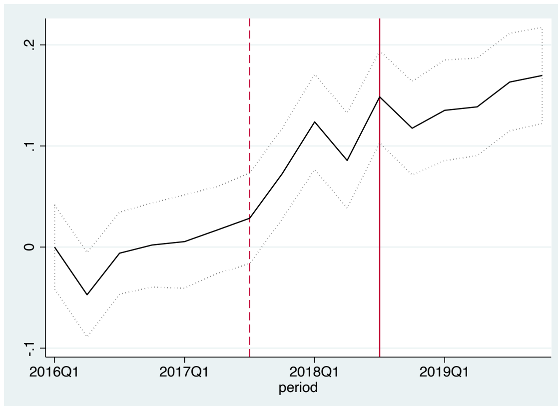
(a) US Imports from China: The Targeted Products



(b) US Imports from China: The non-Targeted Products



(c) US Imports from the ROW: The Targeted Products



(d) US Imports from the ROW: The Non-Targeted Products

The graphs above give us a sense of significant diversion effects around these critical timeline milestones for both targeted products and non-targeted products. For China, there is an episode of reduction in its exports to US of the targeted products in August 2017 when the investigation happened before another episode of more dramatic reduction following the beginning of the trade war. The reverse patterns are observed for the rest of the world: there are marked increases in their exports of the targeted products to the US after both of these events. These patterns also hold for non-targeted products albeit less dramatically, suggesting the spillovers of the impact of the tariff surges over to non-targeted products as well.

3 Trade Diversion Effects on Targeted and Non-Targeted Products

This section formally explores the impact of the tariffs on US imports from China and the rest of the world in terms of both targeted products and non-targeted products using US import data and UN Comtrade monthly data. We obtain significant and robust results confirming the spillover effects of the trade war to third countries on both targeted and non-targeted products as observed in Section 2. Our findings are also robust to the inclusion of time trends and when we break down diversion effects by major trade partners of the US.

3.1 Diversion Effects on Targeted Products

In exploring the effects of the tariff surges on the amount of US imports from bystander countries, our identification strategy relies on a difference-in-differences estimation as in equation (1) below:

$$\begin{aligned} log(Imports)_{jct} = \quad & \beta_1 Targeted_{jc}^{China} \times d_{tar} + \beta_2 Targeted_{jc}^{ROW} \times d_{tar} + \mu_{1,jc} + \mu_{2,jt} \\ & + \mu_{3,ct} + \varepsilon_{jct} \end{aligned} \tag{1}$$

In the specification above, $Targeted_{jc}^{China}$ is an indicator equal to one if the product is targeted and is imported from China. A product is defined as targeted if a tariff was imposed on it at any time during the time period of the trade war, which means this status of being "targeted" is binary and time invariant. $Targeted_{jc}^{ROW}$ is an indicator equal to one if the product is targeted and is imported from ROW, d_{tar} is a time indicator equal to one when the tariff is in place for product j, $\mu_{1,jc}$ represents country-product fixed effects, $\mu_{2,jt}$ are product-month fixed effects and country-time fixed effects $\mu_{3,ct}$ are also controlled for.

The estimates β_1 and β_2 are interpreted as the different trends between the targeted and non-targeted products from country c. That is, the imports of targeted products by the US from China decreases by 26% comparing to the non-targeted products, and the imports of targeted products by the US from the rest of the world increase by 4% comparing to the non-targeted products.

The results of the estimation of equation 1 are presented in column (1) of Table 3 on the impact of US-China Tariff on imports from China and the ROW. It can be seen that while the impact of the tariffs on US imports of targeted products from China is significantly negative, US imports of targeted products from ROW significantly increased during this time period.

3.2 Diversion Effects on Both Targeted and Non-Targeted Products

As clearly indicated in Figure 3 of Section 2, not only targeted but also non-targeted products are affected by the US-China trade war. Therefore, in addition to looking at the difference between the targeted to non-targeted products, we also explore the trade war's diversion effects on non-targeted products with the inclusion of time trend variables. A non-targeted product is defined as one that did not receive any tariff during the trade war period at all - this status is thus binary and time-invariant the same way the targeted product is defined. We estimate equation 2 below:

$$\begin{aligned} log(Imports)_{jct} \quad = \quad & \beta_1 Targeted^{China}_{jc} \times d_{tar} + \beta_2 NonTargeted^{China}_{jc} \times D_{tar} \\ & + \beta_3 Targeted^{ROW}_{jc} \times d_{tar} + \beta_4 NonTargeted^{ROW}_{jc} \times D_{tar} \\ & + \beta_5 Targeted^{China}_{jc} \times t + \beta_6 NonTargeted^{China}_{jc} \times t \\ & + \beta_7 Targeted^{ROW}_{jc} \times t + \beta_8 NonTargeted^{ROW}_{jc} \times t \\ & + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \end{aligned} \tag{2}$$

The specification above has the same variables with those in equation 1 with the addition of the interaction terms between the indicator variables for non-targeted products imported from China and from ROW with the tariff event dummy variables as well as the interactions of the same targeted/non-targeted from China/ROW indicator variables with linear time trends. As before, d_{tar} is a dummy for the period during which the tariff was imposed on product j. D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods. $\mu_{1,jc}$ represents country-product fixed effects and $\mu_{2,jt}$ are product-month fixed effects

Column (2) of Table 3 looks at the impact of US-China trade war controlling for linear time trends t. After controlling for the linear time trend, we see a jump in the US imports trend once the tariffs are imposed.

3.3 Diversion Effects Before vs. After August 2017

From Figure 3 in section 2, we also see that the impact of the US-China Trade war appeared as soon as the start of investigation in August 2017. Therefore, we divide the pre-tariff period into two parts, before August 2017 vs after August 2017 and estimate equation 3 as follows:

$$
\begin{aligned}
log(Imports)_{jct} \quad = \quad & \beta_{1,Inv} Targeted_{jc}^{China} \times d_{Inv} + \beta_{1,Event} Targeted_{jc}^{China} \times d_{tar} \\
& + \beta_{2,Inv} NonTargeted_{jc}^{China} \times d_{Inv} + \beta_{2,Event} NonTargeted_{jc}^{China} \times D_{tar} \\
& + \beta_{3,Inv} Targeted_{jc}^{ROW} \times d_{Inv} + \beta_{3,Event} Targeted_{jc}^{ROW} \times d_{tar} \\
& + \beta_{4,Inv} NonTargeted_{jc}^{ROW} \times d_{Inv} + \beta_{4,Event} NonTargeted_{jc}^{ROW} \times D_{tar} \\
& + \gamma_1 Targeted_{jc}^{China} \times t + \gamma_2 NonTargeted_{jc}^{China} \times t \\
& + \gamma_3 Targeted_{jc}^{ROW} \times t + \gamma_4 NonTargeted_{jc}^{ROW} \times t \\
& + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \qquad (3)
\end{aligned}
$$

Specification 3 essentially repeats equation 2 with the addition of the interaction terms between the targeted/non-targeted from China/ROW status indicator variables with the time indicator for the period during the investigation but before the tariff, i.e., between Quarter 4 of 2017 and Quarter 2 of 2018: d_{Inv} takes the value of 1 if the time falls into this specified period and 0 otherwise. As before, d_{tar} is a dummy for the period during which the tariff was imposed on product j, and D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods.

Column (3) of Table 3 presents the estimates for equation 3 above. The coefficients $\beta_{1,Invn}$, $\beta_{2,Inv}$ and $\beta_{3,Inv}$, $\beta_{4,Inv}$ are highly significant and positive, suggesting that US imports of both targeted and non-targeted products from China and ROW increased sharply after the start of the investigation in August 2017 even before the tariffs were enforced, which might reflect an increase in imports both from China and elsewhere in anticipation of the tariffs.

After controlling for time trends and relevant fixed effects, we can see that the US imports of the targeted products from the ROW increased by 8.7% on average, while the imports of the non-targeted products from the ROW increased by a smaller amount (5%) on average (See column (3) of Table 3).

Table 3: Trade Diversion

	(1)	(2)	(3)
$Targeted^{China}_{jc} \times d_{Inv}$			0.16***
			(0.010)
$Targeted^{China}_{jc} \times d_{tar}$	-0.26***	-0.24***	-0.065***
	(0.02)	(0.01)	(0.02)
$NonTargeted^{China}_{jc} \times D_{Inv}$			0.13***
			(0.03)
$NonTargeted^{China}_{jc} \times D_{tar}$		0.059*	0.19***
		(0.03)	(0.04)
$Targeted^{ROW}_{jc} \times d_{Inv}$			0.087***
			(0.003)
$Targeted^{ROW}_{jc} \times d_{tar}$	0.040***	0.037***	0.13***
	(0.005)	(0.003)	(0.005)
$NonTargeted^{ROW}_{jc} \times D_{Inv}$			0.050***
			(0.01)
$NonTargeted^{ROW}_{jc} \times D_{tar}$		0.034***	0.082***
		(0.01)	(0.02)
$Targeted^{China}_{jc} \times t$		0.0049***	-0.0076***
		(0.0010)	(0.001)
$NonTargeted^{China}_{jc} \times t$		0.0075***	0.0072**
		(0.0003)	(0.003)
$Targeted^{ROW}_{jc} \times t$		0.017***	0.00060*
		(0.003)	(0.0004)
$NonTargeted^{ROW}_{jc} \times t$		0.0055***	0.0019
		(0.001)	(0.001)
Cons	12.1***	12.0***	12.0***
	(0.0009)	(0.002)	(0.003)
Country-HS6 FE	Yes	Yes	Yes
HS6-Quarter FE	Yes	Yes	Yes
Country-Time FE	Yes	No	No
R-sq	0.874	0.873	0.873
N	2561868	2561870	2561870

3.4 Diversion Effects Across Major Trade Partners by Sector

Using UN Comtrade montly data, we explore how the diversion effects vary across the US' major trade partners by estimating equation 2 (Column (2) in Table 3) using US import data from each of these countries. We present the coefficient of the interaction term $Targeted^{ROW}_{jc} \times d_{tar}$ which represents the effects of the trade war on US imports of targeted products from these countries in Table 4 below.

Table 4: Trade Diversion by Country and Sector

Industry	1	2	3	4	5	6	7	8	9
China	-0.41***	-0.35***	-0.33***	-0.35***	-0.26***	-0.20***	-0.22***	0.038	0.053
	(0.06)	(0.1)	(0.03)	(0.06)	(0.08)	(0.05)	(0.04)	(0.03)	(0.06)
The ROW	0.088***	0.21***	0.14***	0.13***	0.18***	0.13***	0.12***	0.10***	0.14***
	(0.02)	(0.05)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)
Decompose the ROW into Major Trading Partners Separately									
EU	0.11***	0.11	0.12***	0.13***	0.21***	0.10***	0.12***	0.099***	0.16***
	(0.03)	(0.08)	(0.02)	(0.03)	(0.05)	(0.04)	(0.03)	(0.02)	(0.05)
ASEAN	0.094*	-0.36	0.25***	0.23***	0.49***	0.41***	0.23***	0.12***	0.26**
	(0.05)	(0.3)	(0.07)	(0.06)	(0.1)	(0.07)	(0.07)	(0.05)	(0.1)
Canada	-0.055	0.38***	0.036	0.0045	-0.032	0.15*	0.20**	0.076	-0.16
	(0.08)	(0.1)	(0.06)	(0.07)	(0.1)	(0.08)	(0.09)	(0.08)	(0.2)
Mexico	0.12	0.29	0.18***	0.13	0.056	0.16	-0.0051	-0.21**	0.11
	(0.08)	(0.3)	(0.07)	(0.1)	(0.2)	(0.1)	(0.09)	(0.09)	(0.2)
Japan	0.013	0.28	0.15***	0.14**	-0.30*	0.10	0.041	0.14*	0.49***
	(0.07)	(0.3)	(0.05)	(0.07)	(0.2)	(0.09)	(0.06)	(0.07)	(0.2)
Korea	0.028	0.22	0.27***	0.16**	-0.066	0.10	0.11	0.028	0.38*
	(0.08)	(0.2)	(0.08)	(0.08)	(0.2)	(0.1)	(0.09)	(0.10)	(0.2)
Taiwan	0.013	-0.32	0.14*	-0.021	0.12	0.012	0.16*	0.22**	0.030
	(0.09)	(0.4)	(0.08)	(0.09)	(0.2)	(0.10)	(0.08)	(0.1)	(0.2)
Others	0.091***	0.32***	0.15***	0.12***	0.11**	0.056	0.12***	0.12***	0.075
	(0.03)	(0.09)	(0.03)	(0.04)	(0.05)	(0.04)	(0.03)	(0.02)	(0.06)

Industry	10	11	12	13	14	15	16	17	18	Non-Targeted
China	-0.23***	-0.014	-0.35***	-0.43***	-0.14**	-0.28***	-0.28***	-0.011	-0.66***	0.059*
	(0.05)	(0.04)	(0.04)	(0.04)	(0.06)	(0.05)	(0.06)	(0.05)	(0.2)	(0.03)
The ROW	0.087***	0.20***	0.11***	0.11***	0.17***	0.11***	0.018	0.100***	0.071	0.081***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)	(0.03)	(0.04)	(0.09)	(0.02)
Decompose the ROW into Major Trading Partners Separately										
EU	0.099***	0.21***	0.13***	0.12***	0.12***	0.077***	-0.055	0.025	0.26**	0.033*
	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)	(0.04)	(0.06)	(0.1)	(0.02)
ASEAN	0.15**	0.21***	0.14***	0.15***	0.20**	0.16***	0.33***	0.12	0.049	0.16***
	(0.07)	(0.05)	(0.04)	(0.04)	(0.09)	(0.06)	(0.09)	(0.09)	(0.3)	(0.04)
Canada	-0.036	0.19***	0.091**	-0.016	0.22**	0.042	0.012	0.22	0.36	-0.0063
	(0.09)	(0.05)	(0.04)	(0.07)	(0.1)	(0.08)	(0.1)	(0.2)	(0.3)	(0.05)
Mexico	0.064	0.24***	0.17**	0.13*	0.36***	-0.031	0.062	-0.28*	-0.11	0.031
	(0.09)	(0.06)	(0.07)	(0.08)	(0.1)	(0.1)	(0.1)	(0.2)	(0.7)	(0.06)
Japan	0.0011	0.26***	0.0040	0.023	0.027	0.16**	-0.025	0.012	0.15	0.029
	(0.10)	(0.06)	(0.05)	(0.06)	(0.1)	(0.07)	(0.2)	(0.1)	(0.2)	(0.05)
Korea	0.18	0.39***	0.19***	0.21***	0.21*	0.14	-0.17	0.21	1.01*	-0.019
	(0.1)	(0.07)	(0.07)	(0.07)	(0.1)	(0.1)	(0.2)	(0.1)	(0.6)	(0.06)
Taiwan	0.31**	0.12**	0.16***	0.13**	0.18	0.18**	-0.19	0.25**	0.33	-0.040
	(0.1)	(0.05)	(0.05)	(0.06)	(0.1)	(0.08)	(0.2)	(0.1)	(0.4)	(0.05)
Others	0.057	0.14***	0.062**	0.081***	0.24***	0.13***	0.014	0.22***	-0.11	0.0099
	(0.04)	(0.03)	(0.02)	(0.03)	(0.06)	(0.04)	(0.06)	(0.08)	(0.1)	(0.02)

Source: UN Comtrade monthly data

Table 4 above gives an idea of which country and industries are affected by the US-China trade war. The EU, ASEAN countries and Mexico seem more heavily affected. The fact that ASEAN countries are more affected are in line with the idea that their comparative advantages are closer to that of China.

4 Underlying Mechanisms of Trade Diversion Effects

In this section, we answer the next natural questions following the revelation of the patterns of trade diversion across types of products and across regions and trade partners as presented in section 3. We explore three potential mechanisms that drive these results: (i) revealed comparative advantage, (ii) capital intensity and capital endowment, and (iii) colocation effects. The first two potential mechanisms are applicable to both targeted and non-targeted products while the colocation effect channel is relevant for non-targeted products specifically.

4.1 Revealed Comparative Advantage (RCA)

In exploring whether countries with revealed comparative advantages in a product benefit more from the US-China trade war (i.e. by exporting more to the US), we estimate the following equation:

$$\begin{aligned} log(Imports)_{jct} &= \beta_1 Targeted_j \times d_{tar} + \beta_2 Targeted_j \times d_{tar} \times \log(RCA)_c \\ &+ \beta_3 NonTargeted_j \times D_{tar} + \mu_{1,jc} + \beta_4 NonTargeted_j \times D_{tar} \times \log(RCA)_c \\ &+ \gamma_1 Targeted_j \times t + \gamma_2 NonTargeted_j \times t + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \qquad (4) \end{aligned}$$

In equation 4 above, the coefficients of interest are those on the triple interaction terms $Targeted_j \times d_{tar} \times \log(RCA)_c$ and $NonTargeted_j \times D_{tar} \times \log(RCA)_c$ which represent how the level of revealed comparative advantage interacts with trade diversion. Time trend variables are included to control for time trends. Product-country and product-time fixed effects are included as in other specifications. $\log(RCA)_c$ is the log of revealed comparative advantage by product and country. As before, d_{tar} is a dummy for the period during which the tariff was imposed on product j, and D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods.

Using UNCTAD STAT database for comparative advantage [4], we took the average revealed comparative advantage measure for each product of each country from 2015 to 2017 to get a measure that reflects the overall level of revealed comparative advantage by country and product.

Column (1) in Table 5 presents the estimates for equation 4 above. The results confirm that trade diversion is governed by the level of revealed comparative advantage. In Table 5, we focus on the import flow from the ROW only.

[4] Data downloaded from `https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_referer=&sCS_ChosenLang=en`

As we are also interested in exploring the role of RCA in the trade diversion that happened after the start of the investigation on China in August 2017 and before the tariff were put in place, we add interaction terms with d_{Inv} which is the dummy variable for this time period as in equation 3 and estimate the extended equation as follows:

$$
\begin{aligned}
log(Imports)_{jct} \quad = \quad & \beta_1 Targeted_j \times d_{Inv} + \beta_2 Targeted_j \times d_{Inv} \times \log(RCA)_c \\
& + \beta_3 Targeted_j \times d_{tar} + \beta_4 Targeted_j \times d_{Inv} \times \log(RCA)_c \\
& + \beta_5 NonTargeted_j \times d_{Inv} + \beta_6 NonTargeted_j \times d_{Inv} \times \log(RCA)_c \\
& + \beta_7 NonTargeted_j \times D_{tar} + \beta_8 NonTargeted_j \times D_{tar} \times \log(RCA)_c \\
& + \gamma_1 Targeted_j \times t + \gamma_2 Nontargeted_j \times t \\
& + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \qquad (5)
\end{aligned}
$$

As before, d_{tar} is a dummy for the period during which the tariff was imposed on product j, and D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods.

Estimates are presented in column (2) in Table 5, which basically confirm the robustness our results regarding RCA as a mechanism driving the spillovers of the US-China trade war onto bystander countries.

Table 5: Trade Diversion and RCA

	(1)	(2)
$Targeted_j \times d_{Inv}$		0.089***
		(0.003)
$Targeted_j \times d_{Inv} \times \log(RCA)_c$		0.012***
		(0.001)
$Targeted_j \times d_{tar}$	0.041***	0.13***
	(0.002)	(0.004)
$Targeted_j \times d_{Inv} \times \log(RCA)_c$	0.010***	0.014***
	(0.001)	(0.001)
$NonTargeted_j \times d_{Inv}$		0.053***
		(0.01)
$NonTargeted_j \times d_{Inv} \times \log(RCA)_c$		0.012**
		(0.005)
$NonTargeted_j \times D_{tar}$	0.043***	0.090***
	(0.009)	(0.01)
$NonTargeted_j \times D_{tar} \times \log(RCA)_c$	0.020***	0.024***
	(0.004)	(0.005)
$Time \times \mathbb{1}\{Target = 1\}$	0.0075***	0.00069**
	(0.0002)	(0.0003)
$Time \times \mathbb{1}\{Target = 0\}$	0.0055***	0.0020**
	(0.0007)	(0.0010)
Cons	11.8***	11.9***
	(0.002)	(0.002)
Country-HS6 FE	Yes	Yes
HS6-Quarter FE	Yes	Yes
R-sq	0.866	0.866
N	2417184	2417184

4.2 Capital Intensity and Capital Endowment

In exploring whether the level of capital intensity and capital endowment plays a role in how much bystander countries benefit from the US-China trade war, we estimate the following equation:

$$\begin{aligned} log(Imports)_{jct} = \; & \beta_1 Targeted_j \times d_{tar} + \beta_2 Targeted_j \times d_{tar} \times \log(KInt)_c \\ & + \beta_3 Targeted_j \times d_{tar} \times \log K\_endow_c \\ & + \beta_4 Targeted_j \times d_{tar} \times \log(KInt)_c \times \log K\_endow_c \\ & + \beta_5 NonTargeted_j \times D_{tar} + \beta_6 NonTargeted_j \times D_{tar} \times \log(KInt)_c \\ & + \beta_7 NonTargeted_j \times D_{tar} \times \log K\_endow_c \\ & + \beta_8 NonTargeted_j \times D_{tar} \times \log(KInt)_c \times \log K\_endow_c \\ & + \gamma_1 Targeted_j \times t + \gamma_2 NonTargeted_j \times t + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \end{aligned} \quad (6)$$

In equation 6 above, $\log(KInt)_c$ represents the log of the level of capital intensity of country c, $\log K\_endow_c$ represents the log of capital endowment or capital stock of country c. The regression extended on our baseline equations presented in earlier sections by featuring a number of interaction terms between the targeted product status and event dummies as well as the variables of log of capital intensity and log of capital endowment. Our coefficient of interest is $\beta_{4,non-target}$ which shows whether the comparative advantage in capital intensive goods has an effect on whether the country benefits from the US-China trade war when it has a high level of capital endowment. As before, d_{tar} is a dummy for the period during which the tariff was imposed on product j, D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods, $\mu_{1,jc}$ represents country-product fixed effects and $\mu_{2,jt}$ are product-month fixed effects and country-time fixed effects.

The data on capital intensity was downloaded from the NBER database.[5] We took the average at the country level for the latest three years which are from 2011 to 2013. The data source for the level of capital endowment is the World Bank's World Integrated Trade Solution database section on "Export Portfolio and Factor Endowments."[6] We also took the average of the level of capital endowment for each country over the latest three years available from 2014 to 2016. Averaging out the measure across these years helps minimize the effects of potential outliers in the data.

Regression results on equation 6 are presented in Table 6. As we can see in this table, β_8 is positive and significant at the 5% level, suggesting that for a country that has a high level of capital endowment, comparative advantage in capital intensive goods has a positive effect on its exports to the US in the targeted product during the tariff surges. These results confirm that capital intensity is another channel through which the spillovers from the US-China trade war take place.

[5] https://www.nber.org/research/data/nber-ces-manufacturing-industry-database

[6] https://wits.worldbank.org/trade_outcomes.html

Table 6: Trade Diversion and Factor Abundance

	(1)
$Targeted_j \times d_{tar}$	0.52***
	(0.06)
$Targeted_j \times d_{tar} \times \log(KInt)_c$	-0.22***
	(0.06)
$Targeted_j \times d_{tar} \times \log K\_endow_c$	-0.045***
	(0.005)
$Targeted_j \times d_{tar} \times \log(KInt)_c \times \log K\_endow_c$	0.014**
	(0.005)
$NonTargeted_j \times D_{tar}$	1.05***
	(0.2)
$NonTargeted_j \times D_{tar} \times \log(KInt)_c$	0.33
	(0.2)
$NonTargeted_j \times D_{tar} \times \log K\_endow_c$	-0.091***
	(0.02)
$NonTargeted_j \times D_{tar} \times \log(KInt)_c \times \log K\_endow_c$	-0.033
	(0.02)
$Time \times \mathbb{1}\{Target = 1\}$	0.0078***
	(0.0003)
$Time \times \mathbb{1}\{Target = 0\}$	0.0061***
	(0.001)
Cons	11.8***
Country-HS6 FE	Yes
HS6-Quarter FE	Yes
	(0.003)
R-sq	0.867
N	2221329

4.3 Colocation Effects

In this section, we explore colocation effects as a potential underlying mechanism for the effects of the US-China trade war to "spill over" to non-targeted products. We confine our sample to imports of non-targeted products from the ROW. The related products are also affected during the trade war even these products are not affected. We define related products by the same HS2, or HS4 or HS6 category. $\Delta \log(Imp)$ represents the increase in the US imports of the targeted products within HS2, HS4 and HS6, respectively. We divide period into 4 sections. (1) before 2017Q3; (2) 2017Q4 - 2018Q2: the start of the investigation; (3) 2018Q3-2019Q2: the 2018 wave of tariffs; (4) 2019Q3 - 2019Q4 the 2019 wave of tariffs and estimate the following equation:

$$
\begin{aligned}
log(Imports)_{jct} &= \beta_1 \mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \\
&+\beta_2 \mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \\
&+\beta_3 \mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \\
&+\beta_4 \mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \times \Delta \log(Imp) \\
&+\beta_5 \mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \times \Delta \log(Imp) \\
&+\beta_6 \mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \times \Delta \log(Imp) \\
&+\gamma_1 Time_t + \mu_{1,jc} + \mu_{2,jt} + \varepsilon_{jct} \qquad (7)
\end{aligned}
$$

Regression results are presented in Table 7. We get highly significant and positive results for the coefficients on the interaction terms indicating colocation effects from both the 2018 and the 2019 waves of tariffs, confirming the presence of highly significant colocation effects in the spillovers of the trade war.

Table 7: The Impact on the Non-Targeted Products

	(1) HS2	(2) HS4	(3) HS6
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\}$	0.051***	0.045***	0.019
	(0.01)	(0.02)	(0.02)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\}$	0.048***	0.056***	0.037
	(0.01)	(0.02)	(0.03)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\}$	0.068***	0.097***	0.11***
	(0.02)	(0.02)	(0.04)
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \times \Delta log(Imp)$	0.057	0.017	0.0037
	(0.03)	(0.02)	(0.03)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \times \Delta log(Imp)$	0.12***	0.064***	0.039*
	(0.03)	(0.02)	(0.02)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \times \Delta log(Imp)$	0.34***	0.14***	0.077***
	(0.04)	(0.02)	(0.03)
Time	0.0012	0.00030	-0.0031
	(0.001)	(0.002)	(0.003)
Cons	11.7***	11.6***	11.2***
	(0.01)	(0.01)	(0.02)
Country-HS6 FE	Yes	Yes	Yes
HS6-Quarter FE	Yes	Yes	Yes
R-sq	0.849	0.847	0.830
N	170345	115651	49826

We also explore how these colocation effects interact with (i) the share of targeted products within each HS code at the 2-digit, 4-digit and 6 digit levels, and (ii) the level of revealed comparative advantage by including relevant interaction terms as shown in Table 8 in the next page. We measure the size of targeted products within HS2 (or HS4 or HS6) in third countries as X = Ratio of Targeted Products to Total Products. Results in Table 8 confirm both the roles of RCA and size of targeted products in magnifying colocation effects: the larger the size of the targeted products (meaning a relatively higher level of importance of the product), the larger impact on the non-targeted but similar products.

Table 8: The Impact on the Non-Targeted Products with Interaction

	(1)	(2)	(3)	(4)	(5)	(6)
	X = Size of Targeted Products			$X = \log(RCA)$		
	HS2	HS4	HS6	HS2	HS4	HS6
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\}$	0.043***	0.033*	0.031	0.051***	0.047***	0.021
	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\}$	0.039**	0.069***	0.067**	0.045***	0.058***	0.042
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\}$	0.068***	0.13***	0.14***	0.071***	0.11***	0.12***
	(0.02)	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \times \Delta log(Imp)$	0.086**	0.024	0.031	0.077*	0.017	0.012
	(0.04)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \times \Delta log(Imp)$	0.15***	0.091***	0.079***	0.16***	0.063***	0.045*
	(0.04)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \times \Delta log(Imp)$	0.42***	0.16***	0.12***	0.38***	0.14***	0.083***
	(0.05)	(0.03)	(0.04)	(0.05)	(0.03)	(0.03)
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \times X$	-0.019	-0.014	0.012	0.0053	0.0078	0.015
	(0.02)	(0.01)	(0.01)	(0.009)	(0.01)	(0.02)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \times X$	-0.023	0.017	0.033***	0.00028	0.0067	0.025
	(0.02)	(0.01)	(0.01)	(0.009)	(0.01)	(0.02)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \times X$	0.011	0.045***	0.035**	0.017	0.032**	0.052**
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
$\mathbb{1}\{2017Q4 \leq t \leq 2018Q2\} \times \Delta log(Imp) \times X$	0.030	0.0054	0.018	0.036	0.0031	0.028
	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
$\mathbb{1}\{2018Q3 \leq t \leq 2019Q2\} \times \Delta log(Imp) \times X$	0.031	0.020	0.026**	0.053**	0.00084	0.023
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{1}\{2019Q3 \leq t \leq 2019Q4\} \times \Delta log(Imp) \times X$	0.087***	0.013	0.031*	0.078***	-0.0018	0.028
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Time	0.0012	0.00033	-0.0029	0.0012	0.00030	-0.0030
	(0.001)	(0.002)	(0.003)	(0.001)	(0.002)	(0.003)
Cons	11.7***	11.6***	11.2***	11.7***	11.6***	11.2***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
R-sq	0.849	0.847	0.830	0.849	0.847	0.830
N	170345	115651	49826	170331	115651	49826

4.4 ROW Also Exporting More to Other Countries

We look for evidence that "regional" exports to other countries also rise along with exports to the US. As such, we estimate the following equation for each country/region including the European Union, Asean, Canada, Japan, Korea and Mexico:

$$\begin{aligned}\log(Exports)_{jt} = \quad & \beta_1 \times Targeted_j \times d_{tar} + \beta_2 \times Targeted_j \times d_{tar} \times \Delta \log(ExpToUS)_j \\ & + \beta_3 \times NonTargeted_j \times D_{tar} + \beta_4 \times NonTargeted_j \times D_{tar} \times \Delta \log(ExpToUS)_j \\ & + \gamma_1 Targeted_j \times t + \gamma_2 NonTargeted_j \times t + \mu_j + \varepsilon_{jt} \end{aligned} \tag{8}$$

$\log(Exports)_{jt}$ is the log of the exports of product j at time t to countries other than the US and China. $\Delta \log(ExpToUS)_j$ is the change in the exports to the US of product j, which is a proxy for the impact of the tariff. Targeted products are those at the HS 6-digit level for which a tariff on China was imposed at some point while d_{tar} as before is a dummy for the period during which the tariff was imposed on product j. D_{tar} takes the value of 1 for any time from Quarter 4 of 2018 and after and 0 for other time periods. $NonTargeted_j$ is a dummy for products at the HS 6-digit level which were not tariffed. Positive estimates of β_2 and β_4 indicate that exports to countries other than the US and China are increasing with the impact of the US-China trade war. Results are presented in Table 9. The evidence suggests that exports of different regions/countries to countries than the US and China did rise.

Table 9: Exports to Countries other than the US and China

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All Areas	ASEAN	Canada	Europe	Japan	Korea	Mexico
$Targeted_j \times d_{tar}$	-0.10***	-0.12***	-0.15***	-0.21***	-0.046***	-0.040***	0.30***
	(0.005)	(0.01)	(0.02)	(0.006)	(0.009)	(0.01)	(0.02)
$Targeted_j \times d_{tar} \times \Delta \log(ExpToUS)_j$	0.086***	0.027	0.074	0.076**	0.051	0.15***	0.24**
	(0.02)	(0.05)	(0.07)	(0.03)	(0.04)	(0.04)	(0.1)
$NonTargeted_j \times D_{tar}$	-0.097***	-0.094	-0.20***	-0.21***	-0.085***	0.084	0.54***
	(0.02)	(0.08)	(0.08)	(0.03)	(0.03)	(0.07)	(0.1)
$\mathbb{1}\{Non-TNonTargeted_j \times D_{tar} \times \Delta \log(ExpToUS)_j$	0.082***	0.040	0.080	0.083	0.033	0.16**	0.15***
	(0.03)	(0.06)	(0.07)	(0.07)	(0.04)	(0.07)	(0.06)
Cons	13.5***	14.2***	11.0***	15.2***	13.5***	13.2***	12.0***
	(0.004)	(0.01)	(0.01)	(0.005)	(0.008)	(0.01)	(0.02)
Linear Time Trend by Country	YES	YES	YES	YES	YES	YES	YES
HS6 FE	YES	YES	YES	YES	YES	YES	YES
R-sq	0.910	0.881	0.773	0.932	0.933	0.885	0.819
N	913722	157043	144312	240450	173112	146116	52689

5 Conclusion

In this paper, we have used UN Comtrade data, US import data, the NBER Manufacturing Industry database and the World Bank's World Integrated Trade Solution database to explore the spillover effects of the US-China trade war in various dimensions and their potential underlying mechanisms. While our findings indicate significant spillovers of the US-China trade war on other countries as well as non-targeted products, which is consistent with the literature so far, we have also uncovered various significant underlying mechanisms of such effects, which, to our knowledge, no other study has done. Our empirical results present conclusive evidence that a bystander country's revealed comparative advantage as well as its level of capital stock and capital intensity lead to increases in the benefits that it receives from the tariff surges between the US and China. In addition, non-targeted products that are similar to targeted products (identified as products within the same groups of HS classifications) are also affected by the tariffs in terms of the level of US imports from other countries vs. from China via the colocation channel. These results pave the way for further research on how firms reorganize their production at the micro level which can be accomplished via the use of customs data.

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