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The Impact of the US-China Trade War in the Houston and National Economies

Yewande Olapade, Pablo M. Pinto, and Sunny Wong

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CHAPTER 1

Introduction

The Houston area has become a central trade hub; thousands of firms engage with foreign markets to procure inputs and place their products. Consumers benefit from ever-increasing varieties of goods produced in the area and around the world, and from lower prices that result from the competition in the globalized economy. Moreover, local producers have access to cheaper intermediate goods that allow them to remain competitive in regional and global markets.

Given its strategic location and its busy port, Houston is a transportation hub for intermediate and final goods flowing into and out of the country. Yet, an intense backlash against trade openness and outsourcing has taken center stage in American politics. Houston is no exception to this trend: not everyone in the nation and in Houston is happy with globalization. The reason is simple: engaging the world through trade has sizable benefits for the nation as a whole, but some businesses and workers are displaced due to higher competition with cheaper foreign goods entering our markets. While in the aggregate the gains from trade are much larger than the losses, the losers usually find a way to make their voices heard.

In recent years, political leaders in the U.S., Democrats and Republican alike, readily point fingers at U.S. trading partners, such as China, Mexico, South Korea, Canada, and the European Union, for allegedly restricting market access to American firms' goods, and services. Trade policy became a central issue in the 2016 Presidential campaign and is making headlines in the run-up to November's election.

Threatening foreign countries with higher tariffs could be expedient on the domestic and international fronts. Raising tariffs helps policymakers muster support from aggravated voters in import-competing industries. For a large country like the U.S., the threat of restricting market access can force partner governments to the bargaining

table. Yet albeit politically expedient, these protectionist stances are grounded in a mercantilist approach to trade politics that has had devastating consequences for the U.S. economy in general, and the Houston area in particular. In today's globalized economy, raising tariffs on Chinese imports not only affects the prices faced by domestic consumers but also disrupts global production networks and increases the cost of production inputs making final goods made by American firms more expensive and exports less competitive in international markets.

U.S. political responses to the so-called "China shock" have resulted in tariff wars that have depressed economic activity in the Houston area and heightened global trade tensions. President Trump's tariff war on China was launched in several waves throughout 2018 and the first half of 2019. The first wave of tariffs imposed import duties of 30 percent on solar panels, and 20-50 percent on washing machines. The second wave occurred in March 2018 with 10 percent duties on aluminum, and 25 percent on steel products, items in which China's market share is nearly half of the world's supplies. The size of these tariffs was smaller compared with the 25% duties, directly targeting over $250 billion worth of Chinese products. The tariffs included in the last wave were slated to rise in value by 15 percentage points in January 2019 until President Trump and President Xi announced a temporary truce to engage in trade talks. Should this happen, about 90 percent of Chinese goods imported by the Houston area are exposed to an average 25 percent higher tariff rates.

This article briefly discusses how raising tariffs on Chinese imports has affected consumers, producers, and business activities in the Houston area and the rest of the U.S. In 2018, the Houston area's imported $12.7 billion of goods from China and $45.8 billion worth of goods from the rest of the world. Of the $12.7 billion of Houston area's imports from China in 2018, approximately $6.07 billion (48 percent) were either capital goods or intermediate goods. These items are inputs used in production of other intermediate goods or final products. The rise in tariffs significantly drives up the cost of production. As a result, these tariff hikes can show up quickly in the unit prices paid by businesses and consumers as higher import duties on Chinese imports were followed by a sharp increase in prices on intermediate inputs and consumer goods purchased from China. More importantly, a tariff hike in one sector can impact prices in other industries and countries through the firm's supply chain network in production and global value chains.

The next chapter shows the impacts on tariffs and prices for both affected and untreated products.

CHAPTER 2

Tariff Rates and Prices

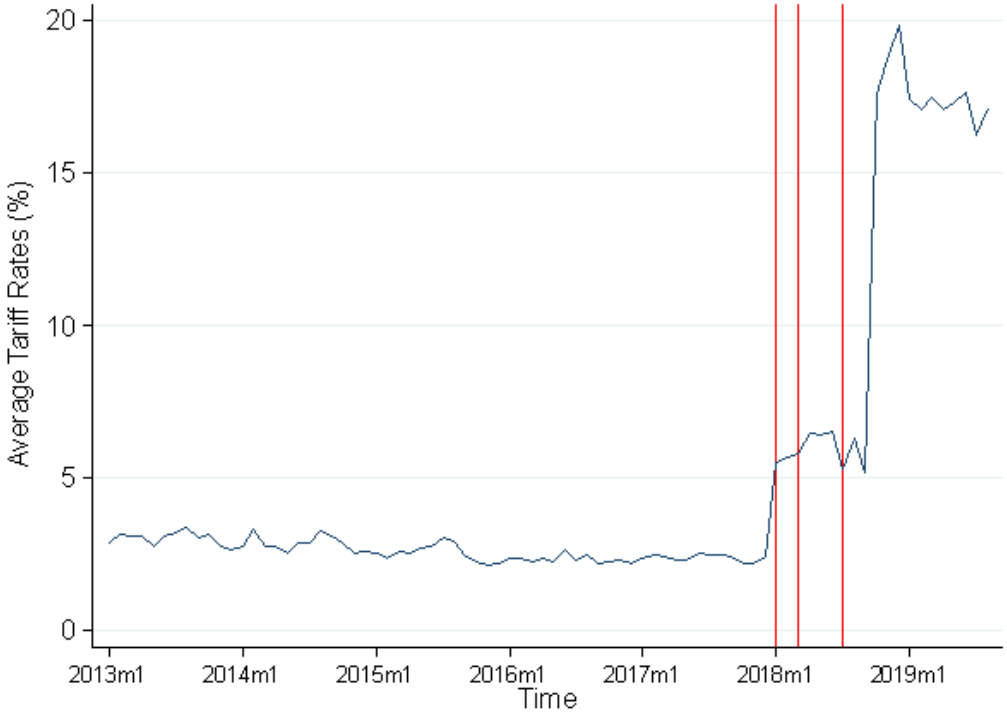
Figure 2.1 reports the average tariff rates imposed on imports from China from January 2013 to August 2019, constructed from annual tariff rates from United States International Trade Commission (USITC). Vertical line indicates the implementation of the tariff waves enforced throughout 2018 and 2019. In January 2013, the U.S average tariff rates on imports was as low as 3%, until in January 2018 when it doubled and rose to 6%, after the enforcement of a higher tariffs on washing machines and solar panels. After the imposition of 25% duties on $250 billion worth of goods imported from China, average tariff rates on Chinese products rose to 18%.

In Figure 2.2, we plot the average tariff rates on imports from China for each group of products affected by tariff hike as well as unaffected products. After the Trump administration trade war on China, there were sharp increases in average tariff rates following imposition of higher duties on washing machines and solar panels, as well as steel and aluminum, with a sharper uptick following tariff hike on Chinese products in particular. Average tariff rates on unaffected products (untreated) and products with future tariff hikes remain flat.

After the tariff hikes we observe a swift uptick in the prices U.S. consumers are paying for these goods. Figure 2.3 plots the Consumer Price Index (CPI) of major appliances, which is the broad category of goods that includes washing machines. The figure shows that even though the CPI for major appliances had been falling steadily for years prior to trade war, prices rose sharply after the imposition of the new tariffs.

While it is difficult to link import prices cleanly to the CPI, Figure 2.4 provides insights on how these tariffs are being passed through to domestic prices by considering what has been happening to the prices paid by U.S. importers. The U.S. customs data reports the foreign exports value and quantities of imports by source country at the

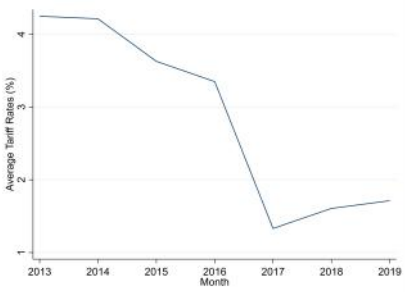
Figure 2.1: Average Tariff Rates on China



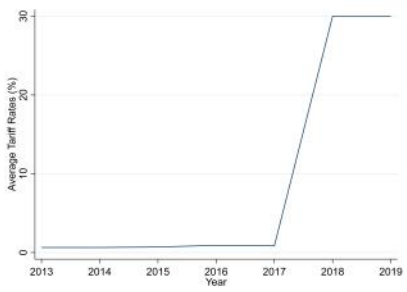
Source: U.S. Census Bureau; USITC; author's calculations.
Average tariff rates are constructed as U.S. Tariffs on the 10-digit Harmonized Tariff Schedule (HTS) product code from China, weighted by imports values. HS10 products with extreme tariff rates above 10000 and re-imported goods are excluded. Vertical lines indicate the implementation of new tariffs: solar and washing machines, steel aluminum, and the $250B list on China respectively.

HS10 digit level of harmonized system. By dividing imports value by total quantities purchased, we calculate the unit values for each dis-aggregated product at HS10 level. We multiply the unit values by the duty rates available from the U.S. International Trade Commission reported in Figure 2.2 and President Trump's tariff rates, to obtain tariff-inclusive imports prices. We eliminate secular trends in price increases by subtracting average price increase for each tariff wave in December 2017.

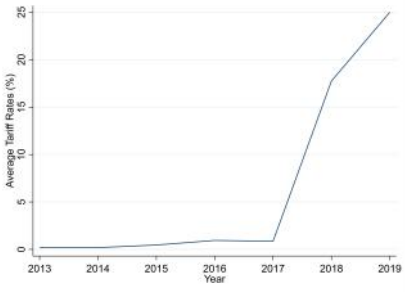
Figure 2.4 plots the evolution of these import-value weighted prices for each of the six waves and unaffected products. A couple of facts jump out here, while prices of untreated products remains flat and then decline after November 2016, we see sharp increases in tariff-inclusive prices of goods that were subject to tariff hikes.



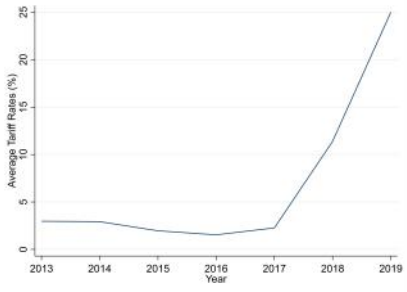
(a) Unaffected



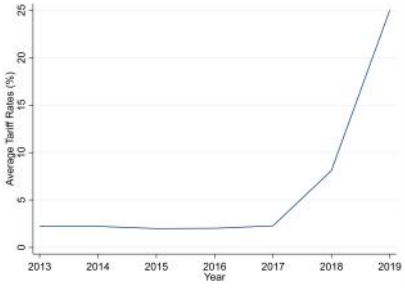
(b) Solar Pan. Wash. Mach.



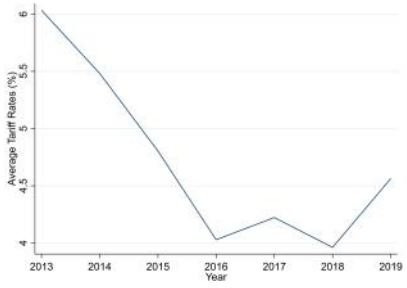
(c) Steel & Aluminum



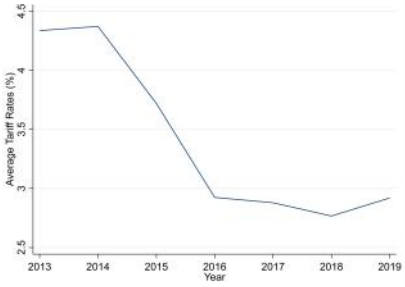
(d) $50 Billion list on China



(e) $200 Billion list on China



(f) Chinese Products Effec. Sep., 2019

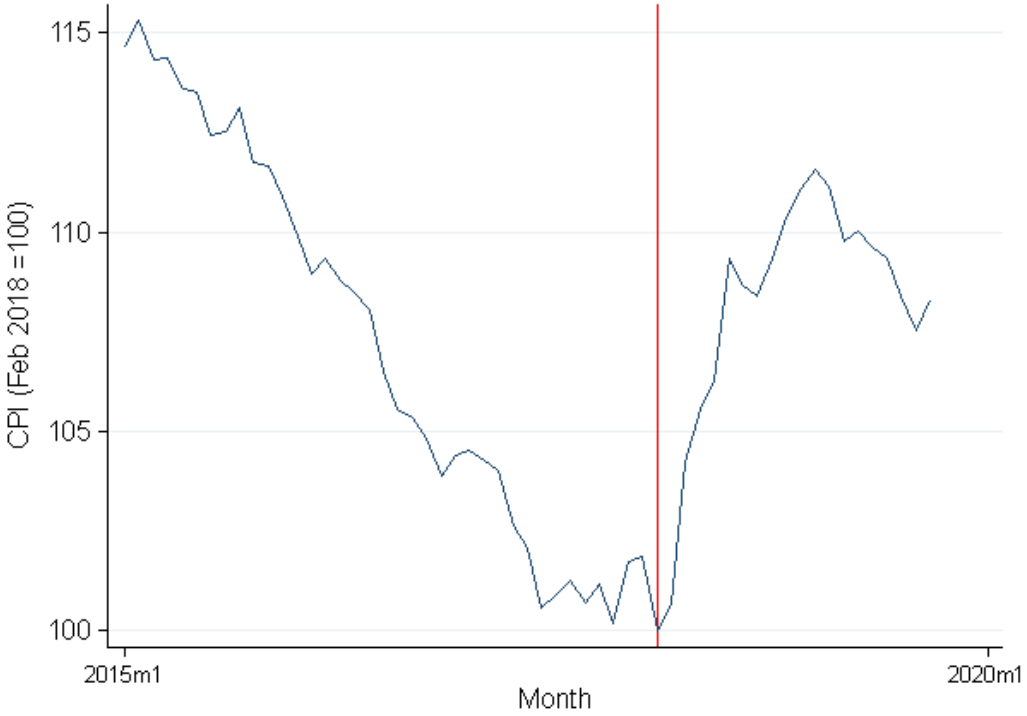


(g) Chinese Products Effec. Dec., 2019

Figure 2.2: Average Tariff Rates by Wave

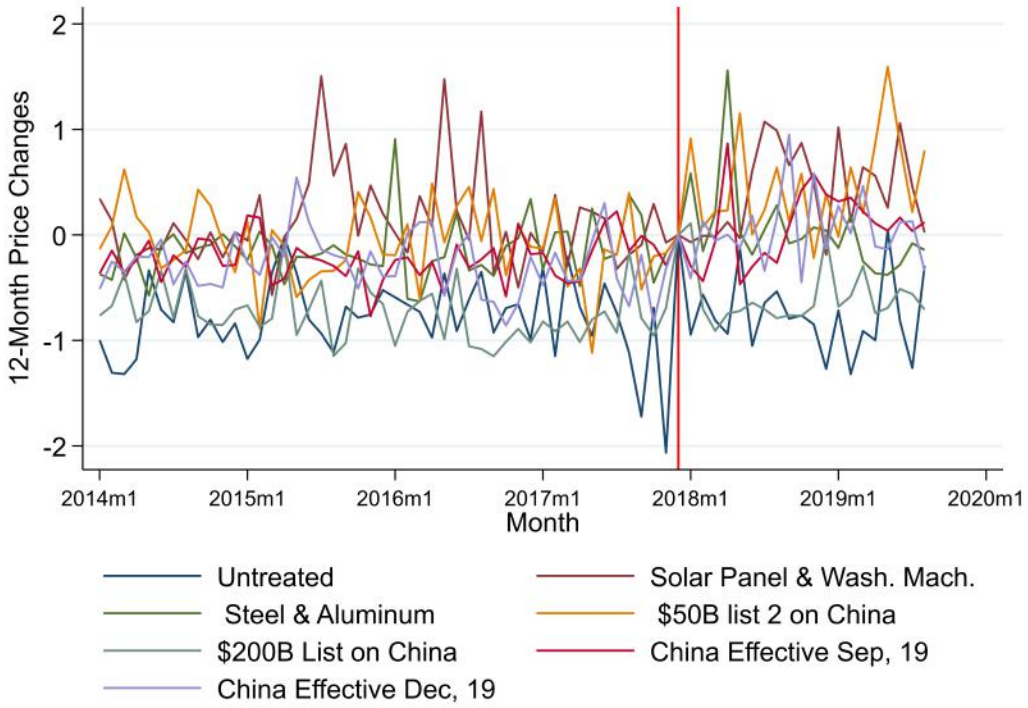
Source: U.S. Census Bureau; USITC; author's calculations.
Average tariff rates based on the HTS10 Tariff Schedule product code weighted by imports values.

Figure 2.3: Consumer Price Index for Major Appliances



Source: U.S. Census Bureau; author's calculations.
Monthly CPI of ELI HK01 - Major Appliances. Series indexed to 100 in February 2018. The red vertical line indicates the implementation of the January 22nd tariffs on washing machines.

Figure 2.4: 12-Month Proportional Change in Import Prices by Wave



Source: U.S. Census Bureau; USITC; author's calculations.
Proportional change in imports-weighted average of 12-month relative changes in tariff-inclusive unit prices for each wave and unaffected products. Proportional change for each wave is normalized to be zero for December 2017.

CHAPTER 3

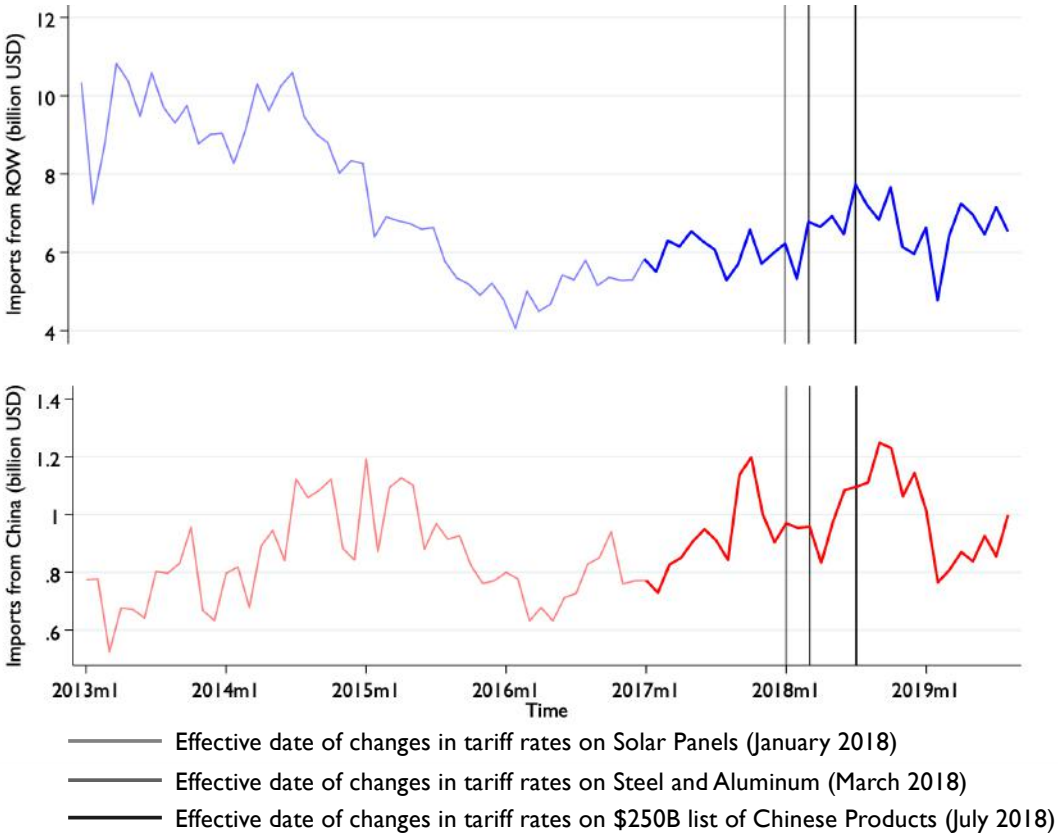
Imports from China and Rest of the World to Houston Area

Figure 3.1 reports the import value in billions of dollars from January 2013 to August 2019 for China and the rest of the world (ROW) (excluding China). The lines with lighter colors represent the import levels before Trump's administration, and the lines with darker colors are the import levels during Trump's administration. The total imports from ROW have been decreasing since January 2013 and reached the lowest level of $4.07 billion in February 2016. From 2013 to 2015, the total volume of imports from China increased.

In 2015, both Donald Trump and Bernie Sanders announced their presidential candidacies, potentially raising uncertainty about changes in trade restrictions and making businesses move forward import orders in order to obtain products before any changes in tariff and trade terrain occurred. Import values were generally increasing from both China and ROW from the beginning of 2016 to around the middle of 2018. The monthly imports from China reached $1.2 billion in October 2017 and dropped sharply to $0.83 billion in April 2018 after the first two waves of tariff war on China in January and March 2018, but imports immediately went up and even increased after the July 2018 tariff change. This uptick could be driven by firms, who were sensitive because of prior announcements of tariff hikes, increasing their procurement from abroad in anticipation of the implementation of the tariffs; imports from China eventually fell before January 2018 date when the tariffs became effective.

Figure 3.2 shows that the share of imports from China relative to the total imports in the Houston area in the past seven years. The figure confirms that the import share from China to the U.S. was increasing from 2013 to 2016 and that despite varying, the average share has only declined slightly since 2016. The imports from China were

Figure 3.1: Houston Total Imports

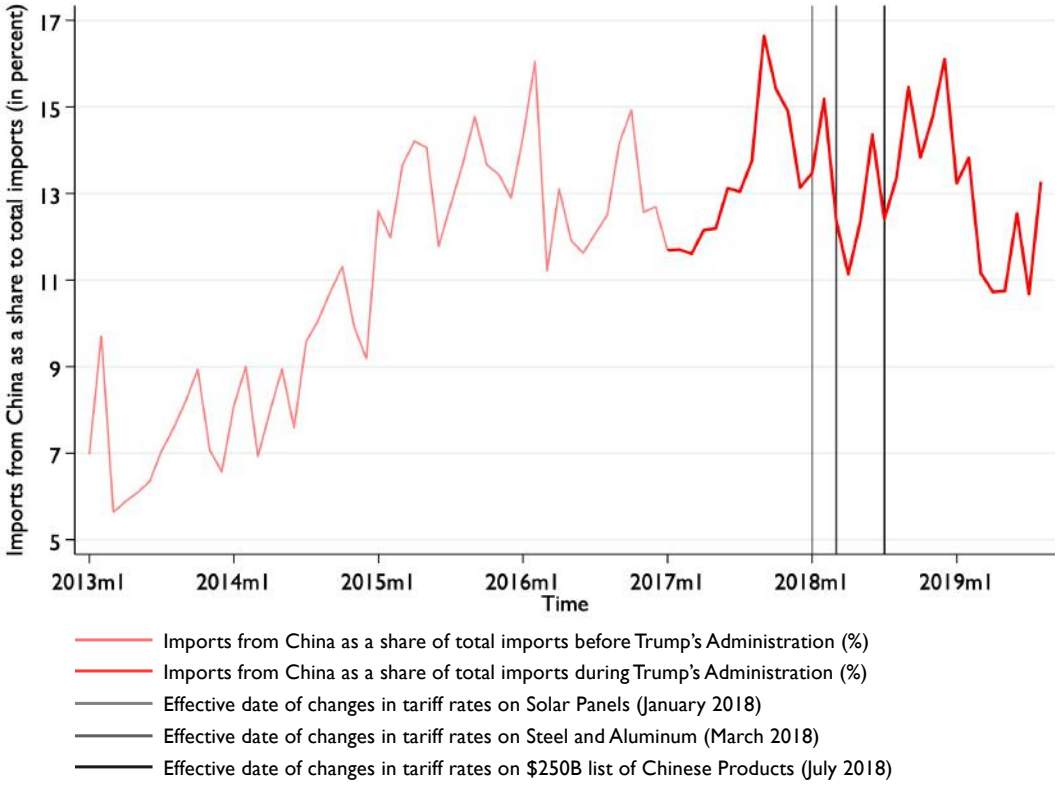


Notes: Lines with lighter colors present imports from ROW and China before Trump's administration, and lines with darker color present imports from ROW and China during Trump's Administration.

about 8.1% of total imports between 2013 and 2015. The share of imports from China has been rising rapidly since mid-2015. The average percentage of imports from China relative to the total imports heightened to 13.2% before Trump's first wave of tariff wars in January 2018. Placing tariffs on specific Chinese imports also has spillover effects on other products not impacted directly by the tariff. We find that prices of these non-tariff products increased by as much as 8% due to the spillover effect. Given the current spread of Chinese imports, businesses around the Houston area are disproportionally impacted, and so are international trade flows.

To avoid paying tariffs on commodities purchased from China, businesses have the option of procuring products from other countries or buying locally. Figure 3.3 presents 12-month growth rates of imports from ROW and China in the period of

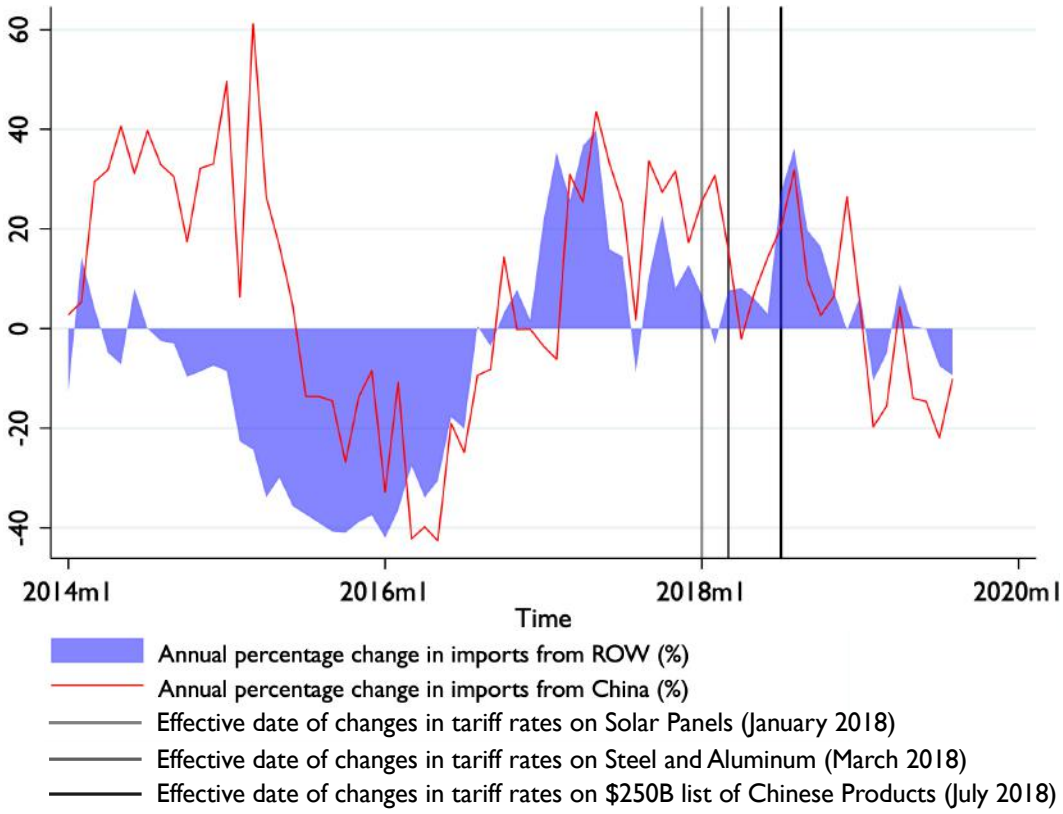
Figure 3.2: China's Share of Total Imports



January 2014-August 2019. The filled areas in Figure 3.3 represent the growth rates of imports from ROW, and the line represents the growth rates of imports from China. To remove the volatility of monthly growth rates of imports, Figure 3.4 illustrates the average annual growth rates of imports in the Houston area.

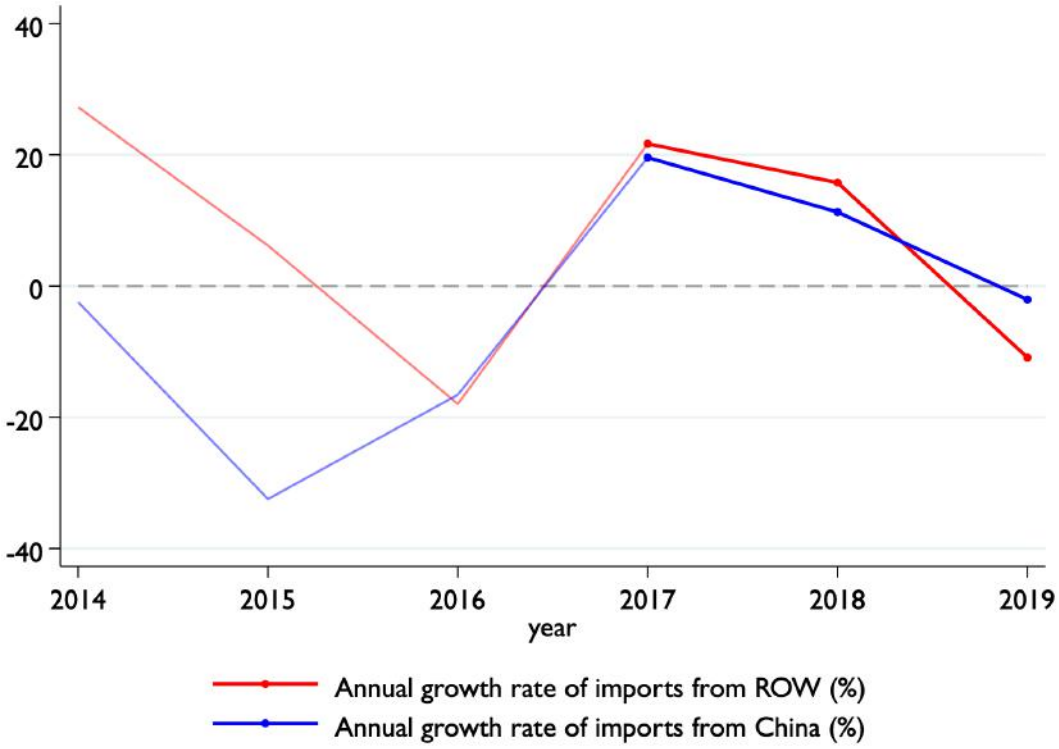
According to Figure 3.4, the U.S. has had a dramatic reversal in import growth since about 2015. This reversal may partly reflect the boom in the U.S. economy, which would increase importation spending due to the income effect. After 2016, there was a rapid growth in imports, both from the ROW and China. From January to December of 2017, a year before the first wave of import duties was imposed on solar panels, the average annual growth rates of imports from China and the rest of the world were 21.7% and 19.6%, respectively. The effects of the three waves of tariffs showed up in October 2018. The growth rates of imports from China and the rest of the world decreased to 15.8% and 11.3%, respectively. In 2019, the growth rates of imports were -10.9% and -2.1% from China and the rest of the world, respectively. These patterns are consistent with Figure 3.3, which shows the annual growth rate of imports from ROW

Figure 3.3: 12-Month Proportional Change in Imports



had a more significant decrease than China in 2014–2016, and this is when China's share of imports was also growing. The imports from the ROW and China grew quickly in 2017-2018 but declined again in 2019.

Figure 3.4: Annual Percentage Growth in Imports



CHAPTER 4

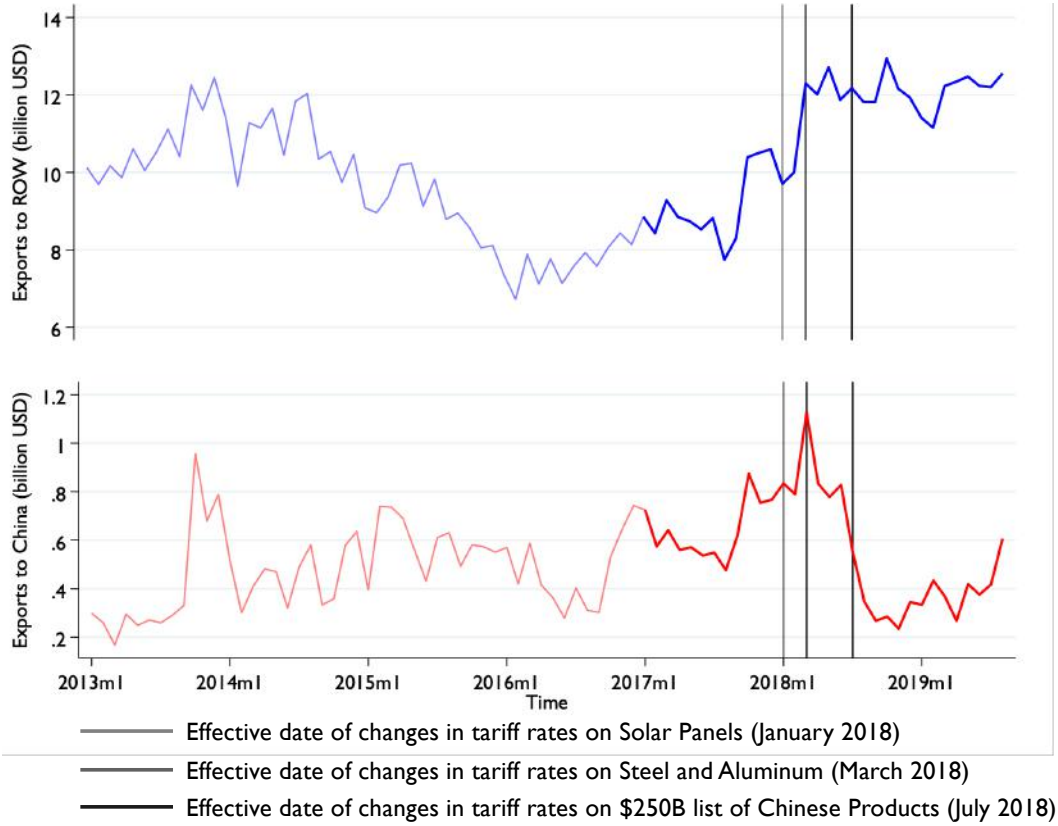
Exports to China and Rest of the World from Houston Area

The purported motivation for engaging in a tariff war with China was based on a flawed premise: that the U.S. trade deficit needed to be reduced. The decline in imports would suggest that the tariff hikes succeeded. However, Figure 4.1 shows that the exports from the Houston port to China declined more rapidly over the period that the U.S. engaged in the tariff war. Figure 4.1 presents the time series data of the exports to ROW and China for January 2013-December 2019. The lines with lighter colors show export levels before Trump's administration, and the darker portions are those during Trump's administration. If we compare Figure 2.4 in Chapter 2 to Figure 4.1, we find that exports to China also had an increasing trend in value from 2013 to 2016 but jump significantly at the beginning of the Trump administration until falling to 2013-2014 levels after July 2018. The top series shows that exports continue growing to the ROW even after the tariff implementation. This movement partly reflects the economic expansion in the U.S. since 2016. However, there was a temporary drop in August 2017. After the decline in August 2017, exports to ROW went up quickly until the second wave of the tariff war in March 2018 and remained steady after. However, Figure 4.1 shows that exports to China dropped significantly from 1.12 billion in March 2018 to $230 million in November 2018. It went down by nearly 80% in eight months.

Besides investigating the absolute levels of exports to China over time, we also present the relative levels of exports to China before and after the tariff war. Figure 4.2 shows the share of exports to China relative to total exports from Houston port throughout 2013:1-2019:12. The exports to China reached an all-time high level of 8.4% in March 2018, and dropped below 2% in November 2018, four months after imposing import tariffs on the $250B-list of Chinese products.[1]

[1]Technically speaking, the percentage of net exports to ROW relative to total trade is measured as

Figure 4.1: Houston Total Exports

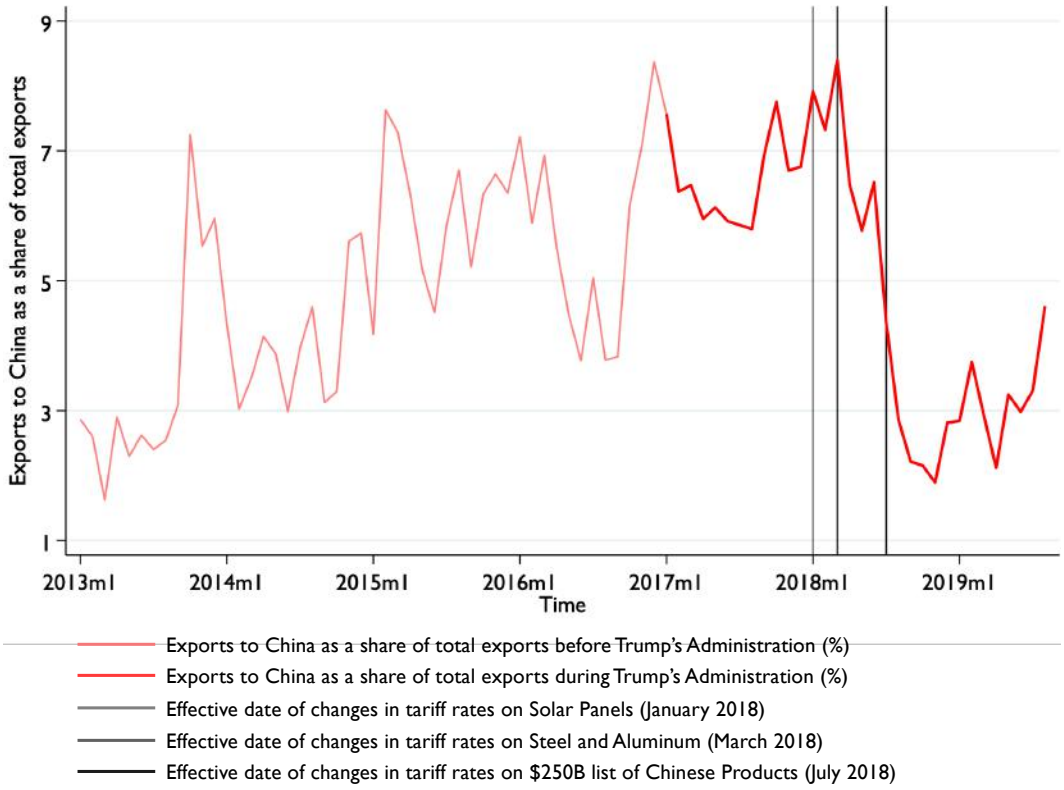


Notes: Lines with lighter colors present exports to ROW and China before Trump's administration, and lines with darker color present exports to ROW and China during Trump's Administration.

Another important observation from the data is that the import tariffs were ineffective in reducing the U.S. trade deficits with China. Figure 4.3 shows the net exports to ROW and China in the Houston area over the period of January 2013-December 2019. The blue and red lines represent the net exports to ROW and China as a share of total trade, respectively. The lines with lighter colors represent the trade situations before Trump's administration and those with darker colors the trade balance conditions during Trump's administration. Figure 4.3 shows that the U.S. has been experiencing

the difference between exports to ROW (excluding China) and imports from ROW divided by the sum of exports to ROW and China and imports from ROW and China. Similarly, the share of net exports to China relative to total trade is defined as the difference between exports to ROW (excluding China) and imports from ROW divided by the sum of exports to ROW and China and imports from ROW and China.

Figure 4.2: China's Share of Total Exports

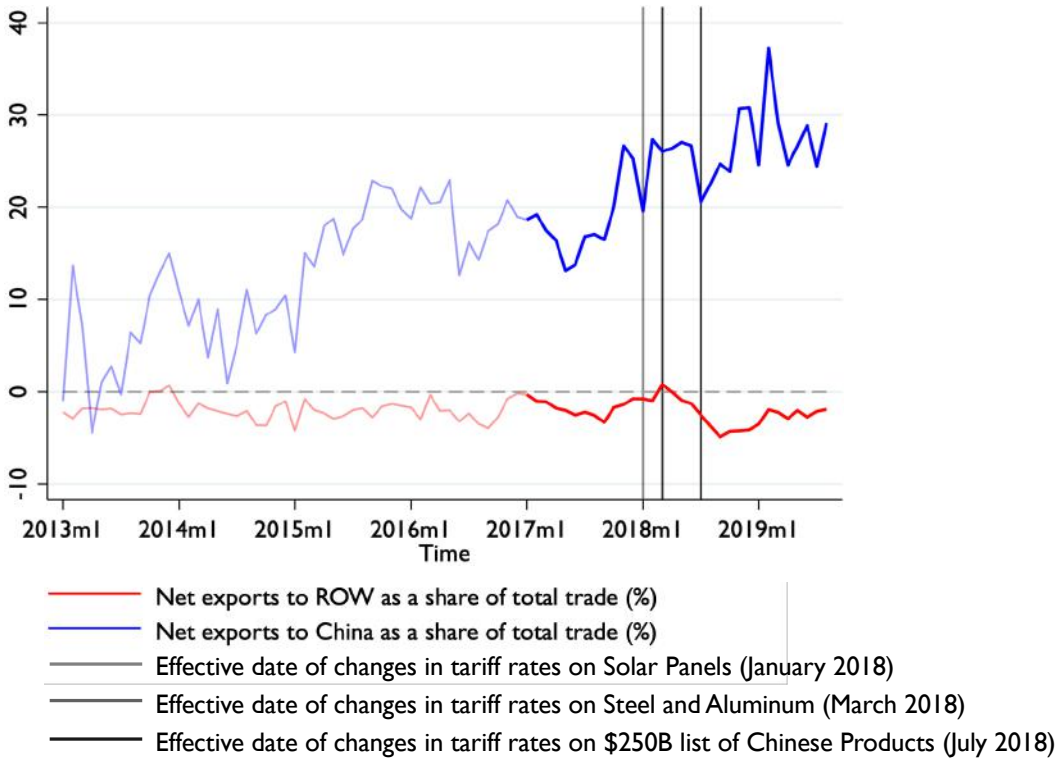


trade surpluses with ROW since mid-2013. The trade surpluses with ROW were trending upward over time. However, the condition of the trade deficit with China did not change after Trump took office in January 2017. It seems that the level of trade deficit with China got worse after imposing tariffs on the 250-billion-dollar list of Chinese products in July 2018. Throughout 2018, Houston area ran a trade deficit with China as net export grew from $135 million in January 2018 to $983 million by September 2018.

Finally, Figure 4.4 presents the 12-month growth rates of exports to China and the rest of the world. Similar to Figure 3.3, the filled areas represent the growth rates of exports to ROW, and the line represents the growth rates of exports to China. Figure 4.4 shows that the United States had a positive annual percentage change in exports to the ROW for almost every month from 2017 to the present.

However, the percentage changes in exports to China were more volatile before and after Trump's implementation of trade tariffs. In 2017, the average 12-month

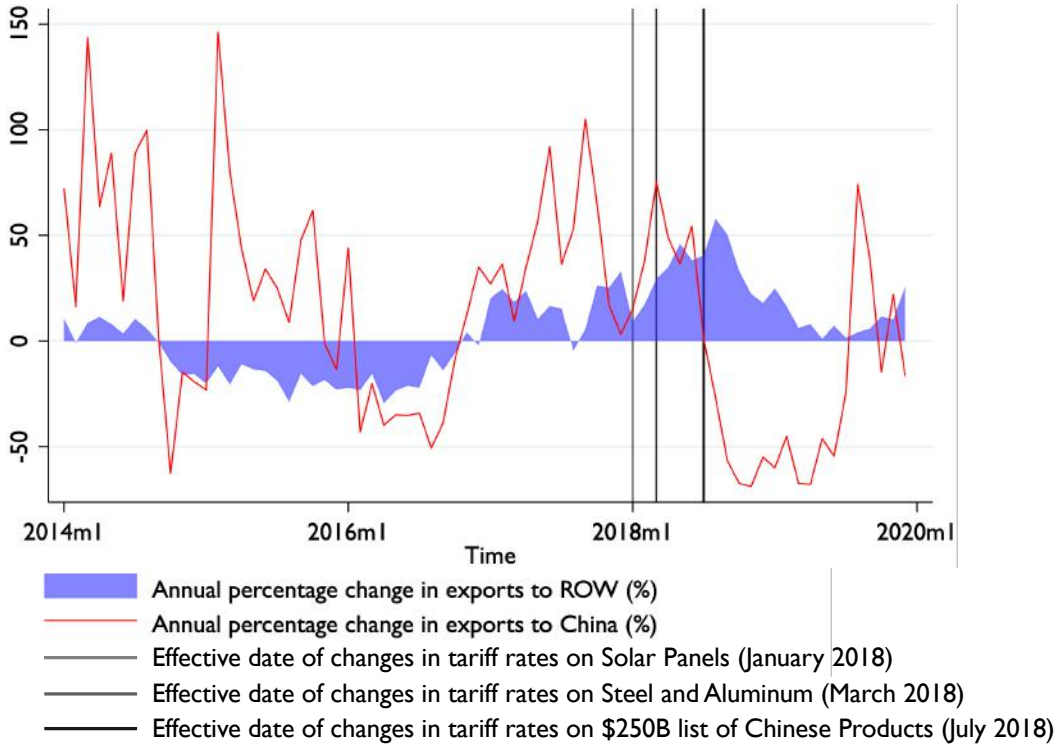
Figure 4.3: Net Exports



growth rates of exports to China and ROW were 44.7% and 17.9%, respectively. The annual growth rate of exports to the rest of the world peaked at 57% in August 2018, but gradually decreased to around 8.7% in the first eight months of 2019.

In contrast, the exports to China dropped substantially after the third tariff wave. The recorded annual growth rate of exports to China was -53.4% in the period from August 2018 through July 2019. This decline in exports could be a result of retaliatory tariffs enacted by other countries, including Turkey, Canada, Mexico, and China herself.

Figure 4.4: 12-Month Percentage Change in Exports



CHAPTER 5

Estimating the Effects of Trump's Trade Policy on U.S. Imports

We now turn to estimating the trade and price effects of Trump's trade policy using a difference in differences identification strategy. The sample covers monthly U.S. imports of dis-aggregated HS10 products such as from China and the rest of the world (ROW) beginning from January 2013 to August 2019 for 45 districts of the United States. Since the sample is long enough we can assess the causal impact of higher duties using Trump's victory as a source of exogenous shock to the model. The results can be interpreted as the mean impact of Trump's trade policy on trade outcomes across U.S. districts and waves of tariff hike. The treatment groups are products affected by tariff increases regardless of the timing of the tariff imposition, while unaffected products serve as the control group.

Since we observe U.S. imports from both China and the rest of the world, we use Trump's November 2016 electoral victory as a source of exogenous shock to the model, and compare the differences in imports across time by partner countries. Products impacted by Trump's tariff hikes are classified as treated, whereas products not targeted by additional tariffs are in the control group. Essentially, this model hinges on the assumption that, had there been no tariff war, the difference in imports values between treated and untreated products will follow with their normal trend before and after November 2016. The triple interaction picks up the difference of these differences between China and the rest of the world.

We analyze the effects for China and compare them to imports from the rest of the world (ROW). We calculate imports from ROW by taking the difference between total imports and imports from China. To identify the impacts of tariff increase on imports value, we estimate the following model:

$$Y_{ijxt} = \beta_0 + \beta_1 After + \beta_2 Treat + \beta_3 After * Treat + \beta_4 China + \beta_5 Treat * China + \beta_6 After * China + \beta_7 After * Treat * China + \epsilon_{ijxt} \quad (5.1)$$

where Y_{ijxt} is imports to districts *i* of HTS10 products *j*, from exporter *x* (where x is China or ROW) at month *t*. *After* is a dummy which equals 1 for months after November 2016 and zero otherwise, measuring the pure effect of time even in the absence of a policy change. *Treat* is a dummy which equals 1 for products affected by tariff waves and zero for unaffected product and captures the difference in imports values for treated and unaffected products prior to change in tariff policy. *After*Treat* measures the difference in differences between control and treated products, before and after tariff war. *China* is a dummy indicator if exporter is China and zero for the rest of the world. Effects of the tariff war on China is captured by the triple interaction term.

Treating the Trump's administration tariffs as exogenous and assuming that they are uncorrelated with unobserved shocks to dependent variable, the estimated coefficient of the triple interaction term captures the impacts of the tariffs on imports values. If trade war has a negative impacts on imports, β_3 is negative and significant. If trade war has a negative impact on China relative to ROW, β_7 is negative and significant. Standards errors are clustered at district level.

Table 5.1 reports the linear regression estimation of equation (5.1). As we expect, the trade war with China has a negative impact on imports. Total imports value of affected products has declined since November 2016 by $1,179,565.18 monthly on average. The triple differences effect is positive and significant, suggesting that compared with ROW, on average, imports of affected products from china has increased since November 2016. Triple interaction term indicates an increase of $1,057,389.854 in imports of affected products from China relative to imports from the ROW. Our results remain significant after controlling for tariff wave and district-level effects. Overall, the impacts of tariff hike on China are negative, and results remain significant with different specification.

Since affected products are distributed across two-digit sectors, we evaluate the differential impacts at sectoral level. First, we crosswalk HTS10 products to 2-digit ISIC rev 3.1. using the World Integrated Trade System (WITS) concordance, which aggregate all products to 15 tradable sectors. Then, we estimate a linear regression of equation (5.1) for each sector. The result is reported in Table 5.2. Our analysis focuses

on the triple interaction term.

Table 5.2 shows heterogeneous impact of trade war on China. On average, imports of affected products from China declined significantly in agriculture, textile, paper, mineral and auto sectors while imports from China increased in wood, chemicals, plastic, basic metals, mineral resources, Office & Medical equipment (OECM), and in other manufacturing sectors.

Table 5.1: Aggregate Impacts of Trump's Trade War (Triple Difference)

Dependent Var.:	import values	import values	import values	import values
after	1,235,737.57***	1,235,737.57**	1,235,737.57**	1,159,867.47***
	(29,592.76)	(391,507.06)	(391,507.11)	(29,156.73)
treat	-1,470,342.74***	-1,470,342.74***		-1,445,528.34***
	(14,744.65)	(234,952.78)		(14,528.65)
aft-treat	-1,179,565.18***	-1,179,565.18**	-1,178,725.59**	-1,099,458.82***
	(30,393.56)	(406,176.68)	(405,821.35)	(29,945.08)
china	-1,779,714.70***	-1,779,714.70***	-1,779,714.70***	-1,826,310.60***
	(24,561.28)	(243,844.43)	(243,844.46)	(24,211.88)
treat-china	1,500,404.56***	1,500,404.56***	1,499,459.81***	1,560,615.88***
	(25,861.48)	(232,193.73)	(230,765.65)	(25,478.95)
aft-china	-1,116,897.88***	-1,116,897.88**	-1,116,897.89**	-1,215,271.94***
	(53,516.58)	(362,302.64)	(362,302.69)	(52,723.93)
aft-treat-china	1,057,389.85***	1,057,389.85**	1,056,784.01**	1,154,401.22***
	(54,869.61)	(376,747.41)	(376,966.04)	(54,056.96)
Solar & Wash. Mach.			-1,215,199.42***	
			(219,104.425)	
Steel & Alum.			-1,638,538.83***	
			(254,819.81)	
$50B list on China			-1,267,063.35***	
			(272,482.835)	
$200B list on China			-1,485,428.909***	
			(245,824.371)	
List Effective Sep. 19			-1,635,767.627***	
			(239,917.017)	
List Effective Nov. 19			-1,299,652.479***	
			(281,242.682)	
Constant	2,240,768.69***	2,240,768.69***	2,240,768.69***	1,779,534.00***
	(14,003.37)	(255,443.14)	(255,443.17)	(25,611.87)
Observations	20,033,905	20,033,905	20,033,905	20,033,905
R-squared	0.001	0.001	0.001	0.031

Table reports effects of Trump trade war on imports from both China and rest of the World in a triple DiD model. Treat is a dummy with one if product was affected by any tariff hikes. China is a dummy with 1 if exporter is China and zero otherwise. Dependent variable is import values at HS10 products category. Standard errors are clustered at district level. The regression controls include tariff waves and importer fixed effects. Triple interaction are strongly significant when standard errors are unclustered. Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 5.2: Sectoral Impacts of Trump's Trade War (Triple Difference)

Dep. Var.: Agric.	Min.	Food	Tex.	Wood	Paper	Petro-Chem	Chem.	Plas.	MinRes.	Basic Met.	Mach.	OECM	Auto	Other Man.	
after	-63,645.282	58,878.273	-65,249.808	-224,247.280***	561,118.577***	-554,518.000***	383,733.745	1352110.302***	130,407.824**	-1,575.337	344,821.127***	-134,460.904	614,299.949***	-786542.4.559***	2821194.967***
	(128,861.899)	(1941871.527)	(93,396.319)	(31,023.198)	(25,994.716)	(19,225.161)	(251,604.189)	(37,039.705)	(43,502.950)	(69,591.060)	(69,561.855)	(288,741.032)	(66,477.878)	(508,200.068)	(264,961.577)
treat	424,222.951***	25542292.433***	86,259.017***	-103,532.722***	168,930.572***	-502,114.347***	1440420.799***	-2244246.425***	-17,023.799	-457,992.843***	-109,834.383**	-117,032.680*	-222,169.411***	-1.855e+07***	-2828508.710***
	(40,882.987)	(1426816.261)	(21,444.521)	(3,841.863)	(11,971.928)	(12,153.893)	(163,459.058)	(25,528.750)	(14,997.062)	(10,197.897)	(38,357.098)	(59,070.856)	(34,336.506)	(185,584.426)	(153,289.239)
aft-treat	55,476.587	-7871158.738***	112,784.427	241,359.589***	-604,147.667***	593,312.968***	-668,099.555*	-1381619.928***	-59,649.296	35,903.954	-372,800.644***	162,750.300	-525,295.098***	10218213.886***	-2821895.596***
	(129,614.788)	(2172352.147)	(93,740.652)	(31,078.815)	(27,434.803)	(19,999.262)	(273,677.263)	(41,342.214)	(43,796.956)	(69,662.949)	(70,357.866)	(289,388.659)	(68,901.017)	(517,223.578)	(266,833.635)
china	61,887.256	-42,107.067	-291,133.548***	29,642.354***	109,906.840***	-469,599.023***	-693,975.492	-2441021.023***	-84,149.531***	-390,520.760***	-481,339.857***	291,810.429**	-589,607.329***	-1.831e+07***	-3099972.999***
	(86,973.207)	(2929803.972)	(49,213.709)	(5,794.385)	(16,566.704)	(20,188.288)	(390,789.963)	(43,207.513)	(22,920.270)	(17,094.452)	(66,688.180)	(102,519.629)	(53,131.224)	(458,074.881)	(256,078.346)
treat-china	-655,471.779***	-2.614e+07***	-182,455.665***	44,668.795***	-313,228.087***	328,068.309***	-495,604.566	2098325.319***	-12,474.549	336,571.058***	-33,999.080	-199,705.478	723,611.929***	16115923.357***	3120207.295***
	(90,620.405)	(3356865.752)	(51,467.873)	(6,151.725)	(20,425.767)	(21,196.085)	(458,655.711)	(49,596.207)	(23,558.797)	(17,461.435)	(67,766.963)	(105,003.269)	(56,813.075)	(473,718.216)	(258,064.641)
aft-china	669,723.22**	-138,108.14	153,608.24	142,333.38**	-577,858.27***	581,519.56***	-341,898.03	-1279136.36***	-377,690.20***	78,485.60	-498,973.34***	786,616.61	-590,182.10***	9181277.83***	-2619869.48***
	(220,444.07)	(4359842.84)	(278,964.61)	(52,687.30)	(58,168.46)	(32,384.74)	(691,581.07)	(69,582.87)	(86,464.41)	(118,809.91)	(131,900.28)	(635,530.47)	(107,776.72)	(887,274.88)	(451,424.68)
aft-treat-china	-687,358.373**	7945607.64	-198,050.43	-189,254.99***	651,741.17***	-602,706.23***	83,798.49	1326572.82***	338,204.88***	-90,920.60	530,536.08***	-772,694.29	428,752.90***	-1.145e+07***	2661321.297***
	(223,670.63)	(5000723.00)	(279,876.54)	(52,775.845)	(60,409.46)	(33,847.83)	(770,175.62)	(78,693.99)	(86,854.33)	(118,929.45)	(133,172.75)	(636,429.94)	(111,914.412)	(905,343.129)	(454,062.553)
Constant	443,045.45***	706,319.65	586,792.94***	299,893.10***	205,120.94***	863,487.92***	785,005.79***	2789684.73***	441,231.36***	705,611.57***	898,542.63***	965,932.94***	985,494.28***	21288866.25***	3513771.480***
(39,805.800)	(1275641.050)	(20,757.683)	(3,630.788)	(10,210.445)	(11,607.499)	(146,213.858)	(22,474.768)	(14,617.880)	(9,976.588)	(37,733.355)	(57,661.205)	(32,151.772)	(173,982.058)	(151,899.695)	
Observations	503,019	79,906	862,935	4,600,516	413,611	450,412	28,253	1,580,471	991,638	609,862	2,484,802	2,787,550	2,564,046	637,543	1,183,213
R-squared	0.002	0.010	0.002	0.001	0.002	0.007	0.006	0.014	0.001	0.005	0.001	0.000	0.000	0.020	0.001

Table reports effects of Trump trade war on imports from both China and rest of the World in a triple DiD model. Treat is a dummy with one if product was affected by tariff wave hikes. China is a dummy with 1 if exporter is China and zero otherwise. Dependent variable is import values at HS10 products category. Standard errors are clustered at district level. The regression controls include tariff waves and districts fixed effects. Triple interaction are strongly significant when standard errors are unclustered. Standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05

CHAPTER 6

Conclusion

Trump's trade wars were designed around an ill-conceived mercantilist logic: reduce the U.S. trade deficit by restricting imports and forcing China, and other U.S. trading partners, to expand market access to U.S. exports. But even assuming that the strategy were sound (it was not), our analysis suggests that it failed to achieve its goals. Raising tariffs on Chinese imports backfired; the negative impact hit all Americans and took a toll on our local economy. The trade wars raise the costs of production and the prices of consumer products and generate adverse negative spillover effects on other goods and services not directly targeted by the tariffs. Most importantly, it led to a higher trade deficit in the Houston area due to the retaliatory actions from other countries.

The outbreak of COVID-19 has unveiled another casualty of the trade wars: a shortfall of medical equipment and supplies, which had been targeted by U.S. tariffs. Moreover, the economic impact of the pandemic is compounded in the Houston area by the fall of oil prices, painting a bleak picture for local businesses, workers, and consumers. The trade war with China, a central source and destination of merchandise goods and services for the Houston area, has created additional and unnecessary headwinds that will likely haunt us.