





hopping" behavior is intuitive from existing theories of tar avoidance and models with

available to consumers (both imported and domestically produced) relative to the average change in tax applied to these goods due to import tariffs. Although our sample of micro-level prices does not overlap with the Korea/Mexico antidumping duties, we report evidence

export unit values (measured at the border) may reflect transfer pricing strategies to reduce the costs of tariffs for trade between related parties. They therefore may not accurately characterize the price change faced by consumers.<sup>3</sup>

Our paper also contributes by providing evidence on the response of multinational firms



Figure 1:

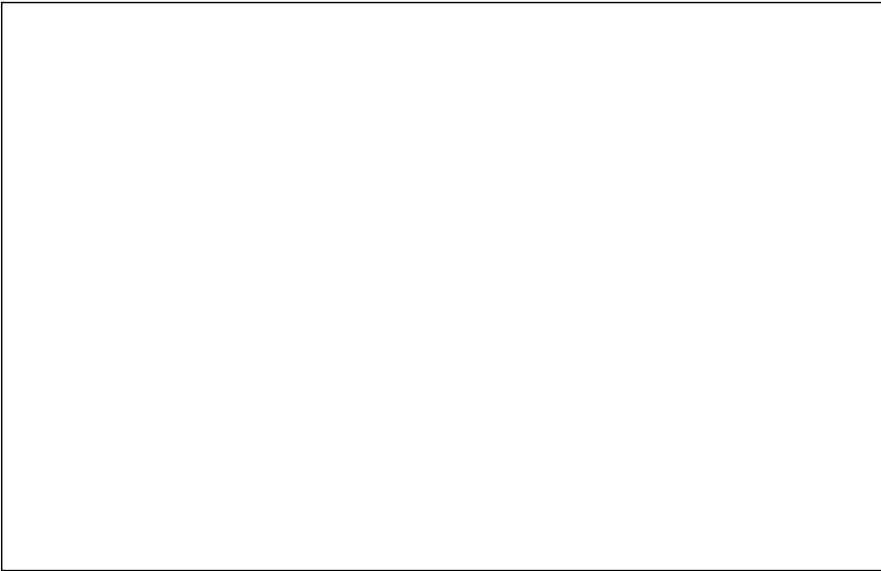




**Figure 2:** U.S. Washing Machine Imports and Korean Washing Machine Part Exports by Country

(a) Monthly U.S. Imports of Washing Machines by Country (Quantity)

(b) Monthly Korean Exports of Washing Machine Parts (Millions of U.S. Dollars)



*Notes:* Data from USITC and Korea Customs Service. Residential washing machines are classified under

shifts in Korean exports of parts follow the corresponding shifts in washing machine production<sup>11</sup>. Exports of parts to China jump in 2013 and 2014 before falling back in 2016 and 2017 as exports of parts to Thailand and Vietnam rise. In addition, overall Korean washing

and November.<sup>15</sup>

In Table [A1](#) we provide a summary of the key dates associated with the three rounds of import restrictions against washing machine imports.

### 3.3 Onshoring of U.S. Production

In [Table A1](#), we provide a summary of the key dates associated with the three rounds of import restrictions against washing machine imports.



## 4.1 Data and Price Trends of Washers and Dryers

Properly identifying the consumer price impact of the U.S. tariffs on washing machines requires data on retail point of sale prices that is both high frequency and detailed with respect

prices of washers and dryers:

$$p_{irt} = c(i)t + \mathbf{X}_i + b_{B(i)}c(i) +$$

25

the average  $\frac{1}{n} \sum_{i=1}^n x_i$  after gear

estimates of the interaction terms are relative to the average log price of ranges before and after the event.



**Figure 5:** Price Effects of Safeguard Tariffs and Antidumping Duties against China

**Table 1:** Difference-in-Difference Estimates: Price Effects of Washing Machine Tariffs

	with model characteristics as controls		with model fixed effect as controls	
	4 month	8 month	4 month	8 month

**Antidumping against China**

Washers

0.0250.8 [(4(mon)27r0-16489mon)463\*\*0-16000mon4(on wDry27(trs))]TJ 8



**Table 2:** Difference-in-Difference Estimates: Brand-Specific Price Effects of Washing Machine Tariffs

	Whirlpool		Maytag		LG		Samsung		G.E.	
	4 month	8 month	4 month	8 month	4 month	8 month	4 month	8 month	4 month	8 month
<b>Antidumping against China</b>										
Washers	-0.0306	-0.0345	0.1420**	0.1897***	0.0098	-0.0110	0.0830*	0.0573	-0.0020	0.0235

baseline results from Table 1 but for all brands, brick-and-mortar retailers, and where each

## 4.5 Implications for the Tariff Elasticity of Consumer Prices

In this section we use the increases in price identified in sections 4.1 and 4.4 to calculate the

shares of country  $k$  to apply to the country-specific tariff rate changes ( $\tau_{t,C}^k$ ).<sup>26</sup> Equation (6) will more accurately capture the indirect price effects of tariffs by measuring the aggregate price and tariff changes separately, while using lagged import weights to reflect the effective tariff burden facing firms and therefore applicable to the initial price level. The focus on





**Table 3:** Calculation of the Tari Elasticity of Consumer Prices

**Table 4: Tariff Pass-Through and Tariff Elasticity of Consumer Prices**

	Tariff Pass-Through Coefficient (1)	Implied Elasticity (2)	Tariff Elasticity of Consumer Prices (Table 3) (3)
Korea/Mexico Antidumping	0.06 (0.16)	1.06	-1.02
China Antidumping	0.32**		

USD annually. This number is of the same order of magnitude as other similar exercises.  
Hufbauer, Lowry et al.





Tintelnot, Felix. 2017. \Global Production with Ex  
*onomics*.

~~2017~~ Daniel He. Shrms. "Canada-U..2FTAgTd1ment(Platforms. )



**Table A2:** Continued

Rate(%)	Effective date	Period of review	Note
1.38	09/16/2015	08/03/2012 to 01/31/2014	<a href="#">Deposit requirement continued</a>



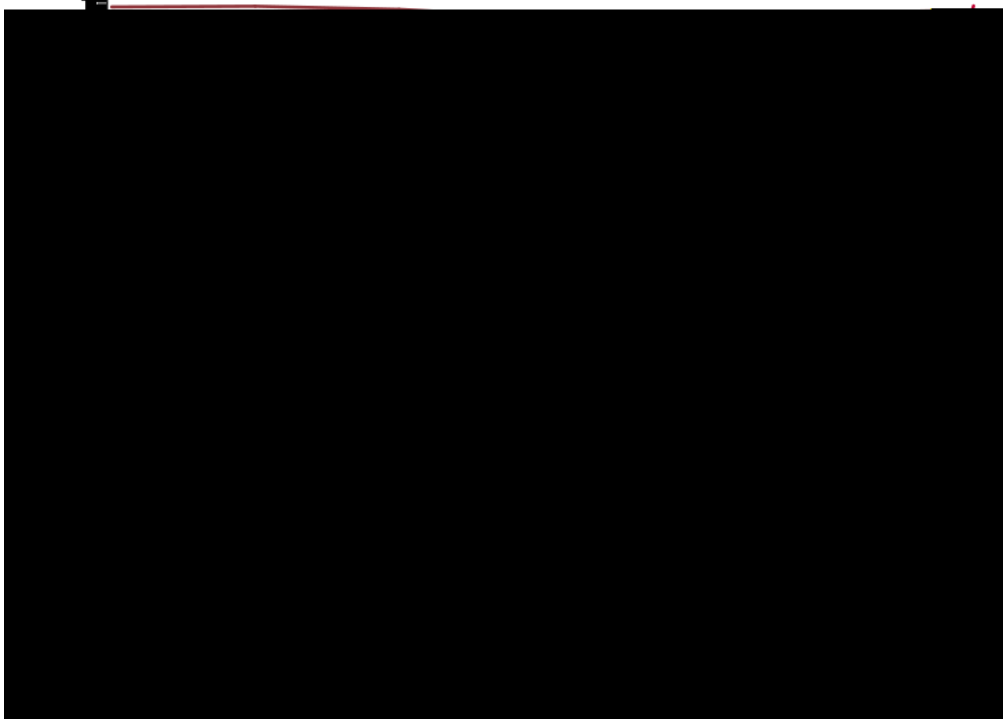


## **B Additional Results**

### **B.1 Intra-Firm vs Arms-length Imports**

Firms are required to report whether a particular import transaction is at arms-length or between related parties. An import transaction is defined as between related parties if "any person, directly or indirectly owns, controls, or holds power to vote 5 percent or more of the outstanding voting stock or shares" of the other party. See Section 402(e) of the Tariff Act of 1930. This distinction matters for our calculations of tariff pass-through, as the

**Figure A1:** Related Party Share of Household Laundry Equipment Imports to U.S., Selected Countries 2010-2016



*Source:*

**Figure A2:** Calculated Duties on U.S. Imports of Washing Machines 2010-2018



calculate the average effective tariff rate paid on imported washers. Figure A4c does this by

## **B.4 Section 301 Tariffs on Other Household Appliances**

A concern with our interpretation of evidence using other appliances in the context of washing machines is that subsequent tariffs on Chinese imports | part of the Section 301 provision







The increasing importance of FTZs for washing machine production destined for the

**Figure A5:** Effective Tariff Rate of Refrigerators and Ranges: All Imports vs Section 301 Imports

(a) Refrigerators



(b) Ranges



Source: USITC.

Notes: Refrigerators include products listed in HS8418100020, HS8418100030, HS8418100040, HS8418100045, HS8418100055, HS8418100065, HS8418100075, HS8418100090, HS8418210020, HS8418210030, HS8418210090, HS8418220000, HS8418290000, HS8418291000, HS8418292000, HS8418300000, HS8418400000. Ranges include products listed in HS7321113000, HS7321113010, HS7321113020, HS7321113050, HS8516604074, HS8516604078, HS8516604080, HS8516604082, HS8516604086.

Figure A6:

**Figure A7:** Sales Rank Correlations across Retailers

**Figure A8:** Average Import Unit Value for Section 201 Imports



*Source:* USITC.

*Notes:* Includes HS8450110040, HS8450110080, HS8450200040, HS8450200080, and HS8450200090. For

Figure A9:

## C Robustness Figures and Tables









Figure A13:

Figure A14:

Figure A15:

**Figure A16:** Price Effects of Safeguard Tariffs and Antidumping Duties against China -

**Table A8:** Difference-in-Difference Estimates: Price Effects of Washing Machine Tariffs - All Brands and Only Brick and Mortar Stores

	with model characteristics as controls		with model fixed effect as controls	
	4 month	8 month	4 month	8 month
<b>Antidumping against China</b>				
Washers	0.0311* (0.0149)	0.0340 (0.0176)	0.0357** (0.0129)	0.0446** (0.0145)
Dryers	0.0201 (0.0128)	0.0173 (0.0149)	0.0223* (0.0105)	0.0290* (0.0114)
Refrigerators	0.0267* (0.0124)	0.0159 (0.0146)	0.0354*** (0.0084)	0.0289** (0.0091)
Dishwashers	-0.0082 (0.0144)	-0.0332* (0.0164)	0.0055 (0.0102)	-0.0107 (0.0107)
<b>Safeguard tariffs 2018</b>				
Washers	0.0868*** (0.0141)	0.0908*** (0.0182)	0.0843*** (0.0118)	0.1022*** (0.0128)
Dryers	0.0972*** (0.0131)	0.0823*** (0.0175)	0.0976*** (0.0103)	0.1012*** (0.0116)
Refrigerators	0.0258* (0.0116)	0.0198 (0.0161)	-0.0032 (0.0085)	-0.0141 (0.0094)
Dishwashers	0.0345** (0.0122)	0.0402* (0.0173)	0.0270** (0.0097)	0.0425*** (0.0124)
N	1,288,914		1,288,914	

Notes: The table reports estimates for  $4m_{event}$   $4m_{event}$



**Figure A17:** Time Fixed Effects from Log Price Regression - All Brands and Brick and Mortar Retailers Weighted by the Number of Stores

Figure A18:



**Figure A19:** Time Fixed Effects from Log Price Regression - All Brands and All Retailers

Figure A20:

Table A10:

**Table A11:** List of Product Characteristics

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**Washers**

Total capacity	Dummies for less than 3.0, 3.0-4.0, 4.0-5.0, more than 5.0 cu. ft.
Steam	Dummy for steam
Energy star	Dummy for energy star
Smart appliance	Dummy for smart appliance

**Figure A21: Total Number of Available Models by Brand**

**(a)** Washers

**(b)** Dryers