

Multi-product Exporters and Antidumping: Evidence from China

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Background

- ❁ Antidumping is a trade measure aimed at eliminating the materially injurious effects on domestic industry of dumping by foreign exporters
- ❁ Antidumping is a welfare costly form of protection both for the US and EU (Gallaway et.al, 1999; Messerlin, 2001)
- ❁ Antidumping duties have been shown to significantly reduce exports from named countries, 50%-60% on average (Prusa, 2001; Bown and Crowley, 2007; Carter and Gunning-Trant, 2010)

- ✿ Explore the trade effects of US antidumping measures on Chinese exports and multi-product firms in 2000 – 2006:
 - ✿ Product-level Response:
 - ✿ Quantify the trade destruction effect caused by antidumping measures
 - ✿ Investigate whether antidumping measures deflect Chinese exports to alternative markets

Research Agenda (Cont.)

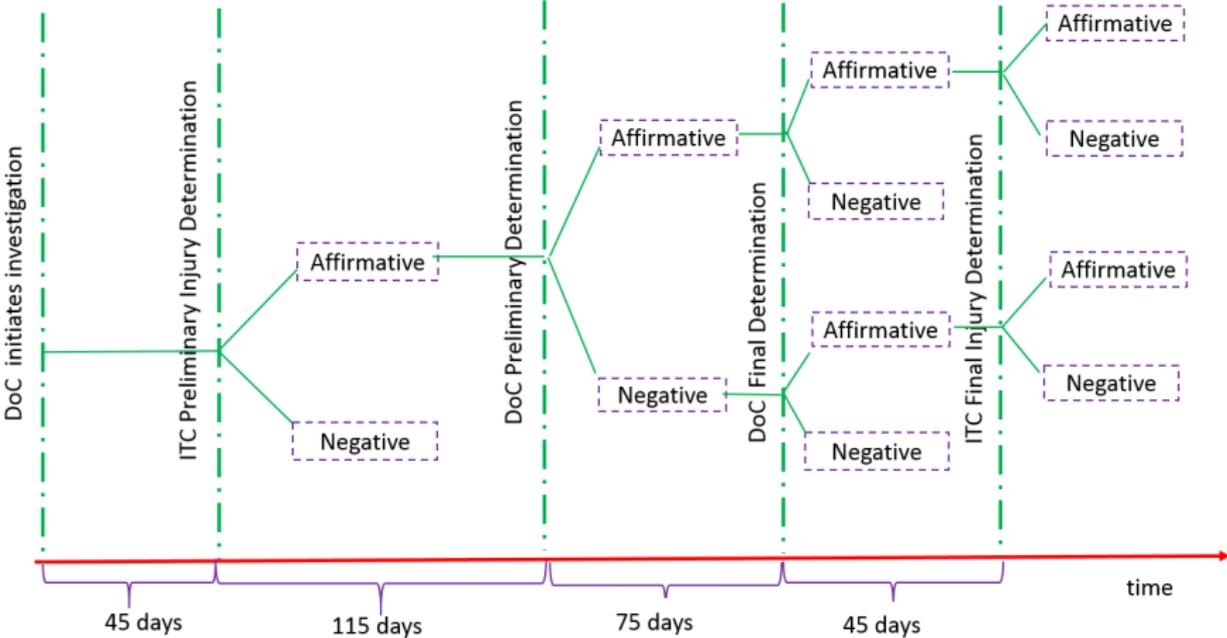
❁ Firm-level Response:

- ❁ Study how antidumping measures shape Chinese firms' export behavior in the US
- ❁ Investigate whether firms reallocate exports across destinations following antidumping shocks
- ❁ Explore whether antidumping measures have spillovers on a firm beyond the targeted products

Related Literature

- ❁ A growing literature focuses on the effects of antidumping measures on firms from named countries
 - ❁ Lu, Tao and Zhang (2013); Chandra and Long (2013)
- ❁ A number of papers study how trade policy uncertainty affects firms' export decisions
 - ❁ Debaere and Mostashari (2010); Crowley et al.(2016)
- ❁ Several studies seek to understand how changes in export costs impact within-firm adjustments
 - ❁ Goldberg et al. (2010); Berthou and Fontagne (2013); Bernard et al. (2014)

US Antidumping Flowchart



- ✿ **Chinese Customs Data** in 2000 – 2006
 - ✿ Exports at the firm, 8-digit HS product and destination level
- ✿ **Global Antidumping Database**
 - ✿ product information classified at the US 10-digit HS level
- ✿ **Aggregate at the 6-digit HS level**
 - ✿ the most disaggregated level at which the two data sets are comparable

Overview of Antidumping Cases

- ❁ The US initiated 48 antidumping investigations covering 142 products against China in 2000 – 2006
- ❁ 76 products ended up with affirmative final ITC determination
- ❁ 49 products had affirmative preliminary ITC determination but received negative final ITC determination, 2 withdrew before the final ITC determination
- ❁ 15 products either withdrew or were given a negative decision at the preliminary ITC stage
- ❁ Antidumping measures are all in the form of ad-valorem duty

Product-level Analysis

Empirical Specification

- ✿ Employ a difference-in-difference (DID) approach including both leads and lags (Autor, 2003)
- ✿ Treatment group: products that were under investigations and subject to antidumping duties in the US \Rightarrow **targeted products**
 - ✿ I drop the products that were investigated but ended up without imposition of any duty
- ✿ Control group: all uninvestigated products within the same 4-digit HS product set with the targeted products \Rightarrow **closely-related products**
- ✿ Treatment time: the year of initiation of an antidumping investigation

Empirical Specification (Cont.)

$$y_{pt} = \gamma_t + \delta_p + \beta_{-4} D_{p,t+\tau}(\tau \leq -4) + \sum_{\tau=-3, \tau \neq -1}^3 \beta_{\tau} D_{p,t+\tau} + \beta_4 D_{p,t+\tau}(\tau \geq 4) + \varepsilon_{pt}, \quad (1)$$

- ✿ where p , t indicate 6-digit HS product line and year
- ✿ $D_{p,t} = 1$ if a product p faces an antidumping investigation in year t ,
 $D_{p,t-1}$ is the omitted group
- ✿ **Dependent variable** y is in turn:
 - ✿ = 1 for positive trade flows of product p in year t
 - ✿ log of the number of exporters, export value, volume and price
(includes only positive values)

Table 1: Trade destruction effect on the US at the product level

Time relative to investigation	(1) Participation dummy	(2) log of # of exporters	(3) log of export value	(4) log of export volume	(5) log of export price
4 or More Years Before	-0.097 (0.078)	-0.100 (0.200)	-0.321 (0.489)	-0.335 (0.506)	0.013 (0.106)
3 Years Before	-0.124* (0.071)	0.027 (0.134)	-0.253 (0.277)	-0.182 (0.274)	-0.072 (0.069)
2 Years Before	0.017 (0.032)	0.084 (0.062)	0.039 (0.138)	0.136 (0.182)	-0.097 (0.073)
Investigation Starts	0.020 (0.040)	0.031 (0.077)	0.006 (0.211)	0.140 (0.241)	-0.134 (0.131)
1 Years After	-0.051 (0.037)	-0.223** (0.102)	-0.640** (0.270)	-0.533 (0.326)	-0.110 (0.135)
2 Years After	-0.156*** (0.041)	-0.440*** (0.114)	-1.617*** (0.369)	-1.525*** (0.371)	-0.093 (0.120)
3 Years After	-0.286*** (0.058)	-0.355** (0.150)	-1.594*** (0.376)	-1.689*** (0.386)	0.094 (0.126)
4 or More Years After	-0.011 (0.062)	-0.706*** (0.160)	-1.862*** (0.474)	-2.007*** (0.521)	0.142 (0.160)
Observations	2059	1786	1786	1785	1785
Adjusted R^2	0.243	0.931	0.802	0.767	0.847

Standard errors clustered at the product level in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

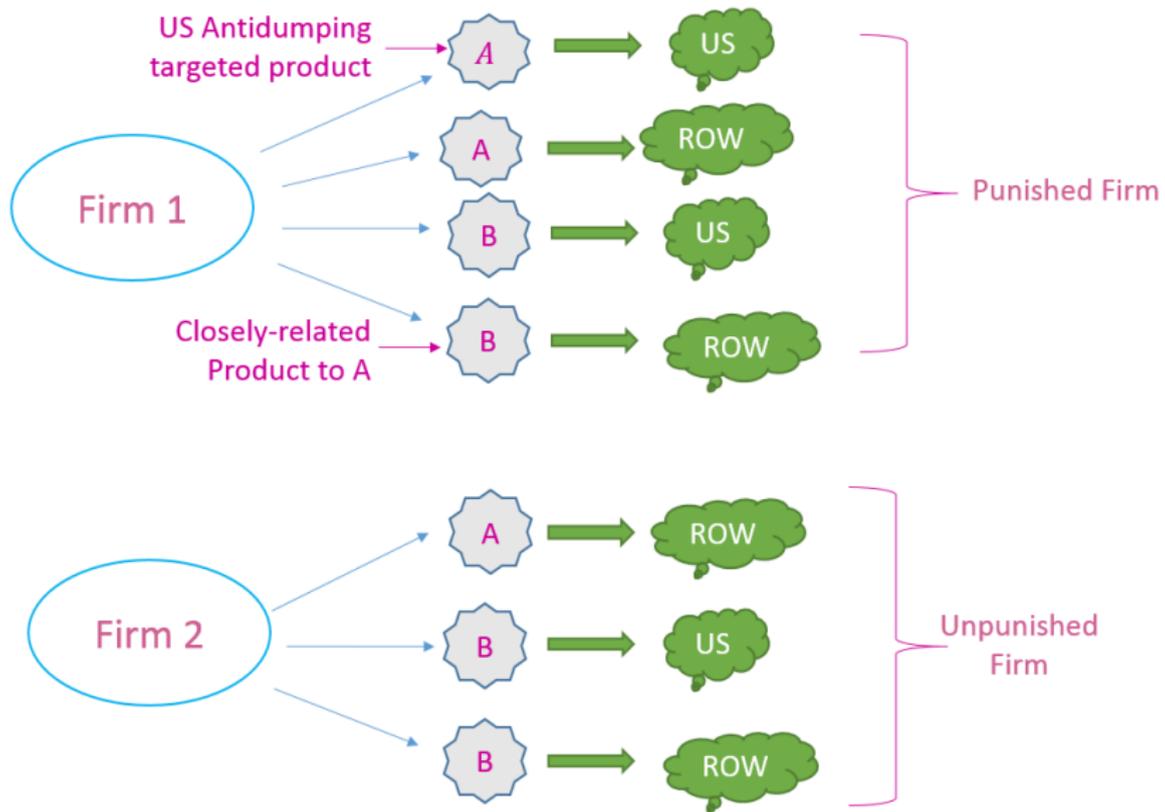
Table 2: Trade deflection effect on the RoW at the product level

Time relative to investigation	(1) Participation dummy	(2) log of # of exporters	(3) log of export value	(4) log of export volume	(5) log of export price
4 or More Years Before	-0.058 (0.047)	0.062 (0.114)	0.065 (0.227)	-0.038 (0.220)	0.102* (0.061)
3 Years Before	-0.109* (0.062)	0.080 (0.066)	0.167 (0.107)	0.091 (0.110)	0.075* (0.044)
2 Years Before	0.025** (0.010)	0.025 (0.044)	0.018 (0.080)	-0.015 (0.086)	0.033 (0.024)
Investigation Starts	-0.021*** (0.008)	-0.070 (0.050)	-0.274** (0.110)	-0.235** (0.114)	-0.039 (0.026)
1 Years After	-0.007 (0.008)	-0.153** (0.071)	-0.514*** (0.126)	-0.415*** (0.129)	-0.099*** (0.035)
2 Years After	-0.018* (0.010)	-0.246*** (0.079)	-0.636*** (0.129)	-0.592*** (0.137)	-0.043 (0.043)
3 Years After	-0.053*** (0.010)	-0.239** (0.109)	-0.647*** (0.166)	-0.671*** (0.173)	0.023 (0.057)
4 or More Years After	-0.058*** (0.013)	-0.004 (0.137)	-0.238 (0.269)	-0.422 (0.275)	0.184** (0.087)
Observations	2138	2069	2069	2069	2069
Adjusted R^2	0.113	0.947	0.874	0.882	0.957

Standard errors clustered at the product level in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Firm-level Analysis

Figure 1: Product and market structure of multi-product firms



Empirical Specification

$$y_{fpt} = \gamma_t + \delta_p + \lambda_f + \beta_{-4} D_{p,t+\tau(\tau \leq -4)} + \sum_{\tau=-3, \tau \neq -1}^3 \beta_{\tau} D_{p,t+\tau} + \beta_4 D_{p,t+\tau(\tau \geq 4)} + \varepsilon_{fpt}, \quad (2)$$

- ✿ where p , t , f indicate 6-digit HS product line, year and firm
- ✿ $D_{p,t} = 1$ if a product p faces an antidumping investigation in year t
- ✿ **Dependent variable** y is in turn:
 - ✿ = 1 for positive trade flows of a firm f exports product p in year t (participation);
 - ✿ log of the export value, volume and price (includes only positive values)

Do firms export less?

- ✿ Estimate the trade distortion effects of antidumping measures on the **targeted products** in the US at the firm level

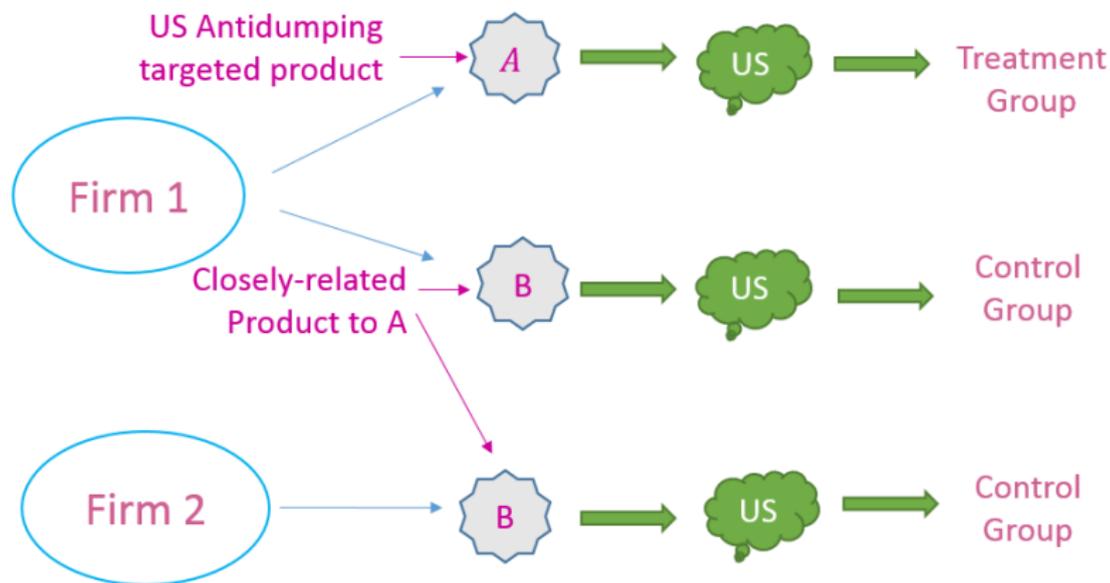


Table 3: Trade destruction effect on the US at the firm level

Time relative to investigation	(1) Participation dummy	(2) log of export value	(3) log of export volume	(4) log of export price
4 or More Years Before	0.014 (0.012)	0.028 (0.094)	-0.038 (0.096)	0.073** (0.034)
3 Years Before	-0.008 (0.014)	0.035 (0.093)	-0.014 (0.091)	0.057** (0.022)
2 Years Before	0.006 (0.007)	-0.020 (0.049)	-0.027 (0.044)	0.010 (0.018)
Investigation Starts	0.012 (0.013)	-0.042 (0.026)	-0.046* (0.027)	0.006 (0.014)
1 Years After	-0.002 (0.008)	-0.080* (0.047)	-0.096** (0.044)	0.016 (0.022)
2 Years After	-0.022** (0.011)	-0.099 (0.068)	-0.118* (0.066)	0.019 (0.030)
3 Years After	0.009 (0.012)	-0.105 (0.093)	-0.207* (0.106)	0.108** (0.045)
4 or More Years After	-0.010 (0.015)	-0.088 (0.127)	-0.174 (0.118)	0.083* (0.047)
Observations	476373	240517	239775	239775
Adjusted R^2	0.010	0.414	0.436	0.714

Standard errors clustered at the product level in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Do exporters deflect to third markets?

- ✿ Investigate whether US antidumping measures lead to *punished* firms deflecting **targeted products** to other destinations, relative to *unpunished* firms exporting the same product

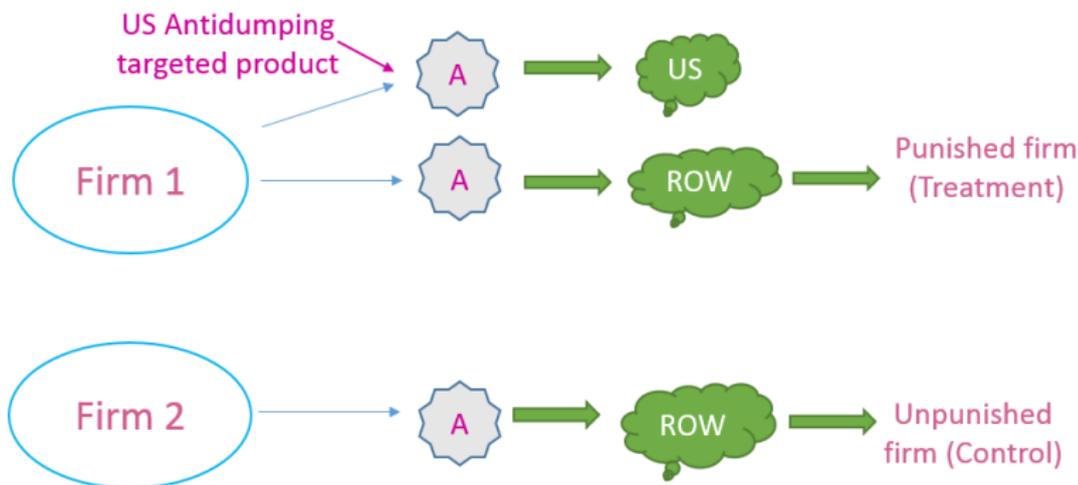


Table 4: Trade deflection effect on the RoW at the firm level

Time relative to investigation	(1) Participation dummy	(2) log of export value	(3) log of export volume	(4) log of export price
4 or More Years Before	-0.001 (0.017)	0.069 (0.159)	-0.092 (0.188)	0.161** (0.072)
3 Years Before	0.001 (0.013)	0.041 (0.145)	-0.065 (0.166)	0.107** (0.048)
2 Years Before	-0.004 (0.011)	0.050 (0.081)	0.002 (0.092)	0.047 (0.029)
Investigation Starts	-0.009 (0.013)	-0.026 (0.042)	0.004 (0.049)	-0.030** (0.013)
1 Years After	-0.012 (0.011)	0.001 (0.068)	0.042 (0.089)	-0.036 (0.027)
2 Years After	-0.044*** (0.013)	0.002 (0.085)	0.052 (0.110)	-0.049 (0.032)
3 Years After	-0.041** (0.018)	0.038 (0.097)	0.050 (0.122)	-0.007 (0.039)
4 or More Years After	-0.088*** (0.016)	0.116 (0.110)	0.138 (0.149)	-0.019 (0.051)
Observations	726763	378752	377903	377903
Adjusted R^2	0.038	0.401	0.448	0.722

Standard errors clustered at the product level in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Do exporters switch to other products?

- ✿ Explore whether an US antidumping action against one product influences the firms' behavior for other products in the US

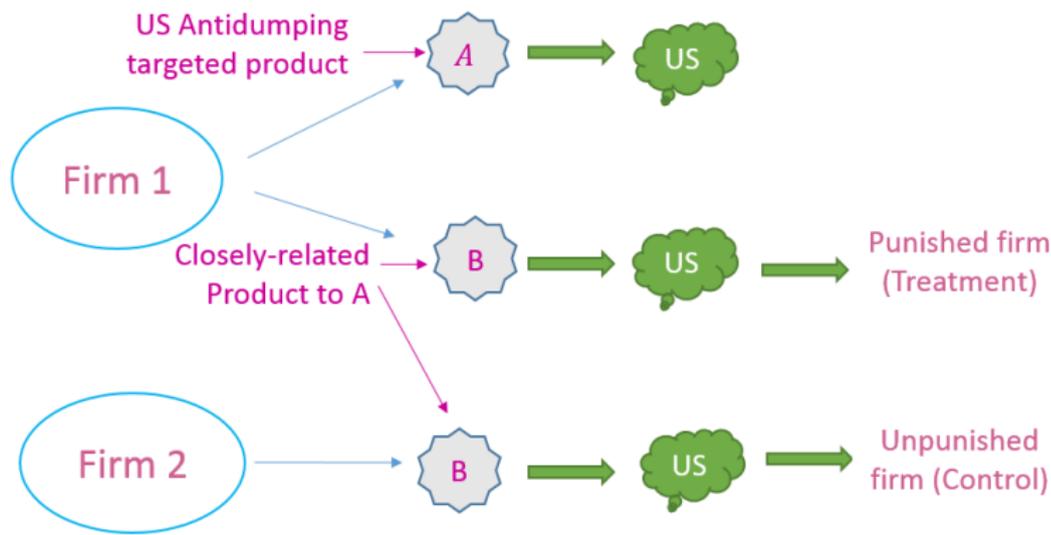


Table 5: Within-firm product switching to the US

Time relative to investigation	(1) Participation dummy	(2) log of export value	(3) log of export volume	(4) log of export price
4 or More Years Before	0.082*** (0.017)	0.205 (0.157)	0.057 (0.173)	0.158*** (0.042)
3 Years Before	0.052*** (0.013)	0.130 (0.113)	0.110 (0.116)	0.025 (0.031)
2 Years Before	0.041*** (0.009)	0.054 (0.061)	0.054 (0.062)	0.003 (0.018)
Investigation Starts	-0.021*** (0.007)	-0.050 (0.035)	-0.051 (0.032)	-0.004 (0.022)
1 Years After	-0.045*** (0.010)	-0.034 (0.050)	-0.067 (0.046)	0.026 (0.028)
2 Years After	-0.088*** (0.017)	-0.106* (0.063)	-0.173*** (0.061)	0.051* (0.028)
3 Years After	-0.085*** (0.015)	-0.073 (0.104)	-0.177* (0.094)	0.089*** (0.028)
4 or More Years After	-0.160*** (0.027)	-0.089 (0.153)	-0.180 (0.145)	0.061* (0.034)
Observations	275343	136468	135959	135959
Adjusted R^2	-0.018	0.444	0.446	0.720

Standard errors clustered at the product level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Do exporters switch to other products?

- ✿ Explore whether an US antidumping action against one product influences firms' export behavior for other products in the RoW

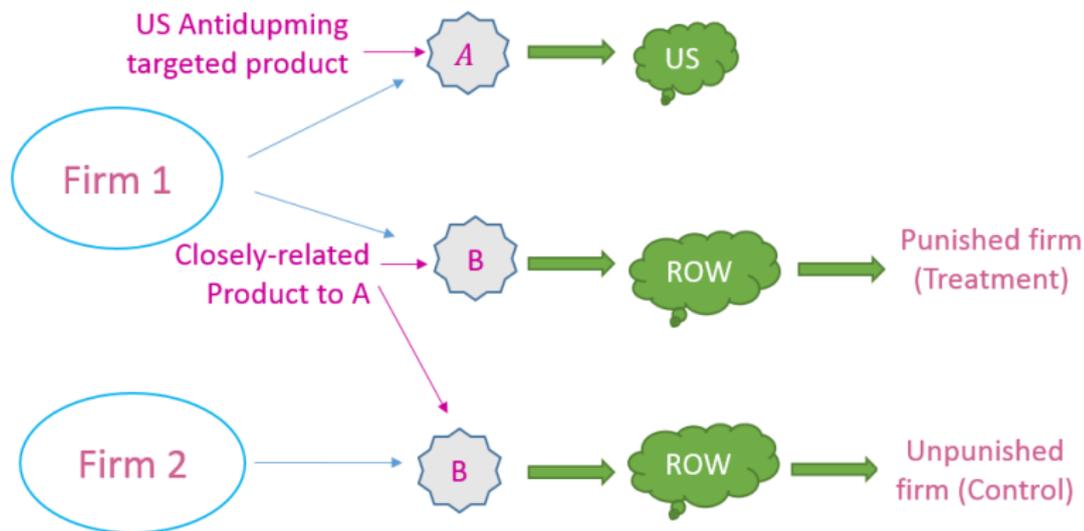


Table 6: Within-firm product switching to the RoW

Time relative to investigation	(1) Participation dummy	(2) log of export value	(3) log of export volume	(4) log of export price
4 or More Years Before	0.003 (0.013)	0.202** (0.091)	0.115 (0.093)	0.089** (0.044)
3 Years Before	-0.005 (0.013)	0.031 (0.076)	0.001 (0.079)	0.030 (0.025)
2 Years Before	-0.001 (0.010)	0.051 (0.042)	0.052 (0.046)	-0.002 (0.015)
Investigation Starts	-0.002 (0.007)	0.022 (0.021)	0.029 (0.022)	-0.006 (0.012)
1 Years After	-0.014 (0.010)	0.029 (0.035)	0.025 (0.034)	0.005 (0.021)
2 Years After	-0.059*** (0.013)	0.034 (0.051)	0.014 (0.049)	0.016 (0.026)
3 Years After	-0.035** (0.015)	0.116** (0.057)	0.074 (0.057)	0.046* (0.025)
4 or More Years After	-0.097*** (0.016)	0.182*** (0.069)	0.160** (0.079)	0.022 (0.040)
Observations	1187834	593817	591812	591812
Adjusted R^2	0.036	0.410	0.433	0.729

Standard errors clustered at the product level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

- ✿ Product-level Responses:
 - ✿ antidumping-**targeted products** are less likely to be exported to the US
 - ✿ severe distortion of bilateral trade flows, mainly due to a significant decrease in the number of exporters
 - ✿ a reduction in Chinese exports to alternative markets

Conclusion (Cont.)

- ✿ Firm-level Responses: ⇐ (NEW in literature)
 - ✿ antidumping-*punished* firms experience a modest decline in export flows to the US
 - ✿ antidumping-*punished* firms are less likely to export the targeted products across destinations
 - ✿ antidumping-*punished* firms tend to switch exports to other unaffected products in alternative markets

Thank you!