Trade Protection Along Supply Chains

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Motivation

- Rise of China as a world trading power and effects on US employment (e.g. Autor *et al.*, 2013; Acemoglu *et al.*, 2016; Pierce and Schott, 2016)
- US-China trade war and "return to protectionism" (e.g. Amiti *et al.*, 2019; Flaaen and Pierce, 2019; Flaaen *et al.*, 2020; Fajgelbaum *et al.*, 2020)
- Well before Trump's presidency, China had been the target of increasing US protection: between 1988 and 2016, average US antidumping (AD) duties against China more than tripled (from 45% to 148%)

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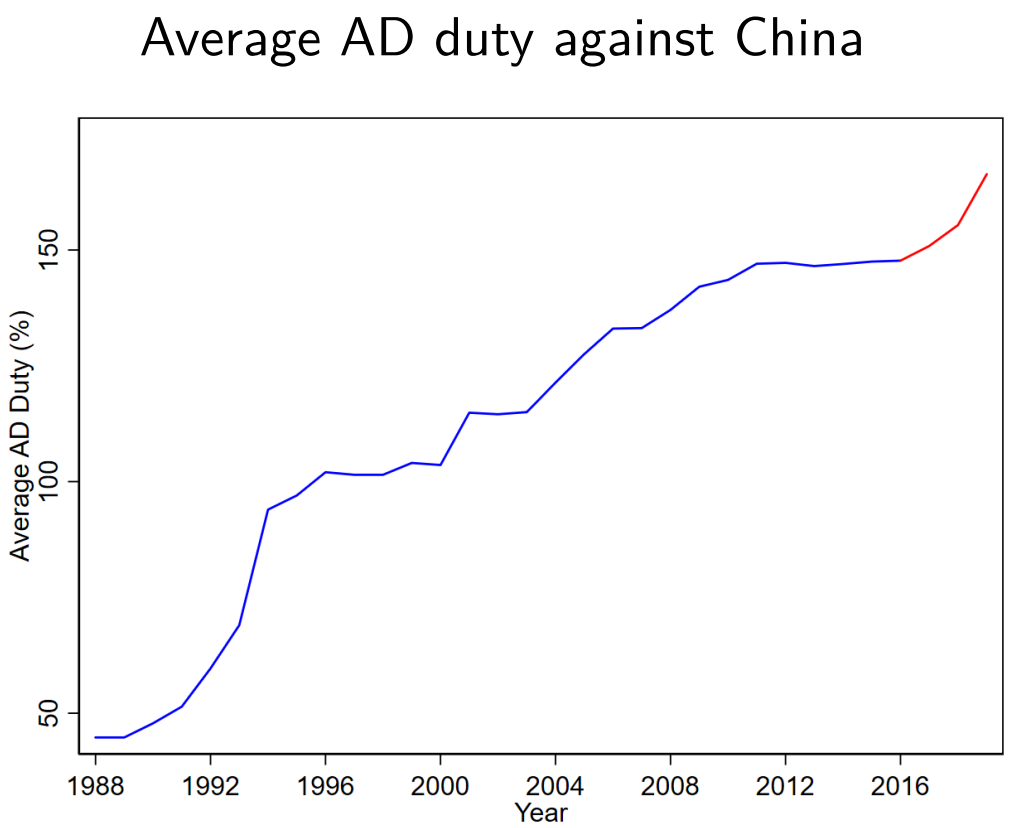

Source: Authors' calculations based on an extended version of the Temporary Trade Barriers Database.

▸ Import coverage

- Emergence of global supply chains and rise of trade in intermediate goods
- Increasing protection against intermediate goods (e.g. Bown, 2019)
- Input protection hurts downstream producers:

  Tariffs on bike components, steel and aluminium have "raised the costs of Bicycle Corporation of America" so "plans to expand are on hold, costing American jobs" ("The Trouble with Putting Tariffs on Chinese Goods," Economist, May 16, 2019)

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Main contributions of our paper

- New instrument for AD, combining exogenous variation in the political importance of industries with their historical experience in AD proceedings

- Using this instrument, we identify the causal impact of trade protection:
  - decrease downstream employment, wages, sales, and investment
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Related literature

- Effects of the **China shock** on US employment (e.g. Autor *et al.*, 2013; Acemoglu *et al.*, 2016; Pierce and Schott, 2016; Wang *et al.*, 2018) and other outcomes (e.g. Autor *et al.*, 2019; 2020a,b; Pierce and Schott, 2020).

- **US-China trade war** (e.g. Amiti *et al.*, 2019; Cavallo *et al.*, 2019; Flaaen and Pierce, 2019; Fajgelbaum *et al.*, 2020; Flaaen *et al.*, 2020)

- **Trade policy and vertical linkages** (e.g. Amiti and Konings, 2007; Goldberg *et al.*, 2010; Alfaro *et al.*, 2016; Blanchard *et al.*, 2017; Erbahar and Zi, 2017; Conconi *et al.*, 2018; Barattieri and Cacciatore, 2019; Bown *et al.*, 2020; Grossman and Helpman, 2020)

- **Antidumping protection** (e.g. Finger *et al.*, 1982; Prusa, 2001; Blonigen and Park, 2004; Irwin, 2005; Bown and Crowley, 2007, 2013, 2016; Konings *et al.*, 2001; Konings and Vandenbussche, 2008; Pierce, 2011; Blonigen and Prusa, 2016; Besedes and Prusa, 2017)

Outline

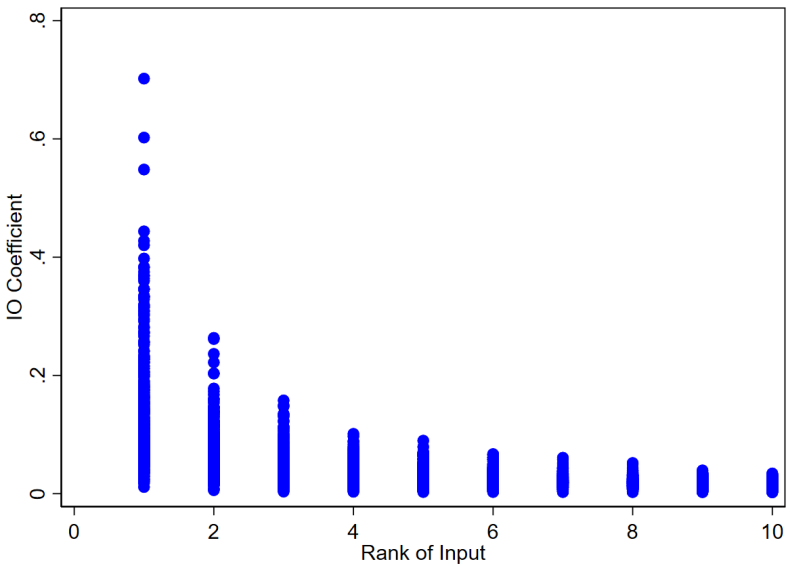
Data on tariffs

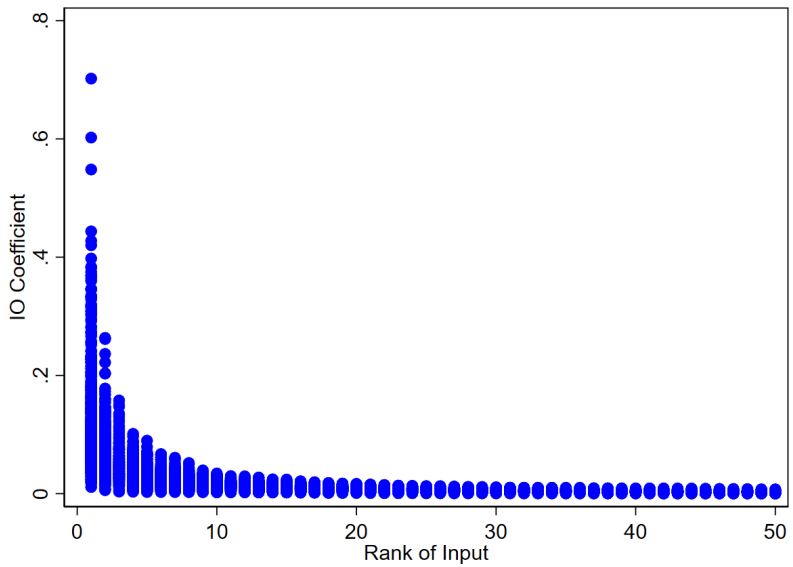
- **Temporary Trade Barriers Database** (TTBD) of the World Bank
- We focus on **AD duties** applied by the United States against China
- We map each AD case to a corresponding **4-digit SIC** sector
- Robustness: all TTBs, MFN tariffs, Trump's tariffs, all targeted countries

Data on input-output linkages

- Input-output (IO) tables from the Bureau of Economic Analysis (BEA) to identify **vertical linkages** between 479 industries
- Following Acemoglu *et al.* (2016), we employ the 1992 BEA tables, fixing technological linkages at the start of our sample period
- Some inputs play a key role in many industries (e.g. steel, paper, organic chemicals, plastic materials)

Average IO coefficients of most important inputs





Measuring protection along supply chains

Main measure of input protection:

$$\textit{Average Input Tariff}_{j,t} = \sum_{i=1}^{N} \omega_{i,j} \; \textit{Tariff}_{i,t}$$

$\omega_{i,j}$: cost share of input i in production of good j (excluding diagonal $\omega_{j,j}$)

$\textit{Tariff}_{i,t}$: AD duty on input i in year t

▸ Descriptive statistics

Other data sources

- County Business Patterns for **employment data**
- UN Comtrade for data on **trade flows**
- Bureau of Labor Statistics for data on **producer prices**
- NBER-CES for **other industry information** (e.g. sales, investment)

Outline

Identification strategy

- Broad concern: **endogeneity** of trade policy (Trefler, 1993)
- **Productivity shocks** correlated with the performance of downstream industries and the level of input protection
- **OLS coefficients** are likely to be biased upwards (i.e. underestimate the negative effects of protection)
- Similar concerns for **lobbying by downstream firms against input protection** (e.g. Gawande *et al.*, 2012; Mayda *et al.*, 2018)

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Identification strategy

- We use an **IV strategy** to identify the **causal effects** of tariffs

- Our instrument exploits exogenous variation in **the political importance of industries that have AD experience**

$$IV_{i,T} = Experience_i \times Swing_{i,T}$$

- AD protection should favor industries that are **important in swing states** (captured by $Swing_{i,T}$), but only if they have **long-term knowledge of the complex institutional AD procedures** (captured by $Experience_i$)

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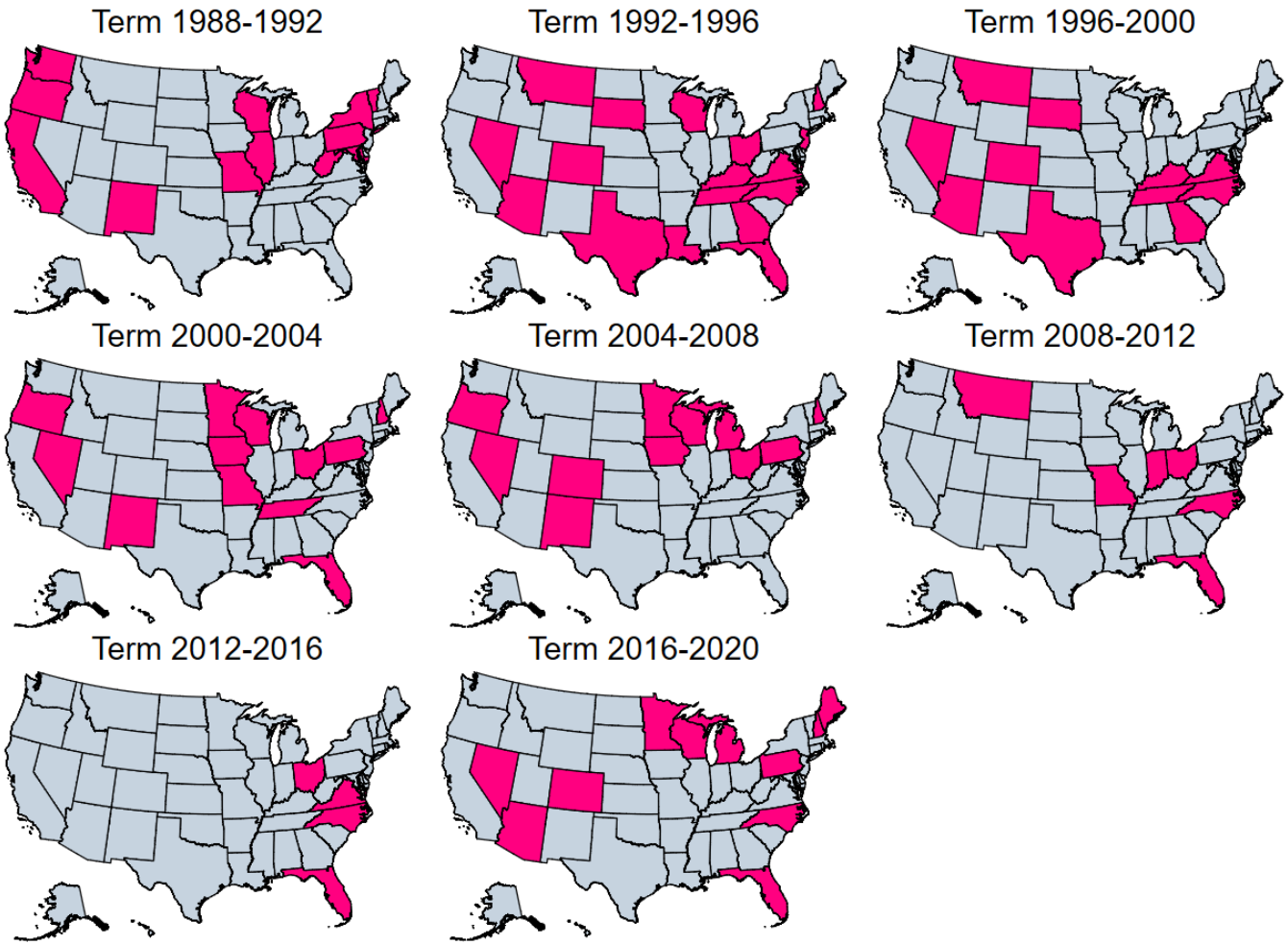
$Experience_i$

- The **process to petition for AD is extremely complex** (Blonigen and Park, 2004; Blonigen, 2006): the petitioning industry must present substantial information about the case, as well as legal analysis and arguments
- As a result of this complexity, **prior experience**
  - decreases the cost of initiating future AD cases
  - increases the likelihood of successful outcomes
- ***Experience***$_i$: number of AD petitions filed by industry i in 1980-1987
- To ensure exogeneity of the instrument, we exclude petitions targeting China and leading to measures in force during 1988-2016

$Swing_{i,T}$

- The **U.S. electoral system** creates incentives to favor swing states, where the vote gap between parties is expected to be small
- **Swing states** shape U.S. trade policy (e.g. Muûls and Petropoulou, 2013; Conconi *et al.*, 2017; Ma and McLaren, 2018; Fajgelbaum *et al.*, 2020)
- $\boldsymbol{Swing}_{s,T} = 1$ if the **difference in vote shares** of Democratic and Republican candidates in the previous presidential election is less than 5%

Swing states during the last eight presidential terms



$Swing_{i,T}$

- Our measure of the **political importance of an industry** is the total number of workers employed in SIC4 industry i in states classified as swing in term T, over the total number of workers in tradable sectors in swing states:

$$Swing_{i,T} = \frac{\sum_s L_{s,i}^{1988} \times Swing_{s,T}}{\sum_s \sum_i L_{s,i}^{1988} \times Swing_{s,T}}$$

- As the identity of swing states changes ($Swing_{s,T}$), the political importance of industries changes, driven by their heterogenous location across states (captured by initial employment shares $L_{s,i}^{1988}$)

Swing-state politics and AD

- Previous studies show that AD decisions of the International Trade Commission (ITC) responds to **domestic political interests** (e.g. Finger *et al.*, 1982; Moore, 1992; Hansen and Prusa, 1997; Aquilante, 2018)

- We provide new evidence of the importance of **swing-state politics** in **AD**:

  - **Swing states are overrepresented** in the key **congressional committees** that deal with trade policy (Finance, Ways and Means), which can influence ITC decisions through various channels (e.g. appointment confirmations, budget allocation, oversight hearings)

  - ITC commissioners are more likely to **vote in favor** of AD when the **petitioning industry is more important in swing states**

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Predicting AD protection

- To check whether our IV strategy allows us to predict AD protection, we estimate the following regression by OLS:

$$Tariff_{i,T} = \beta_0 + \beta_1 IV_{i,T} + \delta_i + \delta_T + \varepsilon_{i,T}$$

$Tariff_{i,T}$: AD duty on imports from China in industry i at the end of term T

$IV_{i,T} = Experience_i \times Swing_{i,T}$

δ_i: industry fixed effects at SIC4 level

δ_T: term fixed effects

Predicting AD protection

	(1)	(2)	(3)
$IV_{i,T}$	1.398***		1.362***
	(0.268)		(0.191)
$Swing_{i,T}$		8.006	1.199
		(5.644)	(4.228)
SIC4 FE	Yes	Yes	Yes
Term FE	Yes	Yes	Yes
Adjusted R^2	0.57	0.54	0.57
Observations	2,835	2,835	2,835

Notes: Observations are weighted by 1988 employment. The dependent variable is winsorized at 5th and 95th percentiles. Standard errors clustered at the SIC3 level in parenthesis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively.

Combining $Swing_{i,T}$ with $Experience_i$ is **key to predicting AD protection**

Robustness checks

	Product coverage	Import coverage	All TTBs	All countries	No steel
	(1)	(2)	(3)	(4)	(5)
$IV_{i,T}$	0.110***	0.017***	1.333***	0.623***	3.314***
	(0.022)	(0.003)	(0.278)	(0.195)	(1.227)
SIC4 FE	Yes	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.69	0.44	0.57	0.62	0.55
Observations	2,835	2,835	2,835	2,835	2,828
	Electoral votes	10% threshold	Next elections	Alternative $Experience_i$	Alternative $Swing_{i,T}$
	(6)	(7)	(8)	(9)	(10)
$IV_{i,T}$	1.137***	2.112**	0.758***	1.240***	5.532***
	(0.203)	(1.038)	(0.220)	(0.246)	(1.072)
SIC4 FE	Yes	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes	Yes
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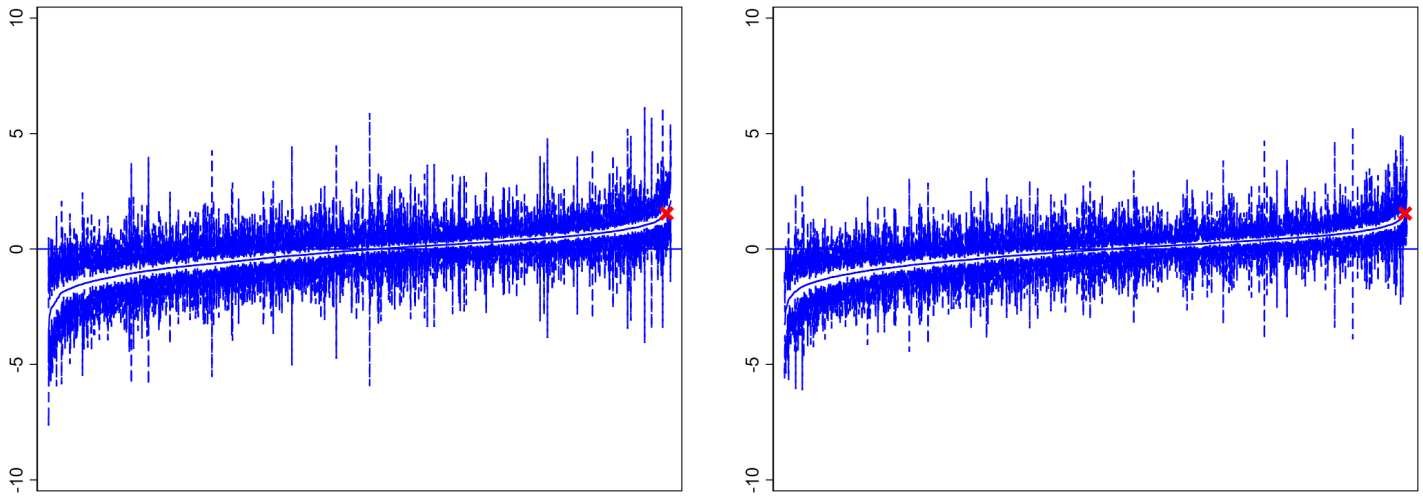
Placebo tests

- To verify the logic behind our IV strategy, we carry out two **placebo tests**:
  - Randomly choose the **identity** of swing states across the 50 US states
  - Randomly choose the **timing** of swing states across the 32 US states that were classified as swing at least once during our sample period
  - For each placebo test, we perform 5,000 randomizations of $Swing_{s,T}$
  - Using randomized $Swing_{s,T}$, we generate $Placebo\ IV_{i,T}$ and estimate

$$Tariff_{i,T} = \beta_0 + \beta_1 Placebo\ IV_{i,T} + \delta_i + \delta_T + \varepsilon_{i,T}$$

5,000 estimated coefficients of *Placebo* $IV_{i,T}$



The red cross corresponds to estimated coefficient in our baseline regression; it is significant at 1% level and outside the 99% confidence interval of the placebo estimates

Predicting AD protection requires keeping track of the actual swing states in each term

Outline

Impact of upstream protection on downstream employment

Baseline two-stage least squares regression:

$$\Delta L_{j,T} = \beta_0 + \beta_1 \Delta \textit{Input Tariff}_{j,T} + \delta_j + \delta_T + \varepsilon_{j,T}$$

$\Delta L_{j,T}$: log change in employment in industry j during term T

$\Delta \textit{Input Tariff}_{j,T}$: change in input protection during term T

δ_j: industry fixed effects at SIC4 level, accounting for sectoral trends

δ_T: term fixed effects, accounting for macroeconomic and political conditions

The impact of tariffs on employment in downstream industries (1988-2016)

	All sectors		Manufacturing sectors only	
	Average input tariff	Tariff on key input	Average input tariff	Tariff on key input
	(1)	(2)	(3)	(4)
$\Delta Input\ Tariff_{j,T}$	-0.319***	-0.042***	-0.151***	-0.019***
	(0.087)	(0.008)	(0.053)	(0.007)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	2,742	2,742
KP F-statistic	229.1	1,349.8	163.6	715.5

Notes: Observations are weighted by 1988 employment. The dependent variable is winsorized at 5th and 95th percentiles. Standard errors clustered at the SIC3 level in parenthesis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively.

1 p.p. increase in input tariff decreases annual growth rate of employment by 0.32 p.p

1 s.d. (0.02) increase in input tariffs decreases the annual growth rate of employment by 0.7 p.p. (16% of the standard deviation of employment growth)

First stage OLS

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▸ First stage ▸ OLS

- We compute the **counterfactual jobs lost due to input protection**, we apply the methodology proposed by Acemoglu *et al.* (2016):

$$\textit{Employment losses} = \sum_{j,T} L_{j,T}(1 - e^{-\hat{\beta}_1 \widetilde{\Delta\tau_{j,T}}})$$

$L_{j,T}$: employment level in industry j at the end of term T

$\hat{\beta}_1$: estimated coefficient of $\Delta \textit{Input Tariff}_{j,T}$ in the second stage

$\widetilde{\Delta\tau_{j,T}}$: observed change in input duties weighted by the partial R^2 of the first stage

- **1.8 million jobs lost** across all downstream sectors over 1988-2016

Heterogeneous effects across industries

- Large losses in non-manufacturing sectors relying on protected inputs:

  Construction: more than 150,000 additional jobs would have been created absent AD protection (average input tariff of 10.20%, average duty on steel of 81.61%)

- The effects of protection also depend on the extent to which downstream producers rely on foreign suppliers for their inputs

Accounting for the Effects on Protected Industries

- Our baseline results focus on the effects of protection on downstream industries

Accounting for the impact of tariffs on protected industries

	Protected industries	All industries (including diagonal)
	(1)	(2)
$\Delta Tariff_{j,T}$	-0.024	
	(0.025)	
$\Delta Input\ Tariff_{j,T}$		-0.327***
		(0.078)
SIC4 FE	Yes	Yes
Year FE	Yes	Yes
Observations	2,833	3,351
KP F-statistic	16.3	375.9

- Focusing on protected industries confounds tariffs on final goods and inputs
- Net negative impact of protection across protected and downstream sectors

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Additional robustness checks

- Measure of protection:
  - Alternative AD measures, all TTBs, duties on other countries
  - Controlling for additional tariffs
- Vertical linkages:
  - Weighting input tariffs by total IO coefficients
  - Effects of protection on upstream sectors
- Controls:
  - Alternative $Swing_{i,T}$, controlling for $Swing_{j,T}$ and $Input\ Swing_{j,T}$
  - Controlling for federal and state-level subsidies
- Econometric methodology:
  - Levels, first-differences, unweighted regressions, alternative clusters
  - "Re-centering" the instrument (Borusyak and Hull, 2021)

Extending the analysis to trade barriers under Trump

- Since Trump took office in 2017, the US has **further increased AD protection** against China (32 new measures, average duty rate of 225%)

- In 2018, Trump introduced **special tariffs** (under Sections 201 and 301 of 1974 US Trade Act, Section 232 of 1962 Trade Expansion Act)

The impact of tariffs on employment in downstream industries (1988-2018)

	AD only		All TTBs +Trump's tariffs	
	Average input tariff	Tariff on key input	Average input tariff	Tariff on key input
	(1)	(2)	(3)	(4)
$\Delta Input\ Tariff_{j,T}$	-0.380***	-0.048***	-0.485***	-0.055***
	(0.105)	(0.009)	(0.145)	(0.010)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,829	3,829	3,829	3,829
KP F-statistic	162.7	979.2	100.4	624.1

Around 500,000 US jobs lost across downstream industries due to protectionist measures introduced in the first two years of Trump's presidency

Effects of protection on other industry outcomes

Effects of protection on other industry outcomes

	Blue Collar	White Collar	Wages	Sales	Investment
	(1)	(2)	(3)	(4)	(5)
$\Delta Input\ Tariff_{j,T}$	-0.143**	0.001	-0.031**	-0.176***	-0.302**
	(0.065)	(0.040)	(0.013)	(0.054)	(0.117)
SIC4 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,320	2,320	2,320	2,320	2,320
KP F-statistic	170.9	170.9	170.9	170.9	170.9

Mechanism: the effects of tariffs on imports and prices

AD duties **decrease imports** of targeted products and **increase prices**

The impact of tariffs on imports and prices

	Imports		Prices	
	China	Top 50 exporters	Domestic goods	All inputs
	(1)	(2)	(3)	(4)
$\Delta Tariff_{j,T}$	-0.134***	0.024	0.056***	
	(0.048)	(0.026)	(0.015)	
$\Delta Tariff_{j,T} \times China_c$		-0.213***		
		(0.079)		
$\Delta Input\ Tariff_{j,T}$				0.059***
				(0.019)
SIC4 FE	Yes	No	Yes	Yes
Term FE	Yes	No	Yes	Yes
SIC4 × Country FE	No	Yes	No	No
Term × Country FE	No	Yes	No	No
Observations	2,687	100,696	2,058	2,320
KP F-statistic	16.2	8.11	16.6	170.9

Conclusion

- We develop a **new instrument** for AD protection, which exploits exogenous variation in the political importance of industries and in their historical experience in AD proceedings
- Using this instrument, we find that higher tariffs decrease imports and increase prices of targeted products, and reduce employment, sales, investment and wages in downstream industries
- Our baseline estimates indicate that 1.8 million jobs were lost in 1988-2016 due to AD protection (4.8% of job gains in that period)
- Our results resonate with concerns heard in the media about the **costs of protection along supply chains**: *"Trump's tariffs on steel will cost manufacturing jobs across the country"* (*Financial Times*, March 1, 2018)

Debate about the use of AD in multilateral trading system

- Previous studies provide an **economic rationale** for allowing AD measures in trade agreements: the ability to protect industries in the face of import surges can act as a "safety valve," allowing countries to sustain trade policy cooperation (Bagwell and Staiger, 1990; Bown and Crowley, 2013)

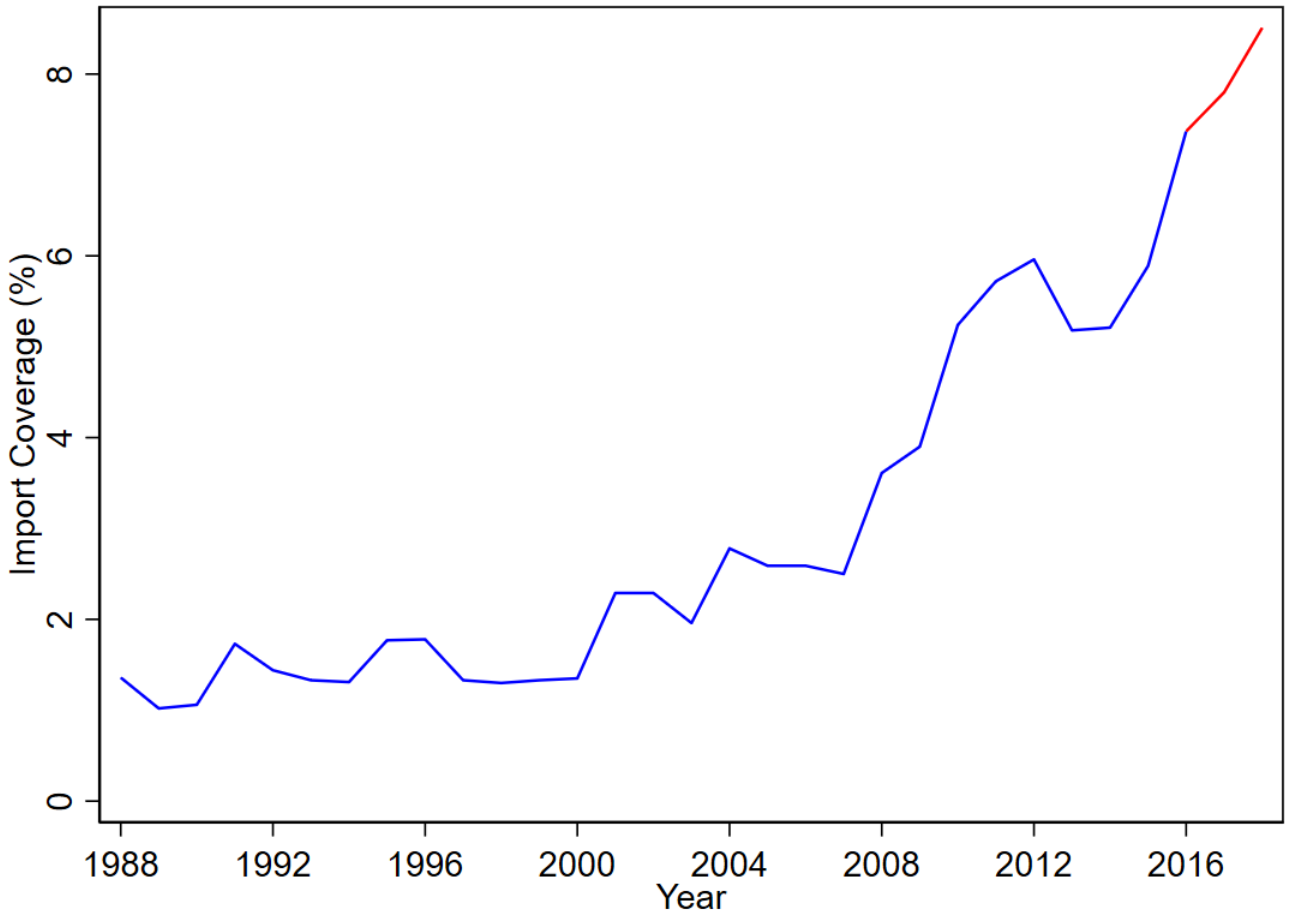
- Our paper emphasizes the **political economy motives** for flexible trade barriers (in the spirit of Bagwell and Staiger, 2005); these motives are particularly important in the United States, where swing-state politics creates incentives to favor key industries in battleground states

- This can help to explain **strong criticism of the WTO Appellate Body by the United States** and its refusal to appoint new members:

  AD protection in United States is "very sensitive here in a way that they may not be in other countries. The Appellate Body obviously hasn't been sensitive to any of that, and they've simply trampled those laws every chance they've gotten" (Stephen Vaughn, former USTR General Counsel)

Thank you!

Share of US imports from China covered by AD duties



Source: Bown (forthcoming).

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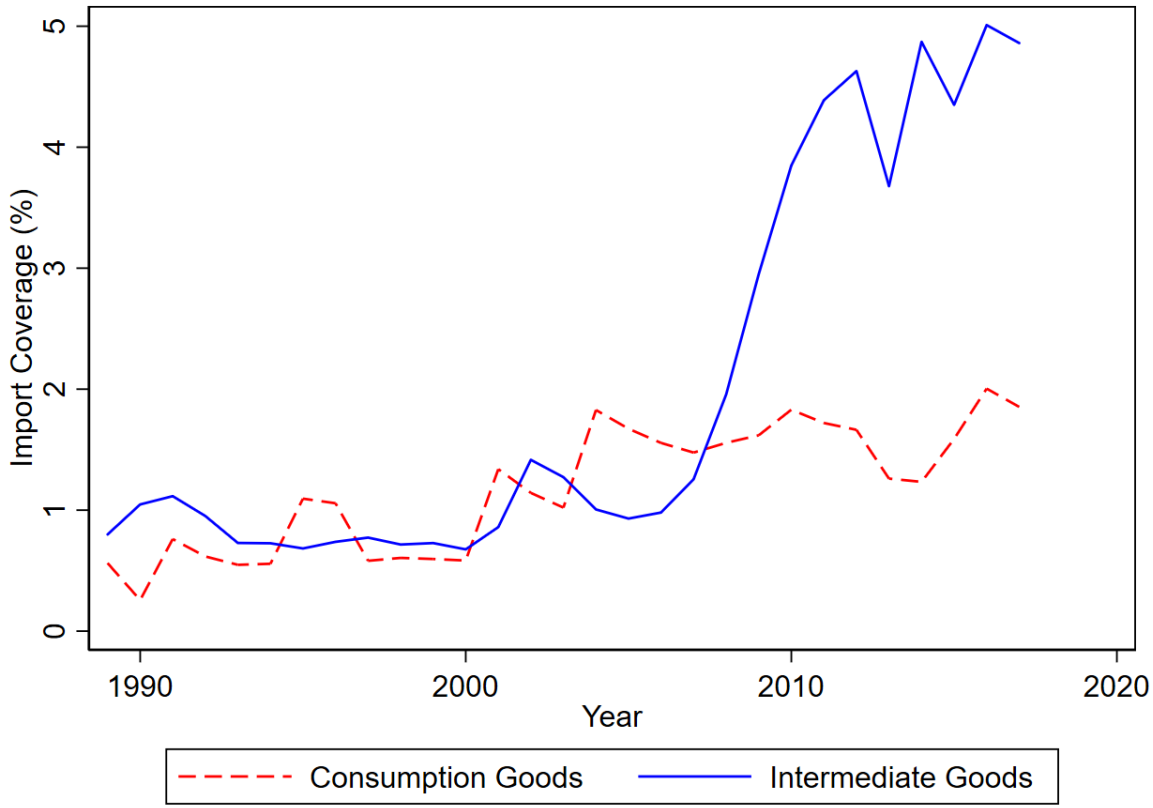
Share of US imports from China covered by temporary trade barriers



Source: Bown (2019)

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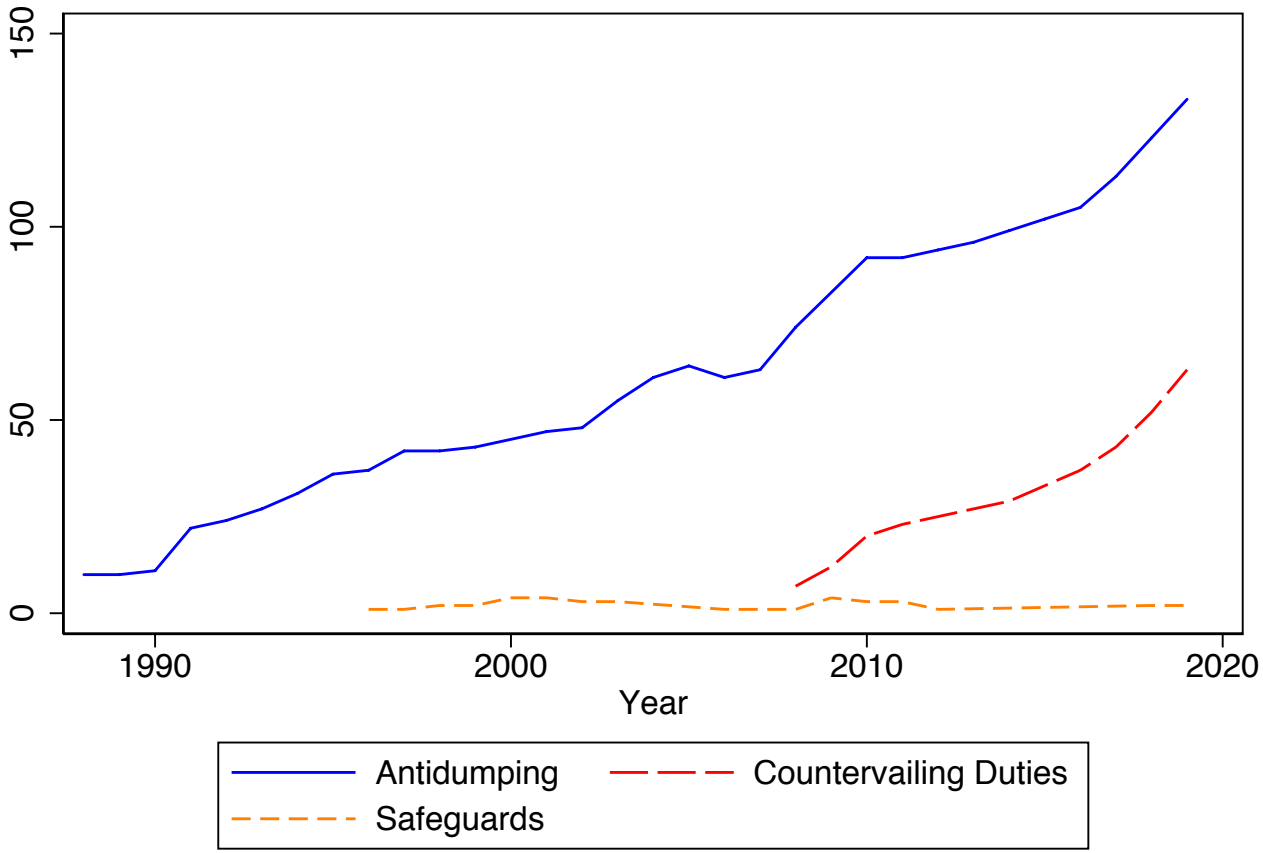
US AD duties, countervailing duties, and safeguards against China



Source: Authors' calculations based on the Temporary Trade Barriers Database.

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Top-10 protected sectors, by average duty

SIC4	SIC4 description	Average tariff
0710	Agriculture	245.5%
2033	Canned fruits and vegetables	243.5%
2037	Frozen fruits and vegetables	237.1%
2035	Pickles, sauces, and salad dressings	234.9%
3792	Travel trailers and campers	172.0%
3399	Primary metal products, n.e.c.	134.6%
3339	Primary nonferrous metals, n.e.c.	125.9%
2869	Industrial organic chemicals, n.e.c.	125.1%
0900	Fishing, hunting, and trapping	120.7%
3494	Valves and pipe fittings, n.e.c.	117.7%

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Descriptive statistics on tariffs applied by the US against China

Variable	Mean	Std. Dev.	Min	Max
	(a) AD duties, 1988-2016			
$Tariff_{j,t}$	0.15	0.53	0.00	4.30
Average Input Tariff$_{j,t}$	0.14	0.15	0.00	1.07
Tariff on Key Input$_{1,j,t}$	0.36	0.63	0.00	3.77
	(b) MFN tariffs, 1988-2016			
$Tariff_{j,t}$	0.05	0.21	0.00	3.50
Average Input Tariff$_{j,t}$	0.02	0.03	0.00	0.43
Tariff on Key Input$_{1,j,t}$	0.05	0.23	0.00	3.50
	(c) AD duties, 2017-2018			
$Tariff_{j,t}$	0.36	0.81	0.00	4.93
Average Input Tariff$_{j,t}$	0.34	0.21	0.02	1.01
Tariff on Key Input$_{1,j,t}$	0.88	0.88	0.00	3.73
	(d) Section 201, 232, and 301 tariffs, 2018			
$Tariff_{j,t}$	0.11	0.07	0.00	0.25
Average Input Tariff$_{j,t}$	0.05	0.03	0.00	0.15
Tariff on Key Input$_{1,j,t}$	0.13	0.05	0.00	0.25

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Top-10 downstream sectors, by average input duty

SIC4	SIC4 description	Average input duty	Average duty on key input	Key input SIC4	Key input description
0800	Forestry	61.78%	245.53%	0710	Agriculture
3449	Miscellaneous metal work	50.17%	81.61%	3312	Blast furnaces and steel mills
2653	Corrugated and solid fiber boxes	44.30%	76.93%	2621	Paper mills
3412	Metal barrels, drums, and pails	43.78%	81.61%	3312	Blast furnaces and steel mills
3448	Prefabricated metal buildings	43.12%	81.61%	3312	Blast furnaces and steel mills
2821	Plastics materials and resins	42.24%	125.09%	2869	Industrial organic chemicals, n.e.c.
2674	Bags: uncoated paper and multiwall	40.81%	76.93%	2621	Paper mills
3084	Plastics pipe	40.62%	53.04%	2821	Plastics materials and resins
2655	Fiber cans, drums and similar products	40.04%	76.93%	2621	Paper mills
3465	Automotive stampings	39.18%	81.61%	3312	Blast furnaces and steel mills

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Politics of AD

- Domestic politics can affect the two institutions that regulate AD:
  - **Department of Commerce** (DOC): determines if imported goods are sold at less than "fair value", sets **dumping margin**
  - **DOC** is part of the executive branch: the President nominates its top positions and can directly intervene in its decisions
  - **International Trade Commission** (ITC): determines whether imports have caused **material injury** to the relevant US industry
  - Decisions of **ITC** reflect interests of key committees in Congress (e.g. Moore, 1992; Hansen and Prusa, 1997; Aquilante, 2018)

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Swing-state politics and ITC votes

ITC commissioners more likely to protect key industries in swing states

	Affirmative vote	Affirmative vote	Share of affirmative votes
	(1)	(2)	(3)
$Swing_{i,T}$	19.391***	16.280***	0.464***
	(4.372)	(4.278)	(0.109)
$Swing_{i,T} \times Same\ Party\ as\ President_{c,T}$		7.285***	
		(2.394)	
$Same\ Party\ as\ President_{c,T}$		0.054	
		(0.039)	
Commissioner FE	Yes	Yes	No
Year FE	Yes	Yes	Yes
SIC4 FE	Yes	Yes	Yes
Adjusted R^2	0.50	0.51	0.30
Observations	856	856	113

The table reports OLS estimates. In columns 1 and 2, the dependent variable is $Vote_{i,t,c}$, a dummy variable which is equal to 1 if ITC commissioner c votes in favor of AD duties against China in year t, in a case involving SIC4 industry i. In column 3, the dependent variable is $Vote\ Share_{i,t}$, the share of ITC commissioners voting in favor of AD duties against China in year t, in a case involving SIC4 industry i. $Swing_{i,T}$ captures the importance of industry i in states classified as swing during term T. $Same\ Party\ as\ the\ President_{t,c}$ is a dummy variable equal to 1 if ITC commissioner c belongs to the same party as the incumbent executive in year t. The sample covers 1985-2008. Standard errors in parentheses are clustered at the SIC3 industry level. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively.

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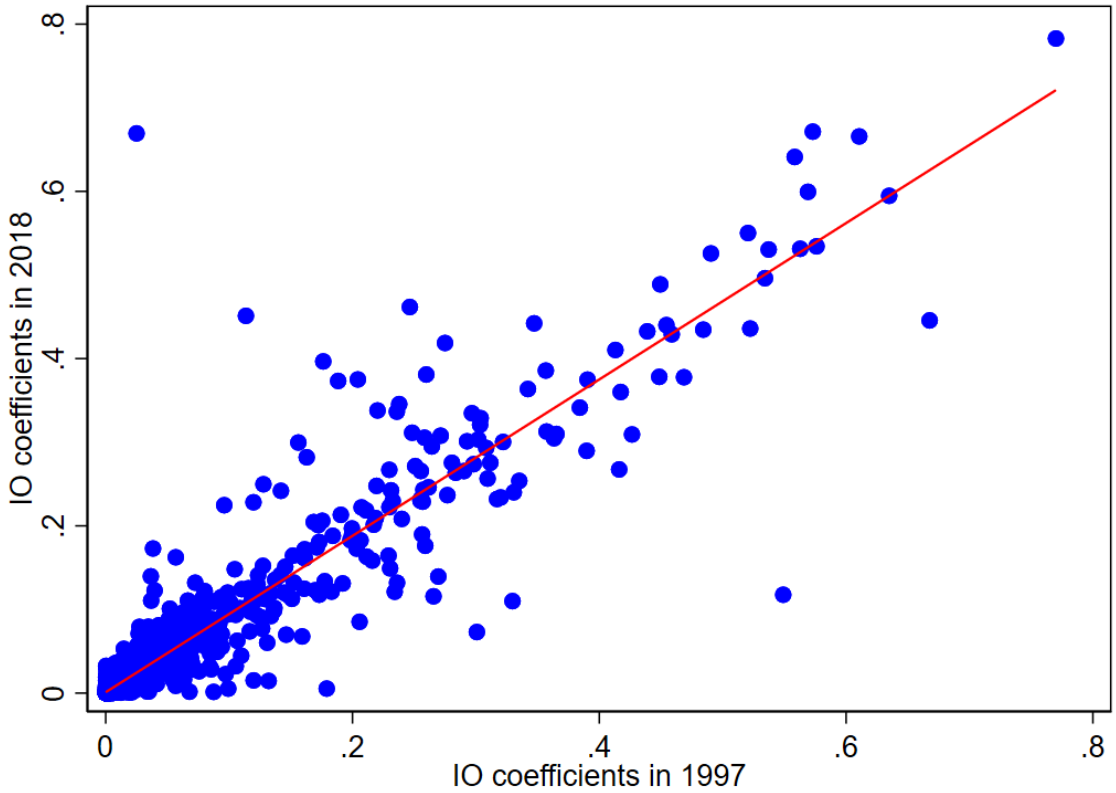
IO coefficients



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Top-10 key inputs

SIC4	Input industry	Share downstream industries	Average cost share of key input
3312	Blast furnaces and steel mills	0.17	0.11
1221	Coal and petroleum	0.10	0.09
2221	Broadwoven fabric mills, manmade	0.06	0.10
2752	Commercial printing, lithographic	0.06	0.04
2621	Paper mills	0.05	0.20
3679	Electronic components, n.e.c.	0.05	0.06
2869	Industrial organic chemicals, n.e.c.	0.04	0.11
2821	Plastics materials and resins	0.03	0.12
2911	Petroleum refining	0.03	0.10
3674	Semiconductors and related devices	0.03	0.04

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Employment shares, 1988-2011

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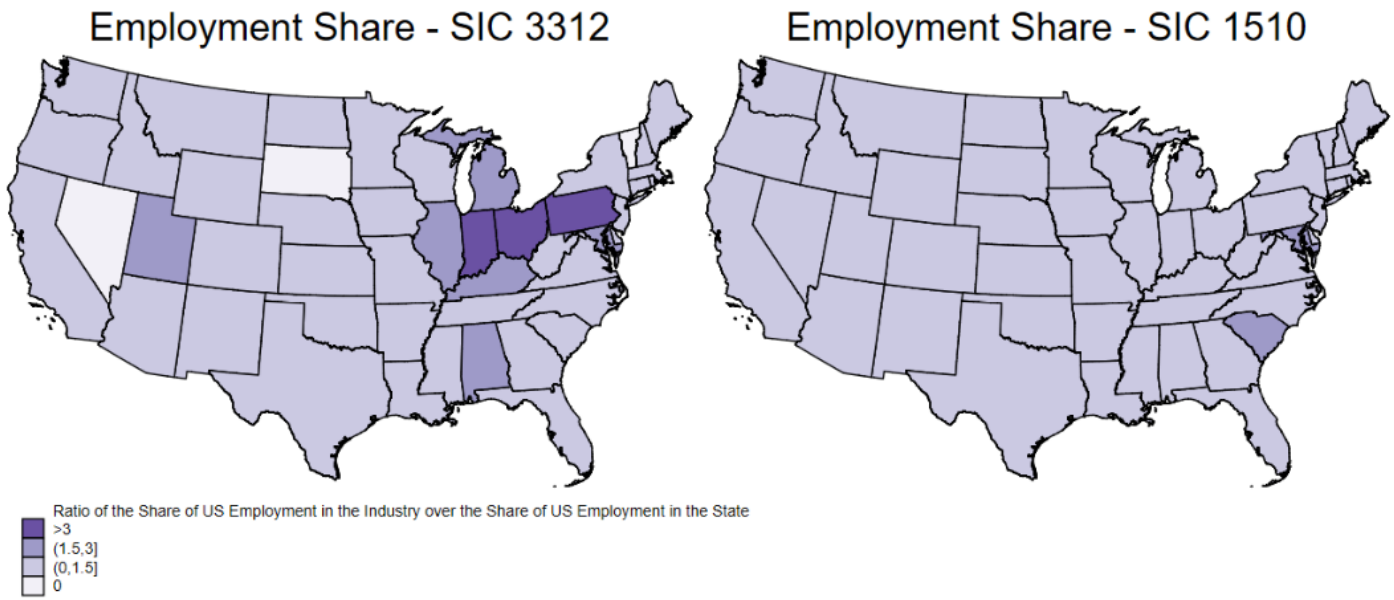
Geographical distribution of steel (SIC 3312) and construction (SIC 1510)

(based on 1988 employment shares)



Indiana, Ohio, Pennsylvania: 13% of total employment, 56% of employment in steel

State-level employment in construction proportional to size of employment force

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First-stage and reduced-form results

	First-stage results			
	All sectors		Manufacturing sectors	
	Average input tariff	Tariff on key input	Average input tariff	Tariff on key input
	(1)	(2)	(3)	(4)
$\Delta IV_{j,T}$	0.001***	0.682***	0.001***	0.714***
	(0.000)	(0.019)	(0.000)	(0.027)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	2,742	2,742
Adjusted R^2	0.29	0.31	0.29	0.28
	Reduced-form results			
	All sectors		Manufacturing sectors	
	Average input tariff	Tariff on key input	Average input tariff	Tariff on key input
	(5)	(6)	(7)	(8)
$\Delta IV_{j,T}$	-0.000***	-0.029***	-0.000***	-0.014***
	(0.000)	(0.006)	(0.000)	(0.004)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	2,742	2,742
Adjusted R^2	0.29	0.30	0.30	0.30

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The impact of tariffs on employment in downstream industries (OLS)

	All sectors		Manufacturing sectors only	
	Average input tariff	Tariff on key input	Average input tariff	Tariff on key input
	(1)	(2)	(3)	(4)
$\Delta Input\ Tariff_{j,T}$	-0.077**	-0.001	-0.007	-0.001
	(0.034)	(0.002)	(0.015)	(0.003)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	2,742	2,742
Adjusted R^2	0.50	0.50	0.42	0.42

Harder to identify negative impact of AD when **ignoring endogeneity of trade policy**

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Top-10 affected sectors, by number of jobs lost due to input protection

SIC4	SIC4 description	Share of total US employment	Average input tariff	Employment loss due to average input tariffs
5812	Eating and drinking places	7.94%	13.4%	-213,795
1510	Construction	5.47%	10.2%	-167,094
5210	Retail trade	13.25%	3.2%	-149,527
5012	Wholesale trade	6.11%	4.1%	-88,037
8060	Hospitals	4.90%	6.1%	-64,784
7532	Auto repair	0.67%	20.2%	-44,648
8320	Social services	1.14%	6.7%	-34,557
2752	Commercial printing, lithographic	0.49%	21.9%	-30,695
7371	Computer services	1.60%	3.4%	-26,903
4210	Trucking	1.71%	4.6%	-26,547

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The impact of tariffs on employment in downstream industries
(heterogeneous effects by import dependence)

	Mean	Median
	(1)	(2)
$\Delta Input\ Tariff_{j,T}$	-0.239***	-0.120
	(0.077)	(0.092)
$\Delta Input\ Tariff_{j,T} \times High\ Import\ Dependence_j$	-0.404*	-0.350**
	(0.230)	(0.151)
SIC4 FE	Yes	Yes
Term FE	Yes	Yes
Observations	3,351	3,351
KP F-statistic	91.5	55.5
F-statistic for the sum	7.98***	12.72***

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The impact of tariffs on employment in downstream industries
(alternative measures of protection)

	Product coverage	Import coverage	All TTBs	All countries
	(1)	(2)	(3)	(4)
$\Delta Input\ Tariff_{j,T}$	-4.235***	-2.896***	-0.379***	-0.696***
	(1.205)	(0.565)	(0.101)	(0.213)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	3,351	3,351
KP F-statistic	140.4	2,669.6	230.8	65.1

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The impact of tariffs on employment in downstream industries (additional tariffs)

	AD duties	US MFN tariffs	Chinese AD duties
	(1)	(2)	(3)
Δ*Input Tariff*$_{j,T}$	-0.144**	-0.305***	-0.306***
	(0.057)	(0.081)	(0.084)
Δ*Tariff*$_{j,T}$	-0.032		
	(0.030)		
Δ*Input Tariff MFN*$_{j,T}$		-0.353	
		(0.245)	
Δ*Input Retaliation*$_{j,T}$			-0.109**
			(0.047)
Δ*Retaliation*$_{j,T}$			-0.007
			(0.014)
SIC4 FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	2,833	3,351	3,351
KP F-statistic	7.97	212.7	231.6

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The impact of tariffs on employment in downstream industries (political importance of industries)

	Alternative $Swing_{i,T}$	Political controls		
	(1)	(2)	(3)	(4)
$\Delta Input\ Tariff_{j,T}$	-0.311***	-0.359***	-0.313***	-0.368***
	(0.092)	(0.103)	(0.095)	(0.107)
$\Delta Input\ Swing_{j,T}$		0.007		0.008
		(0.007)		(0.006)
$\Delta Swing_{j,T}$			-0.548	-0.566
			(0.461)	(0.452)
SIC4 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	3,351	3,351	3,351	3,351
KP F-statistic	192.7	143.9	194.5	148.6

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The impact of tariffs on employment in downstream industries
(alternative methodologies)

	Level regressions (1)	Year differences (2)	Unweighted regressions (3)	SIC2 clusters (4)	Total requirements (5)
Input Tariff$_{j,T}$	-1.154***				
	(0.413)				
Δ*Input Tariff*$_{j,T}$		-1.235***	-0.152***	-0.319***	-0.362**
		(0.341)	(0.046)	(0.104)	(0.095)
SIC4 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	3,351	13,407	3,351	3,351	3,351
KP F-statistic	142.4	229.0	156.7	168.7	170.0

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