

Tariffs and State Capacity

A Specific Story

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A Tradeoff Shaped by Capacity

- Importers can cheat on values when faced with ad valorem tariffs
- Specific tariffs distort relative prices

Constraint to policymakers:

- A complex taxonomy requires capacity

Historical Perspective

Hayes, 1877:

All revenue laws should be simple in their provisions and easily understood. So far as practicable, the rates of taxation should be in the form of specific duties, and not ad valorem, requiring the judgment of experienced men to ascertain values and exposing the revenue to the temptation of fraud

Walker 1847:

...It is not only the reduced duties that have produced these happy results, but the mode of reduction: the substitution of ad valorem for unequal and oppressive minimum and specific duties.

Manning, 1885:

Theoretically considered, ad valorem are preferable to specific duties; but in practice, under such rates as we have had and must continue to have for years to come, the former are the too easy source of deception

We study American tariff policy from 1789-1846

Our question: How does state capacity shape the tariff code?

We do three things:

1. Describe the evolution of US Customs: more capacity & more complexity
2. Write down a model of tariff design with costly verification
 - predict when and where specific tariffs should arise
 - show how to use quasi-experimental variation in tariff regime to test extent of fraud
3. Test the model's predictions for optimal tariff codes
 - accurately predicts pattern of tariffs in the early American republic
 - ... and in modern data (not for today)
 - Discuss implications of improved capacity

Relevant Literature

History of American Tariffs:

Taussig (1910); Pahre (2007); Rao (2016); Irwin (2017); Acosta and Cox (2024); Greenland and Lopresti (2025); Klein and Meissner (2025)

Specific vs Ad Valorem:

Cournot (1838); Wicksell (1896); Das and Donnenfeld (1987); Helpman and Krugman (1989); Krishna (1990); Keen (1998); Wang and Wright (2017)

Tariff Schedule Complexity:

Grossman and Helpman (1994); Costinot et al. (2015); Grant (2025); Lashkaripour and Lugovskyy (2023)

State capacity:

Fisman and Wei (2004); Javorcik and Narciso (2008); Besley and Persson (2009); Moreira and Pérez (2024); Mastroiocco and Teso (2026)

Data

Motivating Example: Carpets

On Brussels, Turkey, and Wilton carpets and carpeting, fifty cents per square yard;
On all Venetian and ingrain carpets or carpeting, twenty-five cents per square yard;

We harmonized every tariff bill.

- Key distinction: *labels* are what is written, *goods* are the narrowest ever-defined classification, and *varieties* are what is actually brought in.

Motivating Example: Carpet Labels

- 1789: “All other goods, wares and merchandise” (5%)
- 1790-1824: “Carpets and Carpeting” (10-15%)
- In 1824, 11 different types of carpets, the only one that stays with an ad valorem tariff is “Carpets and carpeting, all other”
- By 1842: 14 distinct carpets tariffs

Many splits in 1824, following reform and professionalization of Customs in 1818

- Hired “well qualified” officials at major ports, gave them broad discretion

Our goods are made up of *unobserved* varieties, with some price variation

Example:

- Treble ingrain carpets are generally more expensive than single ingrain carpets
- But quality variation even within treble ingrain carpets

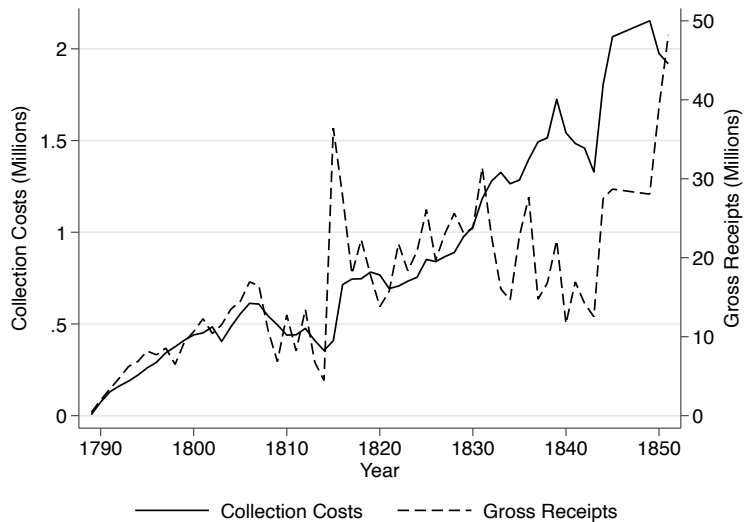
This is a key force for tariff policy: the classification system groups together varieties with different unit values, which determines the efficiency costs of each tariff regime

We know little about what came into the country

- Little disaggregation of imports by good before 1820s
 - And most ad valorem imports are grouped by rate
- Detailed tariff revenue by ad valorem goods starts in the 1840s
 - And even then, 20% of imports are in an “other” category

Motivating Evidence

More Customs Over Time

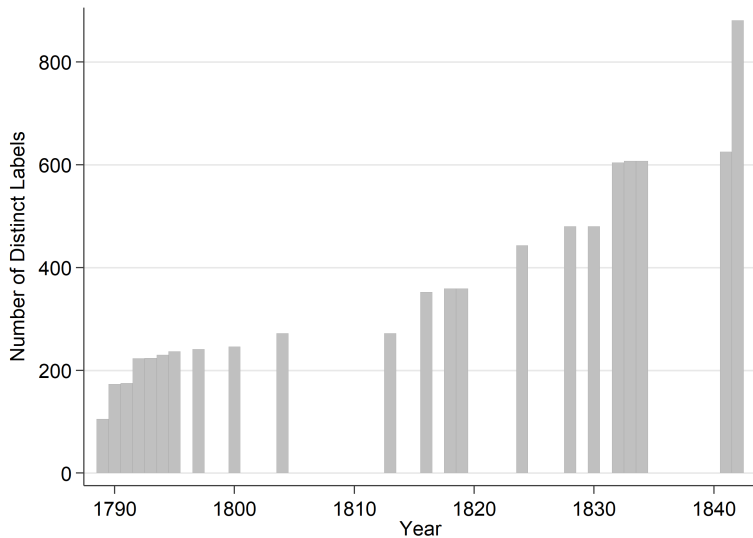


More Customs Occupations Over Time

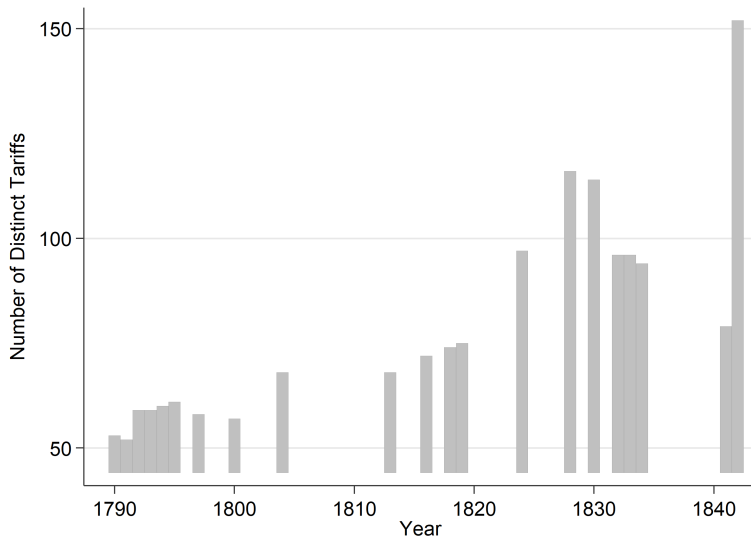


- federally appointed occupations: collector, surveyor, naval officer
- initially inspectors, gauger, measurers, weighers
- over time assistants added, departments created, appraisers, examiners, clerks, etc.

More Labels Over Time



Number of Distinct Tariffs Rates Broadly Increasing Over Time



How to Design a Tariff Schedule

Planner's objective: hit a revenue target (per dollar of expenditure), while minimizing import price index. Tariff is either ad valorem (τ) or specific (t).

Basic problem:

- revenue target is exogenous

Two simplifying assumptions:

- small open economy $\rightarrow$ no optimal tariff motives
- tradables sector “small” $\rightarrow$ no feedback to wages, other prices, etc.

Import Demand and Supply

- Demand:

$$U = C_H^{1-\beta_H} \underbrace{\left[\int_0^1 q_i^{1-\frac{1}{\sigma}} di \right]^{\frac{\sigma}{\sigma-1}}}_{\text{Imports}} \times (1-\beta_H)$$

- Constant expenditure on foreign imports, normalized to 1
- CES over foreign varieties with EoS σ

- Supply:

- Varieties have marginal costs $v \sim F \in \Delta(\mathbb{R}_+)$
- Perfectly elastic supply $\rightarrow$ price is cost plus tariff, $T(v)$:

$$p = v + T(v)$$

$\Rightarrow$ planner minimizes the following price index:

$$P^{1-\sigma} = E(p(v))^{1-\sigma}$$

Plan:

1. Optimal strategies for importers & customs officials
2. Start with the single-tariff case
3. Comparative statics with respect to variance, price, and average tariff rate as tariff schedule complexifies

The Dimensions of State Capacity

Two dimensions of *state capacity*:

1. *Classification cost* c_S : the cost of training customs inspectors to distinguish (split) categories such as j and k ; a categorization $\mathcal{K}$ costs $c_S \cdot H(\mathcal{K})$
2. *Verification cost* c_{AV} : the per-unit cost of verifying declared values within a category j

Why *verification* costs? Customs officials reported difficulties punishing importers who submitted invoices containing prices that “no one believes,” particularly since “the accused party (especially with French goods) can bring witnesses to prove almost anything” (Walker, 1845; Meredith, 1849).

...not only the French: “it is well known that their goods are in their invoices of them far below their true value even in England,” (Niles’ Weekly Register, 1826).

To understand up the setting: start with a given tariff code.

Inspector collects tariff revenue using one of two instruments:

1. Specific tariffs:

$$T(v) = t$$

2. Ad valorem tariffs:

$$T(v) = \tau v$$

Importers minimize expected tariff payments.

- commit to quantities before arriving at port,
- at port, importers declare a value v' (taking account of inspection risk)
- risk neutrality $\implies$

$$q(v, v') = (v + ET(v, v'))^{-\sigma} / P^{1-\sigma}$$

- choose v' to maximize after collections expected revenue:

Customs officials maximize net revenue

- hears report v'
- chooses inspection rate $\phi(v')$
- statutory fine on evaded amount if caught (Yitzhaki, 1987):

$$\kappa\tau(v - v')$$

- Cost c_{AV} per unit inspected

Proposition

With ad valorem tariffs, there is a Perfect Bayesian Equilibrium s.t.

1. *Declaration rule from importers:*

$$v' = \begin{cases} v - c_{AV}/(\kappa \cdot \tau) & v \geq v^* \\ 0 & v < v^* \end{cases}$$

2. *Constant inspection rate $\phi = 1/\kappa$,*

with v^ solving $E(v^{1-\sigma}|v < v^*)/E(v^{-\sigma}|v < v^*) = c_{AV}/(\kappa\tau)$.*

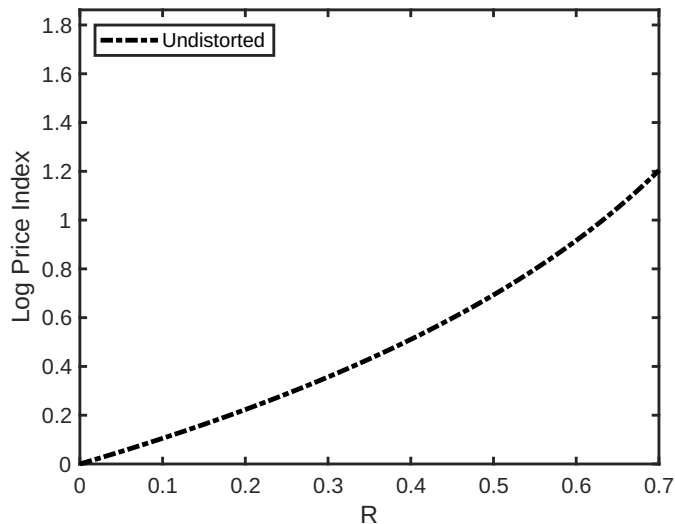
- intuition: at rate ϕ importers are indifferent between *any* report, while the reporting rule leaves inspector indifferent for each v

Net revenue from ad valorem tariff:

$$\Pi_{AV}(\tau) = \frac{\tau}{1 + \tau} \times \left(1 - \frac{\bar{c}_{AV}/\tau}{\bar{v}} \right)$$

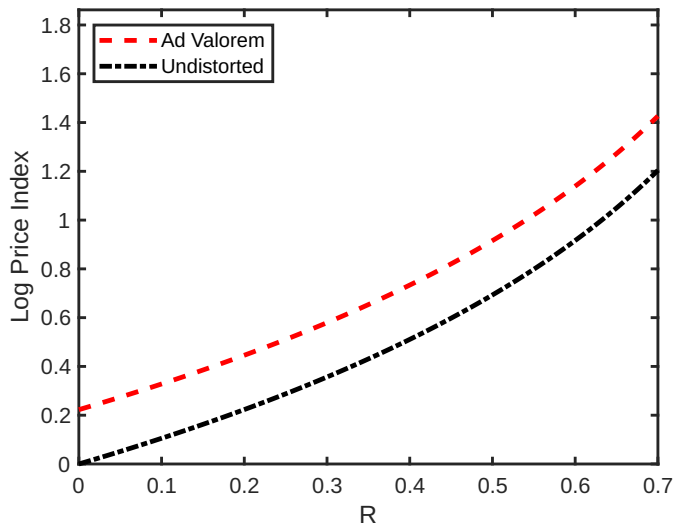
- $\bar{c}_{AV} = c_{AV}/\kappa \rightarrow$ expected cost of inspection
- $\bar{v}$ is the *unit cost*: $Ev^{1-\sigma}/Ev^{-\sigma}$
- first term is undistorted AVE from an ad valorem tariff
- second term is loss from inspection costs

$$\frac{d \log P_{AV}}{d \log R} = \frac{R}{1 - R}$$

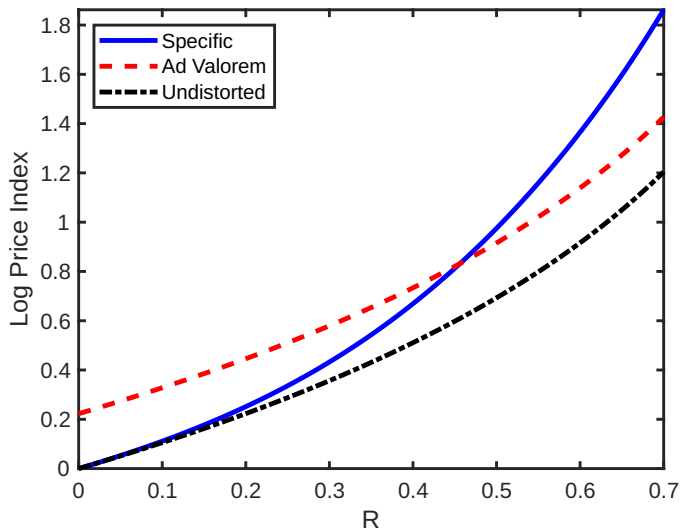


- First best: uniform (ad valorem) commodity tax

Prices and Tariffs



- ad valorem grows at the same rate
- jump due to minimum revenue required to cover inspection costs



Implication 1: Misvaluation

Proposition

Consider a category assessed a specific tariff t whose ad valorem equivalent $\bar{\tau}(t)$ exceeds $\bar{c}_{AV} \equiv c_{AV}/(\kappa\bar{v})$. If the category instead receives the ad valorem tariff $\bar{\tau}(t)$, then reported log (average) unit value falls by

$$\log\left(\frac{\bar{\tau}(t)}{\bar{\tau}(t) - \bar{c}_{AV}}\right) + \Delta(\bar{\tau}(t)), \quad \Delta(\tau) = \beta\tau + o(\tau), \quad \beta > 0.$$

- first term (misvaluation): if $c_{AV} > 0$, importers under-report values under an ad valorem tariff
- second term (Alchian–Allen): a specific tariff bears harder on cheap varieties, so switching to ad valorem shifts consumption toward them (Alchian and Allen, 1964)
- test: after netting out the (linear-in- $\bar{\tau}$) Alchian–Allen term, any residual decline identifies misvaluation

Proposition

Under any optimal tariff schedule:

2. *The net tariff burden is higher on goods subject to ad valorem tariffs than on those subject to specific tariffs.*
- intuition: specific is better for low burdens as verification costs are relatively large
 - for any specific tariff rate, its *ad valorem equivalent* is the ad valorem rate that would preserve the share of consumer category spending raised as tariff revenue (without misvaluation)

Proposition

Under any optimal tariff schedule:

2. *The net tariff burden is higher on goods subject to ad valorem tariffs than on those subject to specific tariffs.*
 3. *Across ad valorem categories, the tariff rate (gross burden) is decreasing in the category's unit value of consumption.*
- intuition: the planner tilts consumption toward high-value, low-quantity goods to economize on verification $\Rightarrow$ lower rates on high unit value goods

Proposition

Under any optimal tariff schedule:

2. *The net tariff burden is higher on goods subject to ad valorem tariffs than on those subject to specific tariffs.*
3. *Across ad valorem categories, the tariff rate (gross burden) is decreasing in the category's unit value of consumption.*
4. *Let j, k be balanced and value-ordered, $F_k(v) = F_j(\delta v)$ for some $\delta \in (0, 1)$ (so j is cheaper). Then k specific $\Rightarrow j$ specific.*
 - jargon is our notion of a category being cheaper: all of j 's values are k 's scaled down by δ
 - intuition: fewer units are imported in the expensive category, so verification is cheaper there $\Rightarrow$ ad valorem on k , specific on the cheaper good j

Proposition

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 5. *Let j, k be balanced and dispersion-ordered, F_k^Q is a mean-preserving spread of F_j^Q : identical unit values of consumption, but more heterogeneity in k . Then k specific $\Rightarrow j$ specific.*
- as values homogenize specific distortion vanishes, while ad valorem still pays verification costs to deter evasion

What Happens When State Capacity Improves?

Benchmark: c_S improves

6. More state capacity $\Rightarrow$ more complexity
 - finer distinctions become worthwhile
7. More state capacity $\Rightarrow$ more reliance on specifics
 - finer categories are more homogeneous

Alternative: c_{AV} improves

- vi. More state capacity $\Rightarrow$ less complexity
 - lower verification cost reduces ad valorem's revenue distortion
- vii. More state capacity $\Rightarrow$ fewer specifics
 - ad valorem becomes more attractive

The Pattern of Tariffs in the Early Republic

1846: Walker pushes to replace all tariffs with ad valorem

in early 1840s, about 150 distinct tariff rates, a mix of specific and ad valorem

- 1846 $\Rightarrow$ dramatic simplification of the tariff code: 9 distinct ad valorem rates

Immediately there is concern about lying on invoices.

Thomas Corwin, 1849:

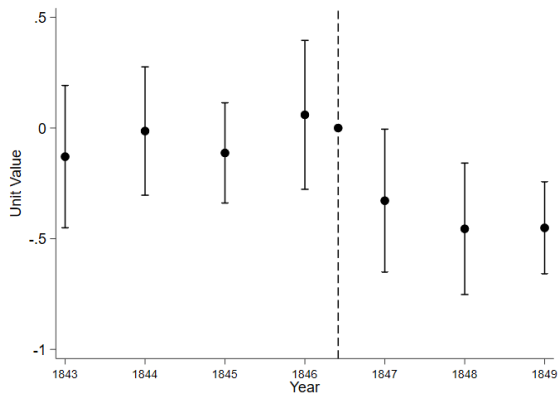
I present with this report several tables intended to show the sudden and extraordinary fall in the invoice values of certain articles which, prior to the tariff act of 1846, had been subject to specific duties, but which by that law were made subject to duties ad valorem. It must be apparent, from these tables, that great frauds are practised by under-valuations daily, which no expedient can prevent, unless such articles as are set forth in these table are charged with specific instead of ad valorem duties.

Compare the unit values of initially-specific goods to initially ad valorem or free list goods

- Treasury staff puts together consistent import statistics for 11 alcohols that switch from specific to ad valorem
- We found consistent reporting for 5 non-switchers
 - some on the free list (directly imported coffees and teas)
 - some ad valorem (wool and other coffee and teas)

With model-derived AVE controls, to block Alchian-Allen effects

Implication 1: Decline in Unit Values (PPML)



Prediction 2: Low AVEs Predict Specific Tariffs

	(1)	(2)	(3)
AVE < 5	0.26 (0.074)	0.21 (0.11)	0.23 (0.076)
5 < AVE < 15	0.18 (0.064)	0.10 (0.086)	0.15 (0.059)
15 < AVE < 25	0.083 (0.046)	0.010 (0.059)	0.052 (0.039)
Mean Outcome	0.679	0.431	0.573
Number of Imports	759	521	1209
Number of Observations	969	727	1696
Tariff Regime	1842	1846	Both

Prediction 3: Lower Unit Values Predict Higher Ad Valorem Tariffs

	(1)	(2)	(3)
Unit Value (Standardized)	-1.34 (0.32)	-0.62 (0.28)	-0.89 (0.28)
Mean Outcome	28.312	27.972	28.175
Number of Imports	854	405	1163
Number of Observations	1069	605	1674
Tariff Regime	1842	1846	Both

Prediction 4: Singleton Labels Predict Specific Tariffs

	(1)	(2)	(3)	(4)
Singleton Label	0.053 (0.0096)	0.080 (0.0097)	0.088 (0.011)	0.14 (0.028)
Mean Outcome	0.11	0.11	0.11	0.49
Number of Goods	1692	1692	1692	1588
Number of Observations	34639	34639	34639	1588
Specification	Year FE	Year $\times$ SITC FE	Year & Good FE	Only 1842

Prediction 4: Homogeneity Predicts Specific Tariffs

	(1)	(2)	(3)
Homogeneous	0.11 (0.0092)	0.16 (0.041)	0.27 (0.032)
Mean Outcome	0.11	0.11	0.49
Number of Goods	1692	1692	1588
Number of Observations	34639	34639	1588
Specification	Year FE	Year $\times$ SITC FE	Only 1842

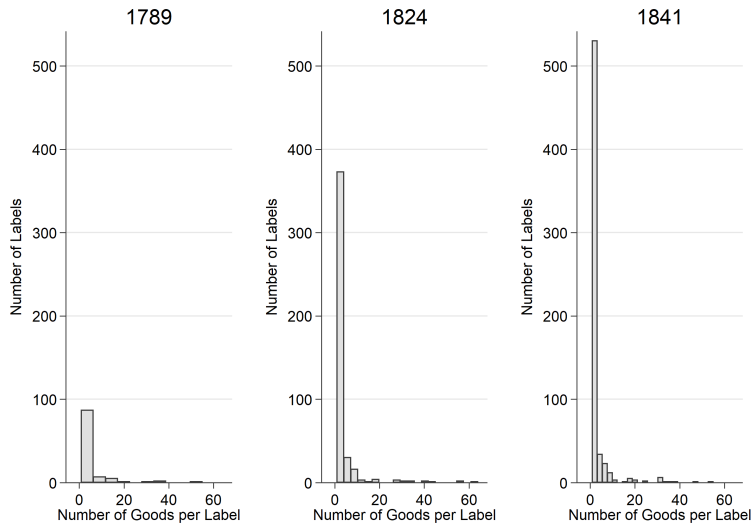
- independent variable = good was listed as a commodity by *The Executive Documents* of the House of Representatives
- Specific even though the true price is known!

Prediction 5: Minimum Tariffs

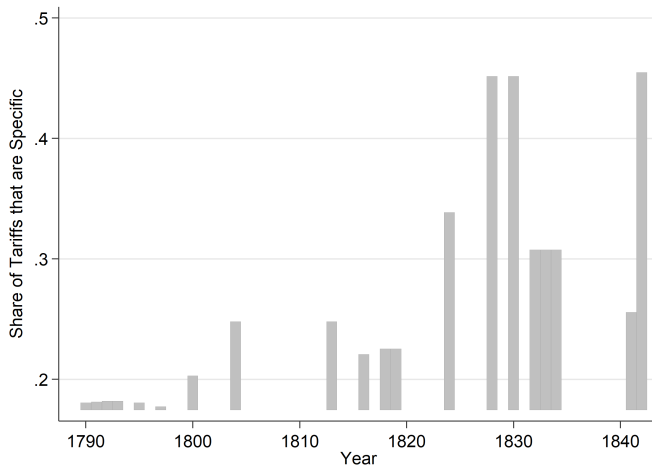
We don't have comprehensive data on unit values, but:

- Beginning with cottons in 1816, *minimum valuations* deemed any good below a value threshold to have been worth the threshold
- so for 1816 cotton cloth (25% ad valorem)
 - cloth under 25¢/sq. yd. $\Rightarrow$ 6 $\frac{1}{4}$ ¢/sq. yd.
- i.e. the statute explicitly assigns *specific* duties to cheap goods

Test 6: The Groupings Get Narrower Over Time

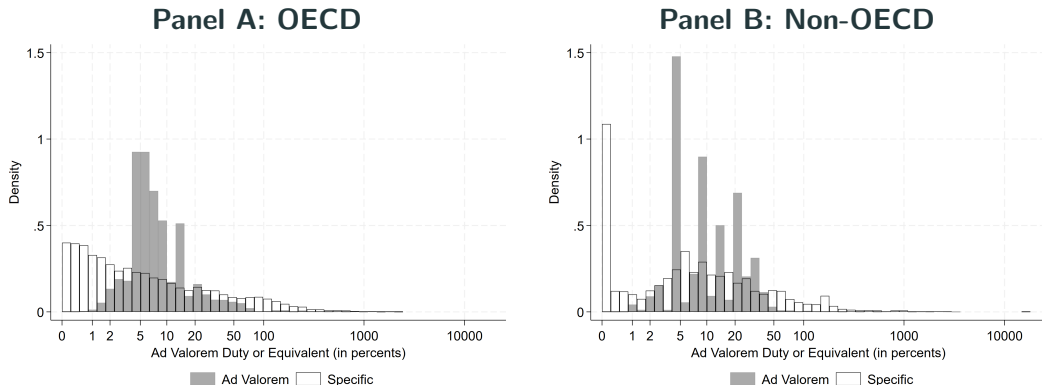


Test 7: Share of Products with Specific Tariff Broadly Increasing



Low Tariffs Also Predict Specificity Today

Figure 1: Distribution of Tariff Rates by Tariff Type



Hamilton (1795): *Inconvenient fractions... serve to perplex the calculation of the duties*

- Our goal: characterize and motivate the pattern of tariffs
- We find similar patterns historically and today

Monitoring frictions shape policy choices

- Costly to verify if an importer is telling the truth

Goods are more likely to be specific when they have:

- Low tariffs
- Little price variation

State capacity allows for more disaggregated tariffs, and therefore more specific tariffs

Thanks!

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Appendix

Data: Defining goods

Harmonize the label to make a consistent schedule

Unit of observation: a *good*.

Two key properties:

- **one** unique tariff line in any given year
- **physically distinct** from other goods with the same path of tariffs

Final schedule has 1300 disaggregated goods

- linked to SITC Rev2 codes and to Rauch (1999) classification

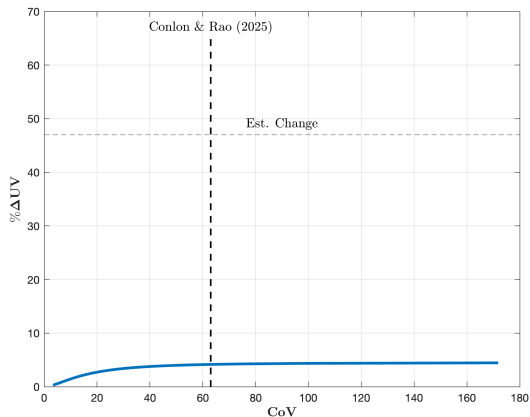
Motivating Example #2: Flannels

Good	Cotton Flannel, uncolored < \$0.20/lb	Cotton Flannel, colored < \$0.30/lb	Cotton Flannel, other	Wool Flannels < \$0.50	Wool Flannels \$0.50–\$1.00	Wool Flannels \$1.00–\$2.00	Wool Flannels \$2.00–\$4.00	Wool Flannels > \$4.00
1789	All other goods							
1790	All other goods							
1791	Cotton Manufactures							
1794	Cotton Manufactures							
1816	Cotton Manufactures			Wool Manufactures				
1824	Cotton Manufactures			Wool Manufactures Over 33 1/3 cents a square yard And all Woolen Flannels				
1828				Wool Mfg < \$0.50	Wool Mfg \$0.50–\$1.00	Wool Mfg \$1.00–\$2.00	Wool Mfg \$2.00–\$4.00	Wool Mfg > \$4.00
1832	Flannels							
1842	Cotton Mfg, uncolored < \$0.20/lb	Cotton Mfg, colored < \$0.30/lb	Cotton Mfg, other	Flannels, not cotton				

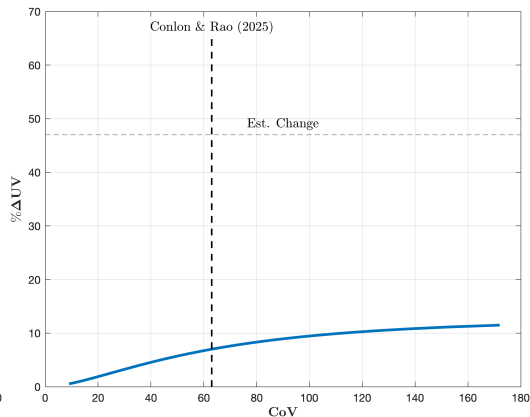
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Alchian-Allen Effects Are Not Plausible

(a) Pareto

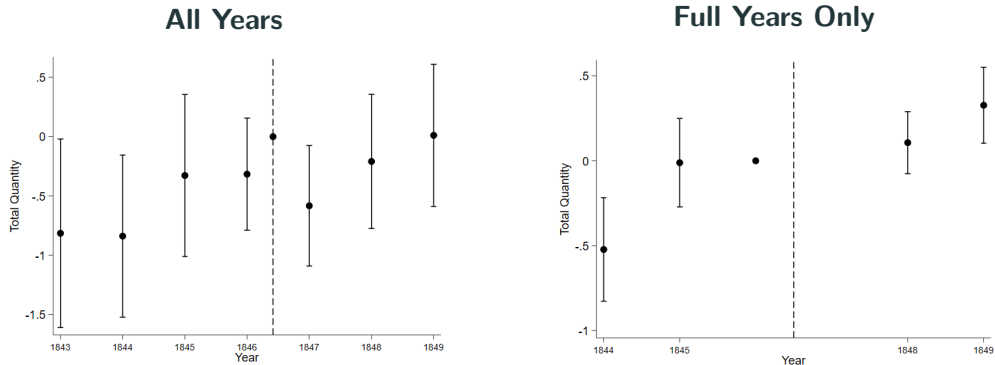


(b) Frechet



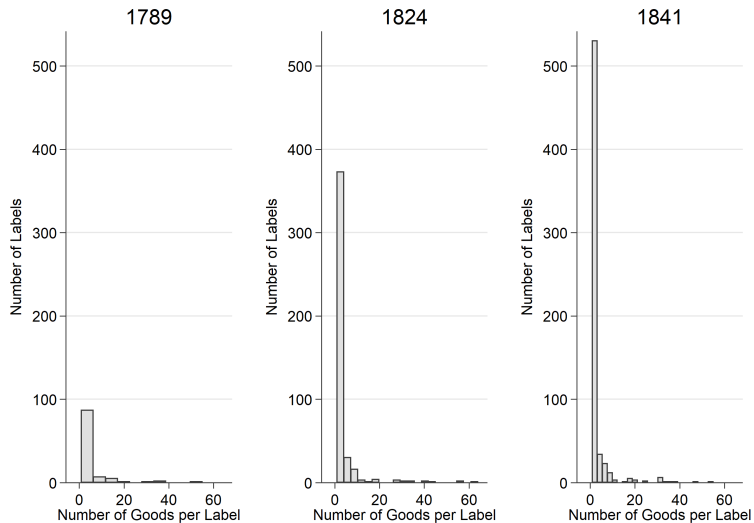
- coefficient of variation against the change in unit values
- use EoS from Errico & Lasharki (2025)

Quantities Event Study Around Removing All Specific Tariffs

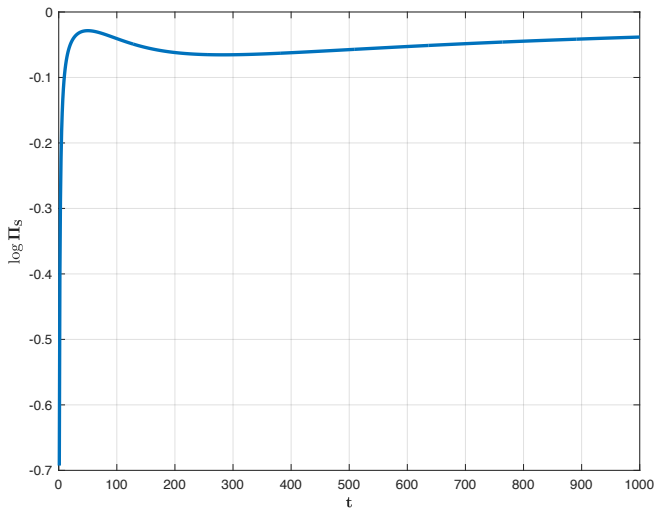


Notes: This figure plots the coefficients of the average monthly quantities and values for the initially-specific goods listed in the 1849 Annual Report of the Treasury of the Secretary for 1843–1849 relative to the goods without specific tariffs for which unit values were reported (two types of coffee, two types of tea, and wool). The vertical line represents the implementation of the Walker Tariff in 1846, which removed all specific tariffs. Panel A shows data from all of the import statistics 1843–1849, and Panel B shows results only for the import statistics with 12 months of reporting (dropping 1843 and two reports for 1847, one for each tariff regime). Results clustered by good. Data: *Commerce and Navigation of the United States*.

The Groupings Get Narrower Over Time



Example of Non Monotonicity with Specific Tariffs



- 2 point distribution with $v_M = 100v_m$
- high EoS $\implies$ substitution to expensive good is rapid and quantity falls very fast