

The Empire Project: Trade policy in interwar Canada

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19th century multilateral (not bilateral) trade

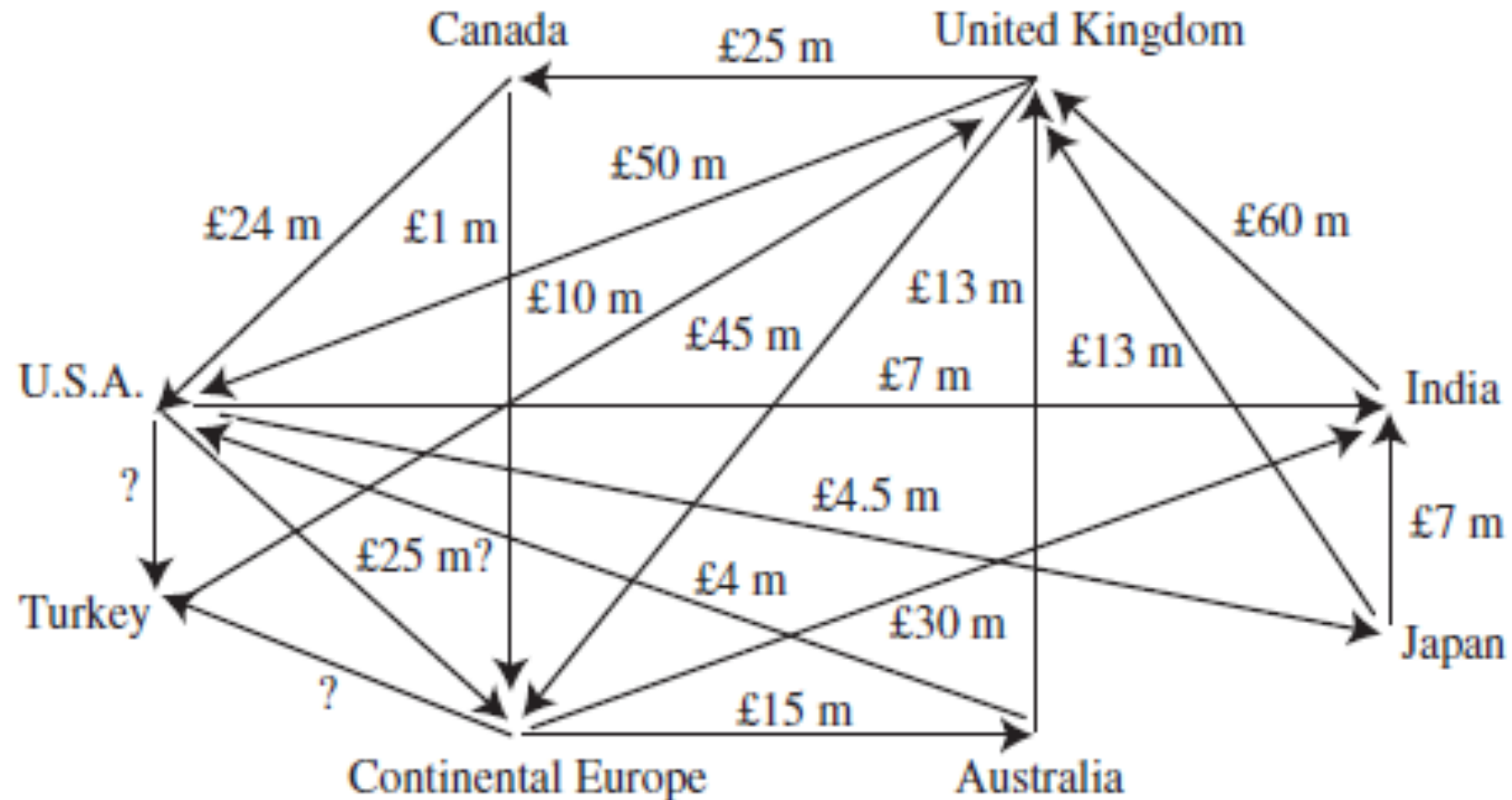


FIGURE 7.5. World pattern of settlements, 1910. *Source:* Saul (1960, p. 58).

Growing dependence on 'blocs'

- “We may characterize the change that occurred as a disintegration of world trade: while previously international settlement took place within a world-wide network of multilateral transactions, there was in the ‘thirties a tendency to achieve settlement either in bilateral exchange between two countries, or within the limited range of countries attached to each other by political or other ties” (Folke Hilgerdt, 1942, pp. 90-91).

Declining interwar multilateralism

- The declining multilateralism of the time was regarded by contemporaries as one of the most dangerous features of the period:
 - “it is now so obvious as to hardly need statement that bilateral trade took on aggressive and destructive aspects as international rivalries were sharpened in the era of what is now known as pre-belligerency” (Condliffe, 1941, p. 287)
- There is a reason why generalized MFN became Article 1 of the GATT...
- But were tariffs really responsible?

Part of a bigger project

- Previous studies of the impact of interwar protection used aggregate trade data and crude policy variables (e.g. dummies) and found small effects: we are using disaggregated data on trade and policies
 - de Bromhead et al. (AER, 2019): the shift to protection had a big impact on the value and especially the geographical composition of UK imports
 - Arthi et al. (EJ, 2024): Indian protection boosted UK exports to India substantially, with Japan being the big loser
 - de Zwart et al. (EHR, forthcoming, and ongoing work): protection in Netherlands and Dutch East Indies
 - Mitchener et al. (EJ, 2022): the average trade impact of retaliation against the Hawley-Smoot tariff was *big*
 - Wulfers (2021): PhD project on Germany using our data
 - Ongoing projects on France; on China with Keller and Shiue; on Japan with Okubo and Yotov...
 - de Bromhead et al. (EREH 2019, AEHR 2021) on structure of import collapses in UK and Asia

The Empire project

- “This empire has hitherto existed in imagination only. It has hitherto been not an empire, but the project of an empire; not a gold-mine, but the project of a gold-mine” (Adam Smith, 1776)
- “the British Empire at last is able to fulfil its long-time hope of real and helpful closer Empire economic association... it is in our common interest to achieve a plan which will provide the maximum exchange of goods compatible with those domestic considerations fundamental to the development of our natural resources. Those considerations cannot be forgotten if the Empire project is to succeed” (R.B. Bennet, Imperial Economic Conference, Ottawa, 21 July 1932).

Canadian interwar trade policy

- 1932: signed several trade deals with UK and other Dominions
- They had been retaliating against US Hawley-Smoot tariff since 1930, and imperial preference now increasingly discriminated against Canada's largest trade partner
- But Bennett's "domestic considerations" also implied a rise in protection affecting all trade partners
- This paper provides a detailed quantitative account of the impact on trade of all these shifts in trade policy

What we do

- New dataset, based on digitizing 7280 pages of detailed trade and tariff statistics
 - 1693 goods, consistently defined, from 112 countries, between 1924 and 1936. 99 industries, 10 sectors. Covers the universe of Canadian imports and we match the (separately stated) figures for total Canadian imports to the dollar
- Use these data to estimate trade elasticities, varying across sectors, trade partners, and years
- Do so using a novel method allowing us to control for all the multilateral resistance terms called for by theory, despite having data for just one country
- Embed those elasticities into a small open economy model with a very simply supply side, but a detailed model of Canadian import demand, allowing us to calculate the impact of tariff changes on imports of all 1693 goods from 112 destinations over 13 years

Relevant literatures

- Interwar trade blocs: Eichengreen and Irwin (1995), Wolf and Ritschl (2011), Gowa and Hicks (2013), de Bromhead et al. (2019), Arthi et al. (2022)
- Retaliation against Smoot-Hawley: little quantitative work. Irwin (2011) on Canada, Mitchener et al. (2022) more generally
- Head et al. (2010): strong colonial trade links are due to “trading capital” that depreciates after independence. Our results speak to the extent to which trade policy might have been responsible
- Baier et al. (2018): trade blocs have heterogeneous effects on participants because a given shock impacts countries differently.
- Trade elasticities: too many to mention

Jacks (2014) the closest to what we do

- Looks at quarterly real trade flows of 9 aggregate product categories
 - Dummy variables (Ottawa accords) and diff-in-diff approach, finds little effect
- We look at universe of commodities (1693)
- Estimate impact of individual tariffs on flows of individual goods, not impact of dummy variables on aggregate trade flows
- Do so in theory-consistent manner (nominal trade flows, structural gravity approach)
- Embody elasticities in small open economy model of Canada with a detailed account of import demand allowing for substitution across a wide variety of margins

Canadian trade policy

- By late 19th century Canadian politicians were trying to achieve three things: privileged access for Canadian raw materials exports in the US (“reciprocity”, achieved 1854-66) and British (“preferences”) markets, while protecting fledgling Canadian manufacturing
- Import substitution from 1878
 - World’s first anti-dumping duty 1904
- Unilateral preferences extended to UK (and eventually the whole Empire, though with a lag) in 1898
- 1907: a third “intermediate” or “treaty” rate is introduced for countries with whom Canada concludes trade deals
- Policy is fairly stable during 1920s, though trade agreements are signed with several countries

Policy after the Great Depression

- May 1930: Canada pre-retaliates against Hawley-Smoot tariff. Targeted tariff increases and countervailing duties on 16 important US export items (30% of US exports). Preferential tariffs lowered on 270 goods.
- Conservatives come to power in July. Tariffs raised, general and intermediate tariffs more than preferential ones. Anti-dumping duties increased, general import surcharge, valuation of imports.
- September 1931: UK leaves gold, Canada imposes anti-dumping duty and uses old exchange rate to value British imports
- October 1931: National government dominated by Conservatives elected in UK. Imposes tariffs. Dominions exempted, pending Ottawa conference to be held in July 1932.

Ottawa agreements

- Canada concludes deals with UK, Irish Free State, South Africa, and Southern Rhodesia, having earlier struck deals with Australia and New Zealand
- Canada lowers tariffs on British goods, raises tariffs on non-British goods
- Promises to extend its British preferences to the colonies (British officials doubted whether it actually did so)
- Promises “that all existing surcharges on imports from the United Kingdom shall be completely abolished as soon as the finances of Canada will allow”, and “to give sympathetic consideration to the possibility of reducing and ultimately abolishing the exchange dumping duty in so far as it applies to imports from the United Kingdom”

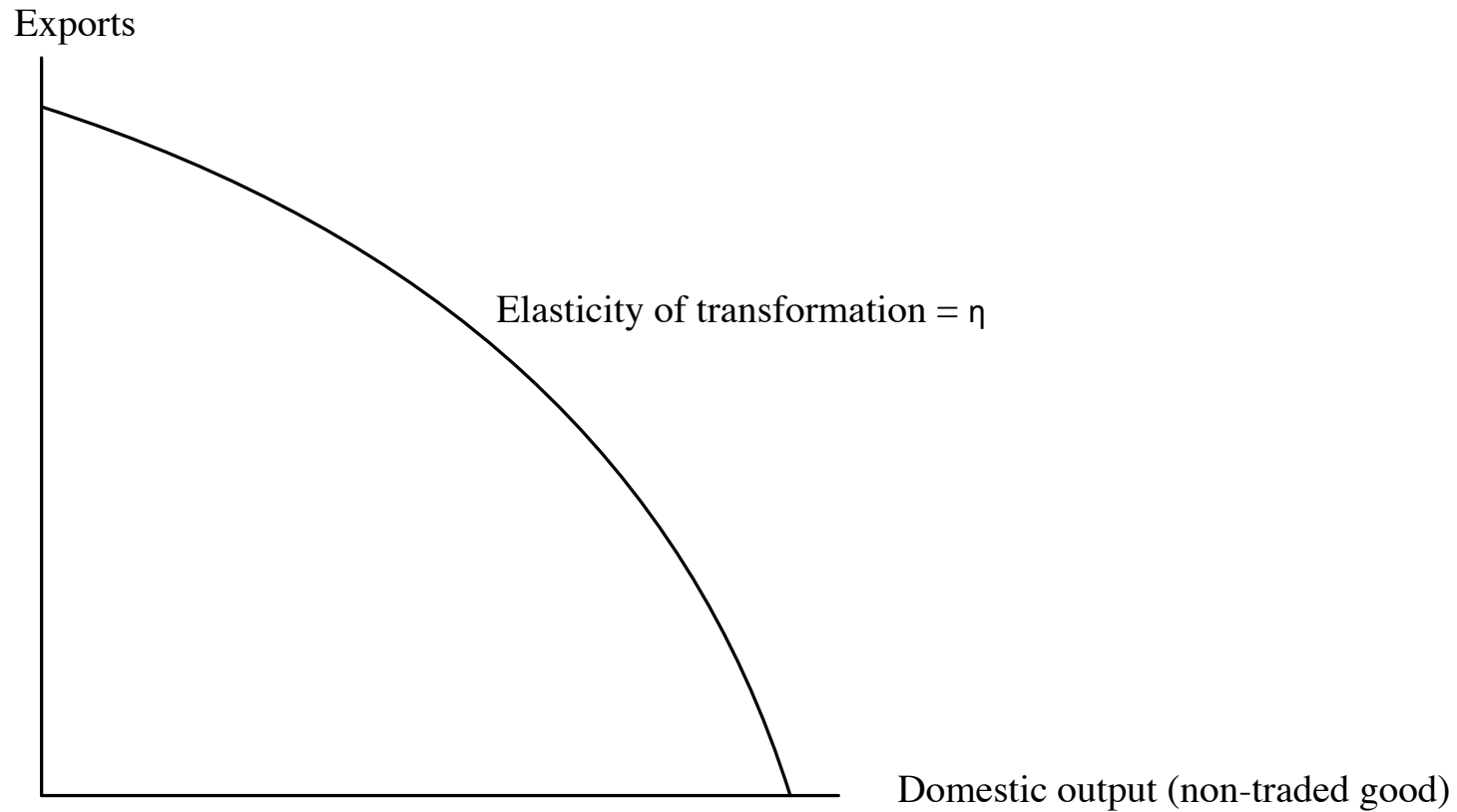
Finally...

- In 1935 Canada strikes a trade deal with the US, according it MFN status for the first time. Comes into effect in 1936.

Empirical strategy

- **1. What was the impact of changes in Canadian trade policy after 1929?**
- Construct small open economy model of Canadian economy in 1929. Very simple supply side but detailed treatment of import demand.
- Ask what would imports have been in 1929 if tariffs had been set at their 1930, 1931,... levels?
- **2. What was impact of entire structure of Canadian protection?**
- Construct models of Canadian economy for 1924-1936
- For each year ask what would imports have been if tariffs had been set to zero?
- Want substitution between domestic goods and imports; between different imported goods; between different national varieties of imported goods

The supply side: one input, 2 outputs, CET production function



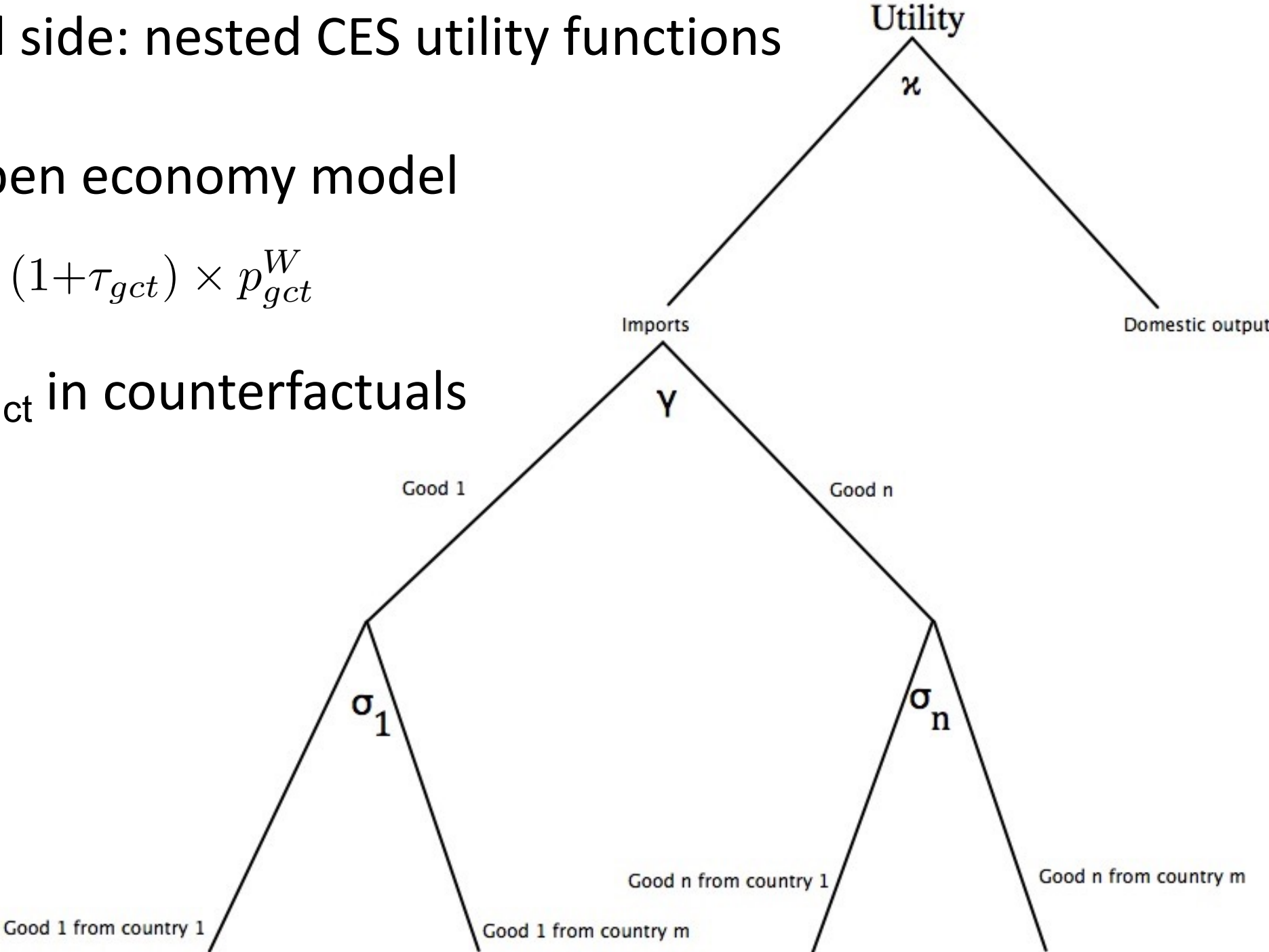
Export good sold to pay for imports. Trade balanced.

Demand side: nested CES utility functions

Small open economy model

$$p_{gct}^D = (1 + \tau_{gct}) \times p_{gct}^W$$

Shock τ_{gct} in counterfactuals



Data

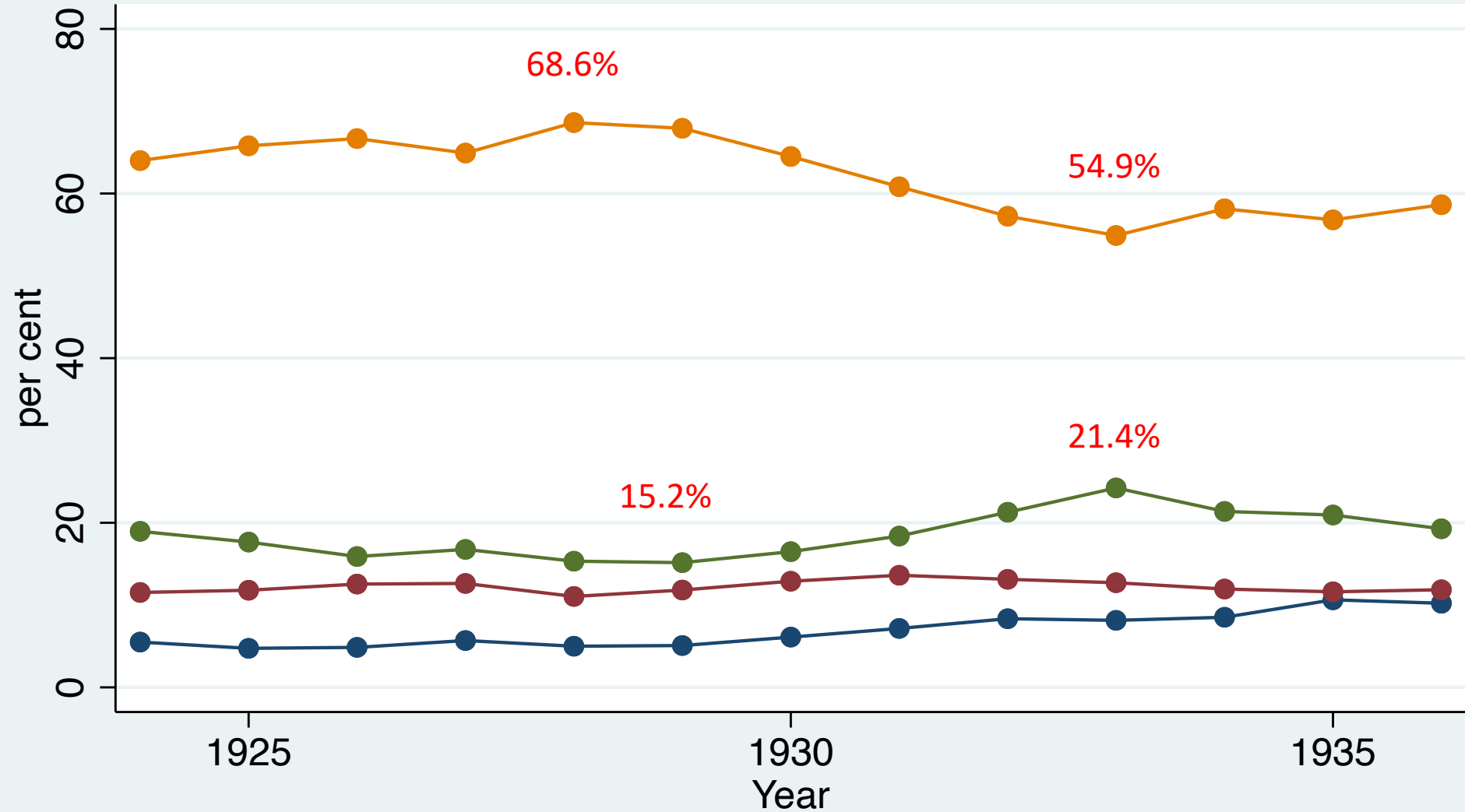
- Digitized 7280 printed pages: 13 trade reports for fiscal years 1924-5 to 1936-7 (ending March 31)
- 2784 product lines, merged into 1697 products consistently defined across years (of which 1317 consistent in original sources)
- 116 original source countries/regions. Merge Canaries into Spain, Azores and Madeira into Portugal, Alaska and Hawaii into USA: 112 countries
- Drop 4 sectors (2 involving coins and bullion, 2 with tariff revenue but no imports): 1693 products (99 industries, 10 sectors) from 112 countries in 13 years

Table 3: Data Coverage: Broad Sectors

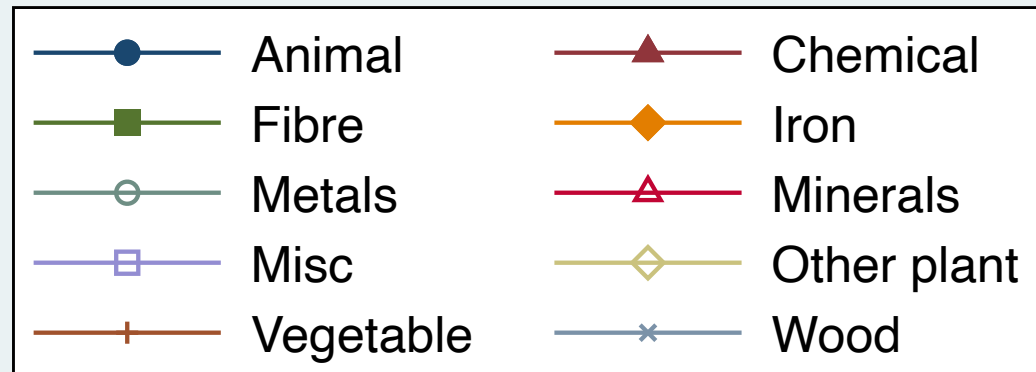
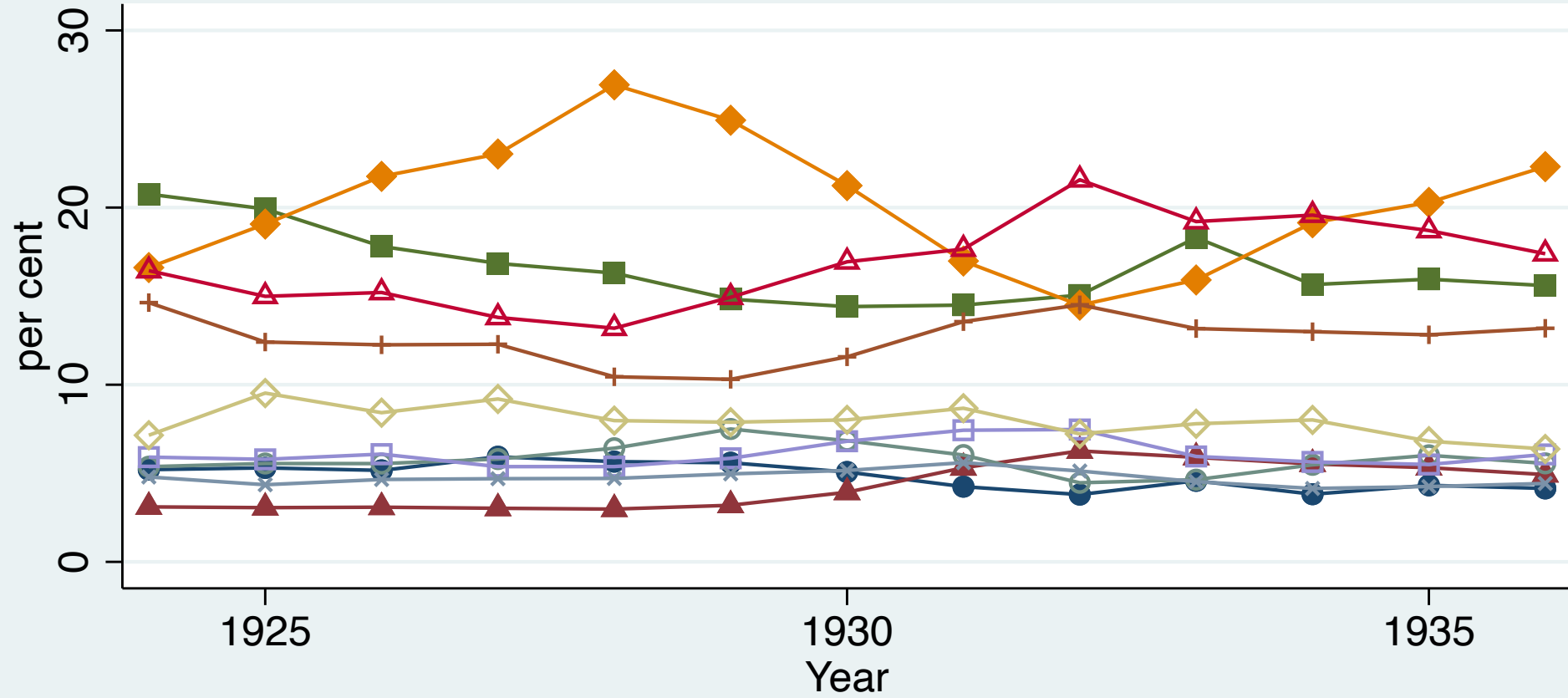
| ID | Sector Description | Sector Label |
|----|--|--------------|
| 1 | AGRICULTURAL AND VEGETABLE PRODUCTS - A. Mainly Food | Vegetable |
| 2 | AGRICULTURAL AND VEGETABLE PRODUCTS - B. Other Than Food | Plant |
| 3 | ANIMALS AND ANIMAL PRODUCTS | Animal |
| 4 | CHEMICALS AND ALLIED PRODUCTS | Chemical |
| 5 | FIBRES, TEXTILES AND TEXTILE PRODUCTS | Fibre |
| 6 | IRON AND ITS PRODUCTS | Iron |
| 7 | MISCELLANEOUS COMMODITIES | Misc |
| 8 | NON-FERROUS METALS AND THEIR PRODUCTS | Metals |
| 9 | NON-METALLIC MINERALS AND THEIR PRODUCTS | Minerals |
| 10 | WOOD, WOOD PRODUCTS AND PAPER | Wood |

Notes: This table lists the 10 broad sectors that are included in the estimating sample and the labels that we use for them in the analysis. A list of the 1,697 products included in the analysis is available by request, and a list of the 100 disaggregated sectors in the sample appears in Table 2. See text for further details.

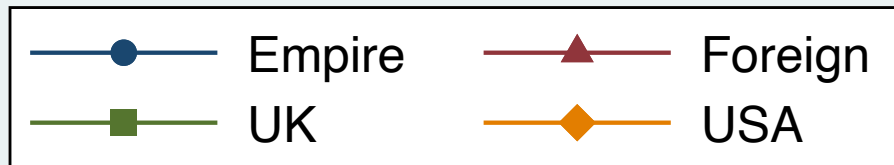
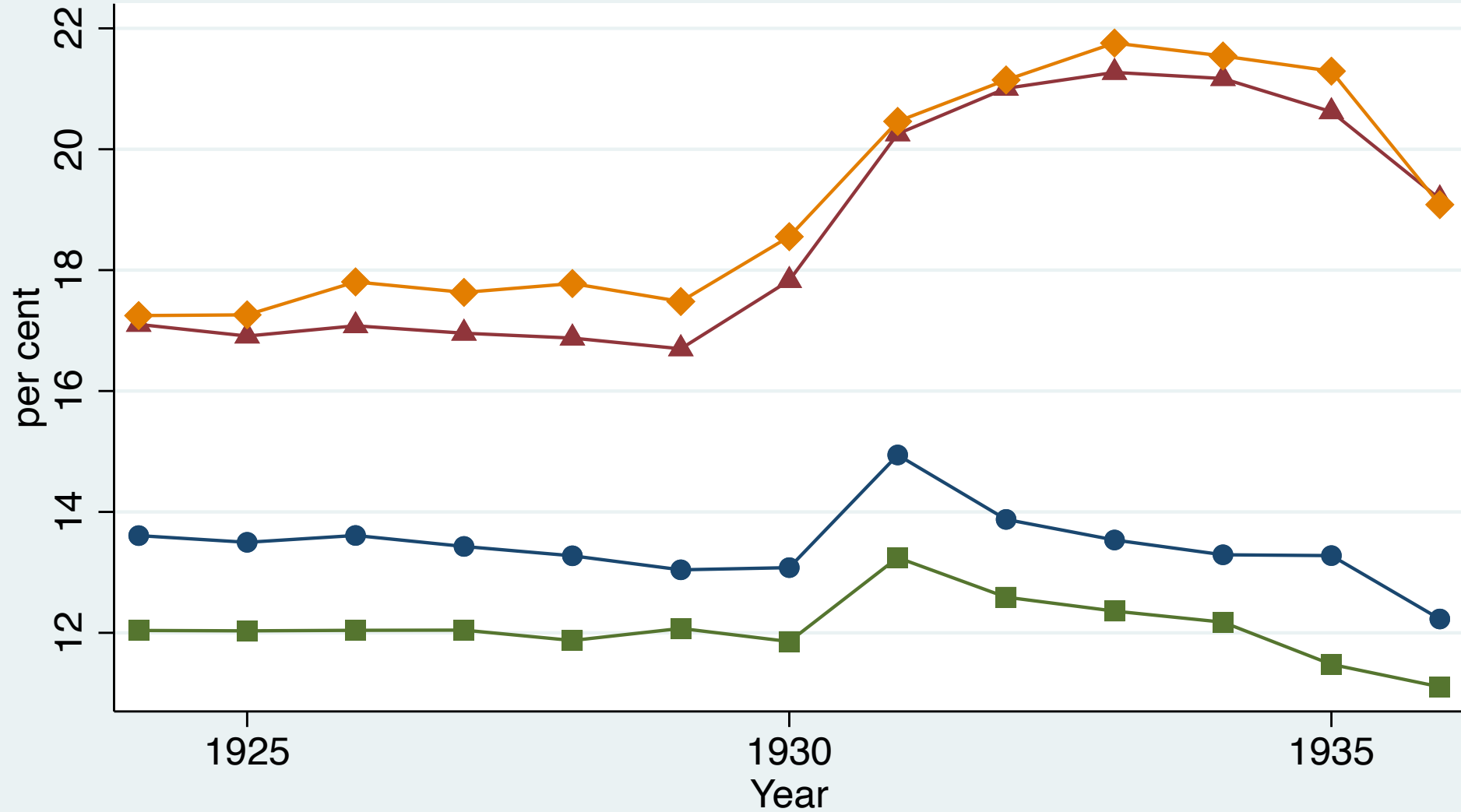
Regional shares



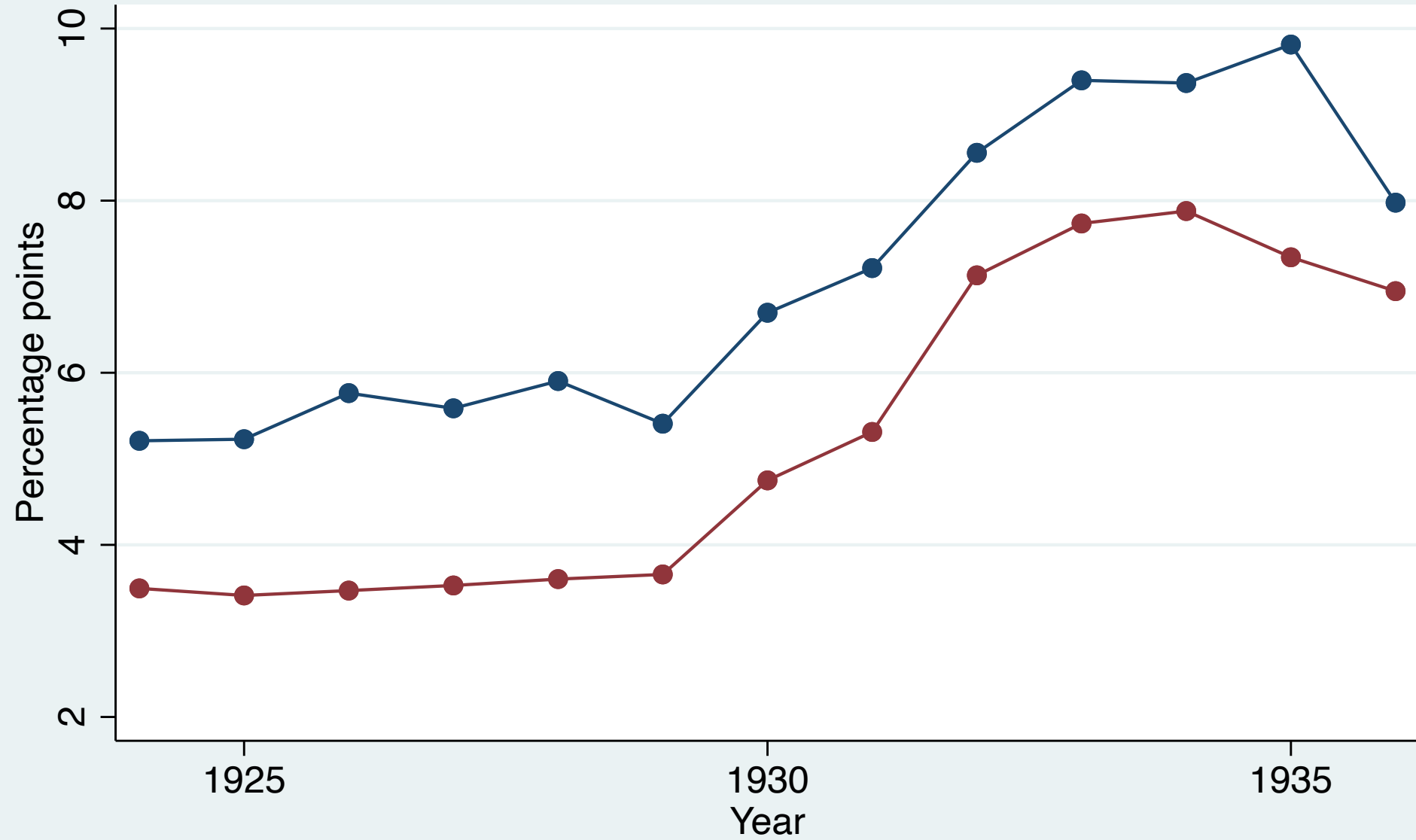
Sectoral shares



Average tariffs by region

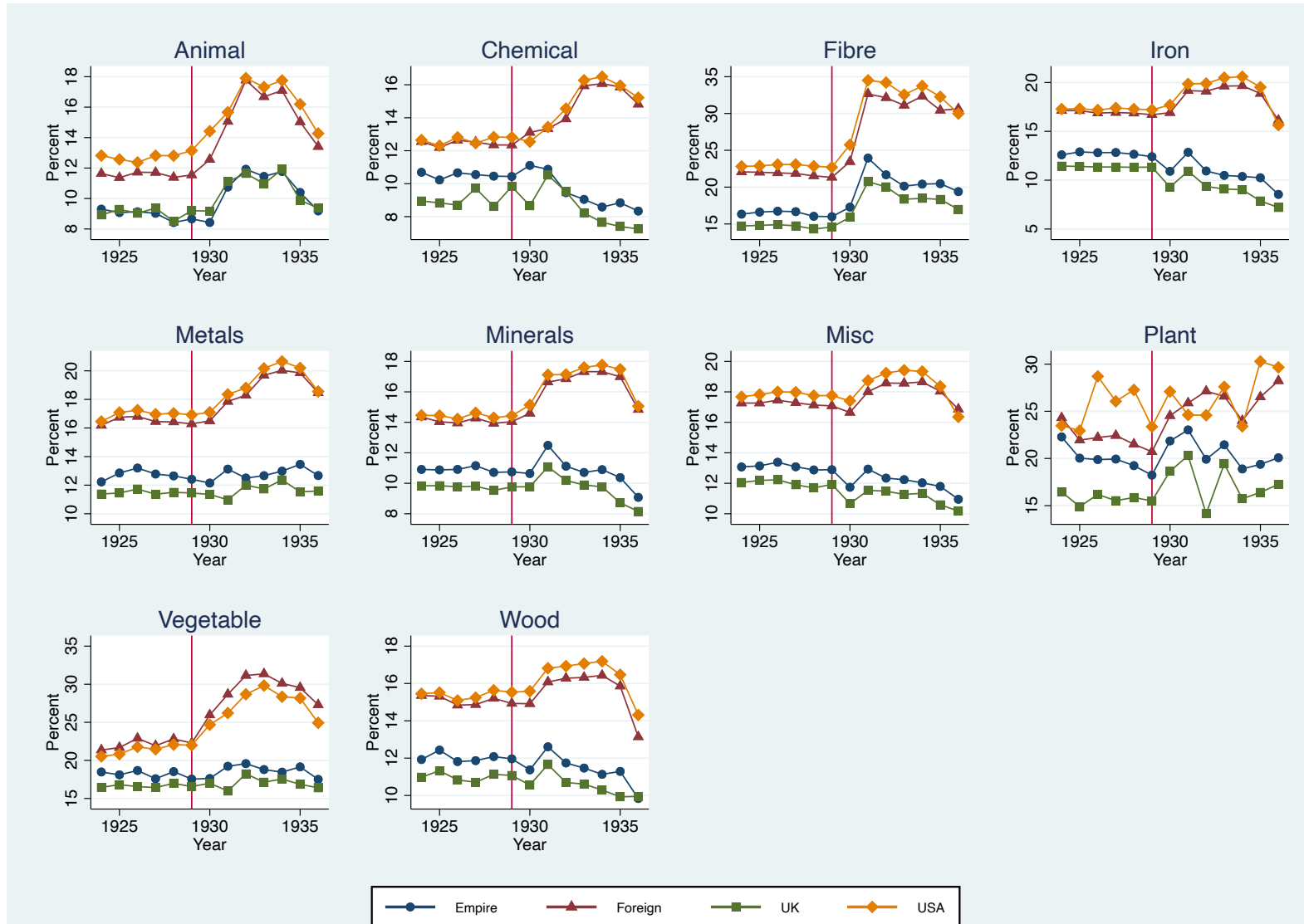


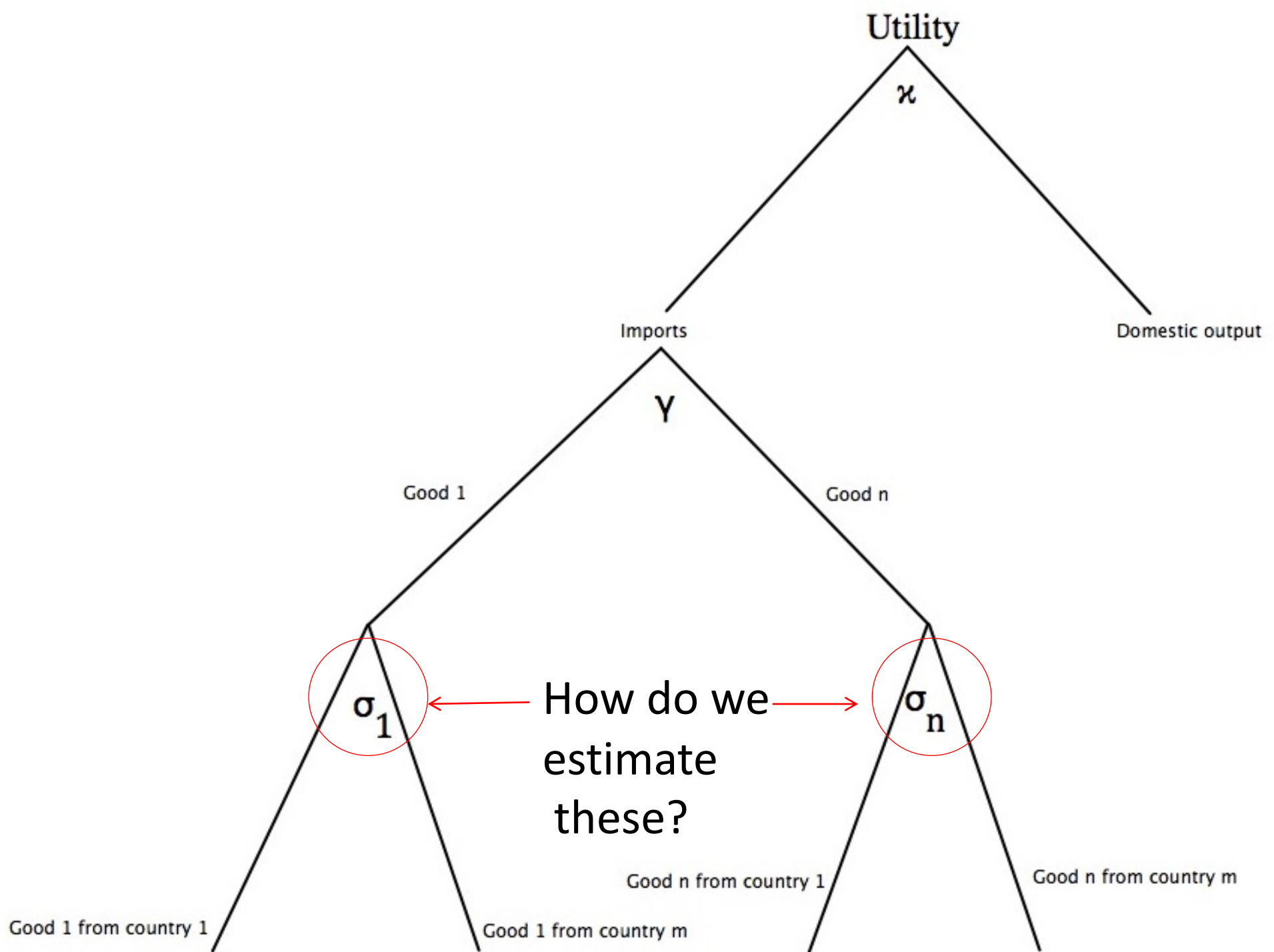
Margins of tariff preferences



—●— USA-UK —●— Foreign-Empire

Average tariffs by sector





What theory requires

Total imports
of good g in
year t

1 + ad valorem
tariff on good g
imported from
country c in year t

$$m_{gct} = M_{gt} \times \frac{Y_{gct}}{Y_{gt}} \times \left\{ \frac{1 + \tau_{gct}}{P_{gt} \times \Pi_{gct}} \right\}^{1 - \sigma_g}$$

Domestic value of imports
of good g from country c
in year t

Share of country
c in global
production of g
in year t

Inward
multilateral
resistance
term

Outward
multilateral
resistance
term

What we estimate (using PPML)

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln(OMR_{gct})^{1-\sigma_g}] \times \epsilon_{gct}$$

What we estimate (using PPML)

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln(OMR_{gct})^{1-\sigma_g}] \times \epsilon_{gct}$$



Control for all time-invariant determinants of trade at national variety level, including differential impact of distance across products. Ensures that identification occurs along time dimension

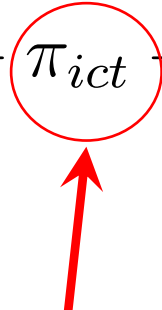
What we estimate (using PPML)

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln(OMR_{gct})^{1-\sigma_g}] \times \epsilon_{gct}$$



Control for all time-varying product characteristics including shifts in demand and supply; also controls for common time trends and inward (Canadian) multilateral resistance terms P_{gt}

What we estimate (using PPML)

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln(OMR_{gct})^{1-\sigma_g}] \times \epsilon_{gct}$$


Control for all time-varying country characteristics including GDP, exchange rates, bilateral treaties. Industry-specific – these are the 99 industries, with on average less than 17 products per industry. Not product-specific as required by theory but getting closer to it.

What we estimate (using PPML)

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln(OMR_{gct})^{1-\sigma_g}] \times \epsilon_{gct}$$

Estimate these using novel procedure that may be useful for others working with data for individual countries. (But it turns out that it doesn't matter very much in this application.)

Common elasticity across all goods

Table 5: The Impact of Canada's Tariffs

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------|---------------------|-------------------------------|---------------------|---------------------|---------------------|---------------------|
| | Main | Cluster | No OMR | OLS | Interval | Balanced |
| LN_TARIFF | -3.671 (0.809)** | -3.671 (0.795)** | -3.576 (0.899)** | -1.571 (0.245)** | -3.724 (0.839)** | -3.988 (0.389)** |
| LN_OMR_STR | 0.138 (0.069)* | 0.138 (0.079) ⁺ | | 0.188 (0.073)* | 0.088 (0.084) | 0.143 (0.070)* |
| <i>N</i> | 179788 | 179788 | 194182 | 91832 | 86530 | 145035 |
| <i>R</i> ² | | | | 0.918 | | |

Notes: This table reports estimates of the common effects of tariffs on Canadian imports. Column (1) includes our main results based on specification (17). The estimates of all fixed effects, including the constant term, are omitted for brevity. Column (2) clusters the standard errors two way (by exporter and product). All other standard errors in this table are clustered three-way (i.e., by exporter, product, and time). Column (3) reproduces the results from column (1) without controlling for the multilateral resistances. Column (4) reproduces the results from column (1) with the OLS estimator. Column (5) uses interval data for every 2 years. Finally, column (6) uses data that are balanced across products and countries across the whole period in our sample. See text for further details.

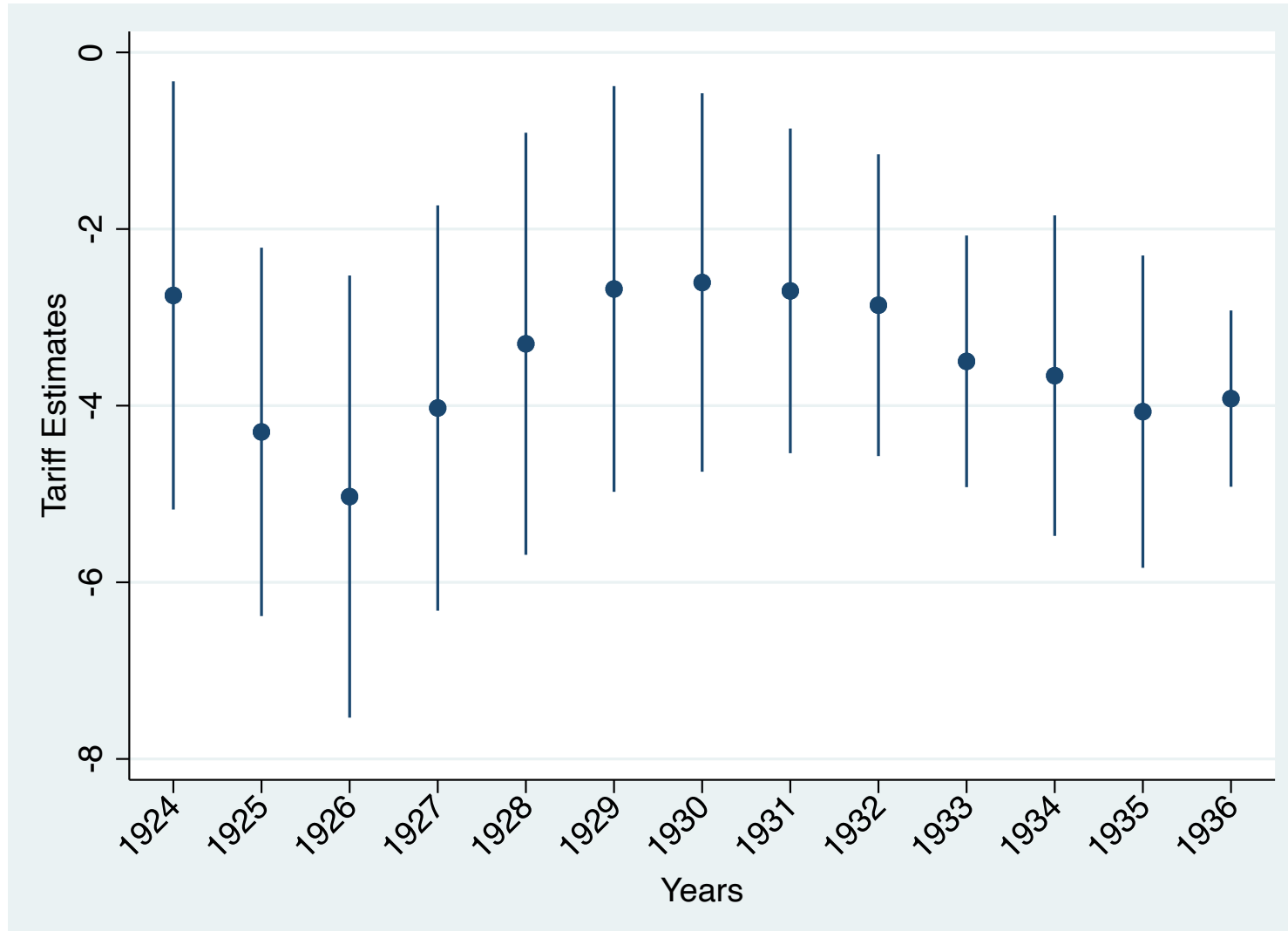
Common elasticity across all goods

Table 6: The Impact of Canada's Tariffs: Alternative Samples.

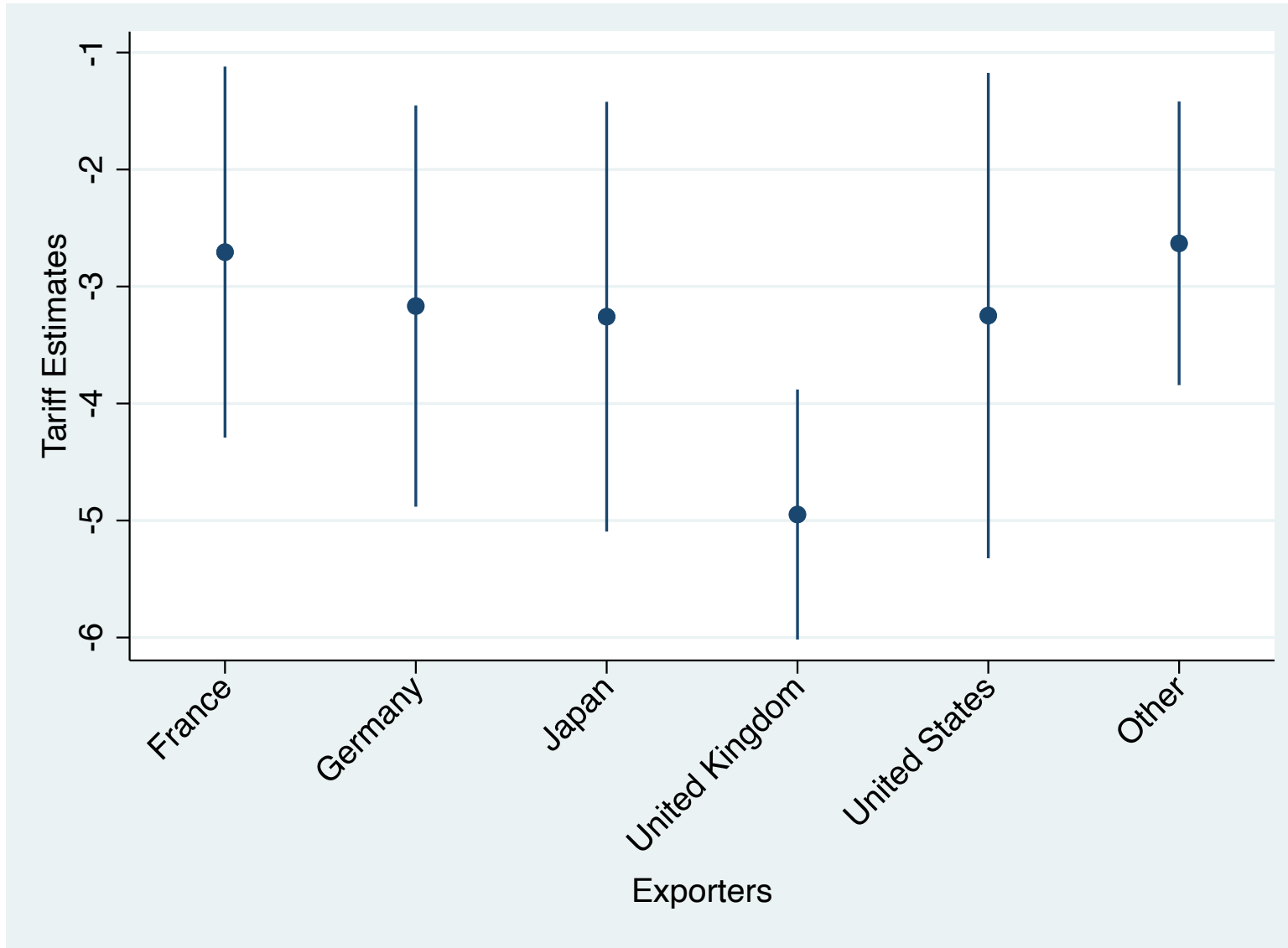
| | Main | No Zeros | No Specific | Only Specific |
|------------|---------------------|---------------------|---------------------|--------------------|
| LN_TARIFF | -3.671 (0.809)** | -3.889 (0.698)** | -4.991 (0.862)** | -2.260 (0.969)* |
| LN_OMR_STR | 0.138 (0.069)* | 0.180 (0.088)* | 0.122 (0.061)* | -1.609 (1.669) |
| <i>N</i> | 179788 | 91832 | 152497 | 21324 |

Notes: This table reports estimates of the common effects of tariffs on Canadian imports using different samples. All estimates are based on specification (17), and the estimates of all fixed effects, including the constant term, are omitted for brevity. Column (1) reproduces the main results from column (1) of Table 5. Column (2) only uses observations with positive imports. Column (3) excludes observations with specific tariffs. Finally, column (4) only uses observations with specific tariffs. All standard errors are clustered three-way (i.e., by exporter, product, and time). See text for further details.

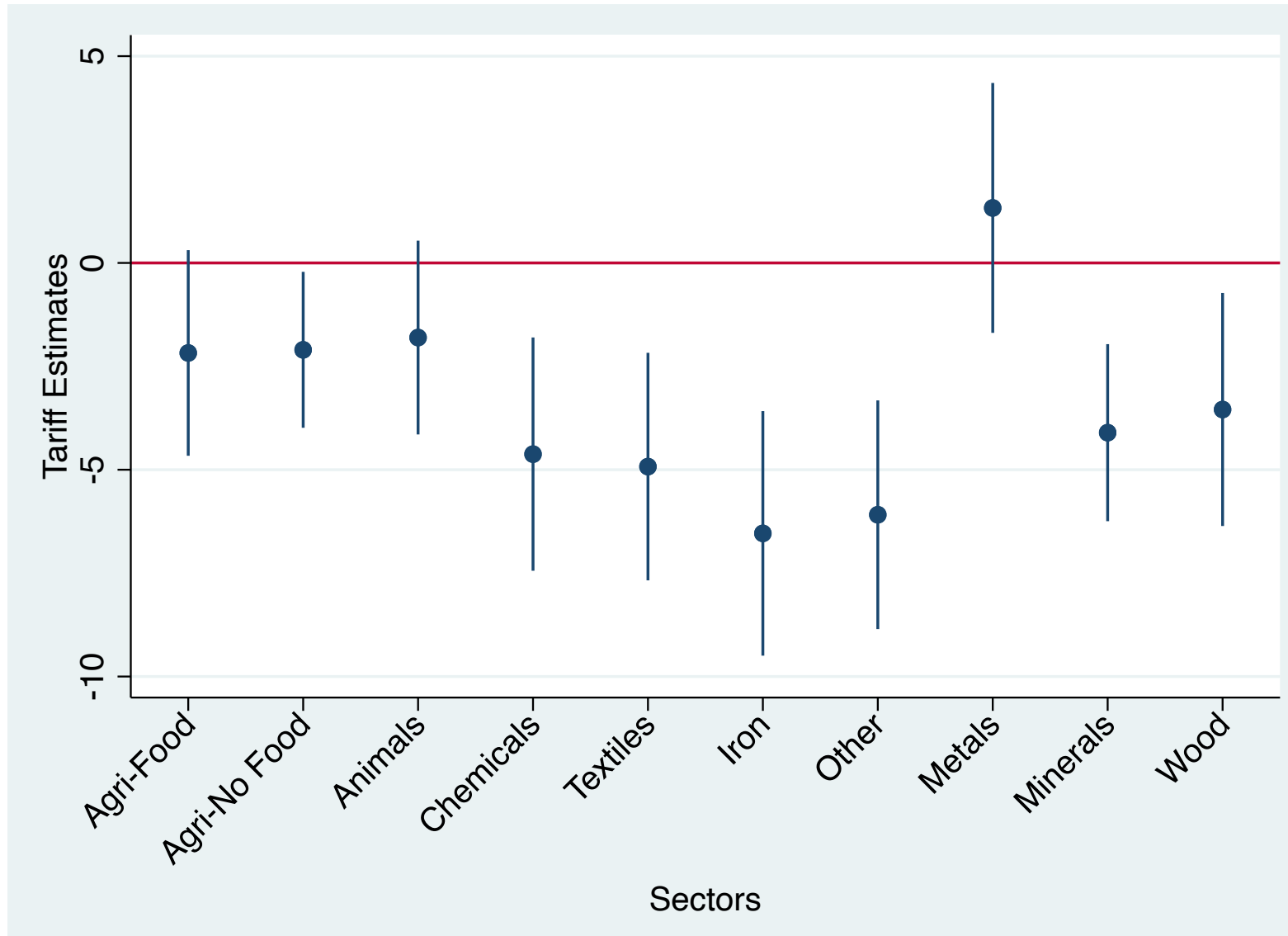
Were elasticities smaller during the Depression?



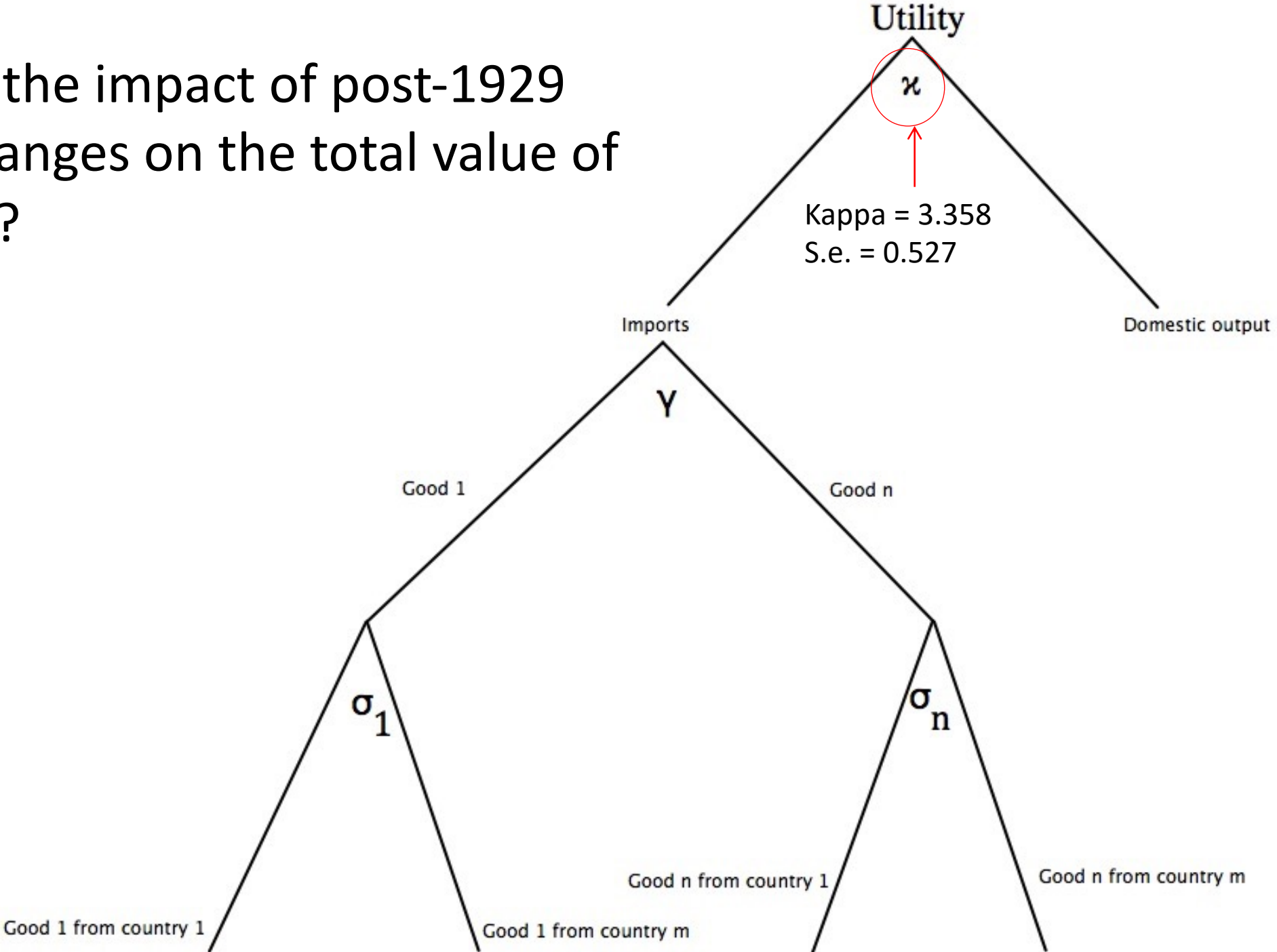
It seems that the impact on UK goods is larger



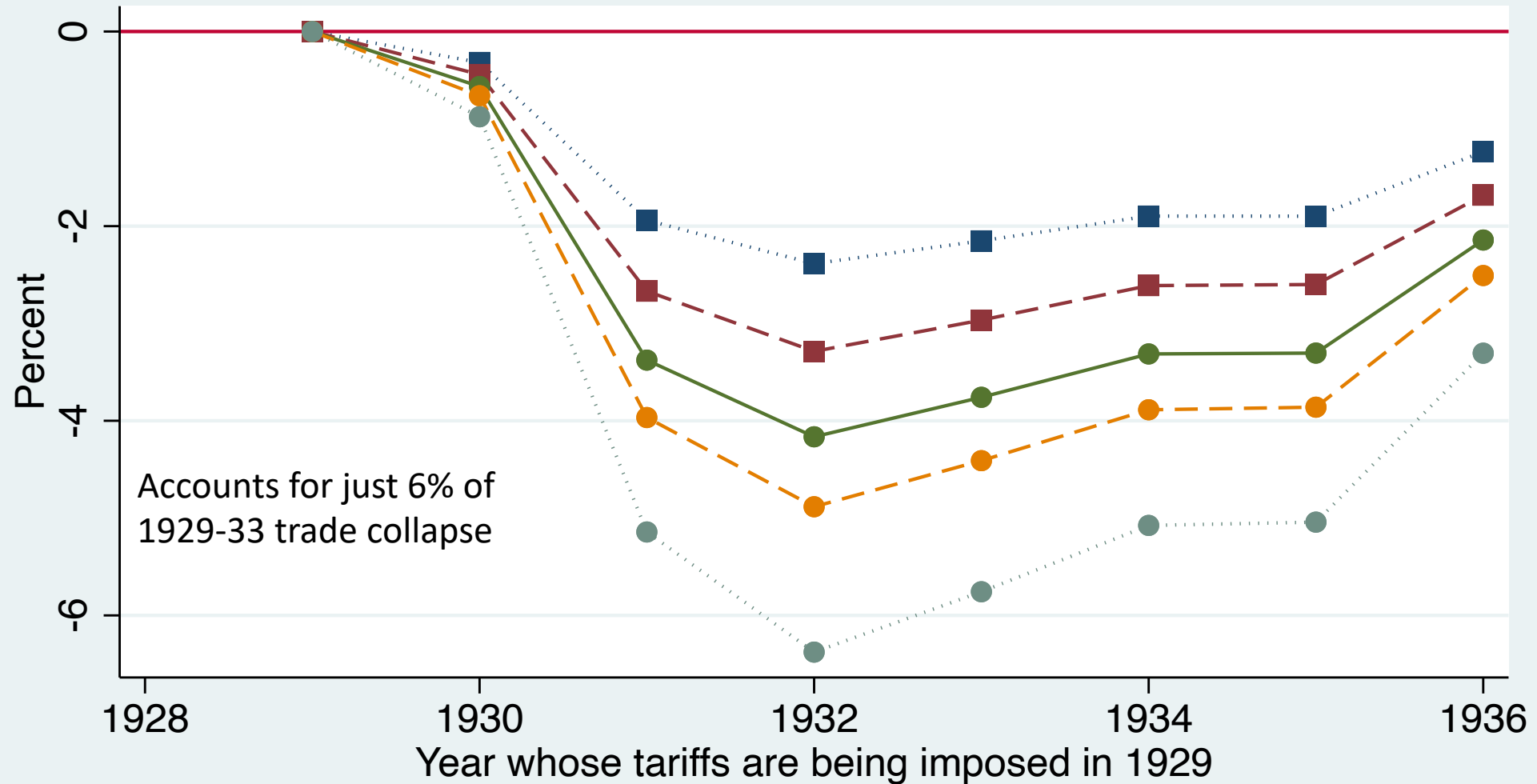
Use these for the base case simulations



What is the impact of post-1929 tariff changes on the total value of imports?



Impact on 1929 imports of imposing later years' tariffs



Impact on 1929 imports of imposing later years' tariffs

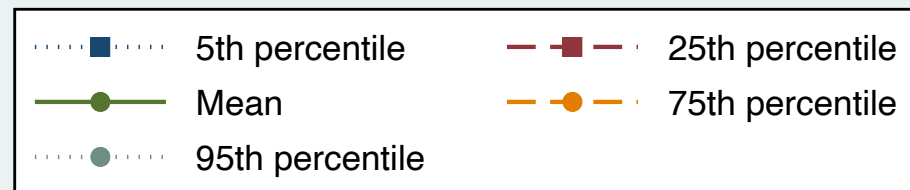
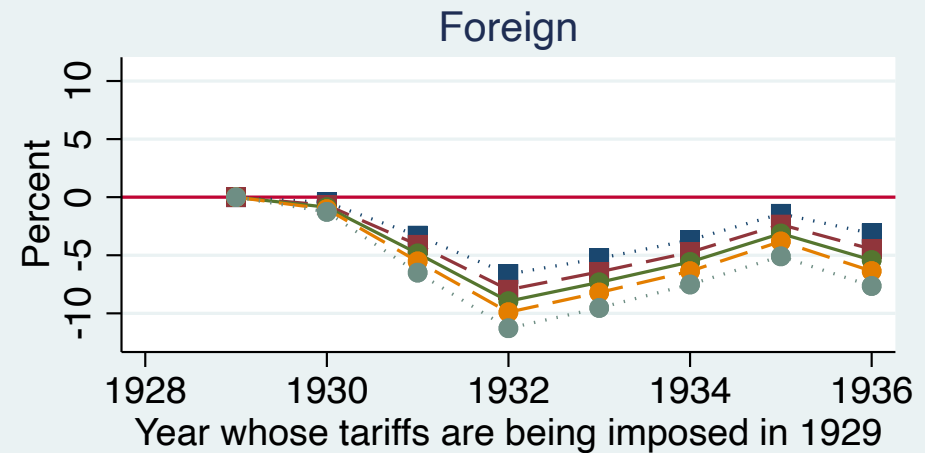
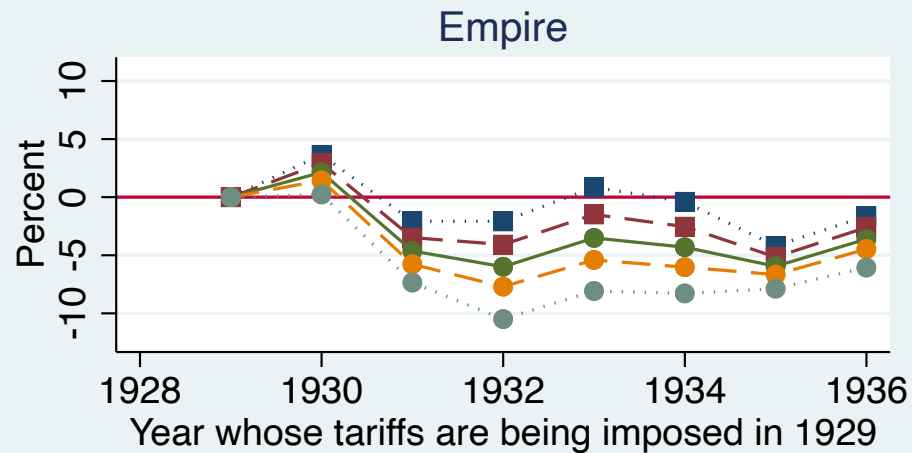
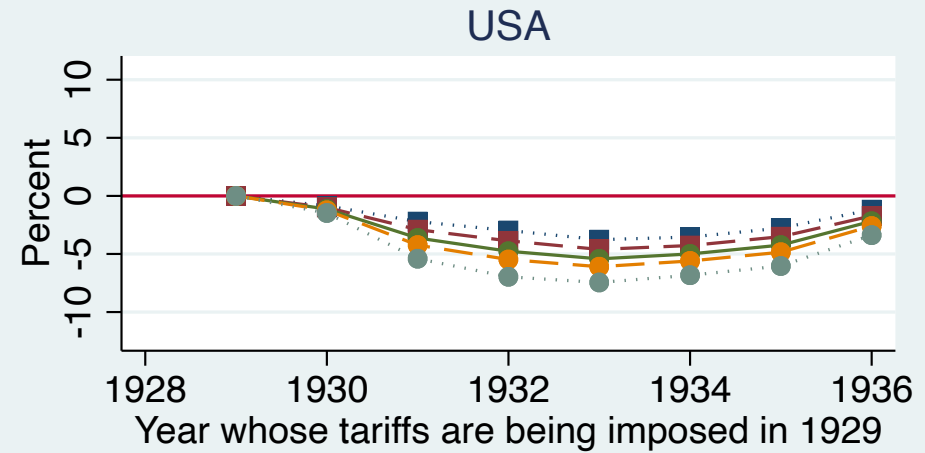
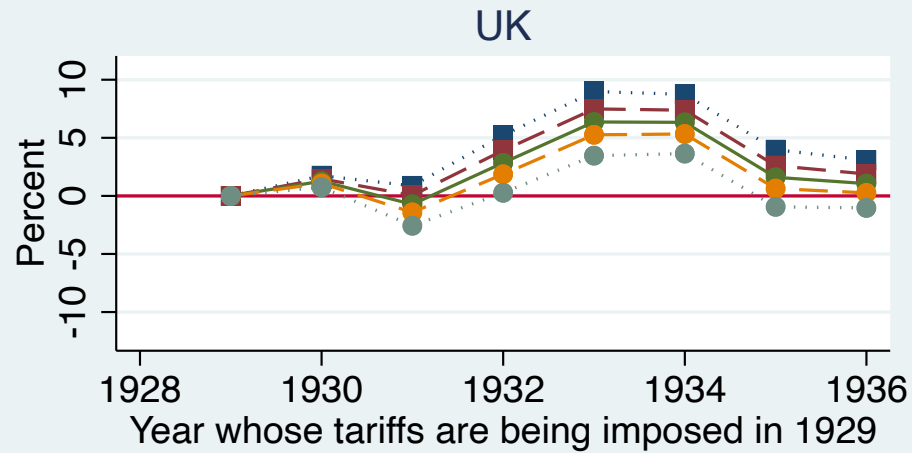
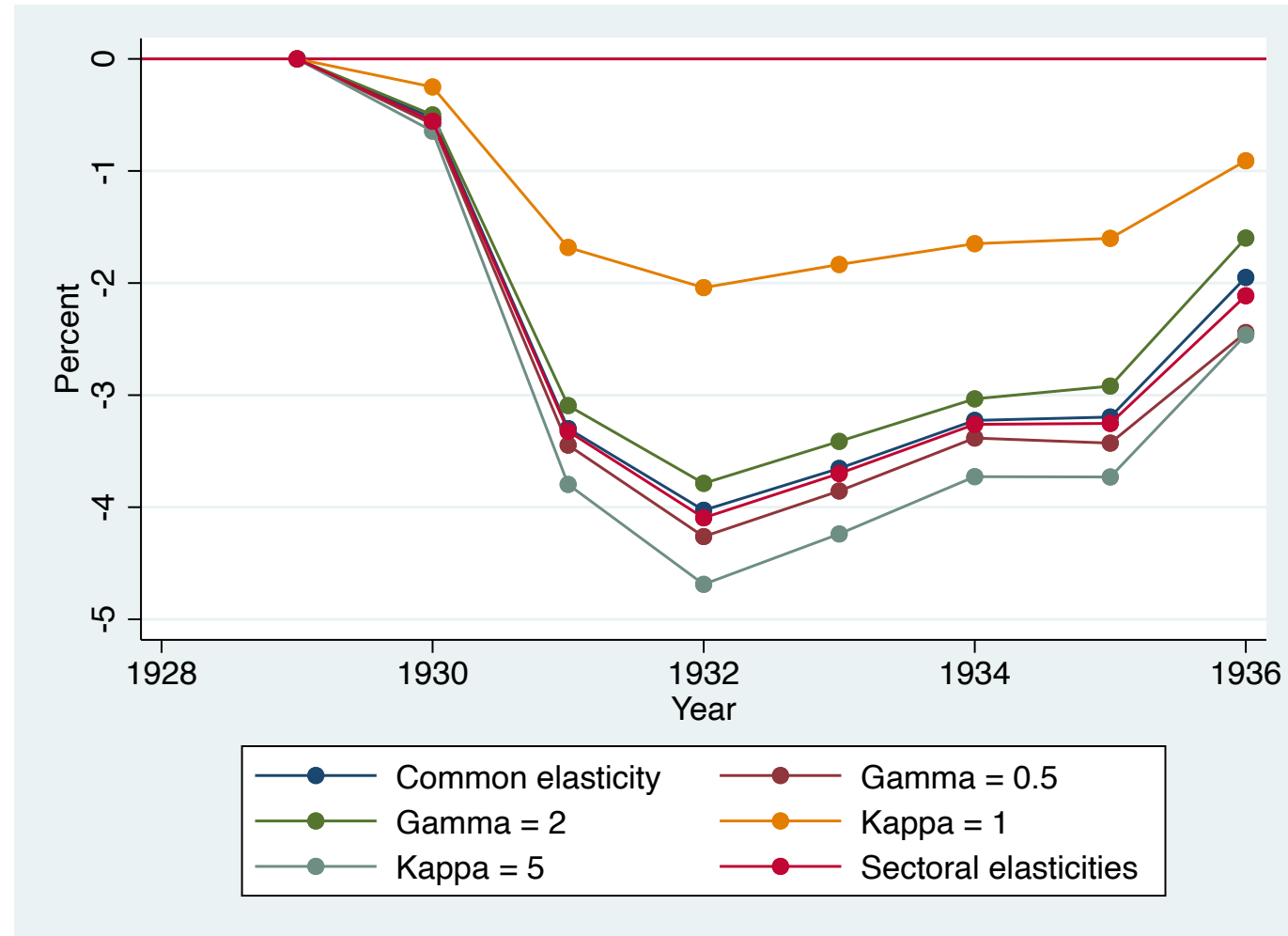
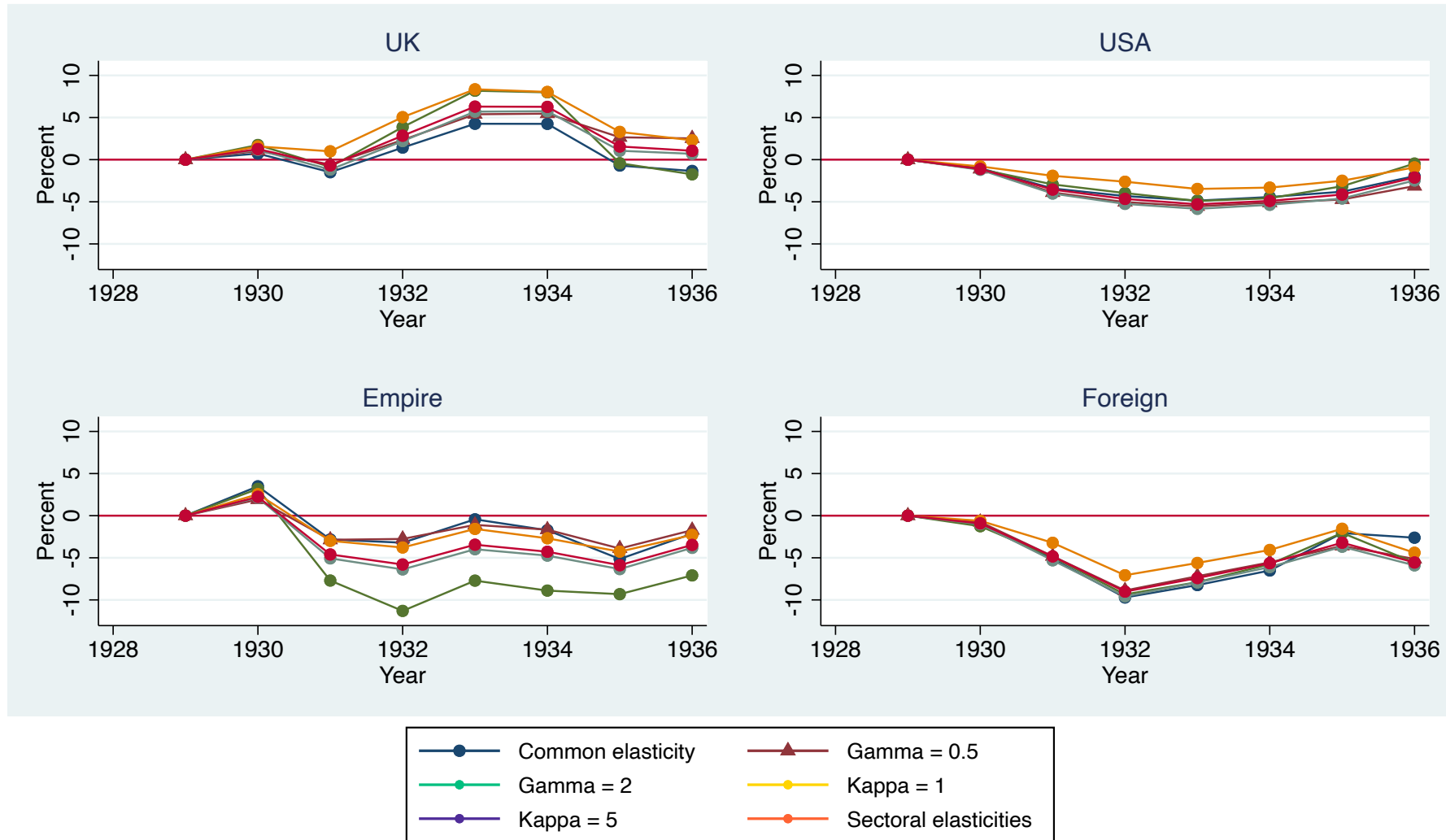


Figure A2: Impact on aggregate 1929 imports of imposing later years' tariffs



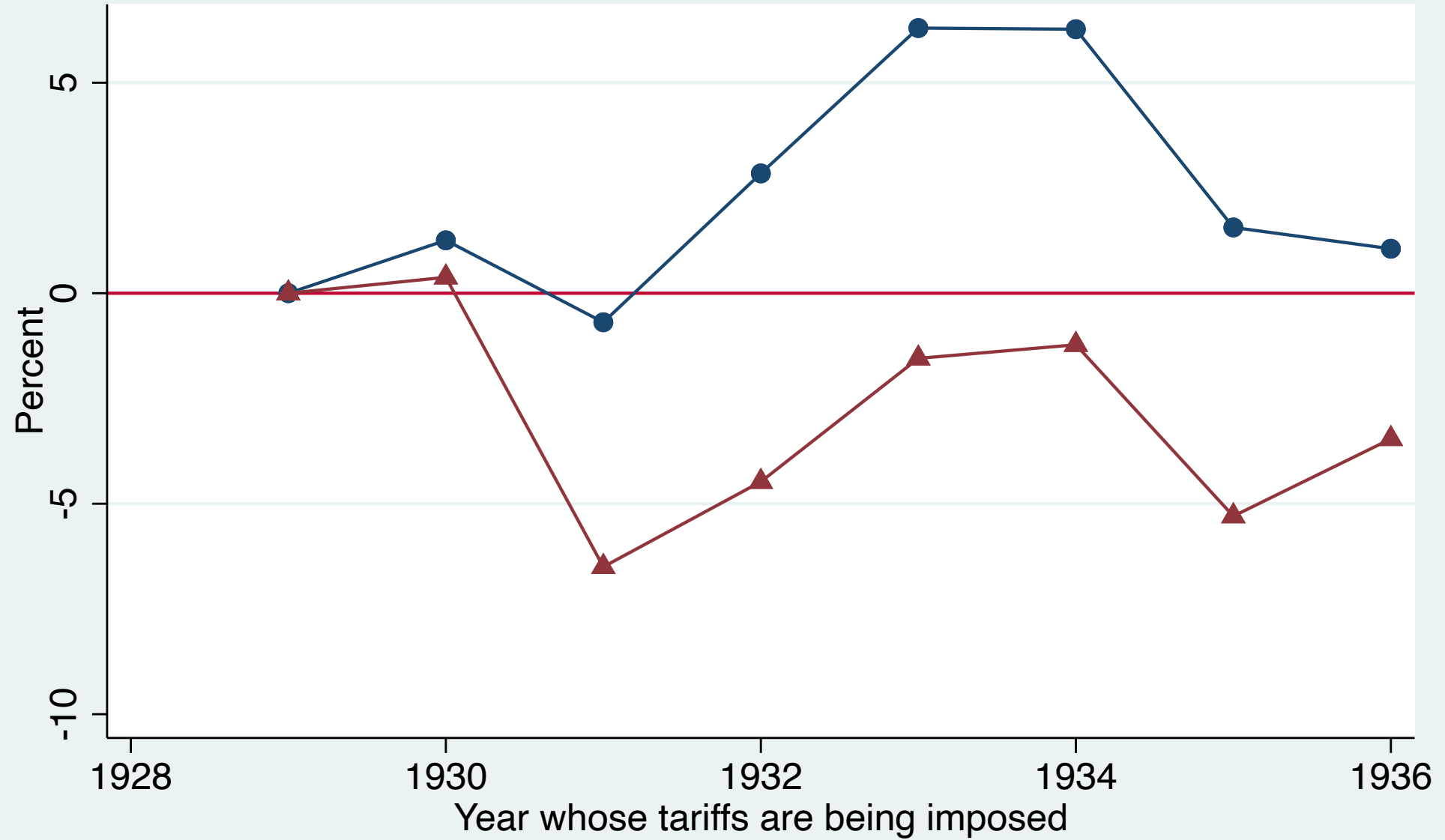
Note: This figure plots the percentage impact on the total value of 1929 Canadian imports of imposing later years' tariffs, rather than 1929 tariffs as actually occurred. See text for further details.

Figure A3: Impact on aggregate 1929 imports of imposing later years' tariffs

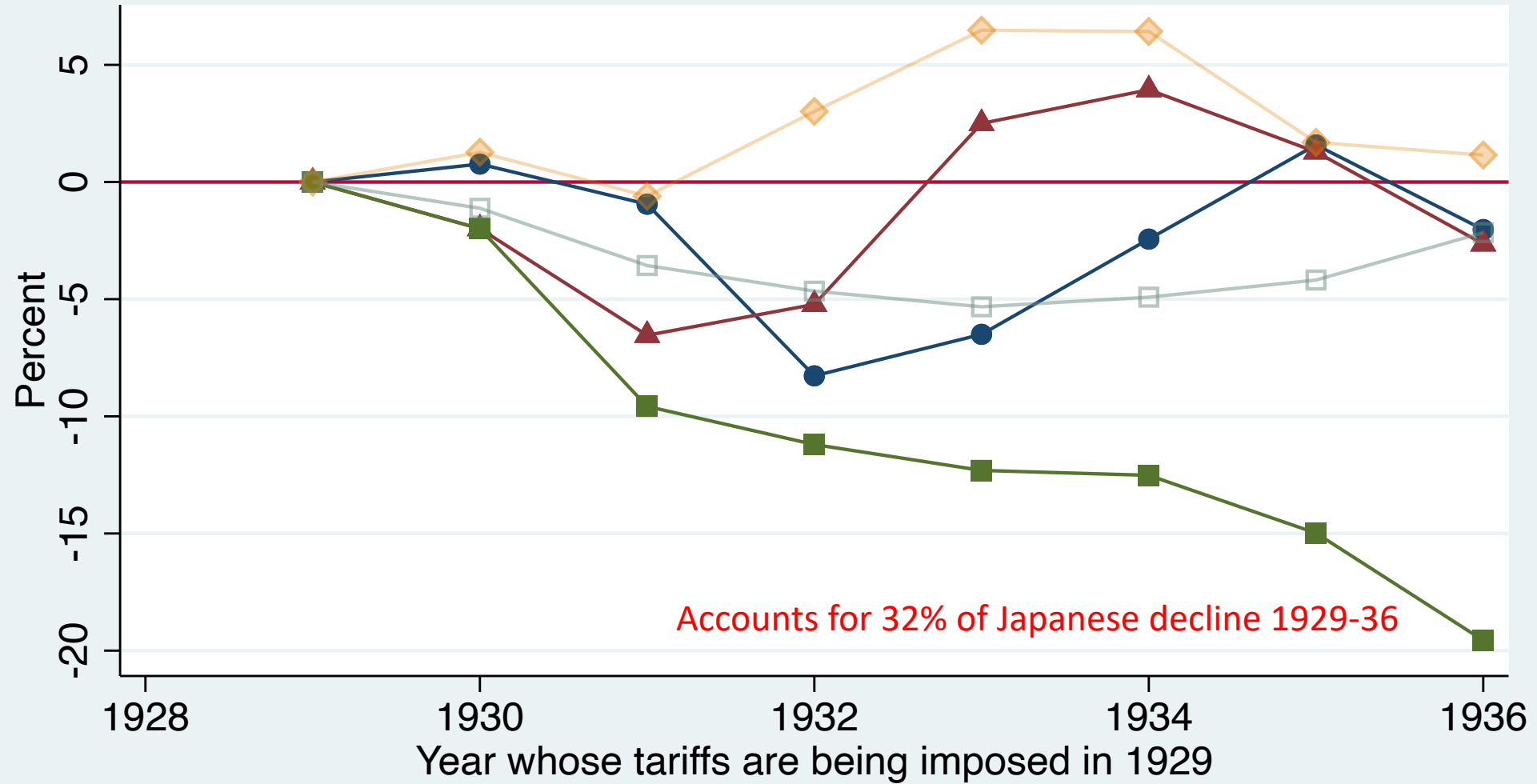


Note: This figure plots the percentage impact on the total value of 1929 Canadian imports from four regions of imposing later years' tariffs, rather than 1929 tariffs as actually occurred. See text for further details.

Impact on 1929 UK exports of imposing later years' tariffs

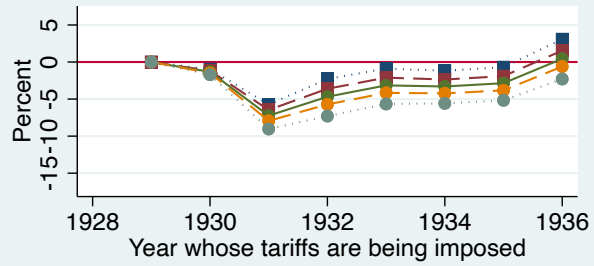


Impact on 1929 exports of imposing later years' tariffs

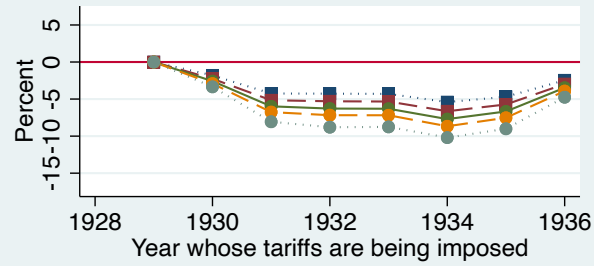


Fibre

UK

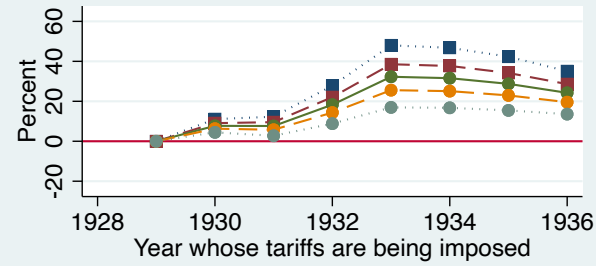


USA

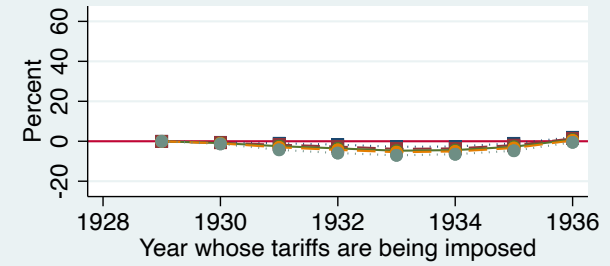


Iron

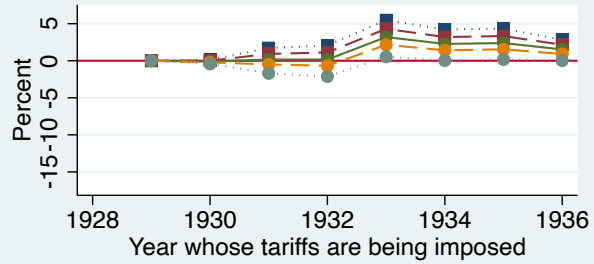
UK



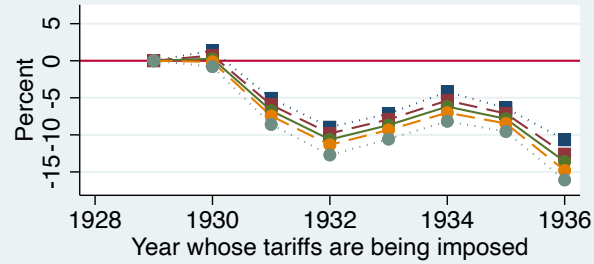
USA



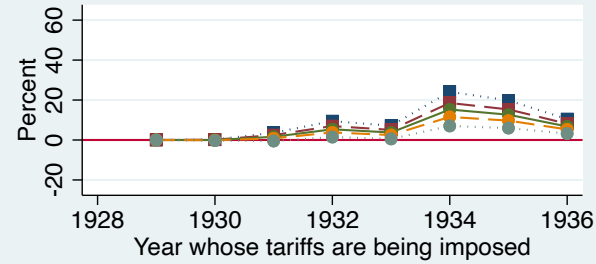
Empire



Foreign



Empire



Foreign

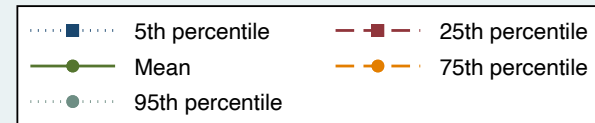
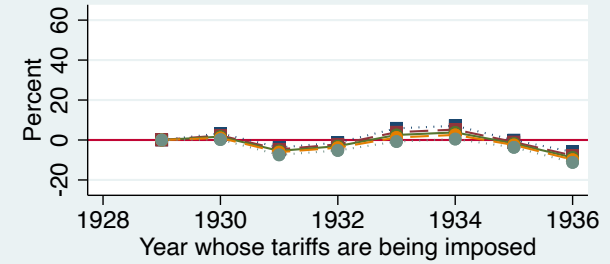
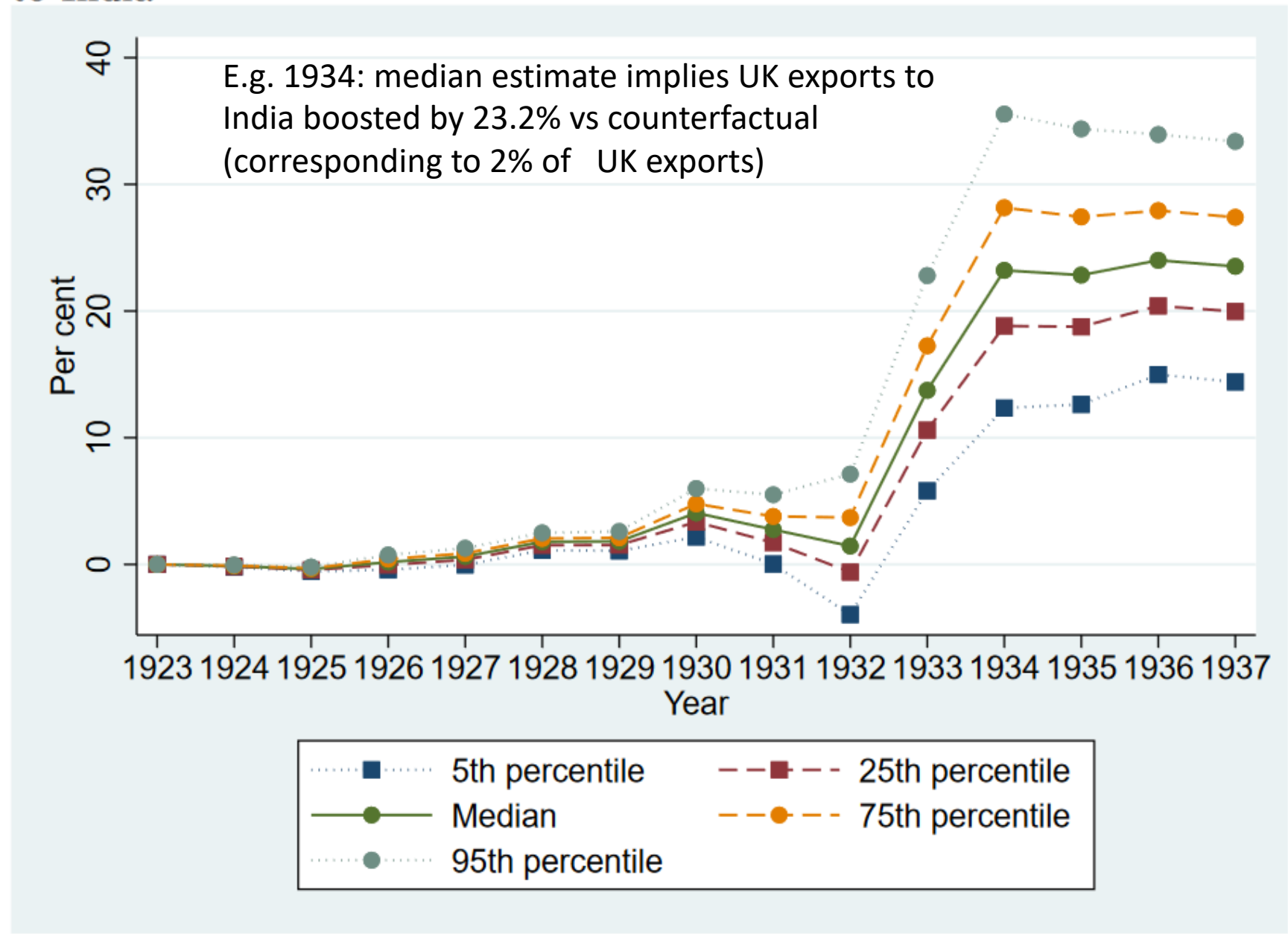
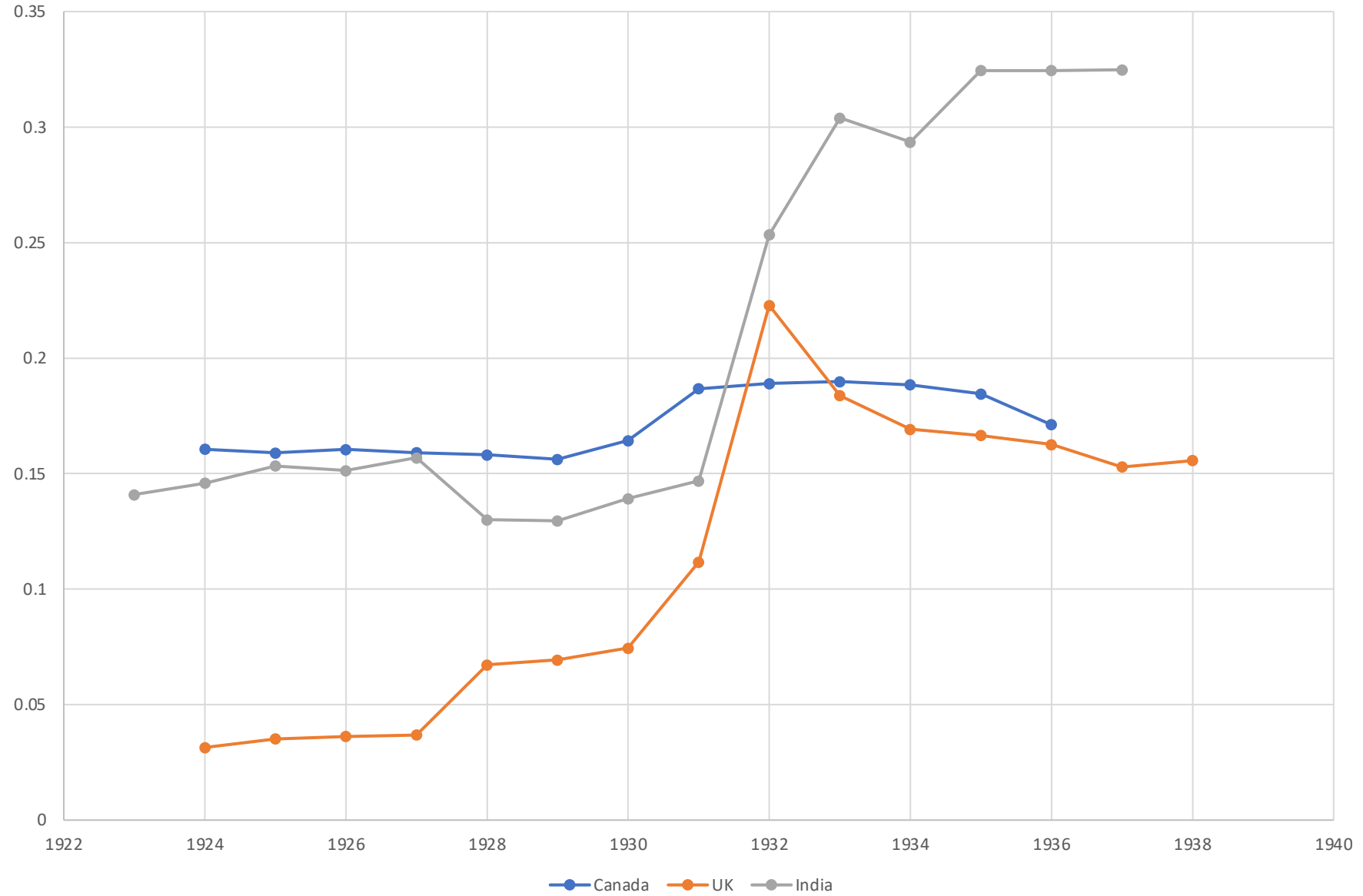


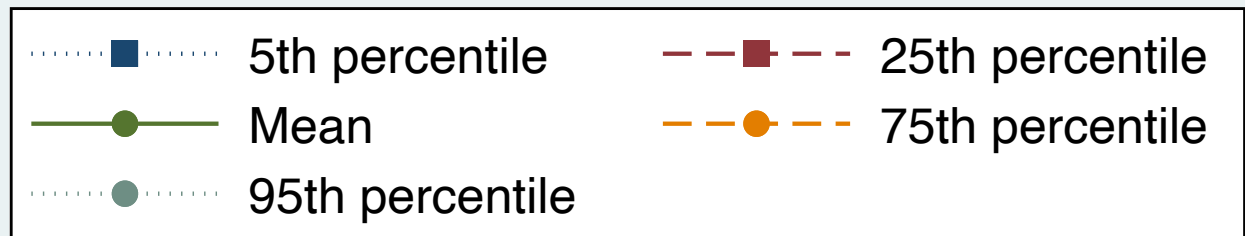
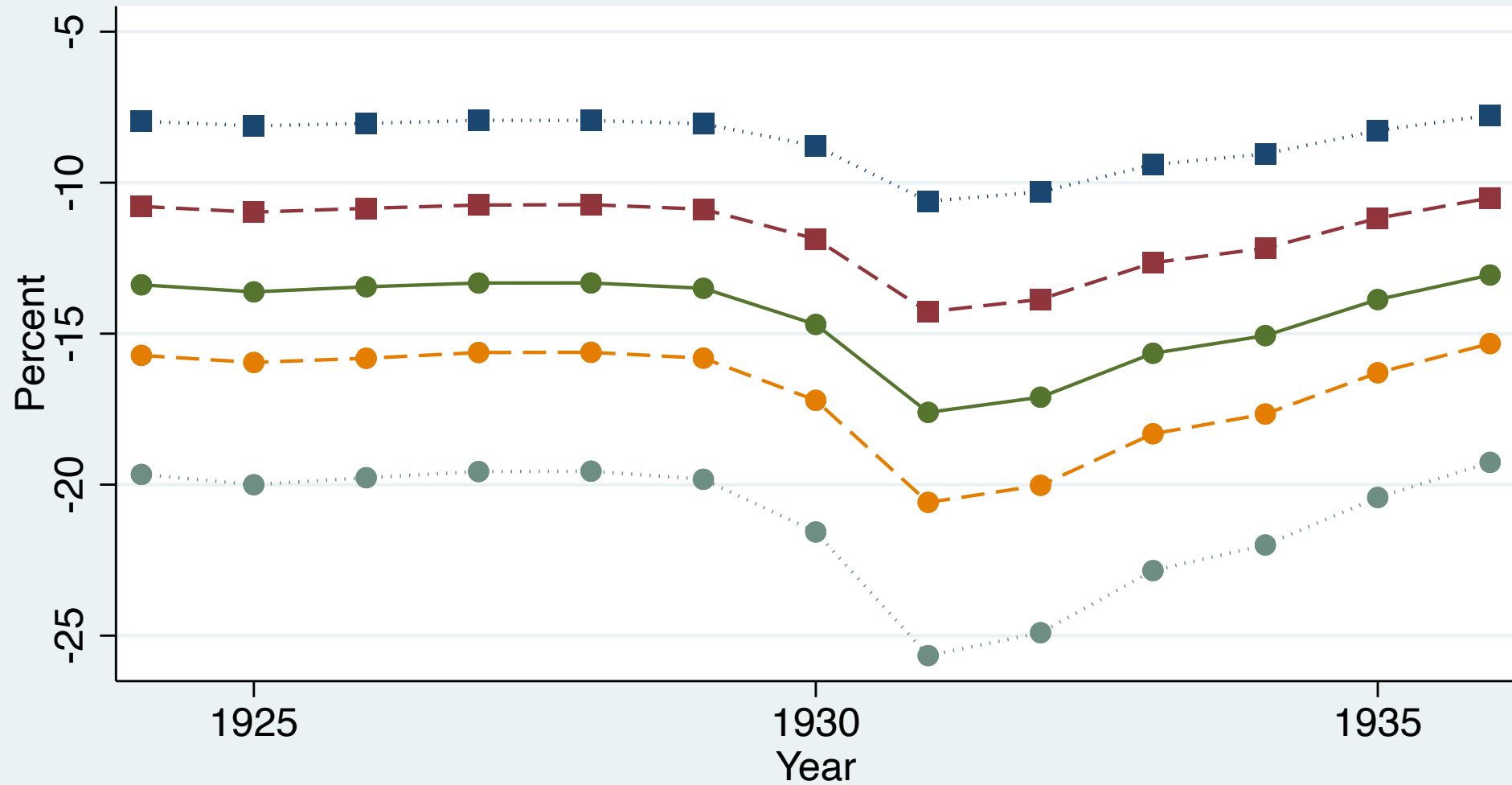
Figure 6: Percentage impact of post-1923 shift in protection on total UK exports to India



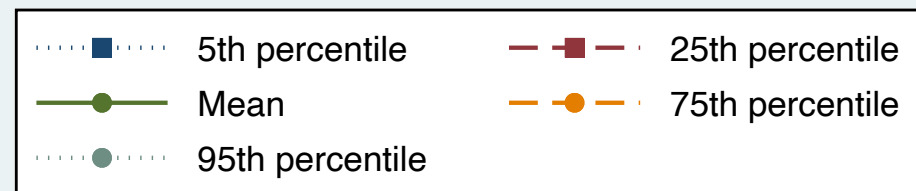
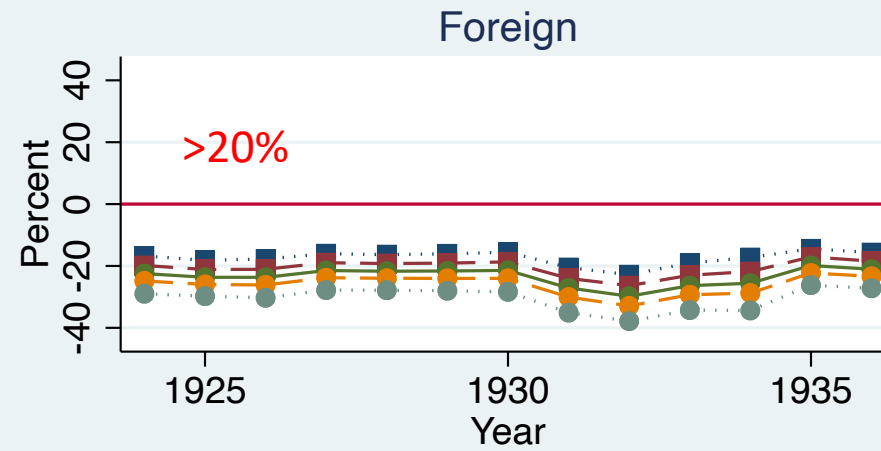
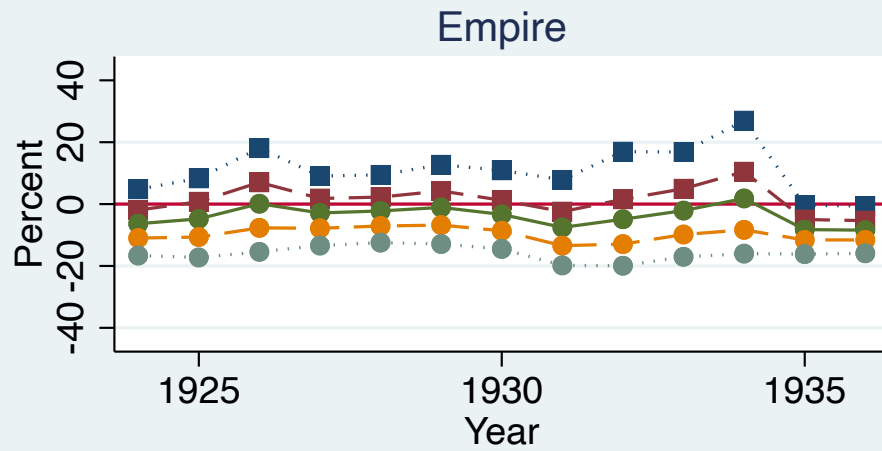
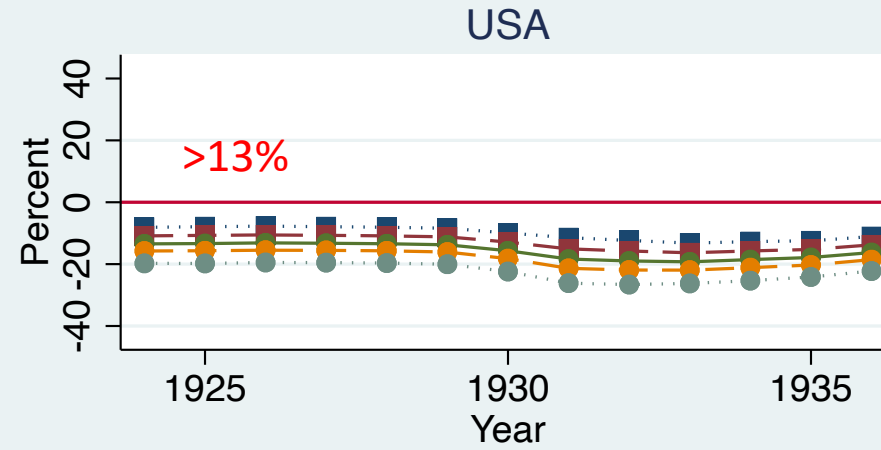
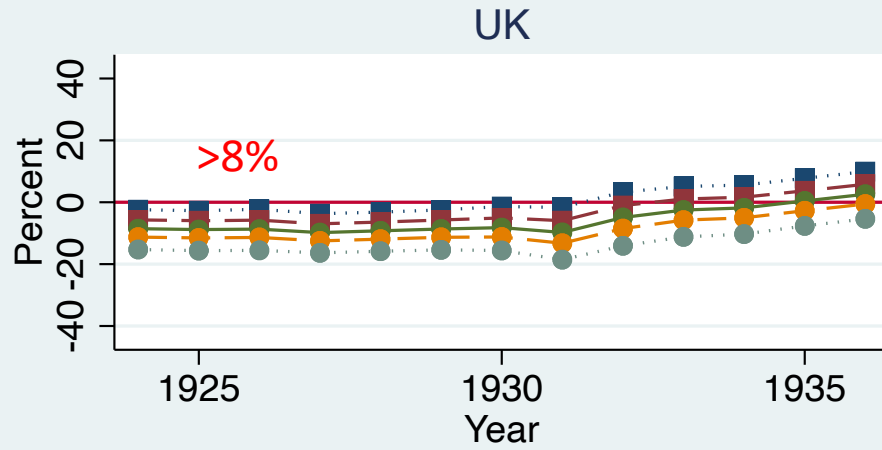
Unweighted average tariffs



Impact on total imports of actual protection vs free trade



Impact on exports of actual protection vs free trade



Conclusions

- Canadian policy after 1929 lowered imports, and tilted trade away from the US and other foreign countries towards the UK
- Modest effects reflect relatively modest shock
 - Trying to estimate an “Empire” effect via a bloc dummy in an aggregate gravity regression would miss this
- Overall Canadian trade policy had a big effect. Japan especially badly hit, but even UK exports were hit in the 1920s.
- Trade discrimination key in assessing impact on UK. Ottawa helped the UK via discrimination, not tariff cuts. By 1936 Canadian protection had no aggregate impact on UK exports.

Future work

- Trade policy uncertainty (Handley and Limao, 2022)
 - Attenuates trade elasticities
 - Can it explain the smaller trade elasticity during the Depression?
 - Can it explain larger UK and empire elasticities, especially after Ottawa?
 - Was it an important part of what the Ottawa deals achieved?
- Separating out the Ottawa (or other) tariff changes more carefully than we currently do

Estimating outward multilateral resistance terms

$$(OMR_{gct})^{1-\sigma_g} = \sum_j \left(\frac{T_{cjt}^g}{IMR_{gjt}} \right)^{1-\sigma_g} \times \frac{E_{jt}^g}{Y_t^g},$$

$$(IMR_{gjt})^{1-\sigma_g} = \sum_c \left(\frac{T_{cjt}^g}{OMR_{gct}} \right)^{1-\sigma_g} \times \frac{Y_{ct}^g}{Y_t^g}.$$

We only need OMR's, but to derive these need to solve for the entire system above (in line with theory)

1. Calculate bilateral trade costs T for countries c & j , goods g , and years t
2. Select size variables E and Y
3. Solve system above

Calculating bilateral trade costs

$$(T_{cjt}^g)^{1-\sigma_g} = \mathbf{GRAV}_{cjt}^g \times \beta^g$$

GRAV contains variables proxying for bilateral trade costs. You can include whatever you have; we were only able to include distance, common language, and common empire.

NB: those variables don't vary by good, but we need T to vary by good. Solution: obtain product-level trade cost elasticities β^g using our Canadian data

Calculating bilateral trade costs

$$m_{gct} = \exp[\beta_{DIST}^g \times DIST_c + \beta_{LANG}^g \times LANG_c + \beta_{EMPR}^g \times EMPR_{ct} + \beta_{GDP}^g \times GDP_{ct}] \times \epsilon_{gct},$$

GRAV contains variables proxying for bilateral trade costs. You can include whatever you have; we were only able to include distance, common language, and common empire.

NB: those variables don't vary by good, but we need T to vary by good. Solution: obtain product-level trade cost elasticities β^g using our Canadian data

Calculating bilateral trade costs

$$m_{gct} = \exp[\beta_{DIST}^g \times DIST_c + \beta_{LANG}^g \times LANG_c + \beta_{EMPR}^g \times EMPR_{ct} + \beta_{GDP}^g \times GDP_{ct}] \times \epsilon_{gct},$$

1. Run the regression at the product level. Not many observations. If we can estimate β^g and it is correctly signed, use that.
2. Run the regression at the 99 industry level. If we can estimate β^g and it is correctly signed, use that for products where we have no previous estimate.
3. Run the regression at the 10 sector level. If we can estimate β^g and it is correctly signed, use that for products where we have no previous estimate.
4. Run the regression for all goods. Use this for products where we have no previous estimate.

Table 4: Sectoral Gravity Estimates, 1924-1936

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|----------|---------------------|---------------------|--------------------|---------------------|---------------------|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | Aggr | Vgtbl | Plant | Animl | Chemcl | Fibre | Iron | Misc | Metl | Minrl | Wood |
| LN_DIST | -1.423 (0.124)** | -1.110 (0.189)** | -1.396 (0.689)* | -1.032 (0.284)** | -0.969 (0.257)** | -0.663 (0.352) ⁺ | -2.094 (0.406)** | -1.260 (0.440)** | -1.871 (0.363)** | -1.917 (0.343)** | -1.566 (0.302)** |
| LANG | 0.235 (0.194) | 0.252 (0.451) | -0.874 (1.258) | 1.266 (0.535)* | -0.190 (0.270) | 0.585 (0.461) | 0.059 (0.795) | -0.474 (0.762) | 0.515 (0.789) | 0.507 (0.555) | 0.552 (0.428) |
| EMPR | 1.603 (0.163)** | 0.494 (0.493) | 2.856 (1.278)* | 0.682 (0.295)* | 1.041 (0.208)** | 1.745 (0.501)** | 2.141 (0.632)** | 1.771 (0.669)** | 1.480 (0.663)* | 1.305 (0.552)* | 1.268 (0.322)** |
| GDP | 0.457 (0.069)** | 0.174 (0.062)** | 0.688 (0.197)** | 0.295 (0.143)* | 0.741 (0.161)** | 0.671 (0.154)** | 0.684 (0.194)** | 1.056 (0.143)** | 0.327 (0.166)* | 0.119 (0.169) | 0.717 (0.141)** |
| <i>N</i> | 210409 | 22294 | 16681 | 19255 | 18831 | 29786 | 25053 | 29656 | 15734 | 16015 | 17104 |

Notes: This table reports gravity estimates of the effects of various determinants of trade flows. The results are based on specification (9). The dependent variable is Canada's product-level imports. The estimator is PPML, and all estimates are obtained with product-year fixed effects. The results in column (1) are obtained with data on all products and the results in each of the subsequent columns are obtained with pooled data within each of the ten broad sector. All standard errors in this table are clustered three-way (i.e., by exporter, product, and time). See text for further details.

Calculating bilateral trade costs

$$(OMR_{gct})^{1-\sigma_g} = \sum_j \left(\frac{T_{cjt}^g}{IMR_{gjt}} \right)^{1-\sigma_g} \times \frac{E_{jt}^g}{Y_t^g},$$

$$(IMR_{gjt})^{1-\sigma_g} = \sum_c \left(\frac{T_{cjt}^g}{OMR_{gct}} \right)^{1-\sigma_g} \times \frac{Y_{ct}^g}{Y_t^g}.$$

$$(\hat{T}_{cjt}^g)^{1-\sigma_g} = \exp[\hat{\beta}_{DIST}^g \times DIST_{cj} + \hat{\beta}_{LANG}^g \times LANG_{cj} + \hat{\beta}_{EMPR}^g \times EMPR_{cjt}]$$

For E and Y we were constrained to use GDP; we then solved the system and extracted the OMR's; now we can run the main estimating equation:

$$m_{gct} = \exp[\ln(1 + \tau_{gct}) \times \beta + \psi_{gc} + \phi_{gt} + \pi_{ict} + \alpha \times \ln OMR_{gct}] \times \epsilon_{gct}$$

Table A3: The Impact of Canada's Tariffs: Common Estimates.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------------------|
| A. Full Estimating Sample | | | | | | |
| LN_TARIFF | -3.033 (0.287)** | -2.847 (0.292)** | -3.791 (0.626)** | -2.650 (0.787)** | -3.576 (0.899)** | -3.671 (0.809)** |
| LN_OMR_STR | | | | | | 0.138 (0.069)* |
| <i>N</i> | 238043 | 236792 | 236269 | 236050 | 194182 | 179788 |
| B. Constrained Estimating Sample | | | | | | |
| LN_TARIFF | -3.183 (0.484)** | -3.024 (0.461)** | -4.112 (0.794)** | -3.165 (0.798)** | -3.671 (0.809)** | -3.671 (0.809)** |
| LN_OMR_STR | | | | | | 0.138 (0.069)* |
| <i>N</i> | 179788 | 179788 | 179788 | 179788 | 179788 | 179788 |
| C. Alternative (country-product) clustering | | | | | | |
| LN_TARIFF | -3.183 (0.534)** | -3.024 (0.511)** | -4.112 (0.743)** | -3.165 (0.814)** | -3.671 (0.795)** | -3.671 (0.795)** |
| LN_OMR_STR | | | | | | 0.138 (0.079) ⁺ |
| <i>N</i> | 179788 | 179788 | 179788 | 179788 | 179788 | 179788 |

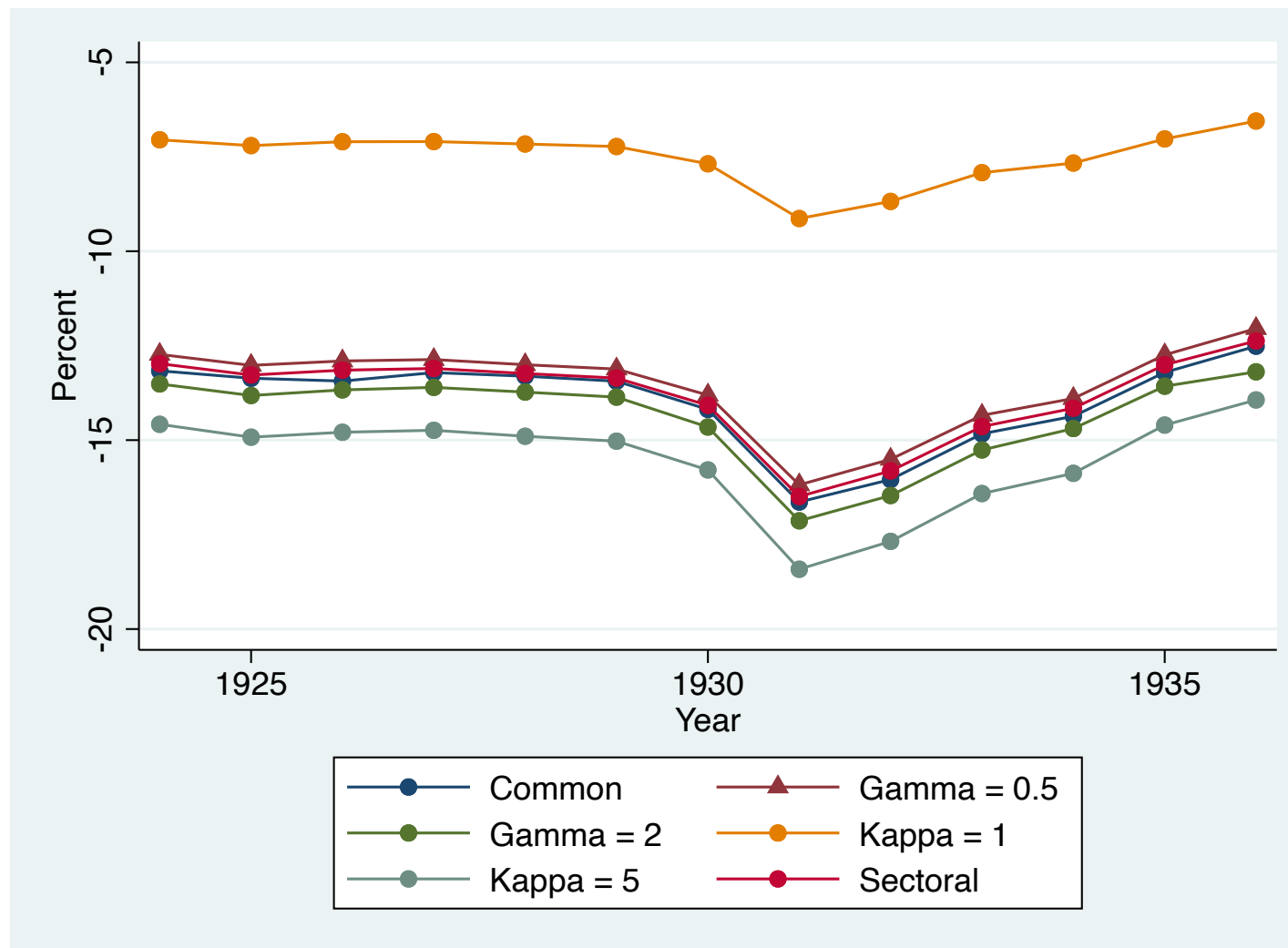
Notes: This table reports estimates of the common effects of tariffs on Canada's imports. The dependent variable is the value of imports in levels. The estimator is always PPML. Panel A reports estimates that are obtained from an unconstrained estimating sample. All results are obtained from specification (5) but with different fixed effects. Specifically, the estimates in column (1) use country, product, and year fixed effects. The estimates in column (2) are obtained after replacing the set of country fixed effects with a set of country-time fixed effects. The estimates in column (3) are obtained after replacing the product fixed effects from the previous specification with product-time fixed effects. The estimates in column (4) are obtained after introducing country-product fixed effects in addition to the fixed effects from the previous specification. The estimates in column (5) are obtained after replacing the country-time fixed effects from the previous specification with country-industry-time time fixed effects. Finally, in column (6) we control for the multilateral resistances in addition to having all fixed effects from the previous specification. Panel B reproduces the specifications from Panel A but based on the restricted sample that was used to obtain the estimates in column (6) of Panel A. All standard errors in panels A and B are clustered three-way (i.e., by exporter, product, and time). Panel C reports results that are clustered by exporter and product only.

Impact on 1929 US exports of imposing later years' tariffs



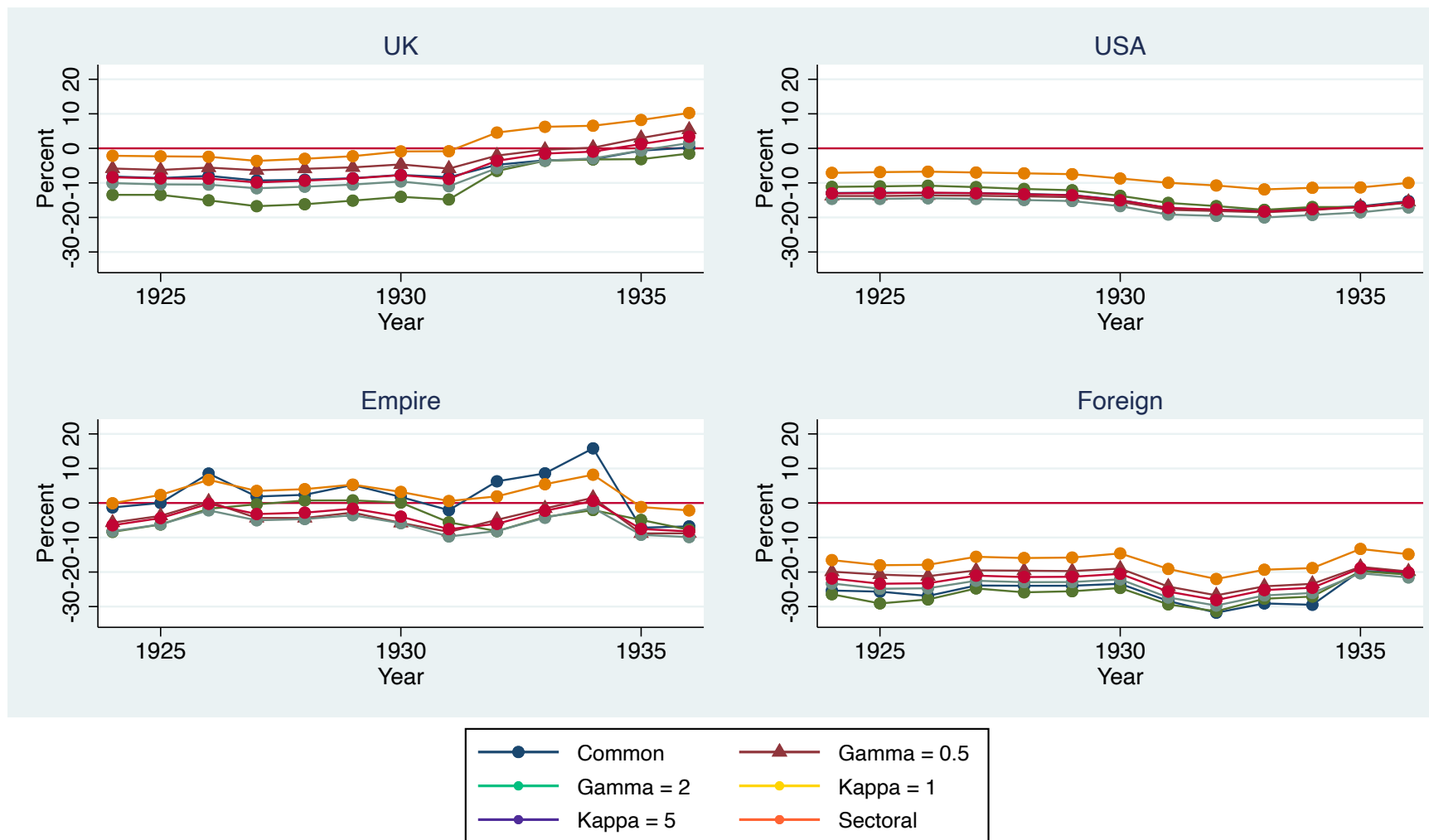
—●— Changing all tariffs —▲— Changing only tariffs on US goods

Figure A4: Impact of entire structure of protection on aggregate Canadian imports



Note: This figure plots the percentage impact on aggregate Canadian imports of imposing the actual structure of protection in each year, compared with a free trade counterfactual. See text for further details.

Figure A5: Impact of entire structure of protection on Canadian imports from 4 regions



Note: This figure plots the percentage impact on Canadian imports from 4 regions of imposing the actual structure of protection in each year, compared with a free trade counterfactual. See text for further details.