Tariffs Hit Differently

The Regional Impact of US Tariffs across Europe and the Role of the Single Market

Gabriel Felbermayr[1], **Julian Hinz**[2,3], Sebastian Krantz[3], Hendrik Mahlkow[1,3], Joschka Wanner[4,3]

[1]WU Vienna & WIFO [2]Bielefeld University [3]Kiel Institute for the World Economy
[4]University of Würzburg & CESifo

World Trade Forum, Bern — 18 September 2026


Reciprocal Tariffs
Country
Tariffs Charged to the U.S.A. Including Currency Manipulation and Trade Barriers
U.S.A. Discounted Reciprocal Tariffs
China 67% 34%
European Union 39% 20%
Vietnam 90% 46%
Taiwan 64% 32%
Japan 46% 24%
India 52% 26%
South Korea 50% 25%
Thailand 72% 36%
Switzerland 61% 31%
Indonesia 64% 32%
Malaysia 47%
Source: Reuters




Source: Volkswagen



Source: DPA



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This paper

- A tariff is set at a **national** border. It is felt in a **place**.
- How much **insurance** does the Single Market give against a shock from outside it?
- **288 NUTS2 regions**, 10 sectors, four depths of European integration
- Labour mobility as a **dial**, not a switch

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Setup

Four Europes, one shock

- **REICIO**: every EU country in the OECD ICIO replaced by its NUTS2 regions ▸ how
- The same US tariff schedule, four baselines:
  - **Fragmented** — no Single Market
  - **Integrated, single countries** — no free movement
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Model

Regions in a production network

- Baqaee–Farhi general equilibrium, solved in changes

equations

- **335 units** (288 NUTS2 regions, 47 countries) $\times$ 10 sectors
- Two factors. **Labour** moves, **structures** stay put.

$\rightarrow$ Hence a region absorbs a shock through its wage, its prices, and who lives in it

- Three departures from the standard setup:
  - the unit is a **region** — a tariff reaches it through its own exports *and* its place in the network
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  - labour reallocates **at a cost**

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Labour mobility: from a switch to a dial

- Standard closures: mobile *within* countries, or *EU-wide*. Both frictionless.
- Workers of type h (country of birth) choose region o:

$$s'_{oh} = \frac{s_{oh}\,\widehat{\tilde{w}}_o^{\,\varepsilon_L}}{\sum_m s_{mh}\,\widehat{\tilde{w}}_m^{\,\varepsilon_L}} \qquad \hat{L}_o = \frac{\sum_h s'_{oh}\,\bar{L}_h}{L_o}$$

$\rightarrow$ Both are $\varepsilon_L \to \infty$; they differ in *scope*, not intensity

$\rightarrow$ Frictionless mobility equalises real wages inside the bloc, hence says nothing about incidence *within* it

- s_{oh} from the 2021 censuses: **232 origins** $\times$ **287 regions**
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Barriers, tariff revenue, transfers

- **Non-tariff barriers** are bilateral and sector-specific. Membership is a wedge, from Felbermayr et al. (2022):
  - single market goods 0.381, services 0.492
  - eurozone 0.072, 0.158 schengen 0.087, 0.075

→ Hence membership can be switched off for any country — including one that did

- **Tariff revenue** is collected and spent where it is levied
- **Cohesion transfers** are a fixed nominal flow, the same in baseline and counterfactual

→ Set seven years ahead, hence unable to respond to anything

- Trade balances held at a fixed share of world income

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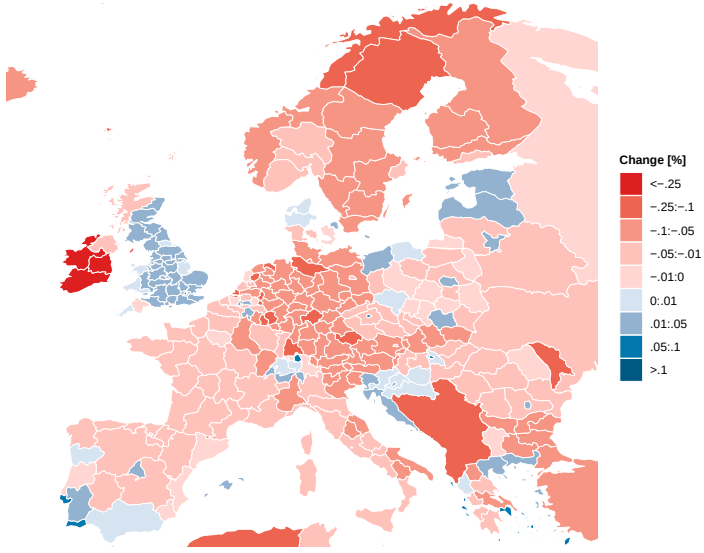
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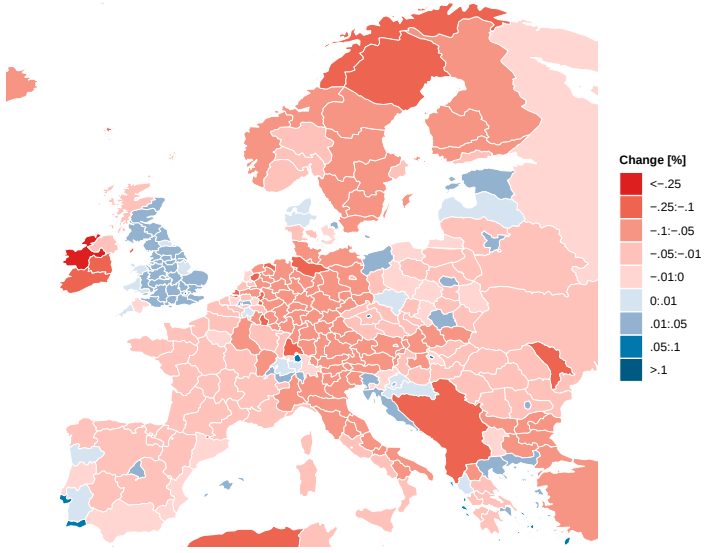
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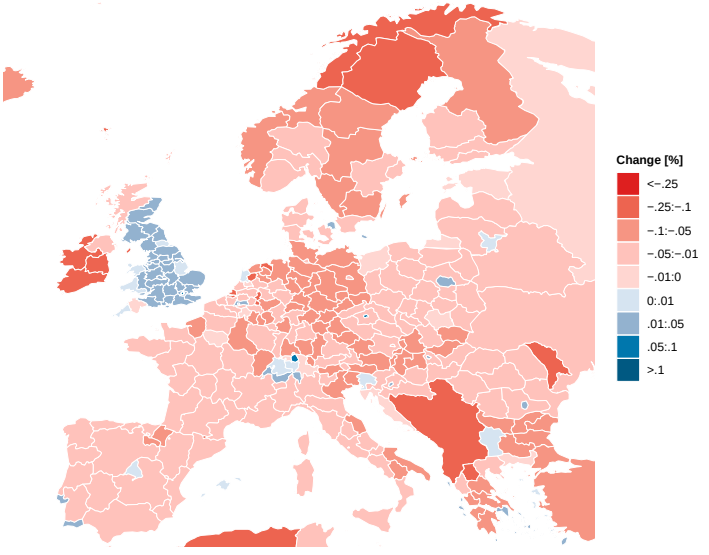
Results



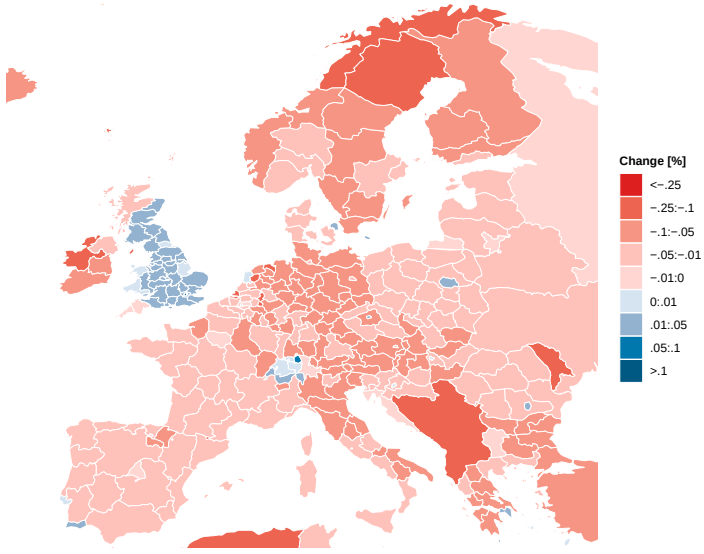
Real value added per capita, 2025 US tariffs, **Fragmented**. *Source:* own calculations, REICIO.



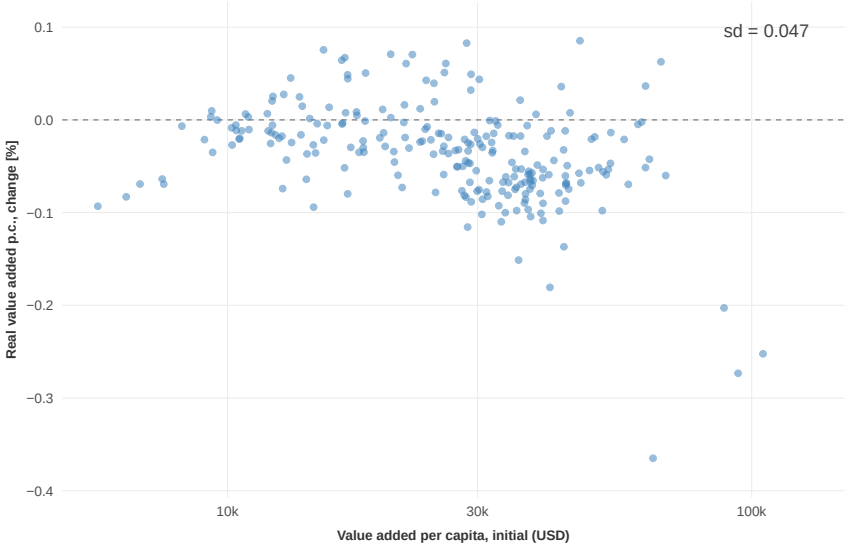
Real value added per capita, 2025 US tariffs, **Integrated, single countries**. *Source:* own calculations, REICIO.



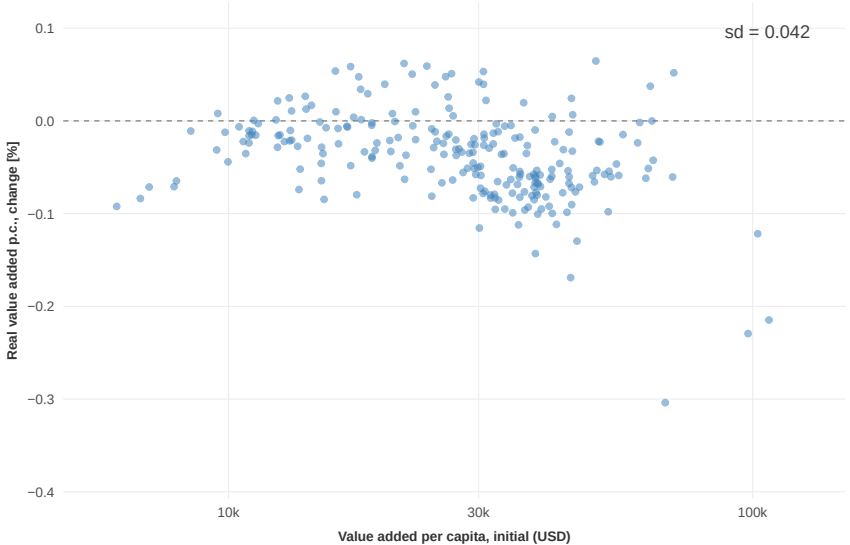
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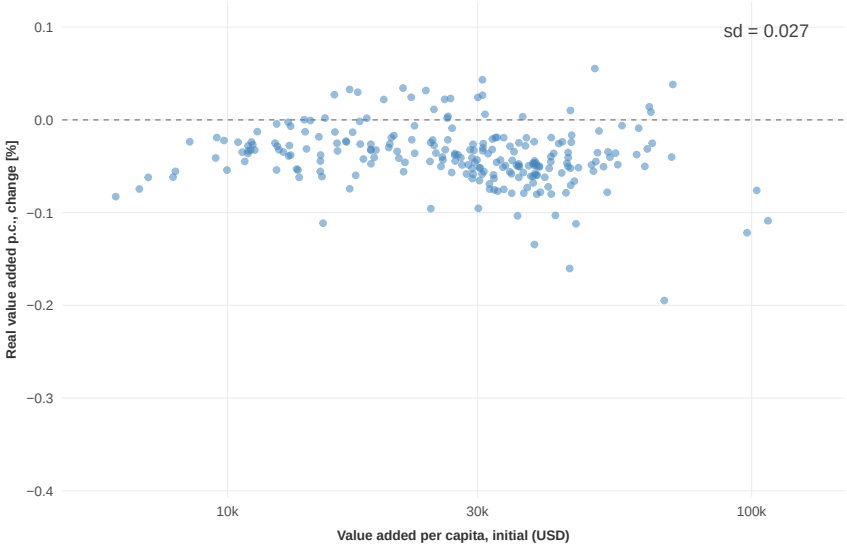
Real value added per capita, 2025 US tariffs, **Deep Integration**. *Source:* own calculations, REICIO.



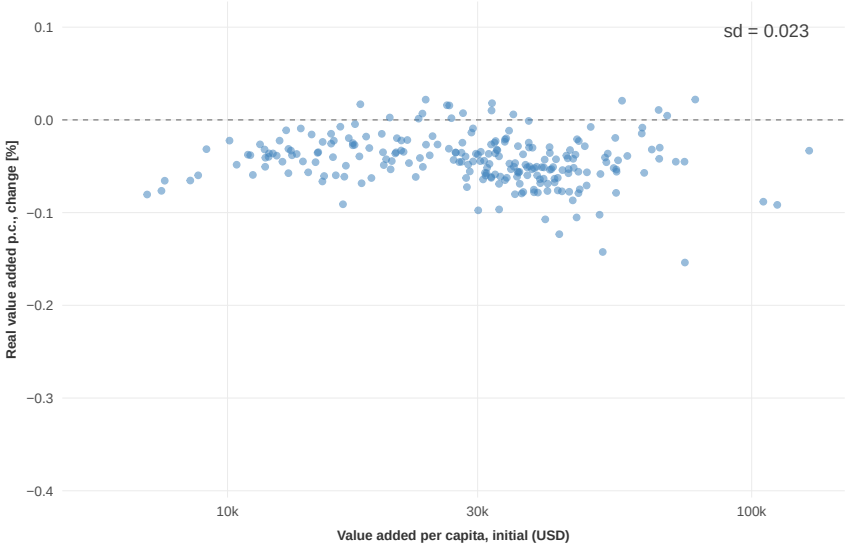
Regional loss against initial income, EU27 regions. **Fragmented**. *Source:* own calculations, REICIO.



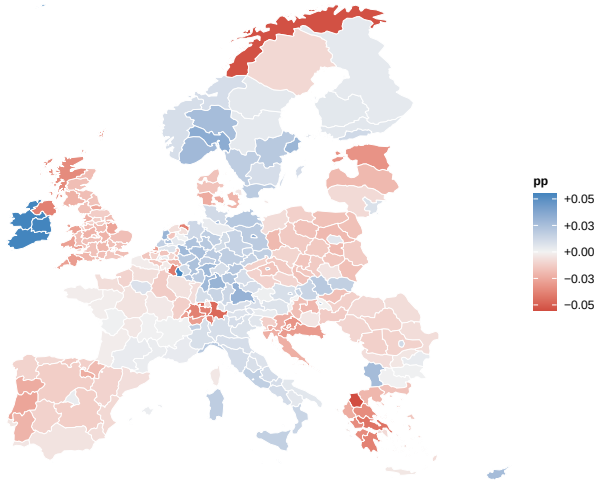
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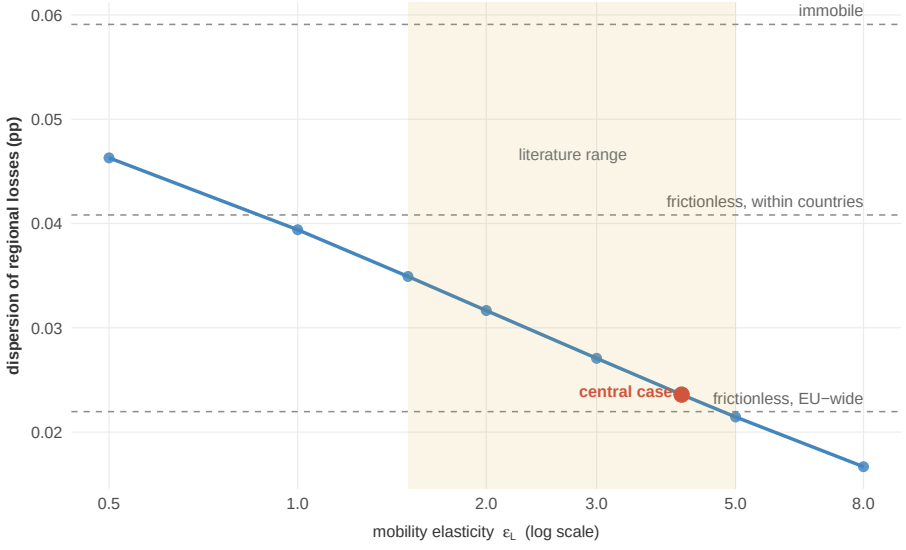
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Real value added per capita, frictional mobility less EU-wide frictionless mobility. *Source:* own calculations, REICIO.



Cross-regional dispersion of regional losses against the mobility elasticity. Dashed: the closures with no elasticity to estimate. *Source:* own calculations, REICIO.

Mobility and the spread of losses

- From **high** to **low** mobility frictions, dispersion **halves**: $0.039 \rightarrow 0.021$
- **46%** of the reallocation crosses a **national border**
- And we can say **who** moves: the exposed, and the already dispersed

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Test case: Brexit

- One country left the Single Market, so for once the counterfactual is observed.

→ The single-market wedge only — the UK had neither the euro nor Schengen

→ Tariff equivalent **7%** goods, **10%** services; the TCA keeps tariffs at zero

- **Out of sample:** UK–EU goods trade falls **28%** in the model, **25–32%** in the data data
- Then the US tariff shock on top of it. UK regions, real value added p.c.:
  - inside the Single Market -0.0010%
  - outside -0.0025%

Two and a half times as costly, from outside.

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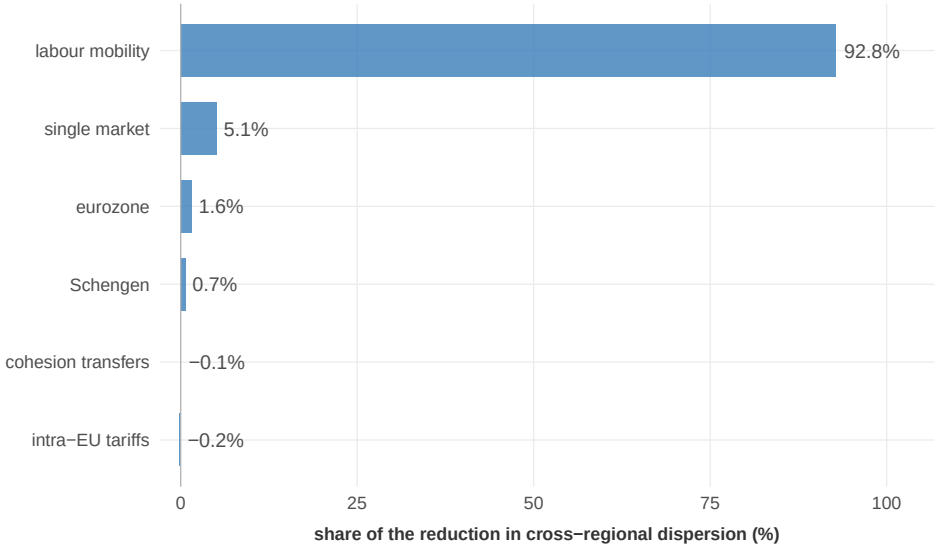
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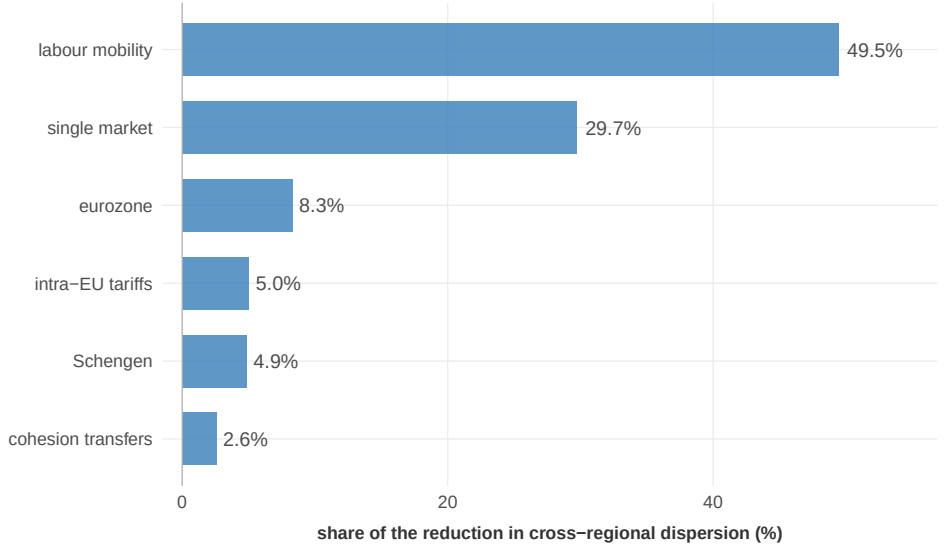
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Shapley contribution of each margin to the fall in dispersion of regional losses; six margins, averaged over all orderings. Value added. Fragmented to fully integrated: 0.063 → 0.027. *Source:* own calculations, REICIO.



The same decomposition on real *income* per capita — what a region's residents keep. Fragmented to fully integrated: 0.128 → 0.106. *Source:* own calculations, REICIO.

Cohesion transfers

- The EU's actual fiscal redistribution cannot respond to a shock, hence it cannot insure against one
- It still changes the arithmetic. A transfer raises the income *level*, so the same loss is a smaller share of it

→ Polish regions' proportional income loss is **a quarter smaller** with transfers than without

→ EU-wide the average loss moves by **2%**, and the dispersion not at all

Market adjustment does the insuring. The budget changes who can afford the hit.

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- **Integration works on the spread, not the mean** — risk-sharing rather than efficiency.
- **How much you get depends on how mobile labour really is.** Frictionless is an upper bound, and Europe is far from it.
- **Next:** a separate cross-border friction — observed mobility crosses fewer borders than the closure implies.

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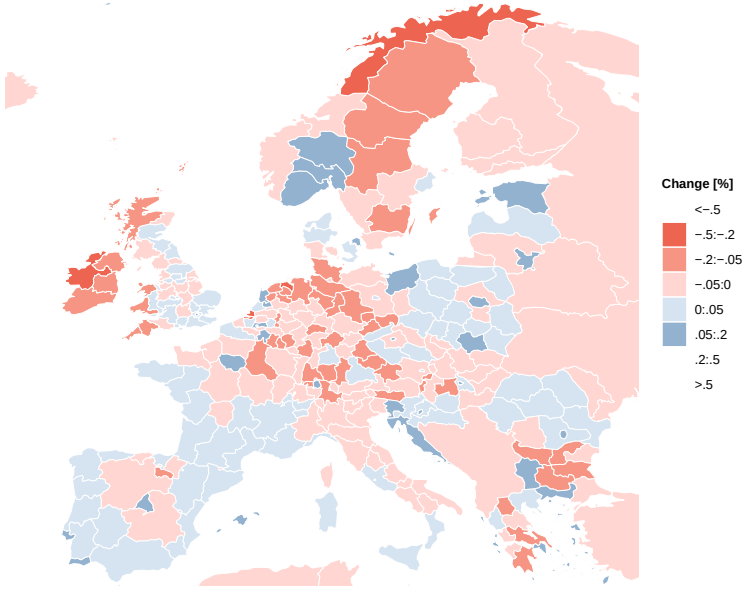
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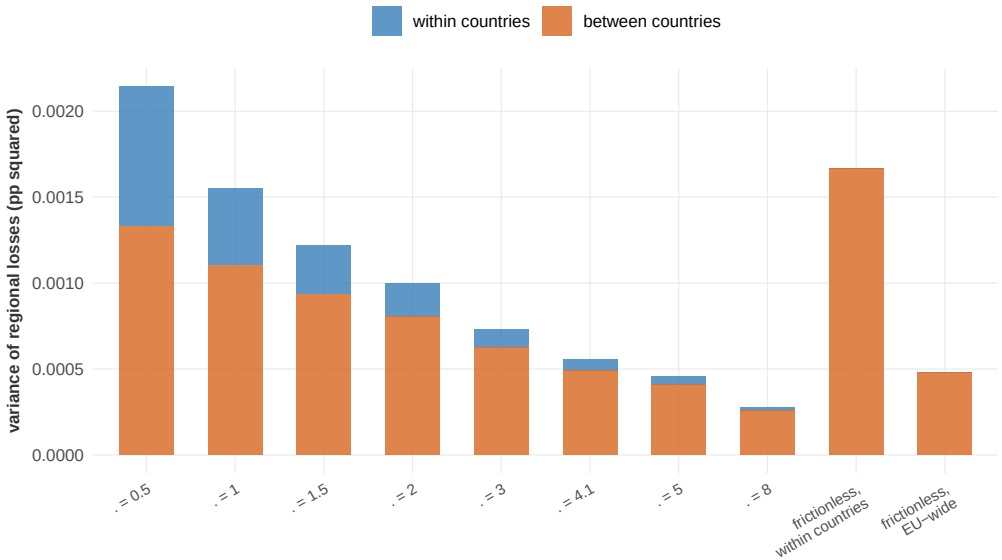
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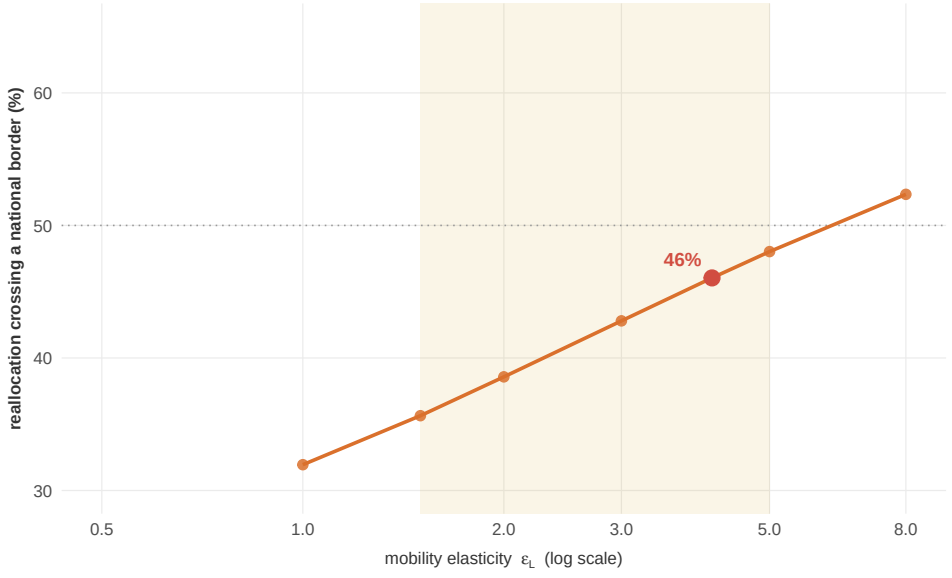
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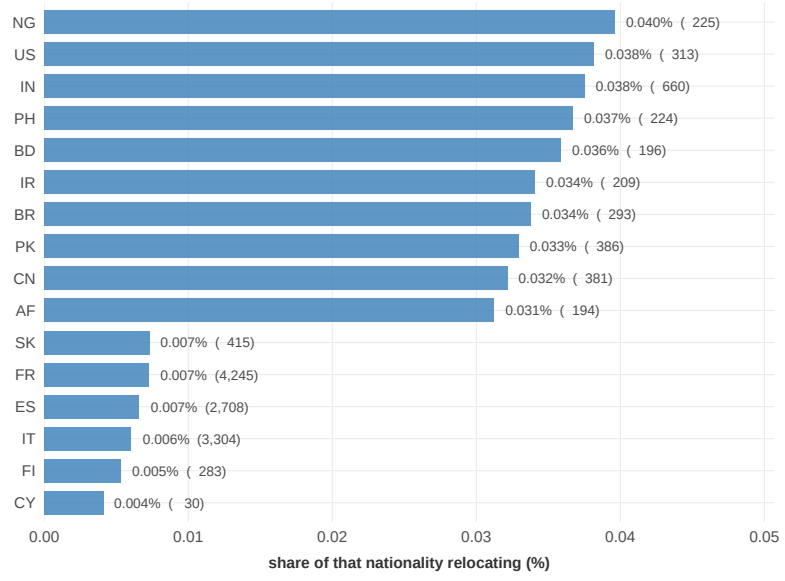
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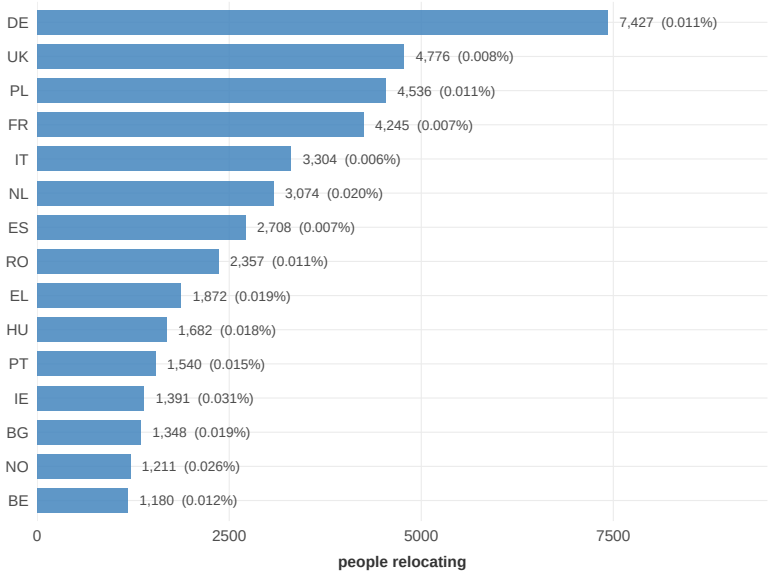


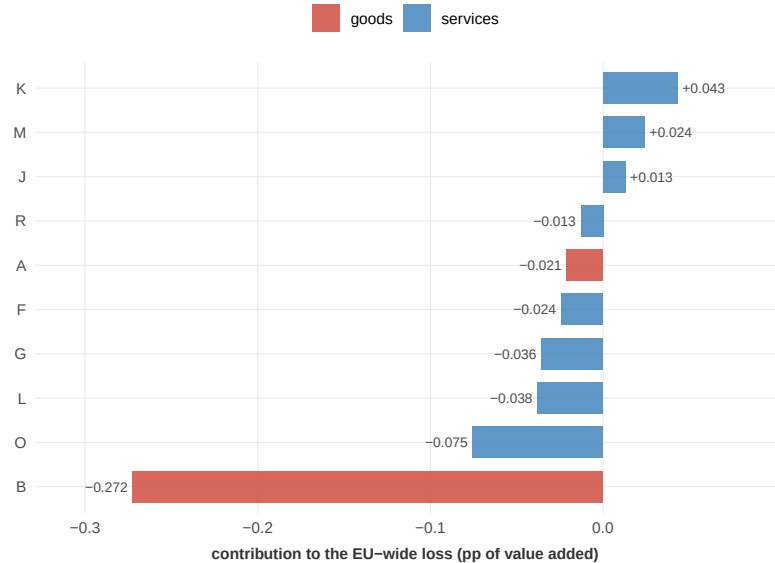
Backup: change in regional labour supply.


within countries
between countries
variance of regional losses (pp squared)
0.0020
0.0015
0.0010
0.0005
0.0000
. = 0.5
. = 1
. = 1.5
. = 2
. = 3
. = 4.1
. = 5
. = 8
frictionless, within countries
frictionless, EU−wide


reallocation crossing a national border (%)
60
50
40
30
46%
0.5
1.0
2.0
3.0
5.0
8.0
mobility elasticity ε_L (log scale)


NG
US
IN
PH
BD
IR
BR
PK
CN
AF
SK
FR
ES
IT
FI
CY
0.040% (225)
0.038% (313)
0.038% (660)
0.037% (224)
0.036% (196)
0.034% (209)
0.034% (293)
0.033% (386)
0.032% (381)
0.031% (194)
0.007% (415)
0.007% (4,245)
0.007% (2,708)
0.006% (3,304)
0.005% (283)
0.004% (30)
0.00
0.01
0.02
0.03
0.04
0.05
share of that nationality relocating (%)


DE
UK
PL
FR
IT
NL
ES
RO
EL
HU
PT
IE
BG
NO
BE
7,427 (0.011%)
4,776 (0.008%)
4,536 (0.011%)
4,245 (0.007%)
3,304 (0.006%)
3,074 (0.020%)
2,708 (0.007%)
2,357 (0.011%)
1,872 (0.019%)
1,682 (0.018%)
1,540 (0.015%)
1,391 (0.031%)
1,348 (0.019%)
1,211 (0.026%)
1,180 (0.012%)
0
2500
5000
7500
people relocating



Backup: goods fall 2.35%, services 0.29%. Manufacturing alone is 0.47 of the 0.73pp total.

Backup: is the regional split of trade any good?

- Interregional flows in REICIO are **imputed**. France and Spain publish the real thing — customs records by NUTS2 region and partner country.
- Comparing 2019, region by region and partner by partner:
  - region **total** exports: correlation **0.88**
  - **bilateral** region × partner: **0.74**
  - partner **composition**: about a third misallocated

Sizes are right. The partner mix is not.

→ No border effect: French regions on the Spanish border trade **2.1**× more with Spain than the imputation allows

→ Small peripheral regions are over-fed — together under **1%** of EU population

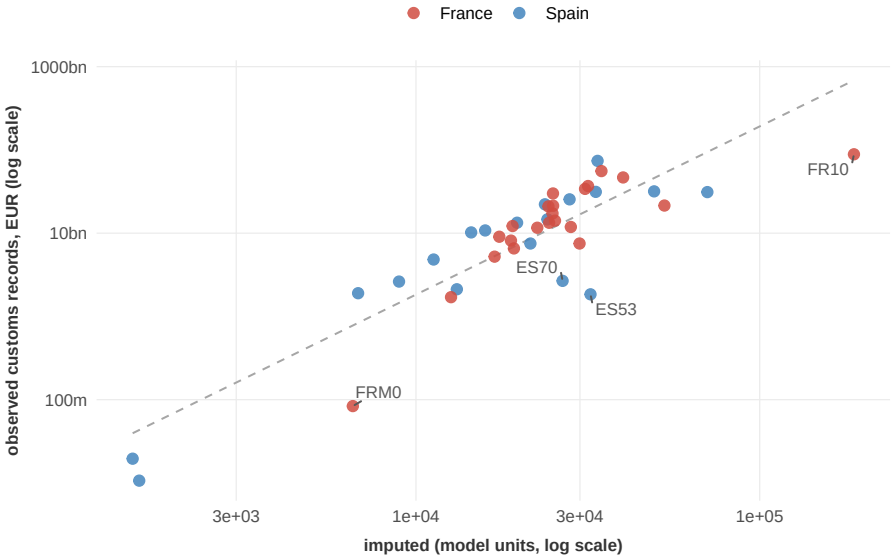
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France
Spain
1000bn
10bn
100m
observed customs records, EUR (log scale)
3e+03
1e+04
3e+04
1e+05
imputed (model units, log scale)
FR10
ES70
ES53
FRM0

Backup: calibrating s_{oh}

- **EU + EFTA:** Eurostat `cens_21cob_r3` — NUTS3 residence × country of birth, aggregated to NUTS2

→ The NUTS2 table has only *aggregate* birth groups, which pools all natives into one type and erases home bias

- **UK:** ONS `TS012`, NRS `UV204`, NISRA `MS-A18` — Eurostat's census cubes have **no UK geography** post-Brexit

- **232 types** × **287 regions**, 522m people; reconciles to Eurostat regional totals at 0.9998

- Home bias varies: ES and FR keep 98% of nationals at home; RO 85%, LU 80%

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Backup: the four baselines

- **Integrated EU** — 27 members, common external tariff, free movement.
- **Integrated Single Countries** — same trade policy, no movement across borders.
- **Fragmented** — no Single Market, MFN tariffs between European countries. Penalties from Felbermayr et al. (2022), sector-specific.
- **Deep Integration** — 15% lower internal non-tariff barriers on cross-border intra-EU pairs.

→ Each adjacent pair differs on *one* margin: trade policy, then mobility scope, then barrier depth.

Backup: REICIO construction

1. Collapse national ICIO blocks to 10 sectors; split intermediate vs. final trade.
2. Regionalize using regional accounts and location quotients.
3. Inject spatial structure from JRC freight and interregional matrices.
4. Blockwise IPF to match row and column totals.
5. Re-insert the EU block into ICIO; allocate extra-EU flows by shares and population-weighted distances.

Limitations: no cross-border commuting at NUTS2; regional export composition inherits the national split; one benchmark year for spatial patterns.

Backup: equilibrium in changes

1. Given $(\hat{\phi}, \hat{\tau})$, update price indices and unit costs.
2. Update trade shares, outputs, cost shares.
3. Compute $\hat{P}^C$, incomes, tariff revenue.
4. Update $\hat{L}$ from the labour closure, then $\hat{w}$; iterate.

Labour market clearing is unchanged by the mobility closure:

$$w'_o L'_o = \sum_{j=1}^{J} \beta_o^{F,j\prime} \gamma_o^{L,j\prime} \gamma_o^{j\prime}.$$

$\varepsilon_L \to 0$ reproduces immobility inside the full model to 8×10^{-7}.