DEGLOBALISATION?

THE REORGANISATION OF GVCS IN A CHANGING WORLD

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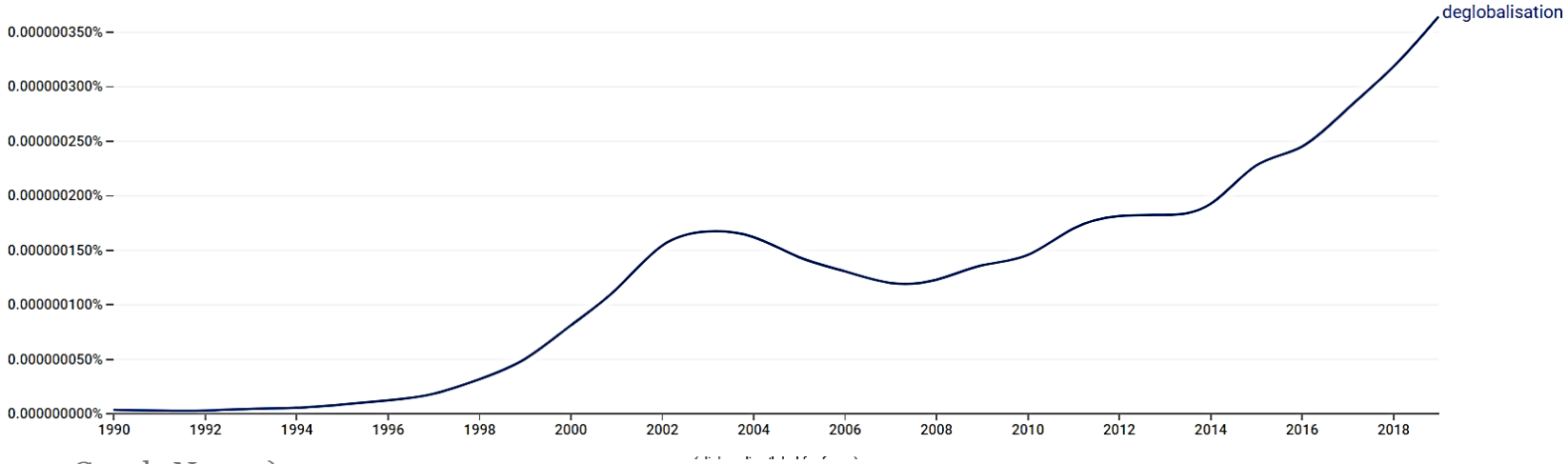
BETTER POLICIES FOR BETTER LIVES

Motivation and context



(Source: Google Ngram)

- Debate whether about regionalisation of trade (e.g. Winters, 1999; Frankel 2007)
- Decrease in elasticity of trade to GDP after Great Financial Crisis; signs that GVCs may be shortening (Haugh et al., 2016; James, 2018; Livesey, 2018; Antràs, 2020)
- Trade tensions, COVID-19 and Russian aggression against Ukraine have fueled debate about GVCs and concentration (Javorcik, 2020; Kilic nad Marin, 2020; Borin et al., 2022)

What we do in this paper

- Exploit new OECD ICIO tables in previous year's prices (1995-2018)
- Investigate changes in structure of supply chains, while taking into account fluctuations in price of intermediate inputs

Focus on four broad questions:

- *1. Did GVCs become less global (i.e. lower fragmentation of production) during 1995-2018?*
- *2. Was there a trend towards regionalisation of value chains?*
- *3. Did the concentration of supply in GVCs increase?*
- *4. How did trade costs in GVCs evolve*?

Data: construction of ICIO in PYP

- Use 2021 edition of OECD Inter-Country Input-Output (ICIO) tables
- 65 economies, 45 industries, 1995-2018
- Adopt approach by Los et al. (2014) for conversion into previous year's prices
- Deflators for value added and gross output from KLEMS (35%), UN National Accounts (30%), STAN (25%), WIOD socio-economic accounts (10%)
- Final demand deflators from UN national accounts
- Balancing (RAS algorithm) after application of deflators

Method (1): import intensity of production

- Following Timmer et al. (2021), we sum gross imports of intermediate inputs all along the value chain
- Measure contribution of cumulative imports of intermediate inputs as share of gross output

The value of imported inputs (as share of gross output) is given by

- $x^{tier1} = (E \circ A')i$

where A is the matrix of intermediate input requirements, E is a trade selection matrix (GN x GN; zeroes on N x N block and ones elsewhere)

$$x_{rk}^{cum} = (E \circ A')i + A'(E \circ A')i + A'^{2}(E \circ A')i + A'^{3}(E \circ A')i + \cdots$$
$$= (I - A')^{-1}(E \circ A')i$$

- Differs from other measures of GVC intensity, such as vertical specialisation measure of Hummels et al. (2001) or VAX ratio (Johnson and Noguera, 2012)
- Counts intermediate inputs imported by any country in the GVC
- No upper bound
- Will increase if foreign value added embodied in production remains unchanged but provided by more countries

Method (2): trade cost estimation

- Draw on Egger, Larch, Nigai, Yotov (2021): provides measure of overall directional bilateral trade cost
- Captures all frictions that increase cost of cross-border trade relative to cost of economic exchanges within an economy
- Apply methodology to information on trade flows and sourcing patterns contained in OECD ICIO tables
- Obtain detailed estimates of trade costs for every combination of exporting economy, importing economy, industry and year
- Separate estimates for trade costs referring to trade in intermediate inputs and trade in final products

Method (3): trade cost estimation

For every industry and year in the ICIO, we estimate:

$$\ln \frac{X_{ij,t}^{sr}}{X_{ii,t}^{sr}} = e_{i,t}^{s} + d_{ij,t}^{s} - e_{j,t}^{s} + \epsilon_{ij,t}^{sr} \text{ such that } e_{i,t}^{s} = e_{j,t}^{s} \; \forall i = j \text{ and } s \neq r$$

where

- $X_{ij,t}^{sr}$ are trade flows from country i to country j and from industry s to industry r,
- $X_{ii,t}^{sr}$ are the domestic flows in country j from industry s to industry r,
- $e_{i,t}^{s}$ are exporter fixed effects,
- $e_{j,t}^{s}$ are importer fixed effects,
- $d_{ij,t}^{s}$ are country pair fixed effects
- $\epsilon_{ij,t}^{sr}$ is an is an idiosyncratic stochastic term

Log of partial equilibrium trade costs obtained as $T_{ij,t}^{s} = -\frac{1}{\theta^{s}} d_{ij,t}^{s}$ with θ^{s} an industry-specific elasticity (Rubinova and Sebti, 2021)

Method (4): trade cost estimation

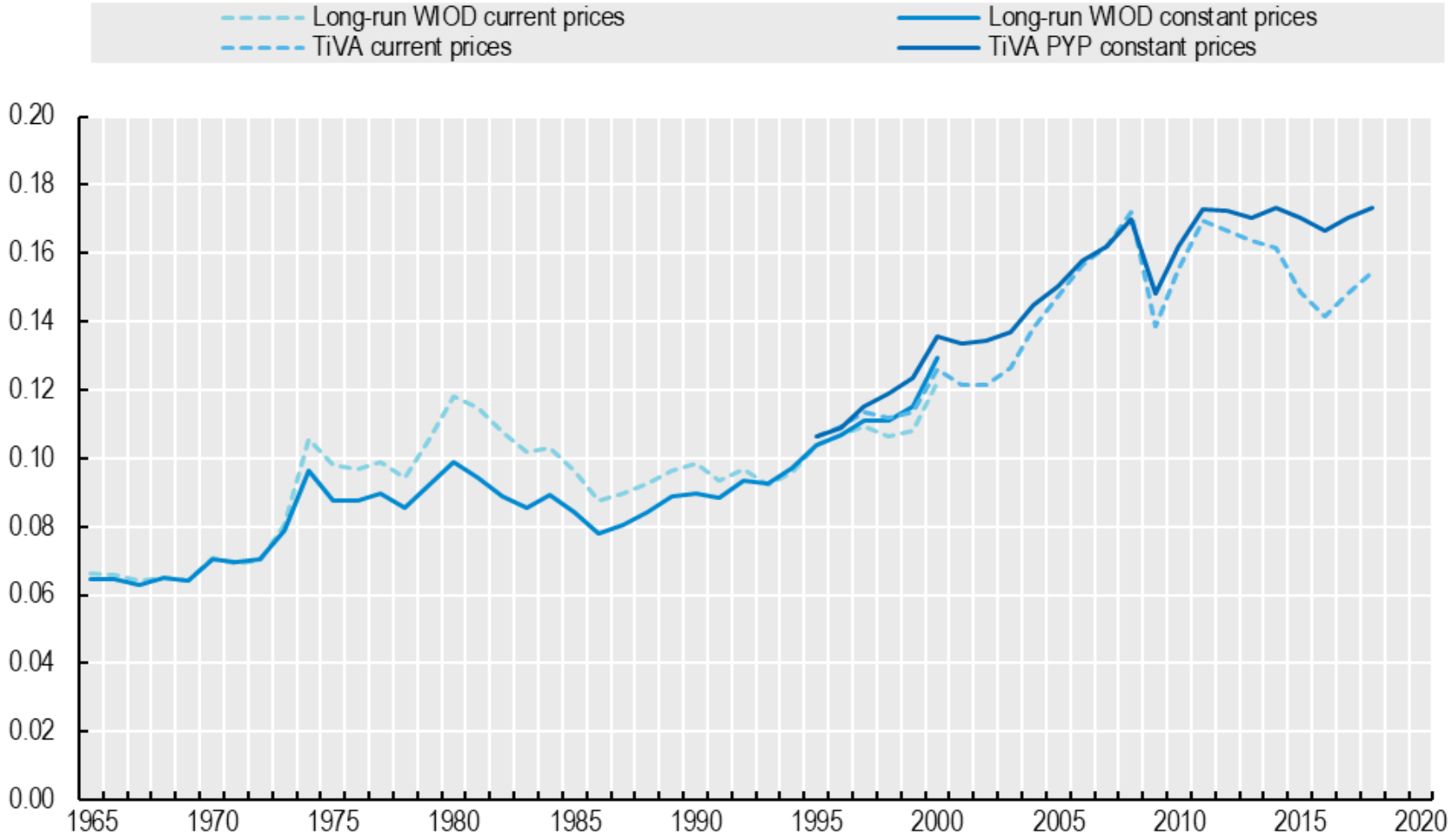
Regress bilateral trade cost on three categories of determinants:

1. *ease of trade (geography, technological evolutions, reductions in transport costs, logistics performance),*
2. *trade policies*
3. *uncertainty*

- Draw on work on cumulative tariffs in value chains (Miroudot, Rouzet and Spinelli, 2013; Johnson, 2018[)
- Express all bilateral trade costs estimates as tariff equivalents and construct a world matrix of bilateral trade costs on intermediate inputs.
- In analogy to calculation of import intensity, we calculate a cumulative trade cost that can be interpreted as tariff equivalent of all upstream trade costs on intermediate inputs weighted by value added they contribute to final production.

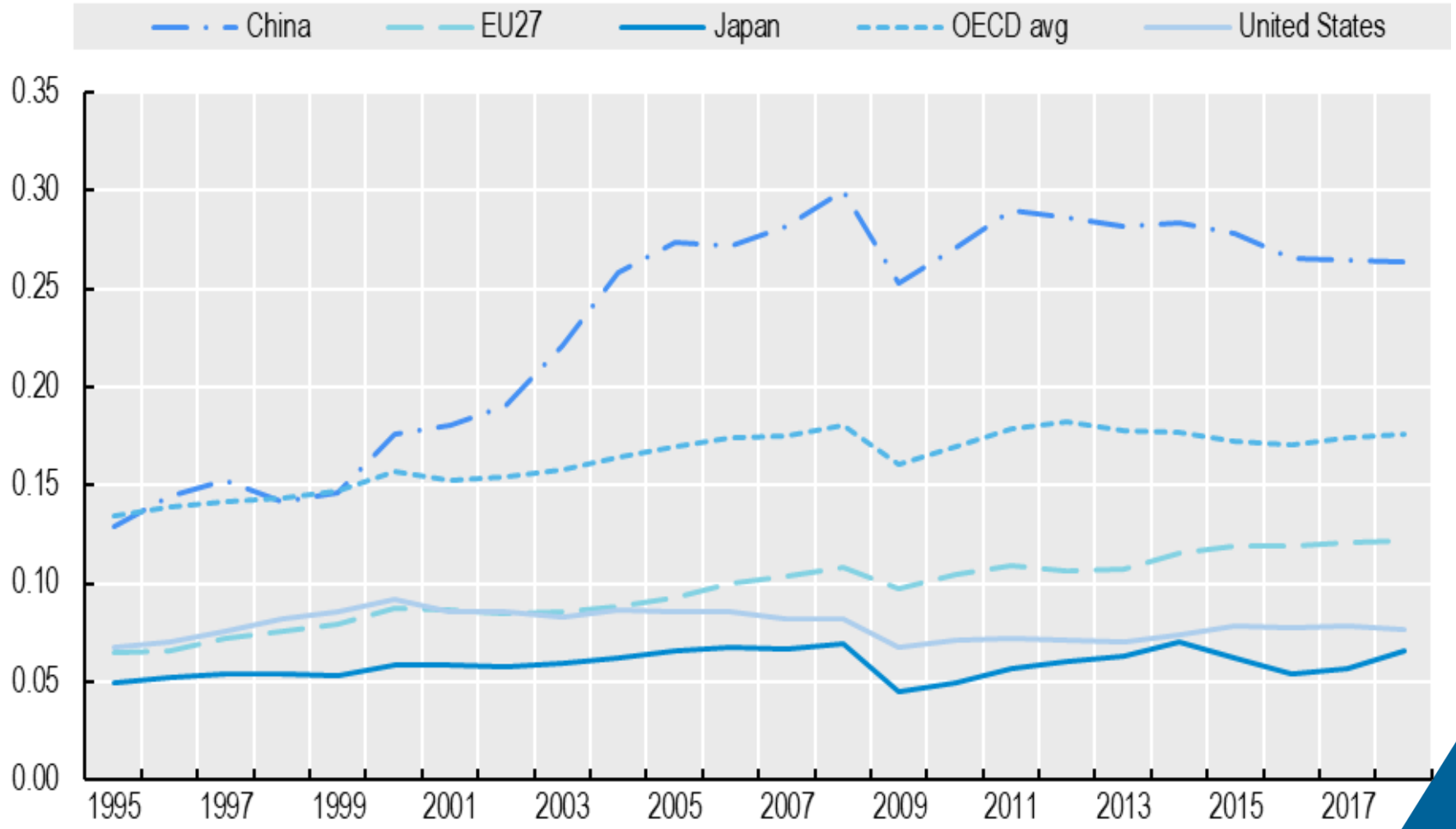
DID GVCS BECOME LESS GLOBAL DURING 1995-2018?

Slowdown, but not reversal of globalisation



Note: Base year is 1965 for the long-run WIOD data and 1995 for the TiVA PYP data.

Import intensity of production, main economies

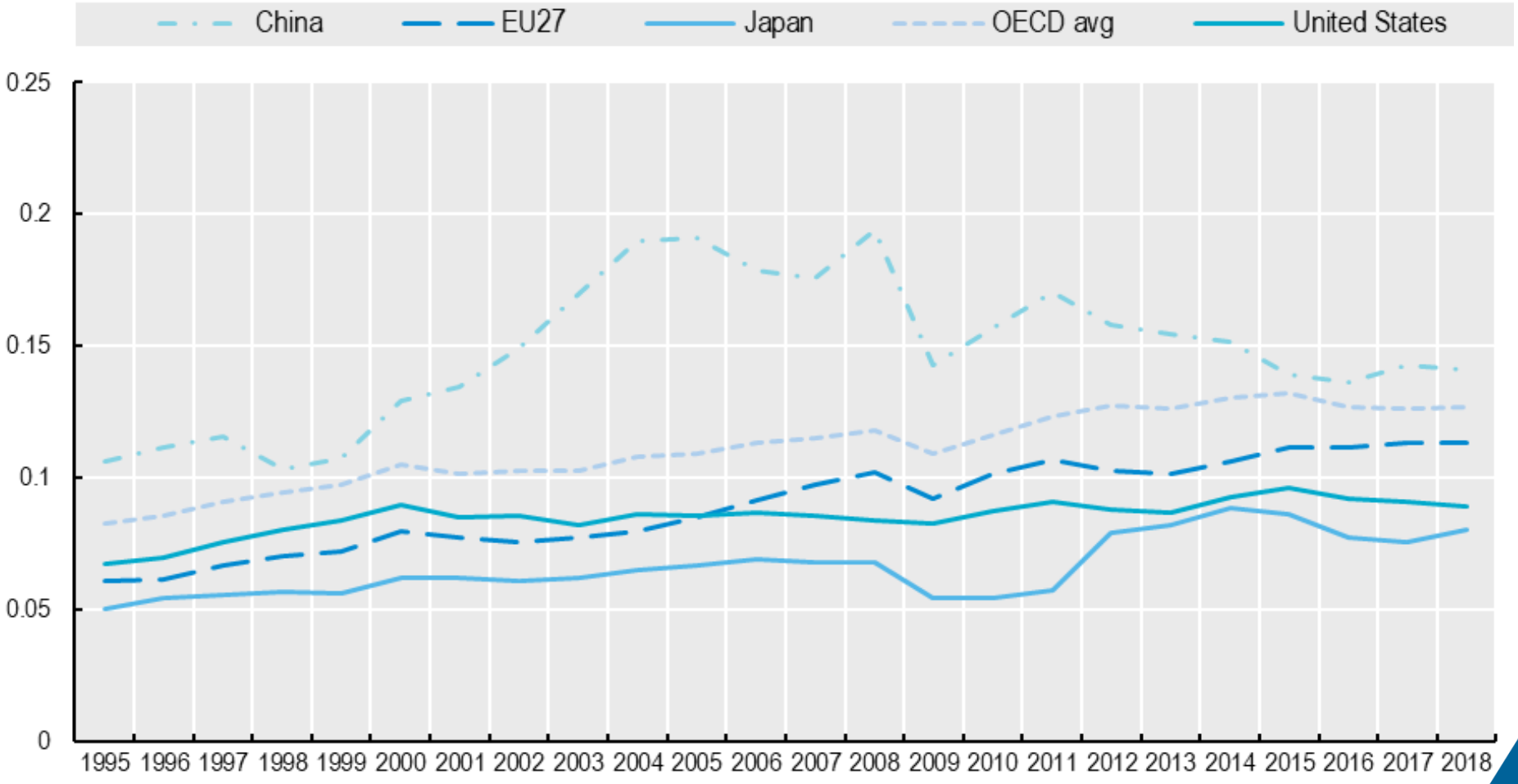


LINK: 2018 vs. 2011

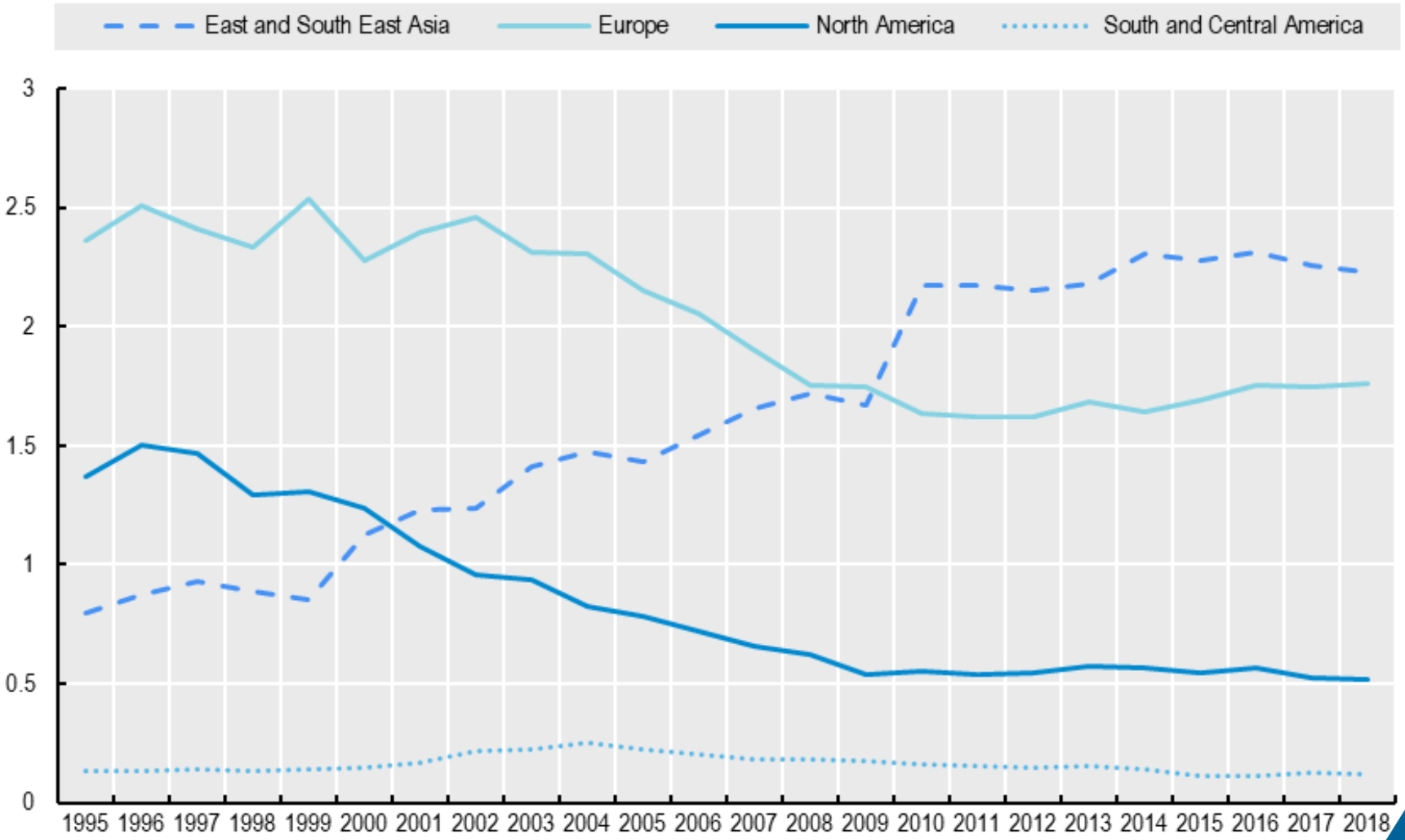
LINK: by industry

WAS THERE A TREND TOWARD REGIONALISATION?

Ratio of foreign to domestic production stages

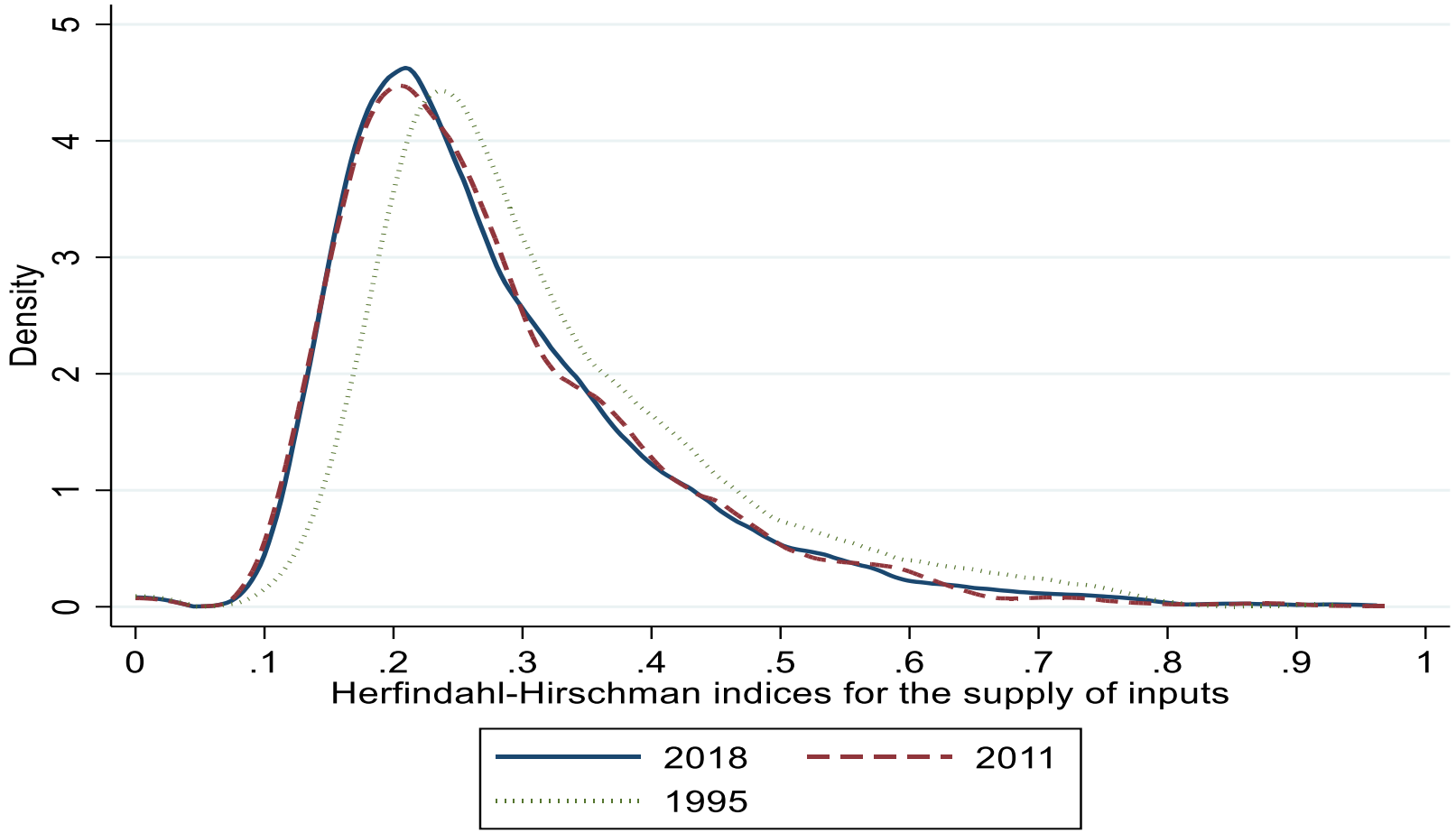


Ratio of regional to extra-regional foreign production stages

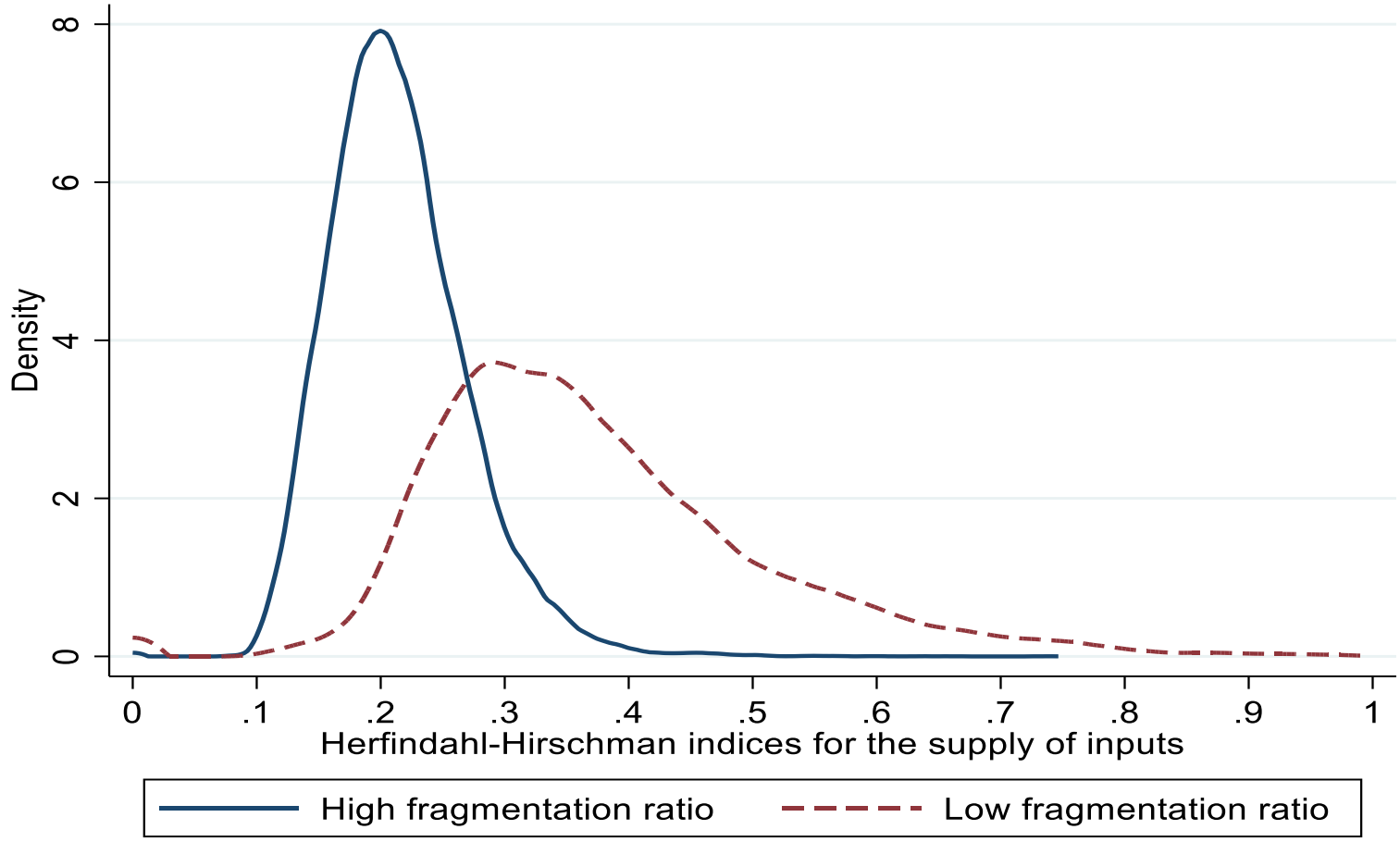


DID CONCENTRATION OF SUPPLY INCREASE?

Concentration of supply has decreased

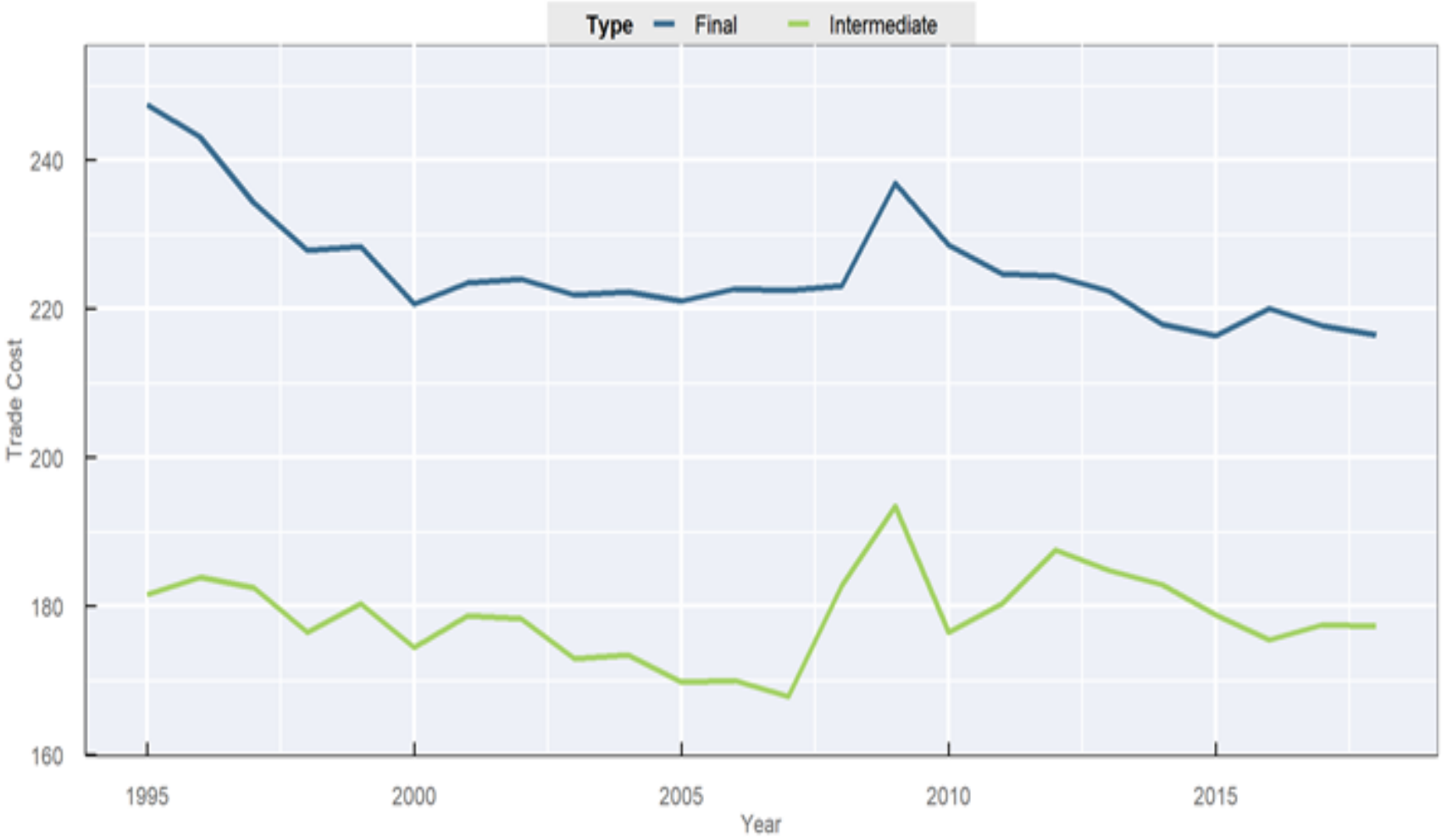


Concentration of supply higher in low-fragmentation industries

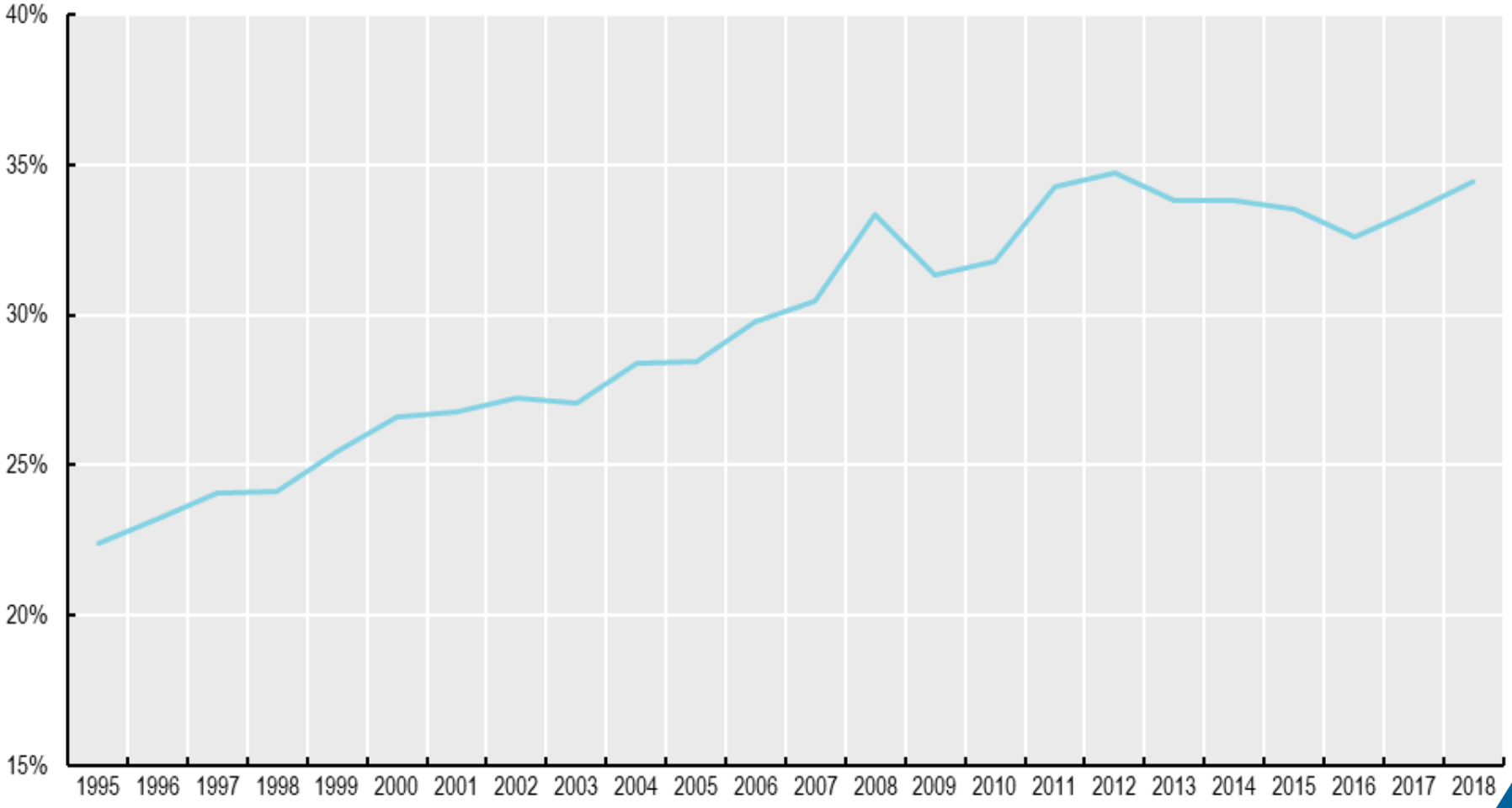


HOW DID TRADE COSTS IN GVCS EVOLVE?

Trends in bilateral trade costs (ad valorem equivalent %), 1995-2018



Trend in average cumulative trade costs along value chains, 1995-2018



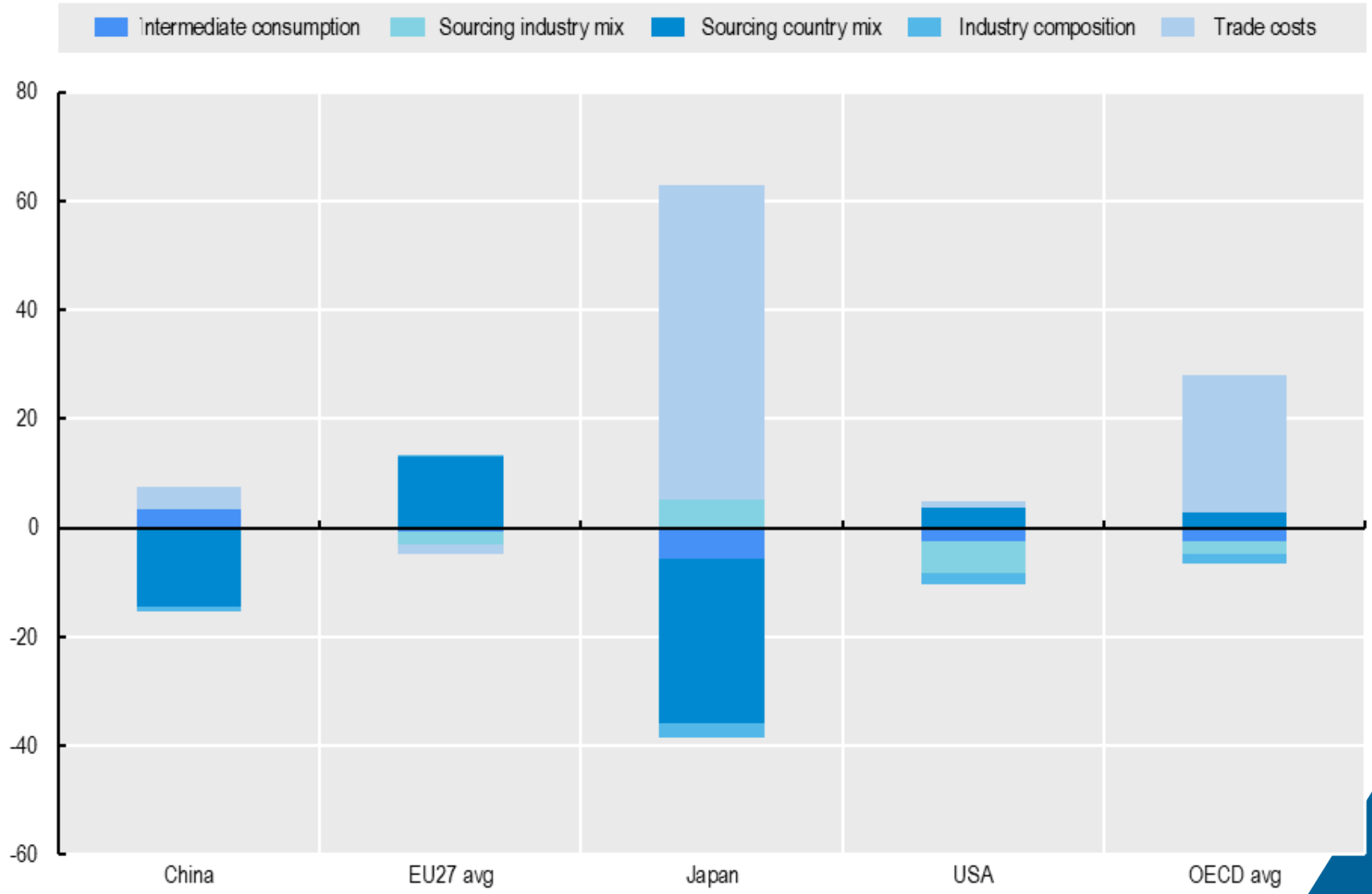
Disaggregating cumulative trade cost changes

Structural decomposition analysis to identify drivers of changes in cumulative trade costs:

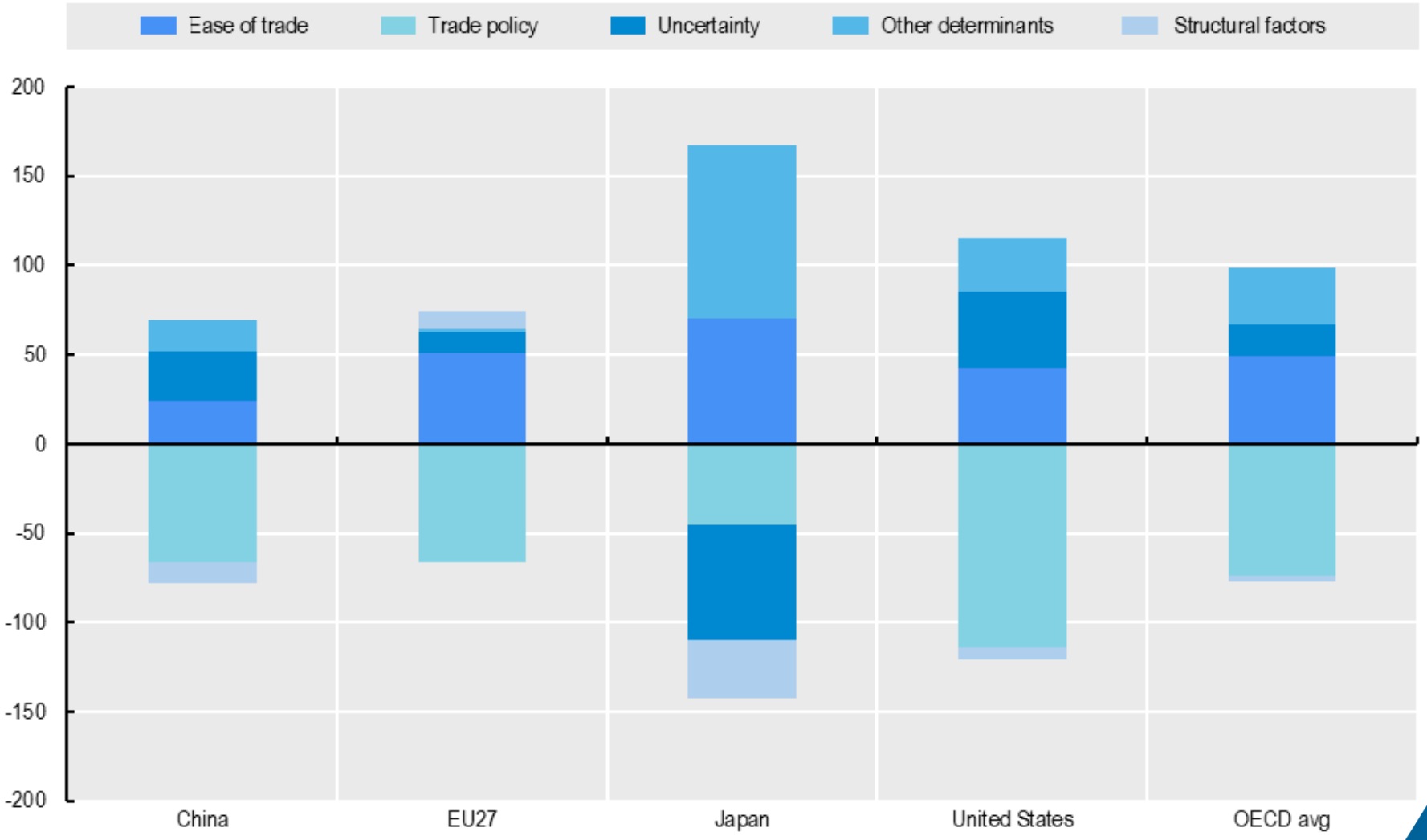
- Change in structure of GVCs
  - Change in share of intermediate inputs in total output
  - Change in the sourcing industry mix
  - Change in the sourcing country mix

- An increase (or decrease) in bilateral trade costs
  - Change in ease of trade (geography, technological evolutions, reductions in transport costs, logistics performance)
  - Change in trade policies
  - Change in uncertainty

Structural change in GVCs vs. change in bilateral trade costs (2011-2018)



The role of ease of trade, trade policy, uncertainty and other determinants of trade costs



NEXT STEPS

- Refine structural decomposition analysis (e.g. different definition of trade cost components)
- Sensitivity analysis (e.g. sectoral aggregation for trade cost estimation)
- Incorporate role of investment / MNEs
- Analyse drivers of changes in import intensity (incl. technology)

THANK YOU

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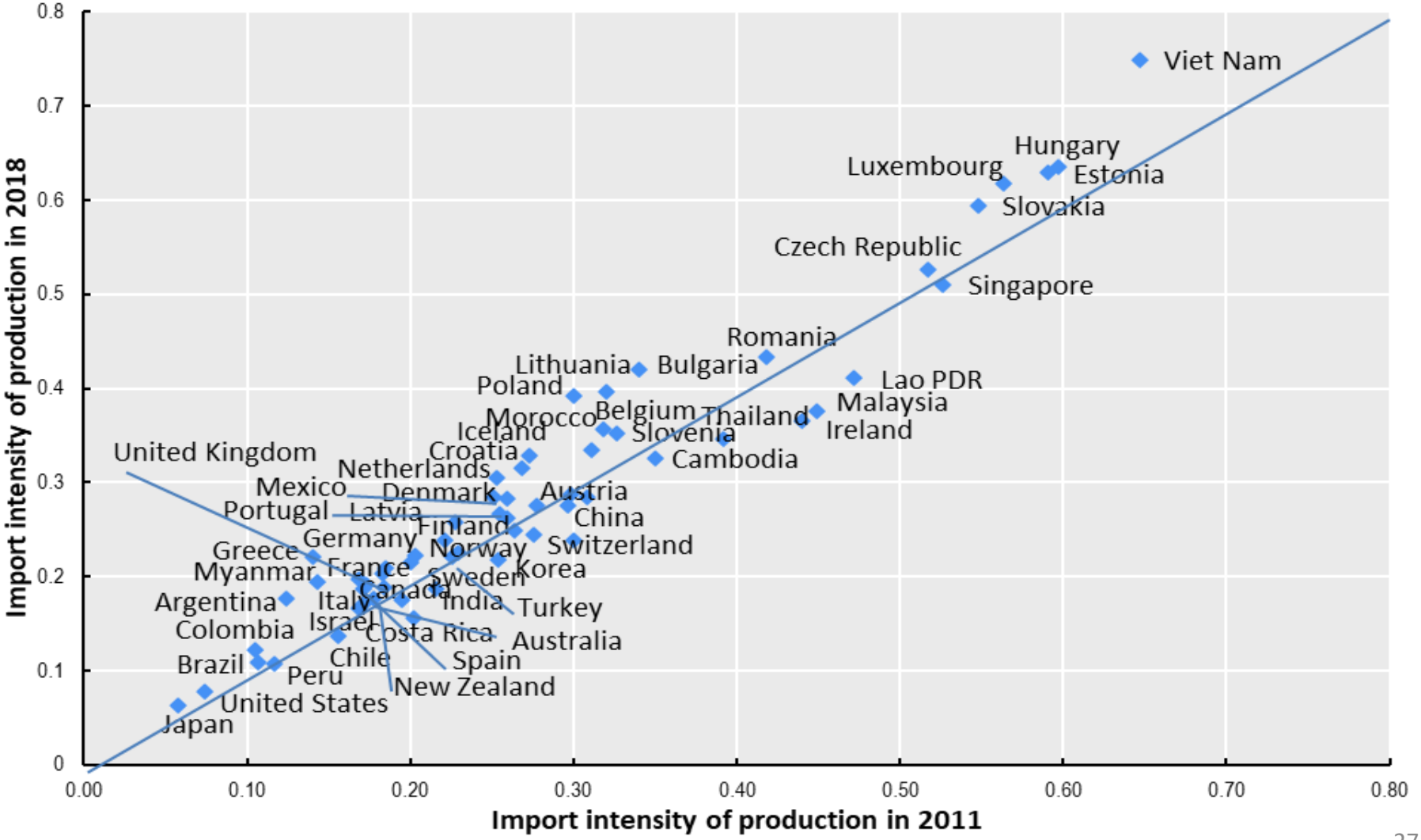
APPENDIX

Import intensity of production, 2018 vs. 2011



Import intensity of production, by industry