

Export Assortativity: The Organisation of International Trade

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Executive Summary

- The network structure of int'l trade offers a **new dimension for policy options**.
- Design of **two novel measures** for relative (**network-based**) export prices and specialisation (comparative advantage), namely **export price assortativity (EPA)** and **relative export density (RED)**.
- EPA and RED can be interpreted as measures of **local comparative advantage**, **conditioned** on the markets a country serves.
- Investigation of the **highly-disaggregated** product and geographical structure international trade.
- General organisational principles of international trade**: Countries focus their export on destinations, where they have an relative (or, local) advantage of price and specialisation.
- Positive relation** between export price assortativity and **export growth** (trade competitiveness indicator).

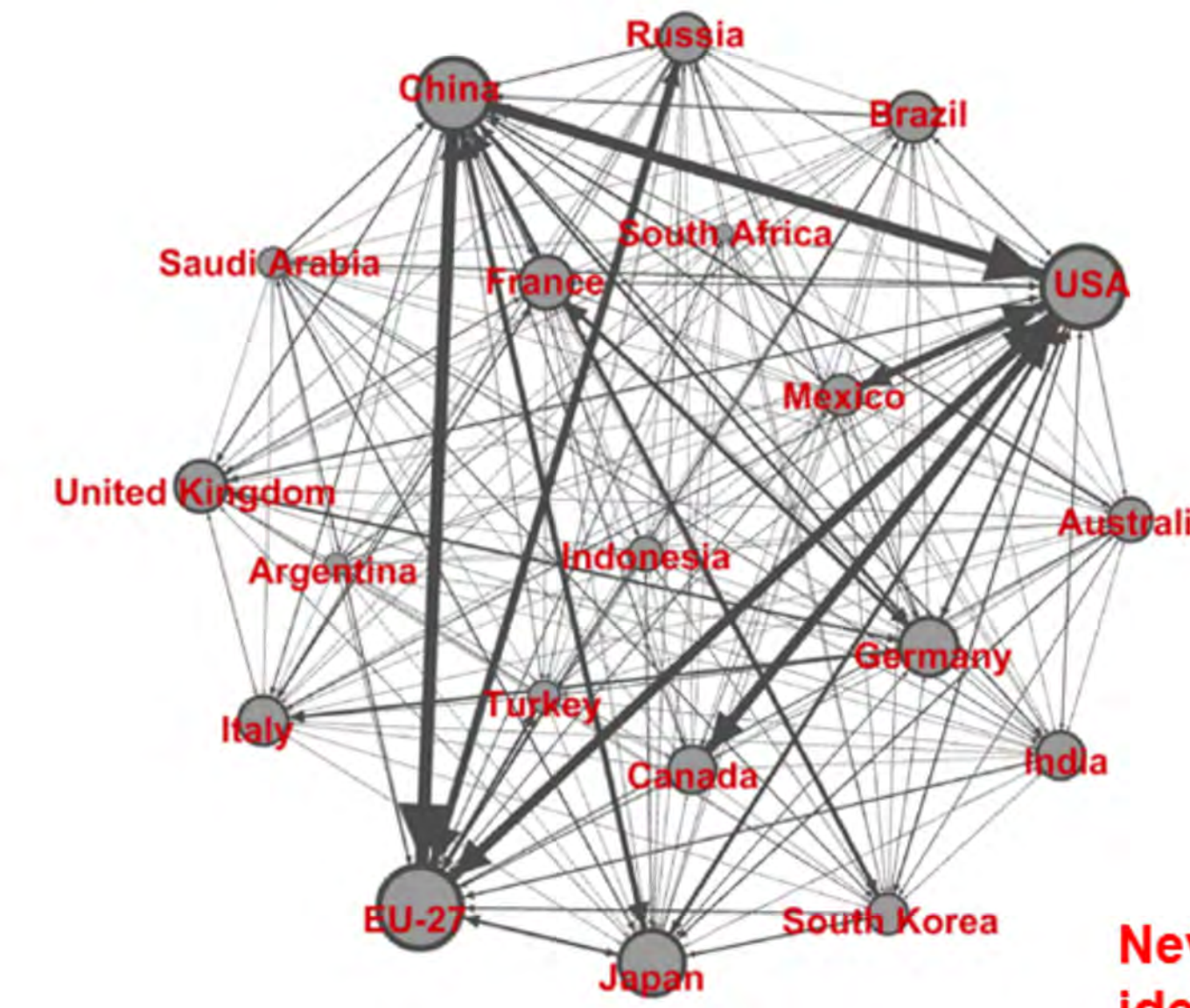
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1. Why Structure / Networks?

Idiosyncrasy:

Every country is integrated differently into the global web of trade.

Generally: The network perspective allows one to take a bird's eye view of this inherent complexity



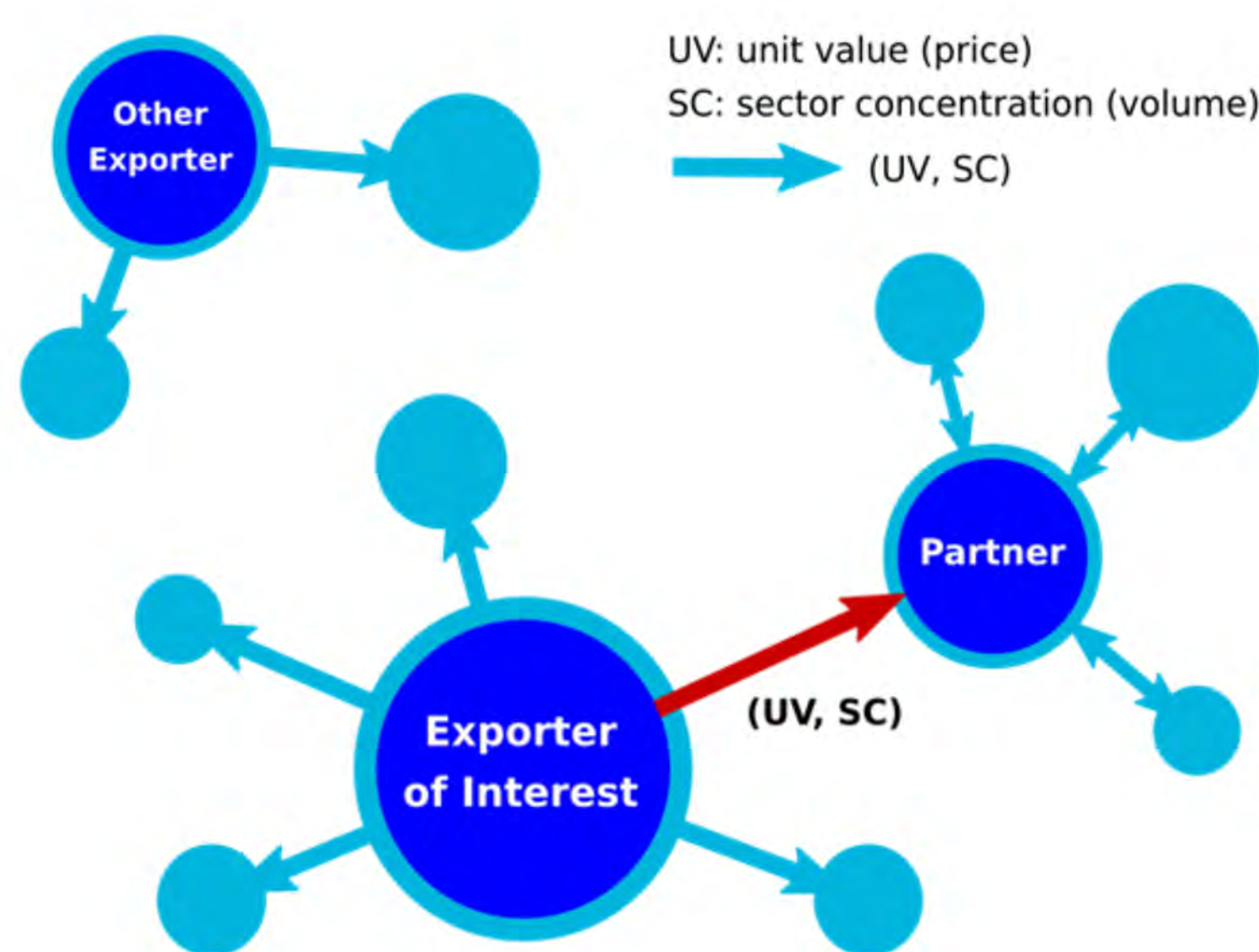
Visualisation of the trade network between G-20 economies (2011).

Data source: UN Comtrade.

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Nevertheless, is it still possible to identify some general principles??

2. Single-product structure: The world may be too much



In the presence of sparseness or heterogeneity of trade relations, the **local structure** is expected to matter, as global comparisons (including "other exporter") may not be informative

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3. Assortativity

Assortativity (or **dissortativity**) can be defined as the tendency of an exporter to trade and compete with countries, which share **similar** (or **different**) characteristics in terms of **Unit Values & Sector Concentration**.

A **general assortativity measure** for some property x of a country a with respect to all other countries b it **connects** to, is given by

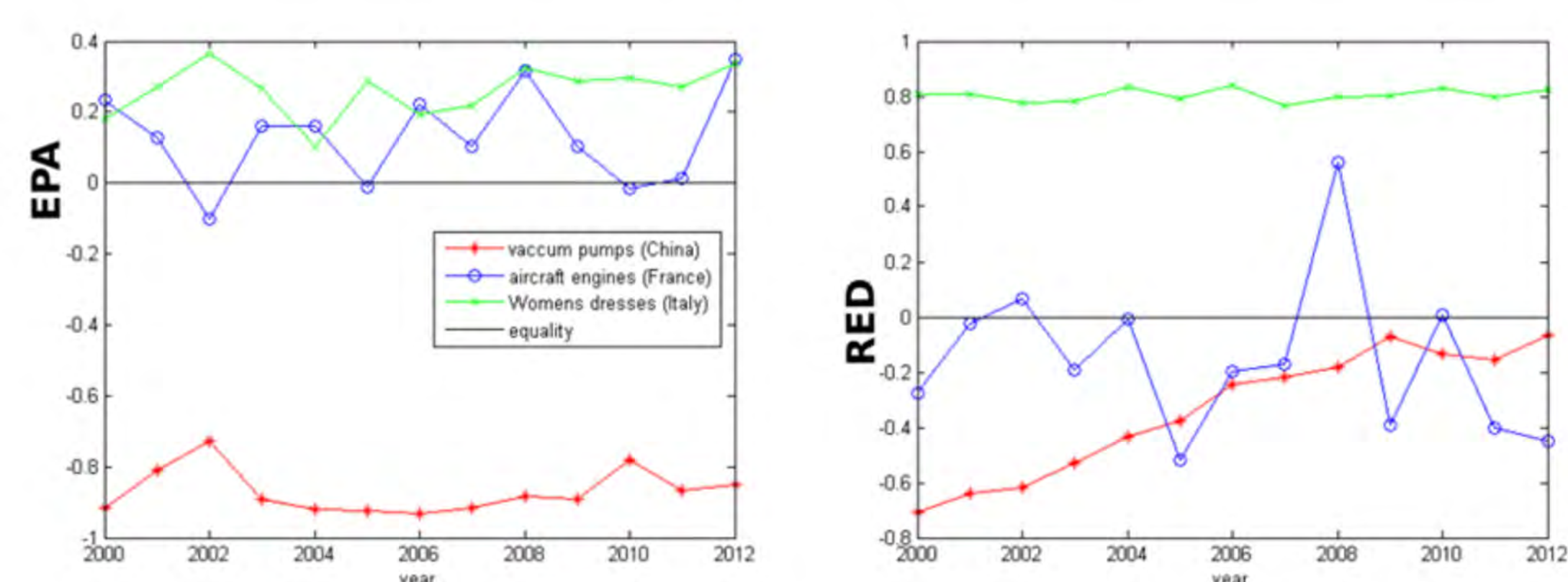
$$A_x^a \equiv \langle f_{ab} * \frac{x_a - x_b}{x_a + x_b} \rangle_b \in (-1, 1]$$

Where f_{ab} represents the connections between all countries a and b , e.g. being trade partners, and $\langle x \rangle$ is a general average, such that the norm is fulfilled ($A_x^a = -1$: no export; $A_x^a = 1$: monopoly).

Interpretation: $A_x^a > 0$ (< 0) $\Rightarrow x_a > x_{neighbour}$ ($x_a < x_{neighbour}$).

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4. EPA / RED: 1-Product Examples

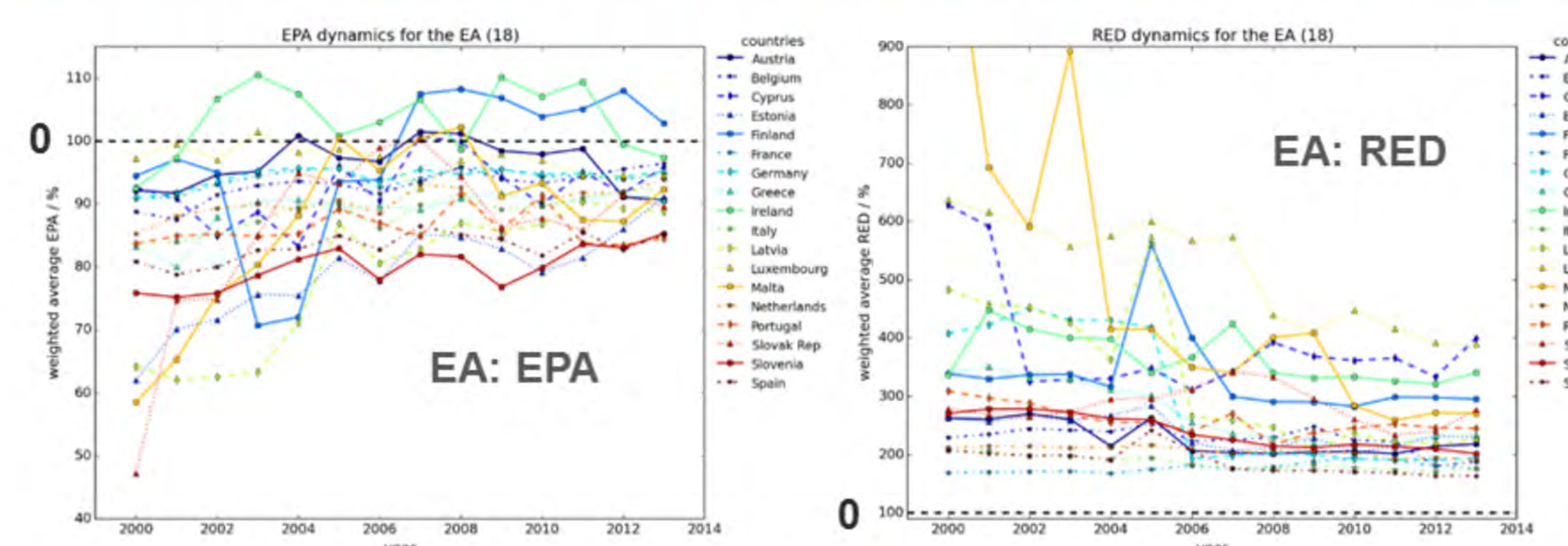


On the EPA – ECA Plane (for this example):

- China:** "Laggard" \rightarrow wholesaler.
- Italy:** Premium exporter.
- France:** Specialist.

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5. General Organisational Principles of Int'l Trade



The general:

- We are all cheap:** Weighted average EPA generally **below zero** (price competitiveness).
- Size matters:** Strong tendency to export to markets where one has an **advantage of specialisation** ($RED > 0$: economies of scale).

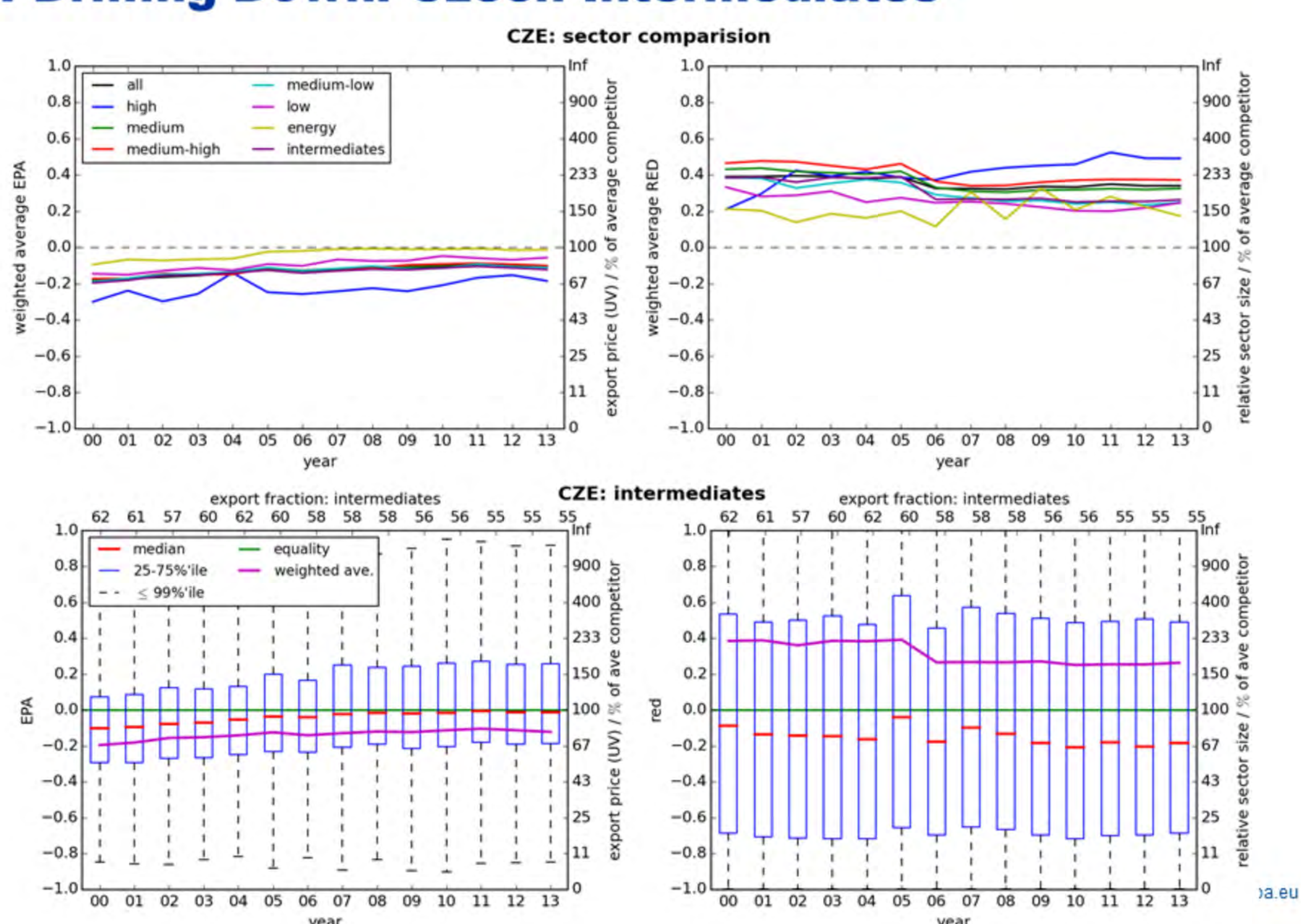
- Wholesaler characteristics
- Complex Organisation ($RED \neq 0$)

The particular:

- Globalisation:** Average EPA and RED are converging to zero (growing number of links).
- EA convergence:** CESEE converge faster to the zero-EPA line.

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6. Drilling Down: Czech Intermediates



18.EU

7. EPA and Export Growth: 55-variable BMA "Horseshoe"

Variable	PIP	Post Mean	Mean/SD	Cond.Pos.Sig.	Country	R ²	statistic	name
Stock of FDI inflows % GDP	1.00	0.31	5.80	1.00	Netherlands	0.89	Mean no. regressors	28
Export sophistication (goods)	1.00	0.32	4.47	1.00	Czech Republic	0.88		
Age dependency	1.00	-0.23	-3.83	0.00	Spain	0.86	Draws	5.00E+07
RCA in exports of intermediates	0.99	0.18	3.65	1.00	Poland	0.85	Burnins	5.00E+06
Price of capital formation	0.99	-0.25	-3.47	0.00	France	0.84	Time	3.13131 hours
Government consumption % GDP	0.98	0.29	3.38	1.00	Lithuania	0.82	No. models visited	2218490
Broadband subscribers	0.98	0.16	3.27	1.00	Greece	0.82	Modelspace 2 ^k	9.00E+15
Implicit tax on consumption	0.95	0.16	2.98	1.00	Portugal	0.8	% visited	2.50E+07
Size of government	0.94	0.14	2.92	1.00	Belgium	0.72	% Topmodels	0.81
Agricultural land	0.94	-0.13	-2.97	0.00	Estonia	0.71	No. Obs.	216
Long-term interest rate	0.93	-0.15	-2.86	0.00	Finland	0.71	Model Prior	random / 5
Government effectiveness	0.90	-0.13	-2.78	0.00	Slovenia	0.66	gg Prior	EBL
Market capitalisation of listed companies % GDP	0.90	-0.19	-2.82	0.00	Italy	0.65	Shrinkage-Stats	Av=0.9318
Export price assortativity	0.85	0.11	3.54	1.00	Sweden	0.64		
TFP	0.83	0.28	2.52	1.00	Bulgaria	0.59		
RCA in exports of medium-high tech	0.71	-0.11	-2.20	0.00	Austria	0.58		
Real ULC-deflated effective exchange rate	0.68	0.18	2.04	1.00	Romania	0.55		
Index of human capital	0.66	0.09	2.10	1.00	Germany	0.49		
Operating surplus % GDP	0.61	0.15	1.91	1.00	Denmark	0.48		
Stocks traded % GDP	0.58	-0.09	-1.75	0.00	Hungary	0.37		
Investment in construction	0.55	0.17	1.71	1.00	United Kingdom	0.37		
Temporary employment %	0.55	0.10	1.79	1.00	Ireland	0.18		
R and D expenditure (government)	0.52	-0.10	-1.76	0.00				

Robustness Checks:

"t-statistics proxy"

- Implemented:** Different priors and initial model size.
- Forthcoming:** Jointness analysis (collinearity) and sample split (old/new member states).

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