

Trade openness and
international production networks in
emerging Asian countries

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Global Value Chains:
impacts and policy
issues*

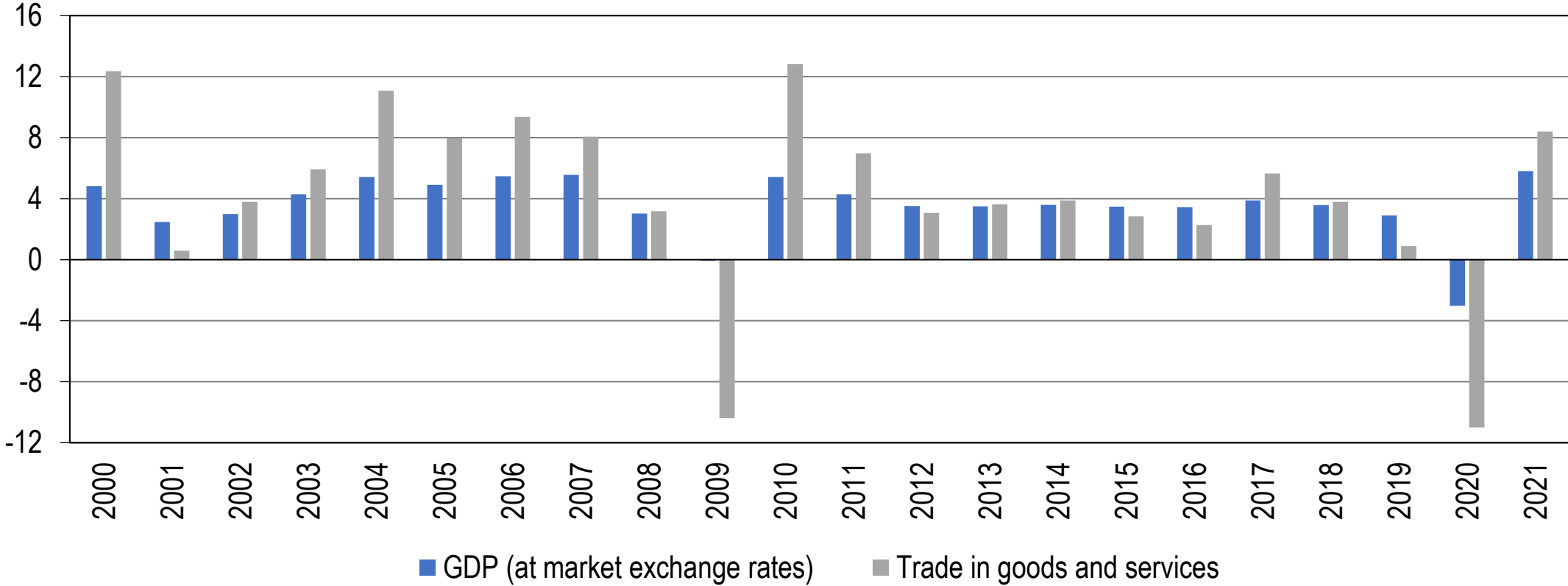
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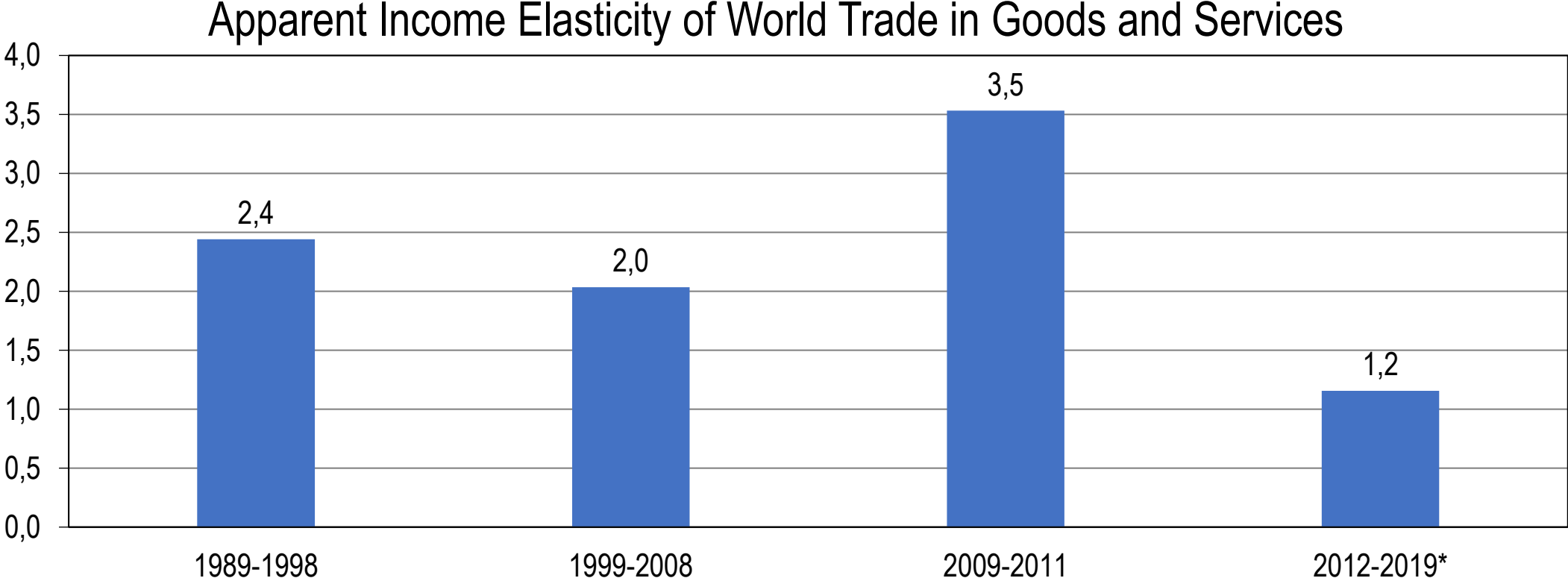
Outline

- The «age of slow trade»
- Trade openness in emerging Asian countries
- Trade regionalization
- Changes in the organization of international production networks
 - Trade in value added
 - Traditional trade data on intermediate goods
- Changes in development patterns
- Concluding remarks: open research questions

The Age of Slow Trade



The Age of Slow Trade

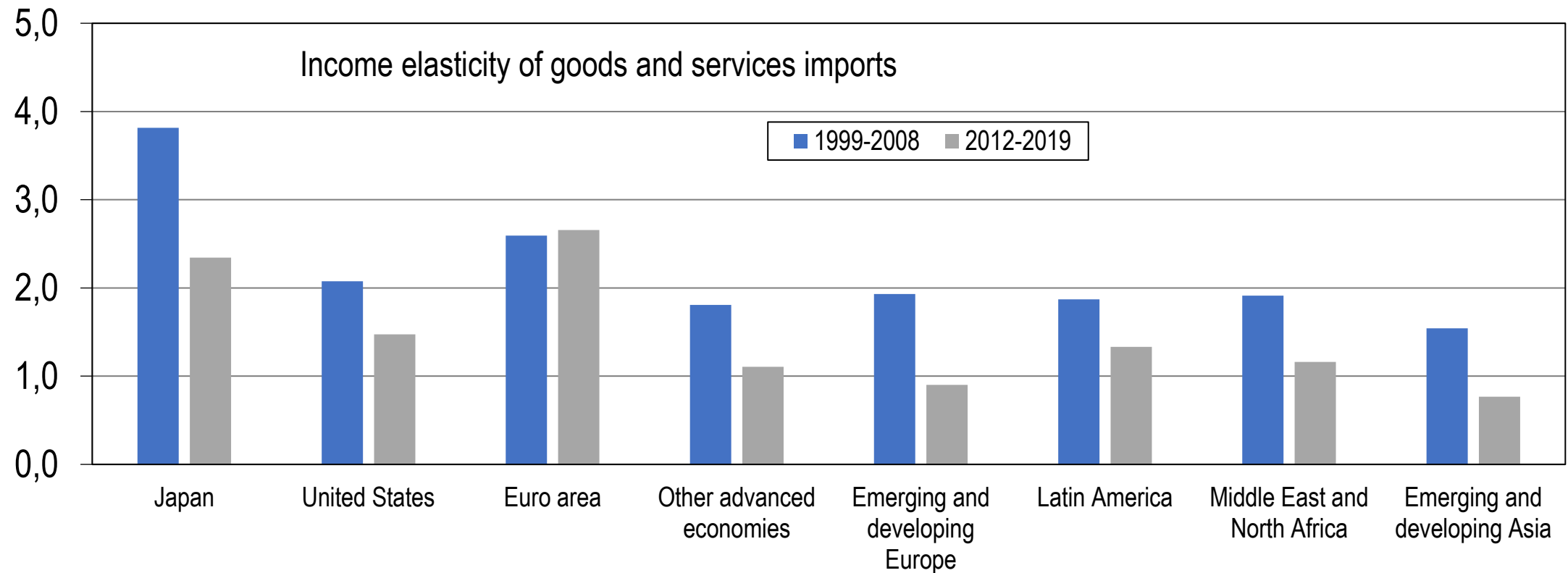


The Age of Slow Trade

Possible explanations:

- Weakness in aggregate demand;
- Composition effects;
- End of the most dynamic phase of globalization: limits in the geographic expansion of international production networks (GVCs);
- Changes in development patterns;
- Government support for domestic industries.

Trade slowdown is widespread, but particularly strong in emerging and developing Asia

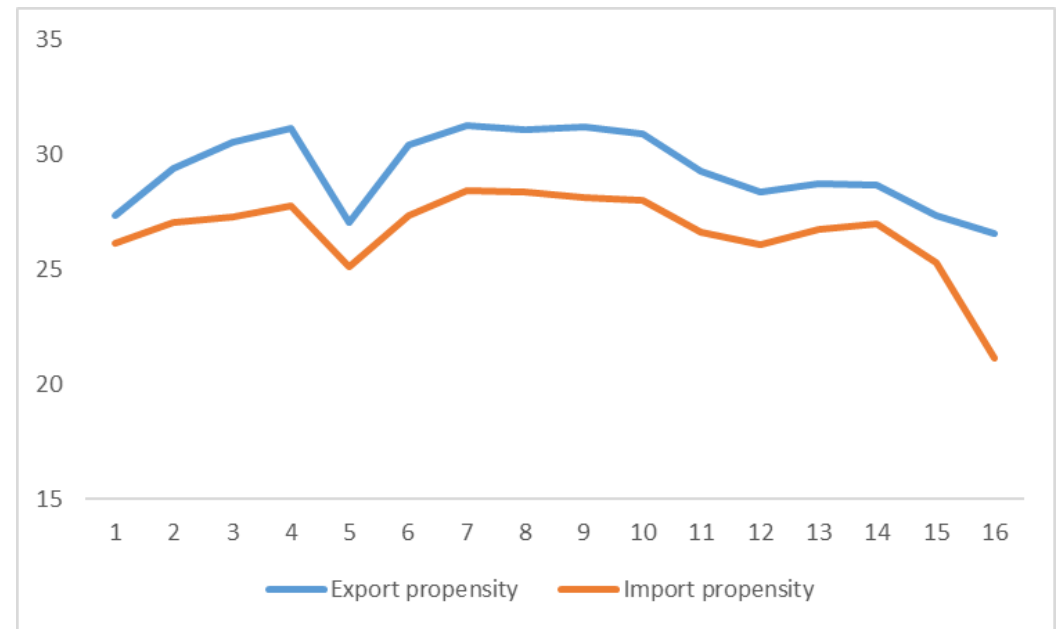


Trade openness in Eastern and Southern Asia

At current prices

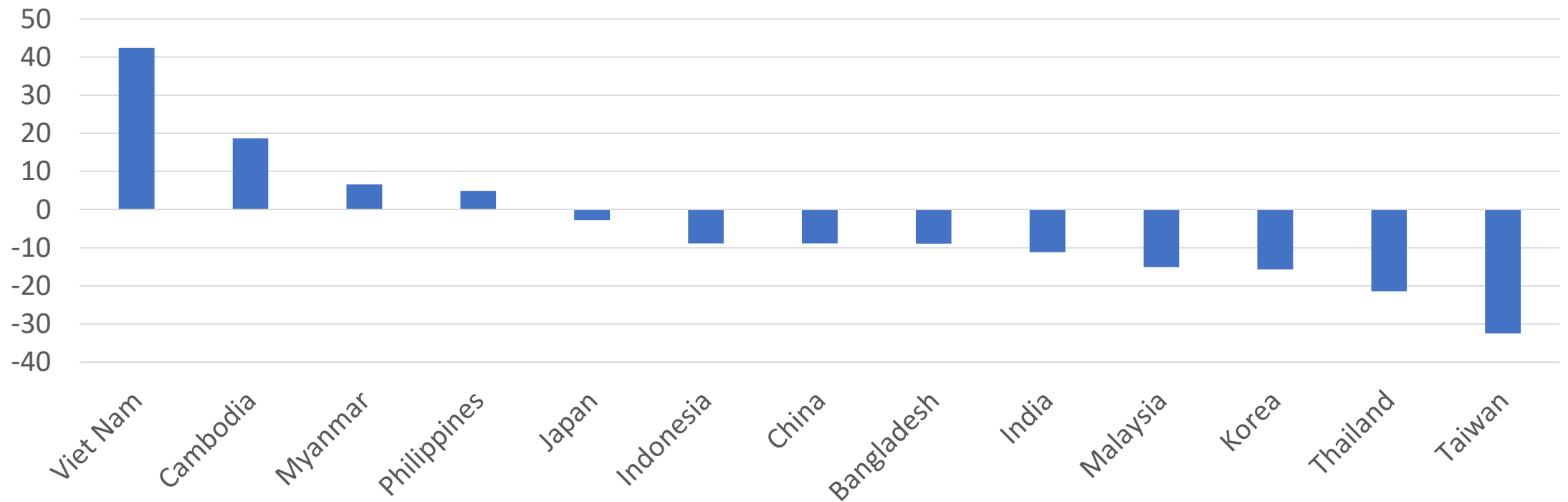


At constant prices

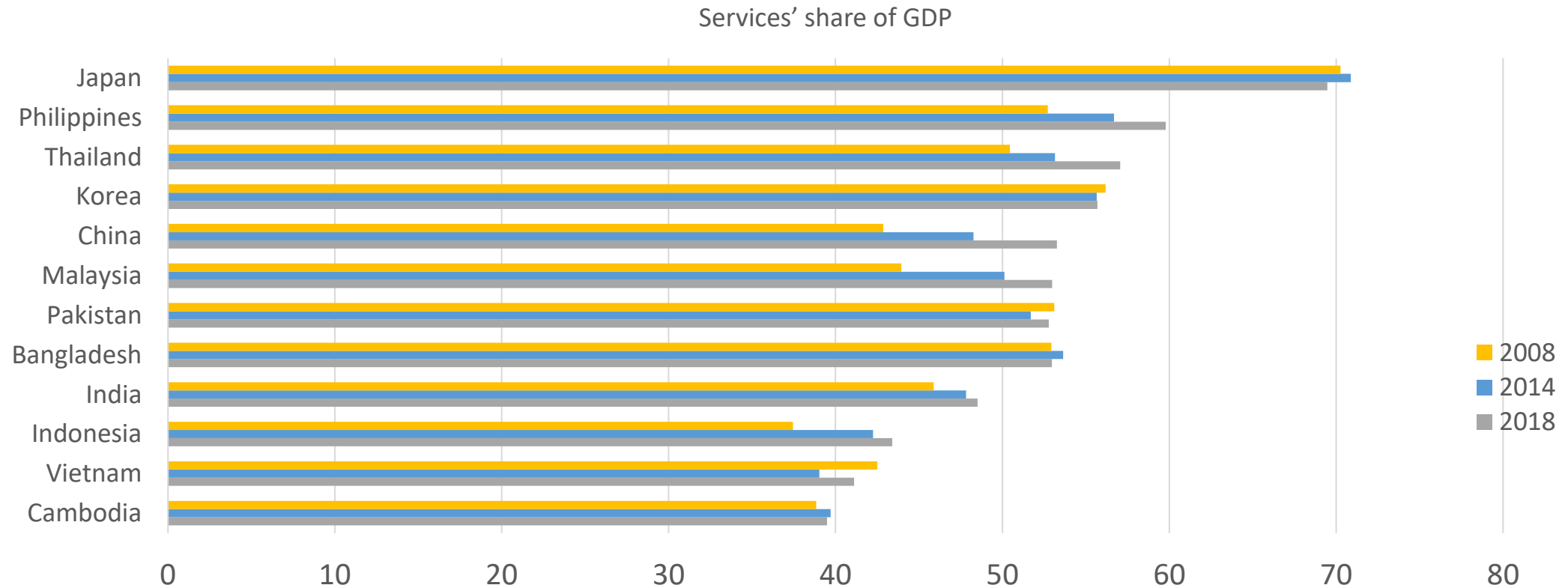


The recent fall in international openness is widespread among emerging Asian countries

Trade-to-GDP ratio: changes between 2014 and 2019



A process of tertiarization of the economies?



A tendency to regionalisation?

- Since the mid-1980s, the importance of regional factors has increased markedly in explaining business cycles especially in regions that experienced a sharp growth in intra-regional trade and financial flows (IMF, 2013);
- The regional integration of production has become central to Asia's leadership in global manufacturing, with each step produced in the most cost-efficient location; China is often the hub of such production networks, but most regional economies participate in them (Asian Development Bank, 2008);
- PTAs, such as of the Regional Comprehensive Economic Partnership (RCEP) have undoubtedly accelerated economic integration between Asian countries. Already in 2014 RCEP countries covered a regional market that represented nearly 60 percent of ASEAN total trade and over 40 percent of inward FDI (Chen et al., 2017).

Measuring trade regionalization: trade shares

- Intra-regional trade share:

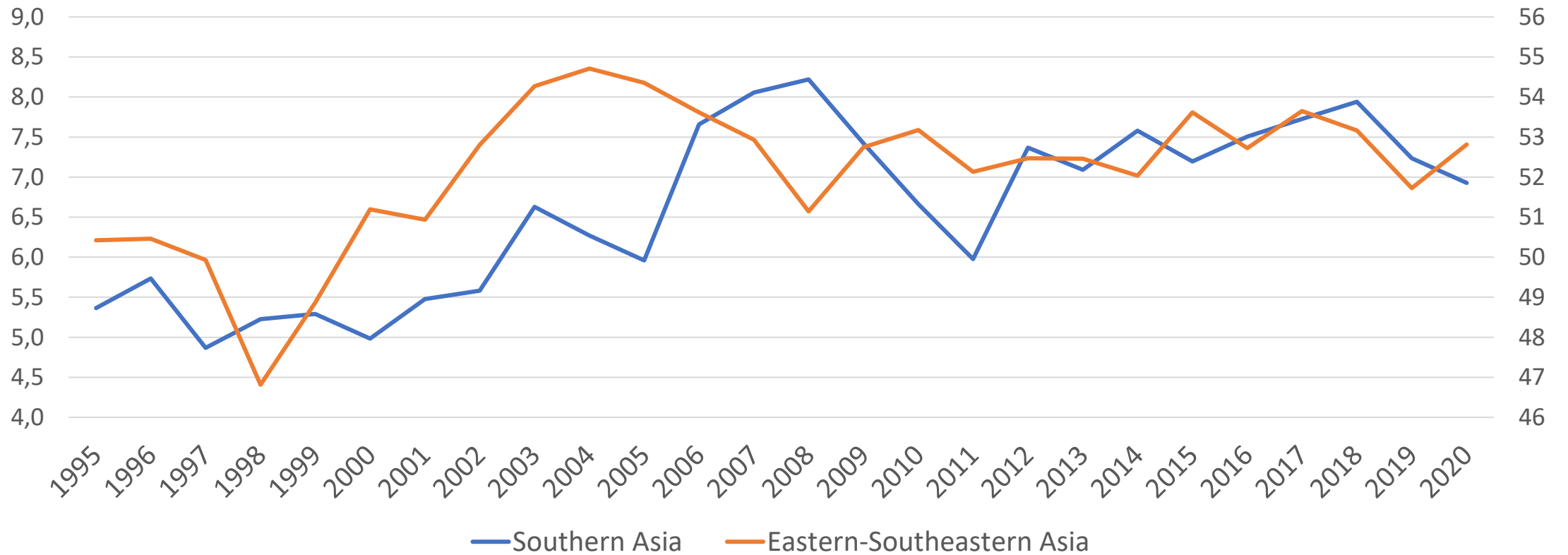
$$S_i = t_{ij}/t_i \quad 0 \leq S_i \leq 1$$

where: t_{ij} = intra-regional trade of region i ;

t_i = total trade of region i .

- Extra-regional trade share: $1-S_i$

Intra-regional trade as a percentage of total trade



Limitations of trade shares

	Cross-region comparisons	Time-series analysis for the same region
Sensitivity to the number of countries	Regions with a higher number of countries tend to show a higher intra-regional trade share	An increase in the number of member countries increases a region's intra-regional trade share
Sensitivity to the size of the region	Larger regions (in terms of total trade) tend to show a higher intra-regional trade share	Pro-cyclical distortion

Trade intensity indicators

- *Intra-regional trade intensity*

$$I_i = S_i / W_i = (t_{ji} / t_{i.}) / (t_{.i} / t_{..})$$

where: W_i = the region's weight in world trade

$t_{.i}$ = world trade with the region = $t_{i.}$

$t_{..}$ = world trade

$$0 \leq I_i \leq (t_{..} / t_{.i})$$

- *Extra-regional trade intensity*

$$E_i = (1 - S_i) / (1 - W_i)$$

$$0 \leq E_i \leq [t_{..} / (t_{..} - t_{.i})]$$

Trade intensity indicators

- Geographical neutrality (no preferences)

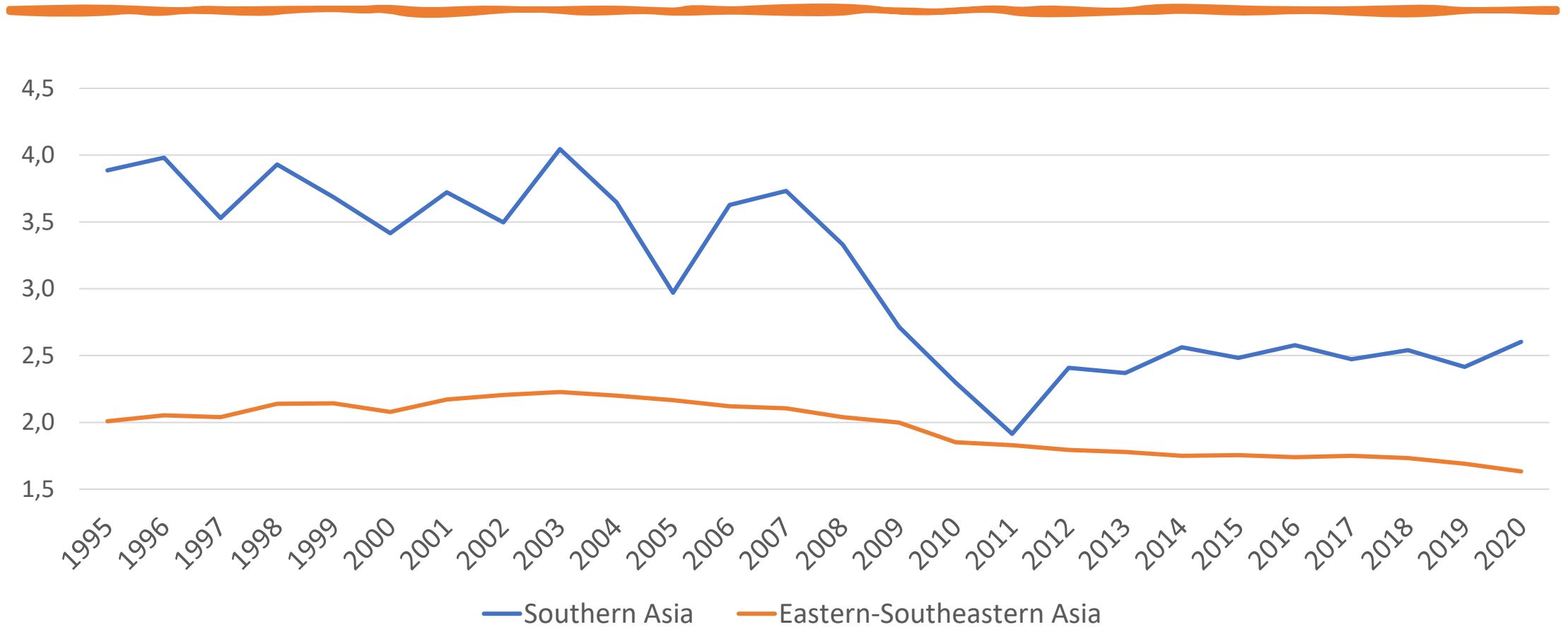
$$I_i = 1 \leftrightarrow E_i = 1$$

- Kunimoto's interpretation (1977)

$$I_i = t_{ii} / E(t_{ii})$$

where $E(t_{ii}) = (t_{i.} \cdot t_{.i} / t_{..}) = (t_{i.})^2 / t_{..}$

Intra-Regional Trade Intensity Index



Some limitations of the traditional trade intensity indicator

- 1) *Range variability*: its maximum value is a decreasing function of the region's total trade.
- 2) *Range asymmetry*: its range below the threshold value of 1 is much smaller than above.
- 3) *Dynamic ambiguity*: intra- and extra-regional trade intensity indicators can move in the same direction, if certain conditions hold.

Revealed trade preference indices

- Homogeneous (size-independent) indicator of intra-regional trade intensity

$$HI_i = S_i / V_i = (t_{ii} / t_{i.}) / [(t_{.i} - t_{ii}) / (t_{..} - t_{i.})]$$

where: V_i = the region's weight in other regions' trade

$$0 \leq HI_i \leq \infty$$

- Homogeneous (size-independent) indicator of extra-regional trade intensity

$$HE_i = (1 - S_i) / (1 - V_i)$$

$$0 \leq HE_i \leq \infty$$

Revealed trade preference indices

- Revealed intra-regional trade preference index (regional introversion)

$$SJ_i = (HI_i / HE_i - 1) / (HI_i / HE_i + 1)$$

$$-1 \leq SJ_i \leq 1$$

- Revealed extra-regional trade preference index (regional extroversion)

$$SF_i = (HE_i / HI_i - 1) / (HE_i / HI_i + 1)$$

$$-1 \leq SF_i \leq 1$$

$$SF_i = -SJ_i$$

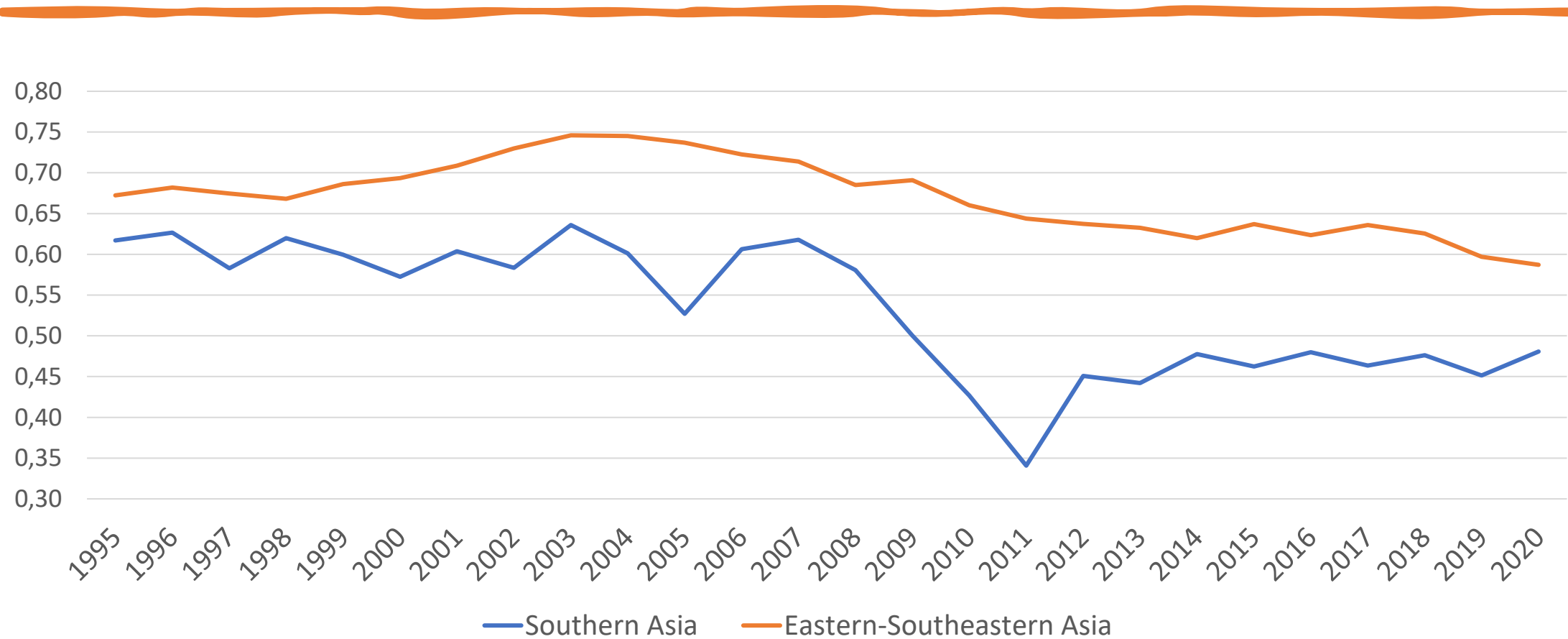
- Geographical neutrality (no preferences)

$$SJ_i = 0 \leftrightarrow SF_i = 0$$

- For $i = 1, 2$

$$SJ_1 = SJ_2 \text{ and } SF_1 = SF_2$$

Revealed intra-regional trade preferences



Shorter production chains?

Shortening of international production networks (IPNs) occurred since 2011. Among possible explanations, World Bank Report (2020) lists:

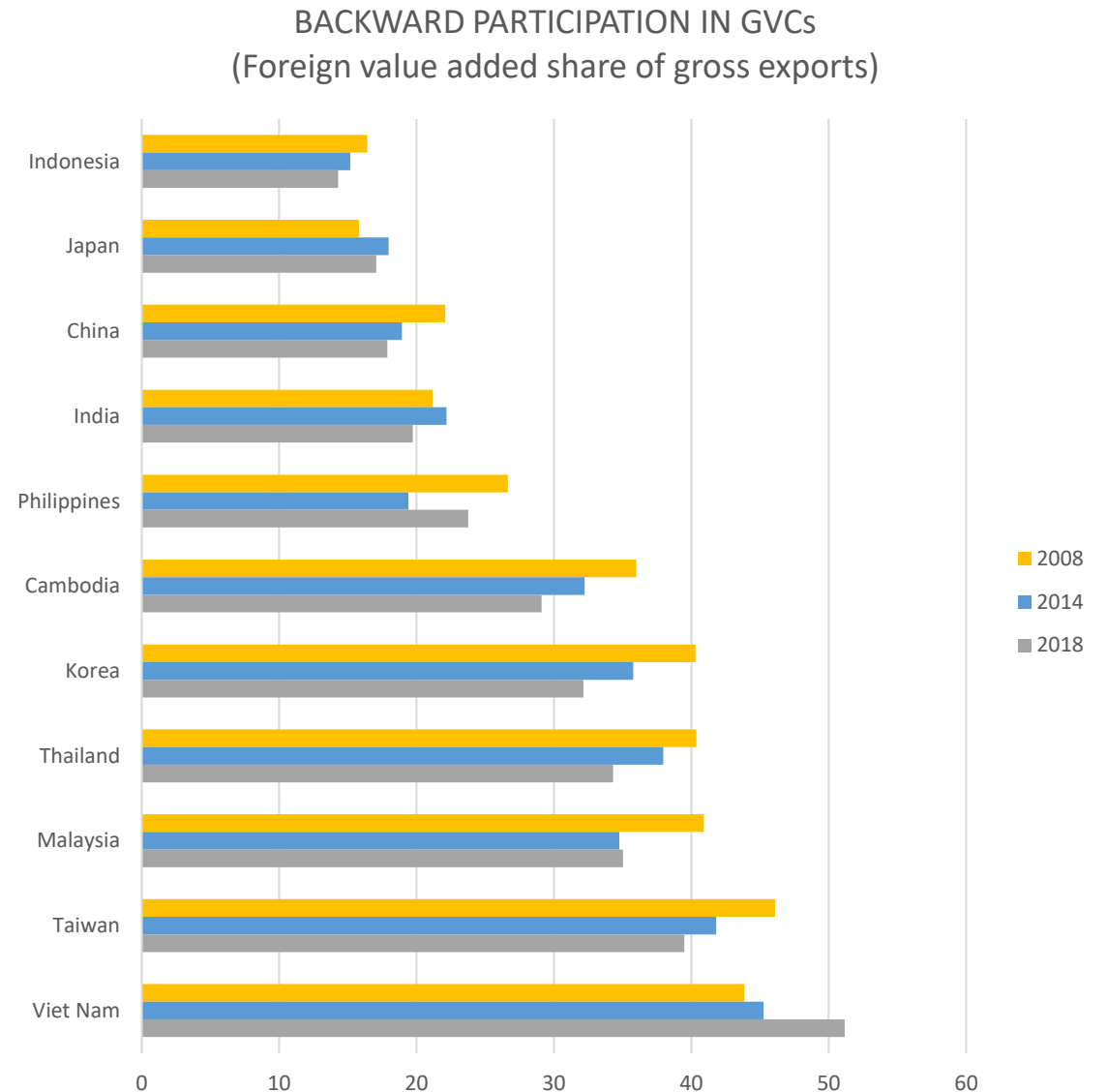
- Preferential Trade Agreements (PTAs);
- Innovations (3D printing, robotization);
- Geopolitical tensions.

ECB Working Group on GVCs (2019) highlights:

- Increased labour cost in key emerging markets;
- Risk associated with long supply chains;
- Protectionist measures;
- China's demand shift toward services.

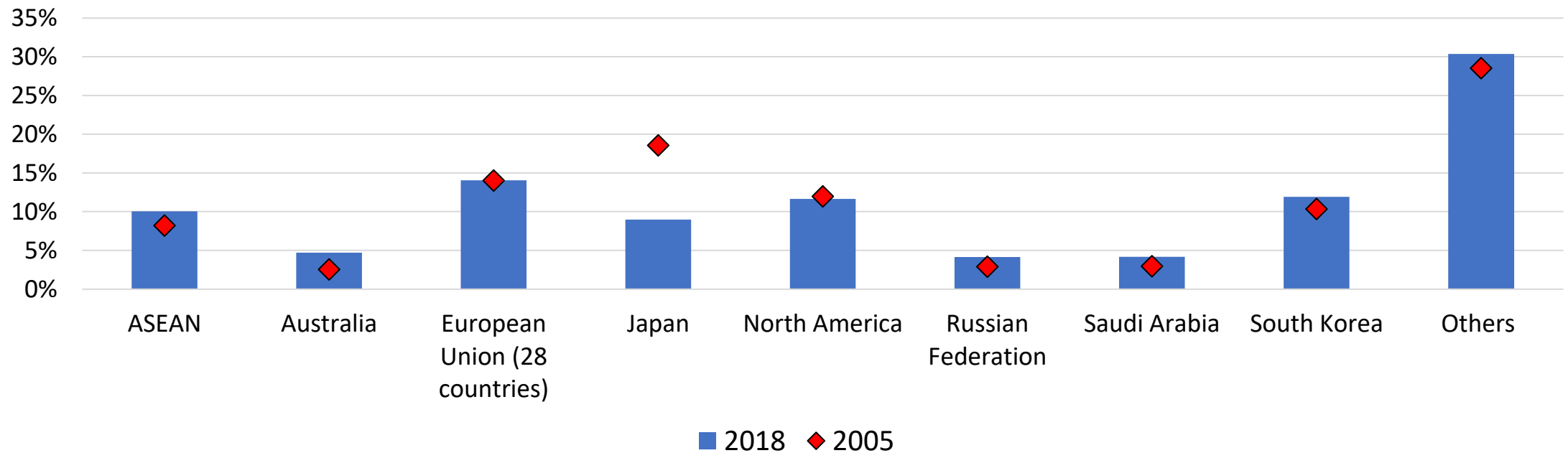
Backward participation in GVCs (TiVA data)

- The foreign value-added content of gross exports tends to be higher in relatively smaller economies
- A widespread reduction in backward participation of Asian countries in GVCs



The origin of inputs used in China's gross exports

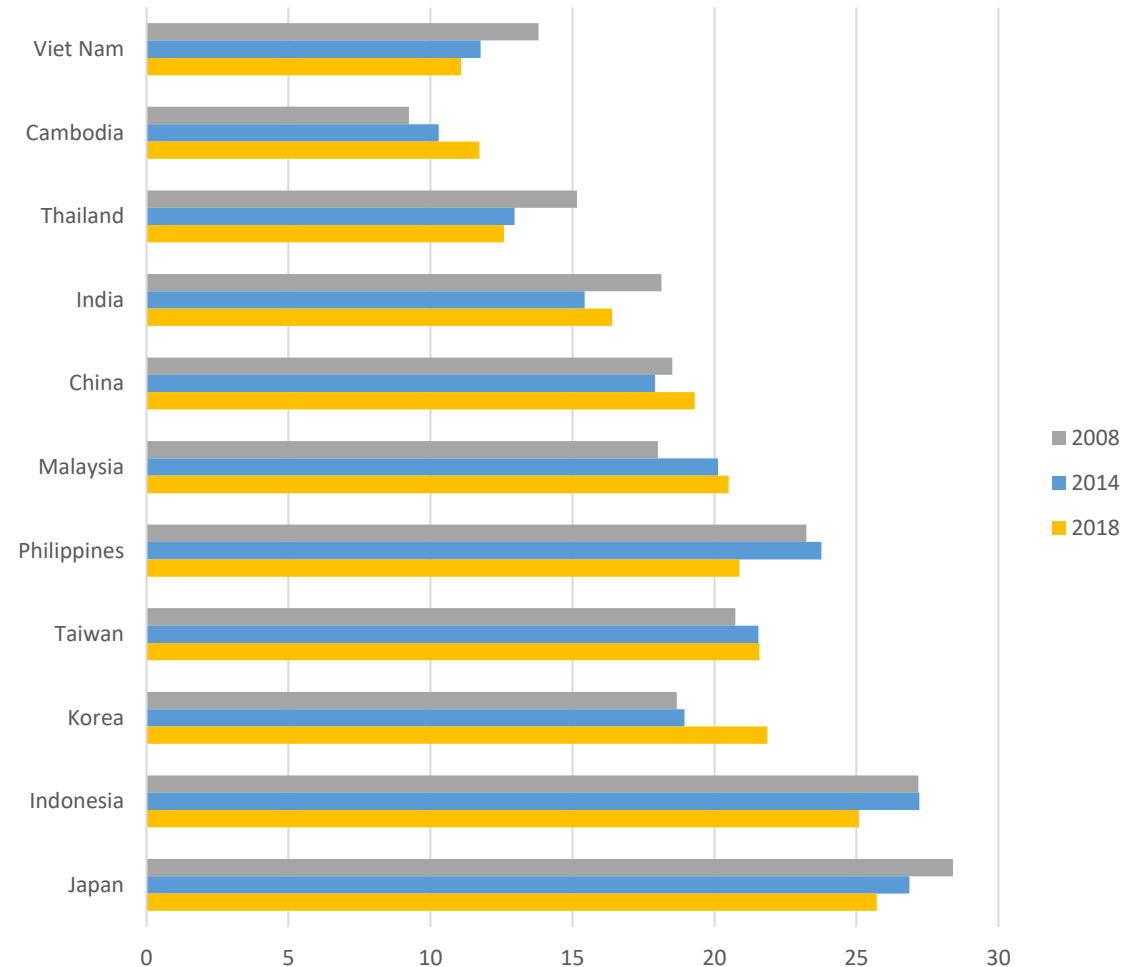
China - foreign value-added shares of gross exports by origin country
(percentage shares)



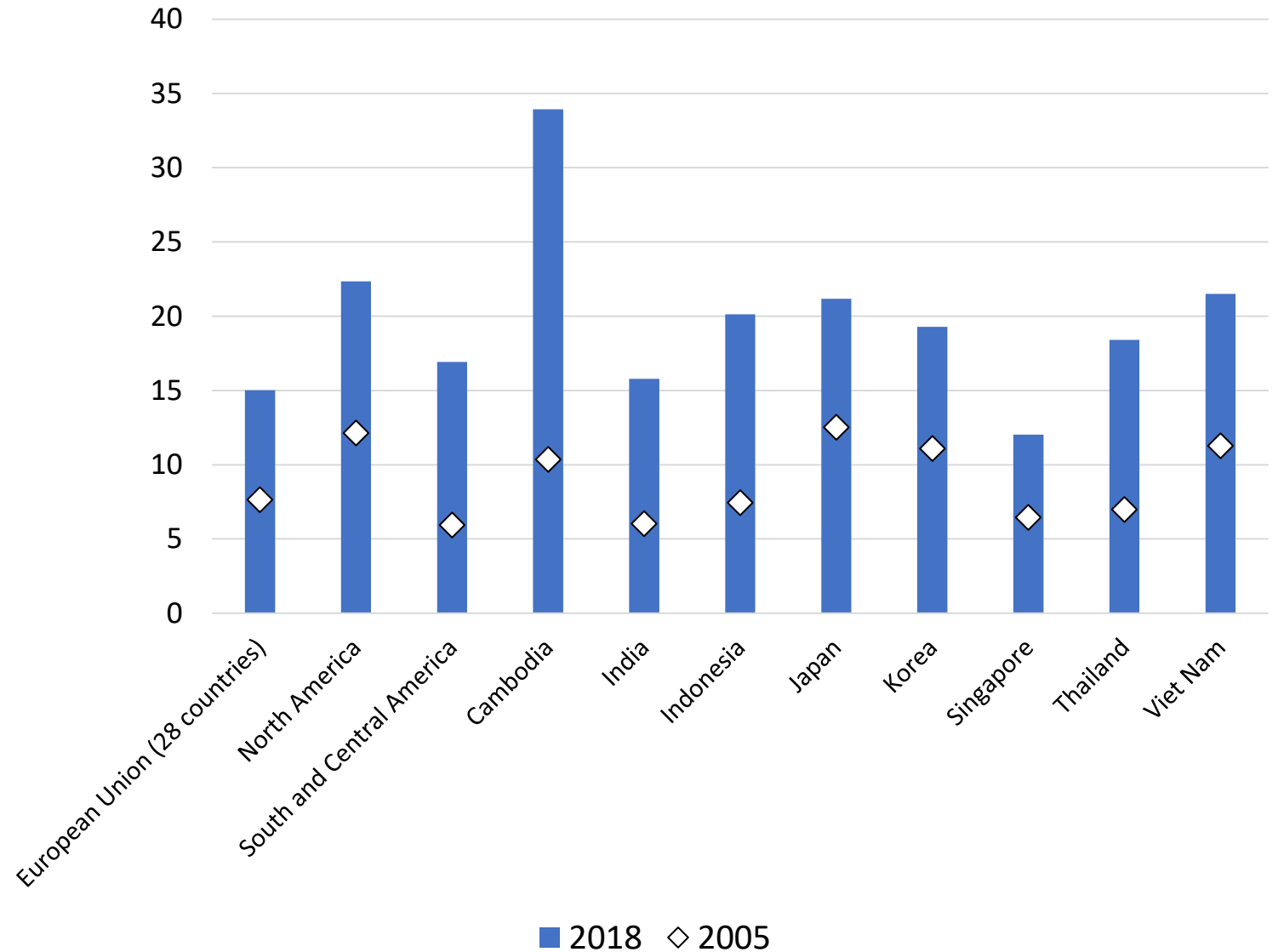
Forward participation in GVCs (TiVA data)

- Domestic value added that crosses at least two borders before reaching final consumption
- Cambodia, China, Malaysia, Taiwan and Korea have moved upstream along GVCs in the last decade

FORWARD PARTICIPATION IN GVCs
(Domestic value added in foreign exports as a share of gross exports)



China's share of foreign value added in domestic final demand



Using traditional trade data to detect changes in international production networks

- Trade in *processed* intermediate goods, net of raw materials
- A country's position in IPNs can be measured through a net-trade index of specialization:

$$IPN_{ik} = \frac{[(x_{ik} / \sum_k x_{ik}) - (m_{ik} / \sum_k m_{ik})]}{[(x_{ik} / \sum_k x_{ik}) + (m_{ik} / \sum_k m_{ik})]}$$

$$-1 \leq IPN_{ik} \leq 1$$

where:

x_{ik} = country i 's exports of processed intermediate goods in sector k

m_{ik} = country i 's imports of processed intermediate goods in sector k

Trade in processed intermediate goods and the slowdown of globalization

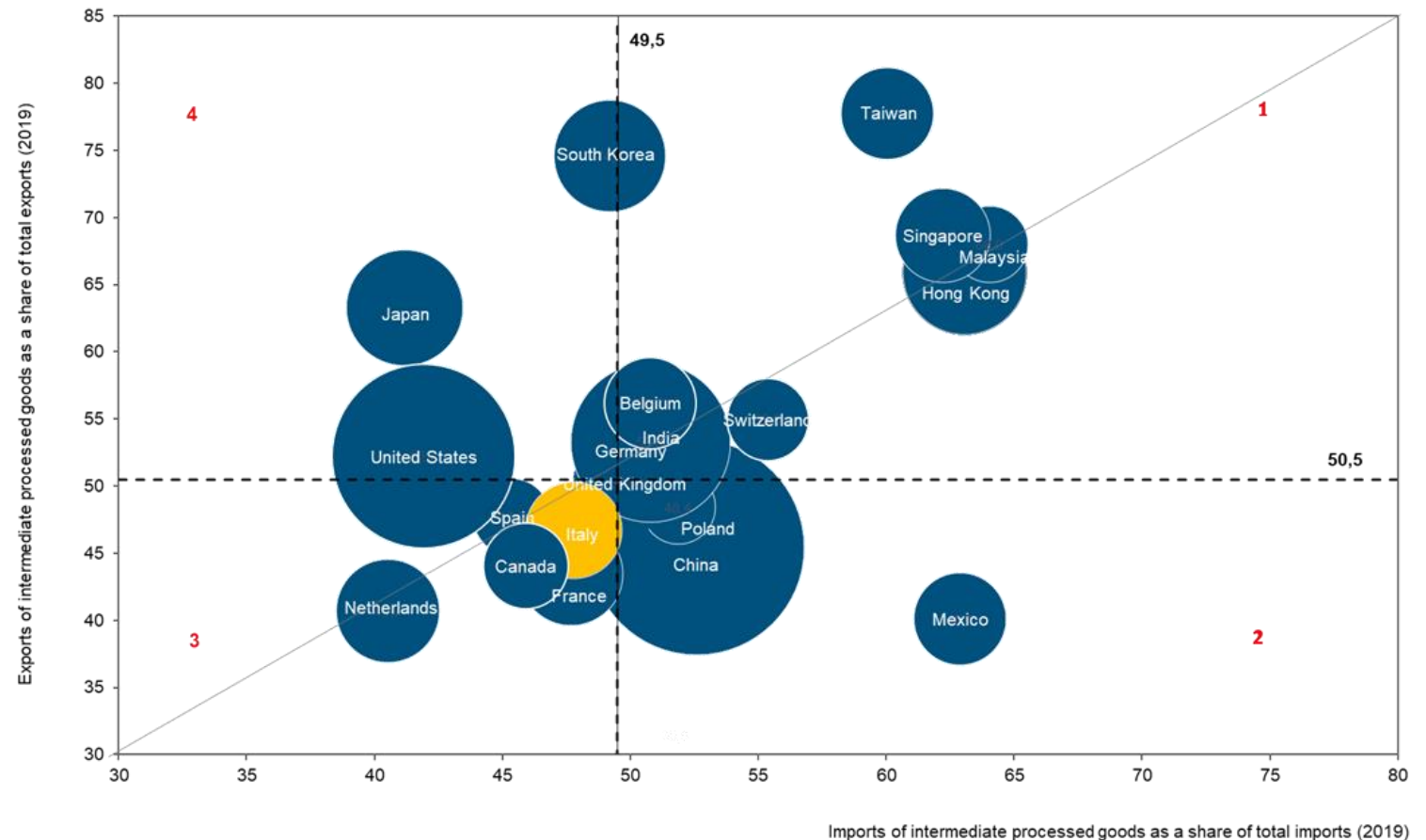


IPN involvement: trade in processed intermediate goods

Trade in *processed* intermediate goods as a share of total trade in goods, by country⁽¹⁾

- (1) The size of the bubble measures each country's share of all reporting countries' trade in intermediate processed goods, in 2019, on total trade (imports+exports). The dotted lines refer to the total of reporting countries. Total trade excludes products not classified by the Broad Economic Category classification (BEC, Rev.4)

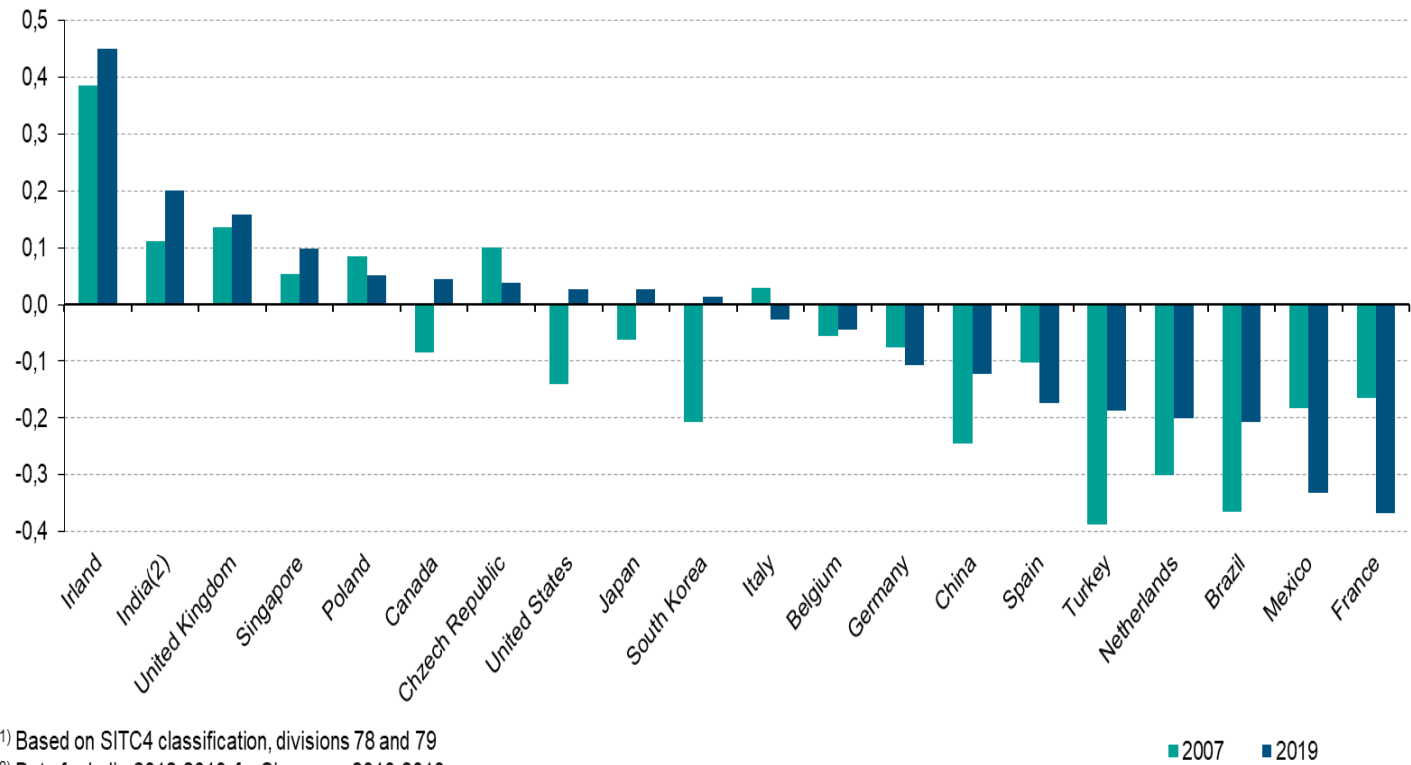
Source: ITA based on data from Eurostat and National Statistics Institutes



IPN involvement: Index of Relative Position in IPNs - Means of transportation

Means of transportation: index of relative position in international production networks⁽¹⁾

- Wide differences across sectors in the relative position of each country «upstream» or «downstream» the production chains
- Significant changes between 2007 and 2019 in the transportation means sector:
- Canada, the US, Japan, South Korea changed their orientation from downstream to upstream;
- Countries such as China, Brazil and Turkey moved up along the value chain by reducing their specialization in assembling imported inputs
- The opposite happened in France and Mexico.



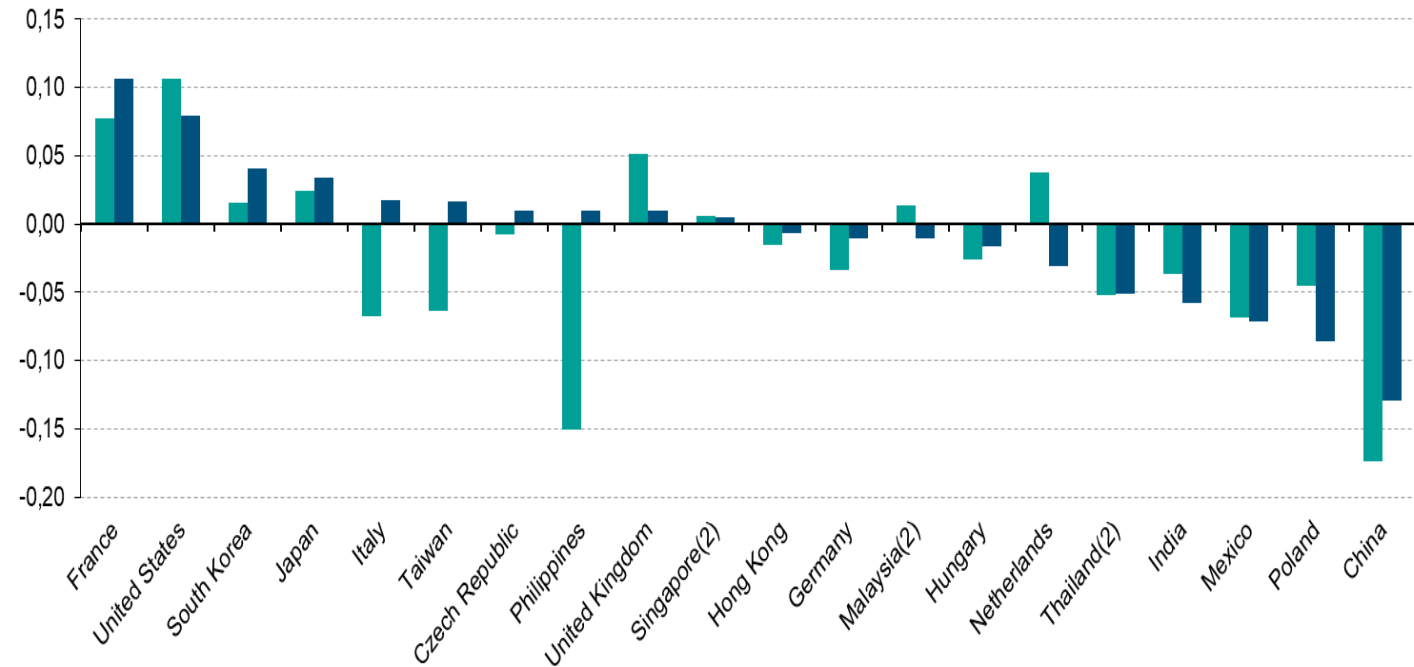
⁽¹⁾ Based on SITC4 classification, divisions 78 and 79

⁽²⁾ Data for India 2012-2019; for Singapore 2010-2019

IPN involvement: Index of Relative Position in IPNs - Means of transportation

Electrical machinery and appliances: index of relative position in international production networks⁽¹⁾

- Between 2007 and 2019 Italy, Taiwan and Philippines clearly moved towards upstream phases, specializing in exports of processed intermediates.
- Also, China moved up the value chain less specializing in downstream phases
- On the other hand, Poland and India engaged more in downstream activities



⁽¹⁾ Based on SITC4 classification, division 77

⁽²⁾ Data for India 2009-2019; for Malaysia, Thailand and Singapore 2013-2019

■ 2007 ■ 2019

Source: ITA based on data from Eurostat and National Statistical Institutes

A change in the growth paradigm?

- The decline in trade-income elasticities is much more pronounced among EMEs than in AEs; for China and India the fall is particularly strong, respectively from 1.8 and 1.5 in 1980-2007 to 0.8 and 0.6 in 2012-2015 (ECB IRC Trade Task Force, 2016);
- China IPNs shortened more than in any other country/region (Fhrom and Gunnella, 2017); China has embarked on a necessary and welcome process of rebalancing away from investment and toward more consumption-led growth (IMF WEO, 2016);
- Growth in South Asia has been driven by domestic demand: on average, government consumption grew 11.1% and investment by 9.3% in 2017-2018. Domestic demand is expected to remain strong with support from monetary and fiscal policies (World Bank South Asia Economic Focus, 2019);
- Rebalancing of the Chinese economy from an export-driven growth model to domestic absorption is a potentially important structural factor in the slowdown (OECD Economic Policy Paper, 2016).

Concluding remarks and research questions

- Trade slowdown is a global phenomenon, Europe excluded; Asia is the region and China is the country with the most marked reduction in trade openness: regionalisation or domestication?
- Trade regionalization has fallen in the last decade
- Is there a shift in the development paradigm: from export-led to domestic demand-led growth?
- Is it possible that China is still gaining ground in global value chains despite focusing more energy on domestic development?
- What is the possible role of infrastructures' development in facilitating domestic trade creation?
- What is the role of multinational enterprises' local production for domestic markets?