

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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Emerging Economies  
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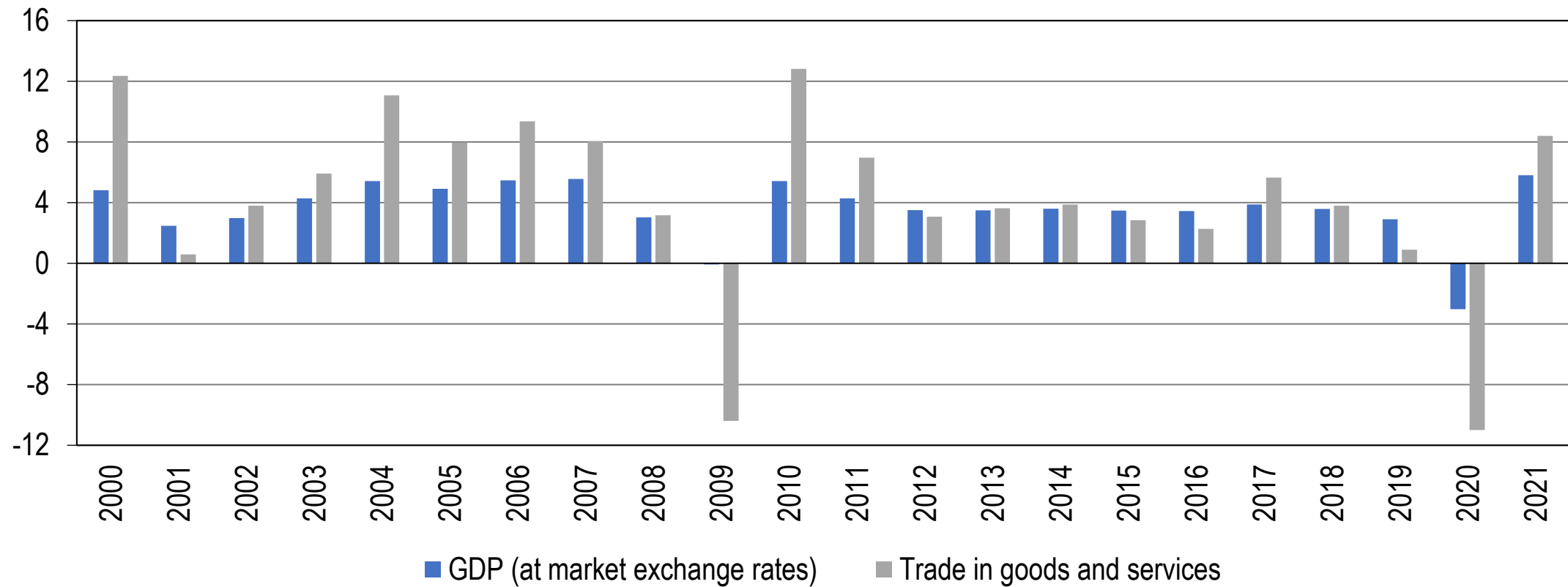
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# Outline

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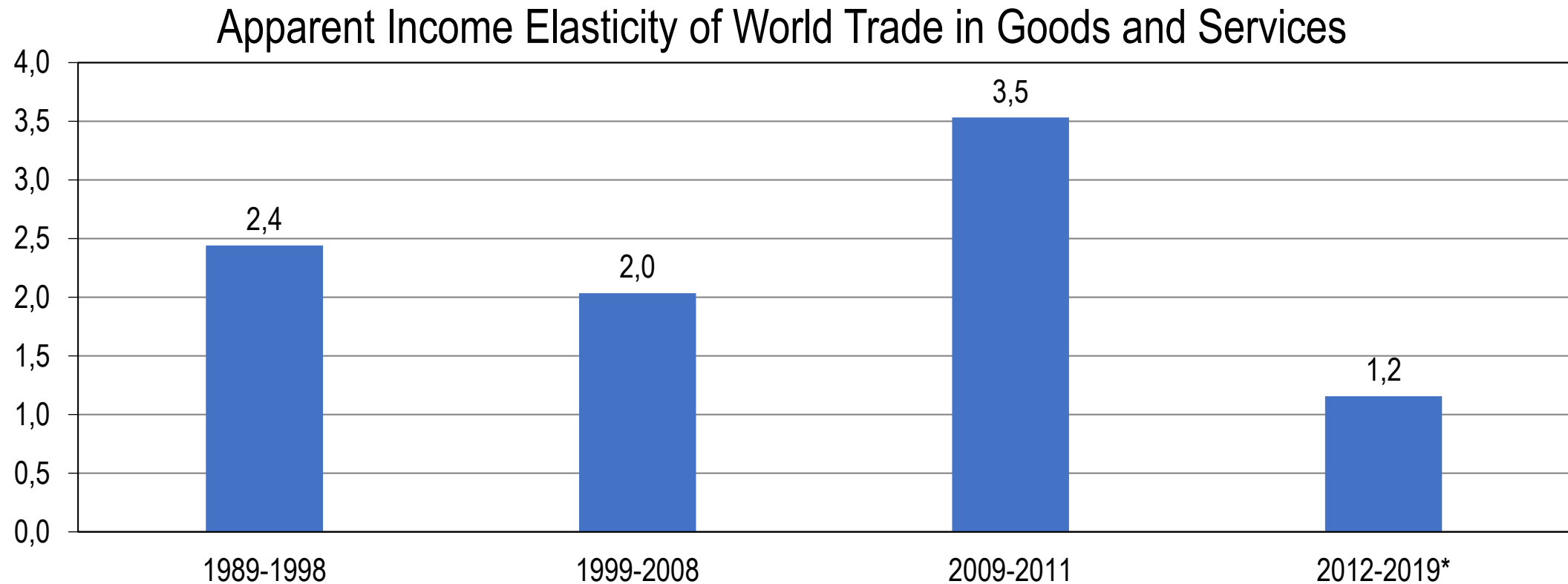
- The «age of slow trade»
- Trade openness in emerging Asian countries
- Trade regionalization
- Changes in the organization of international production networks
  - Trade in value added
  - Traditional trade data on intermediate goods
- Changes in development patterns
- Concluding remarks: open research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

# The Age of Slow Trade



# The Age of Slow Trade

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# The Age of Slow Trade

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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

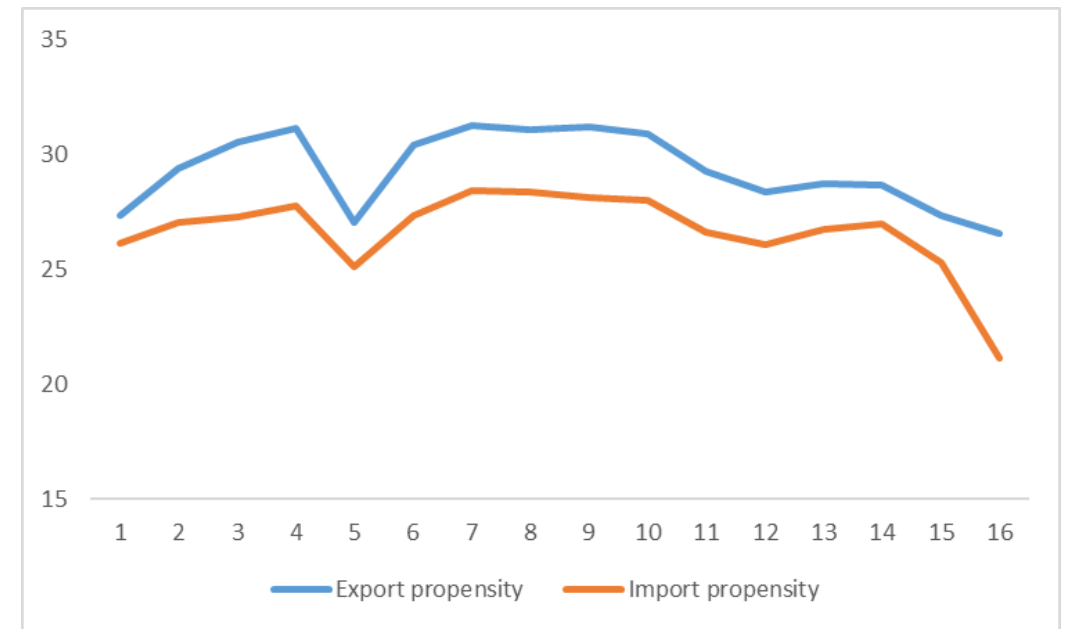


# Trade openness in Eastern and Southern Asia

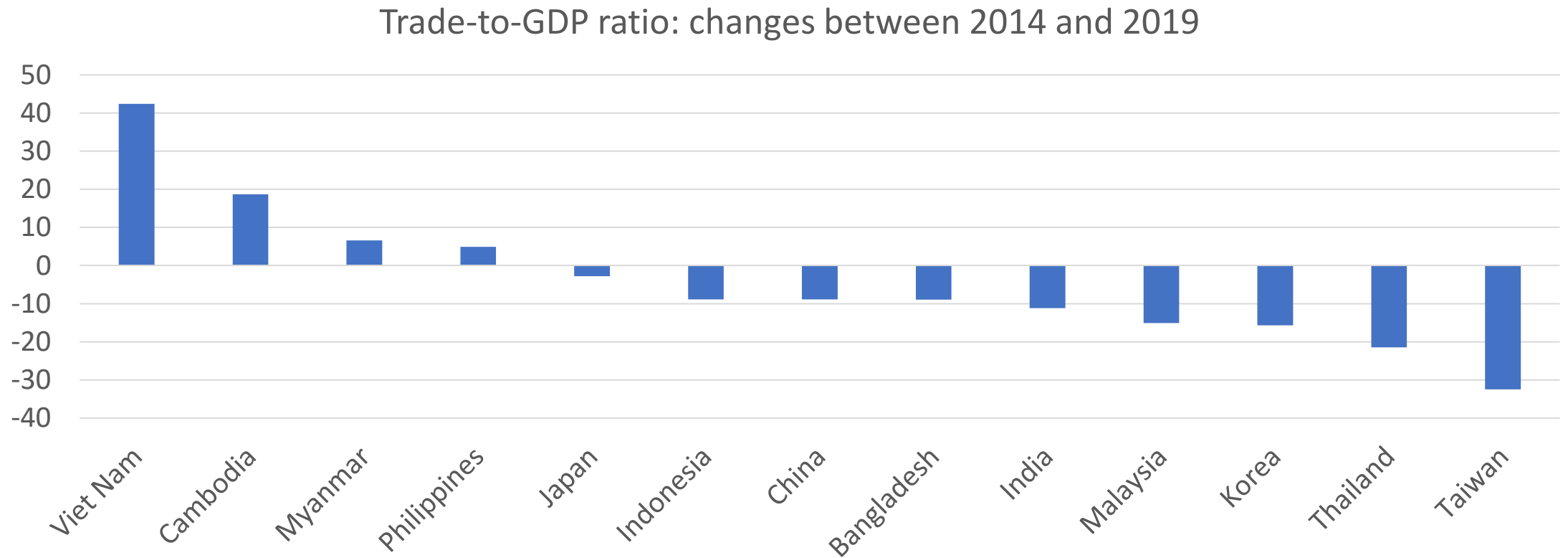
At current prices



At constant prices

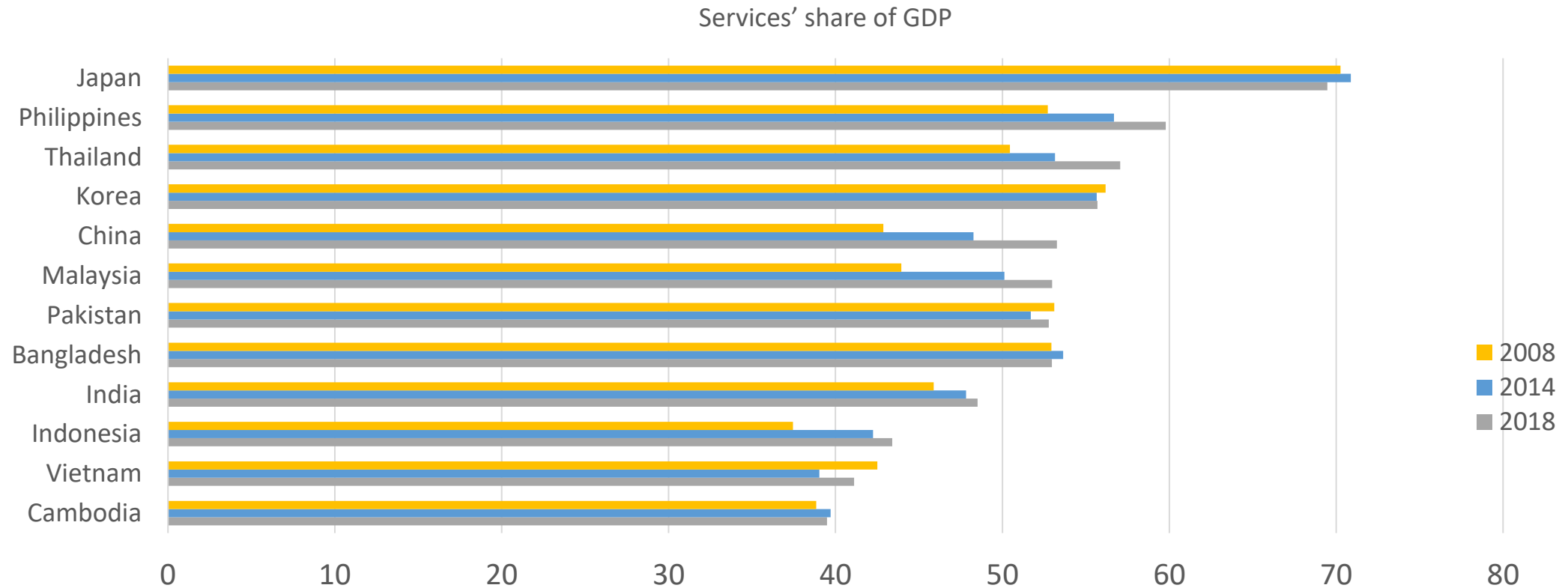


# The recent fall in international openness is widespread among emerging Asian countries





# A process of tertiarization of the economies?



# A tendency to regionalisation?

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- 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

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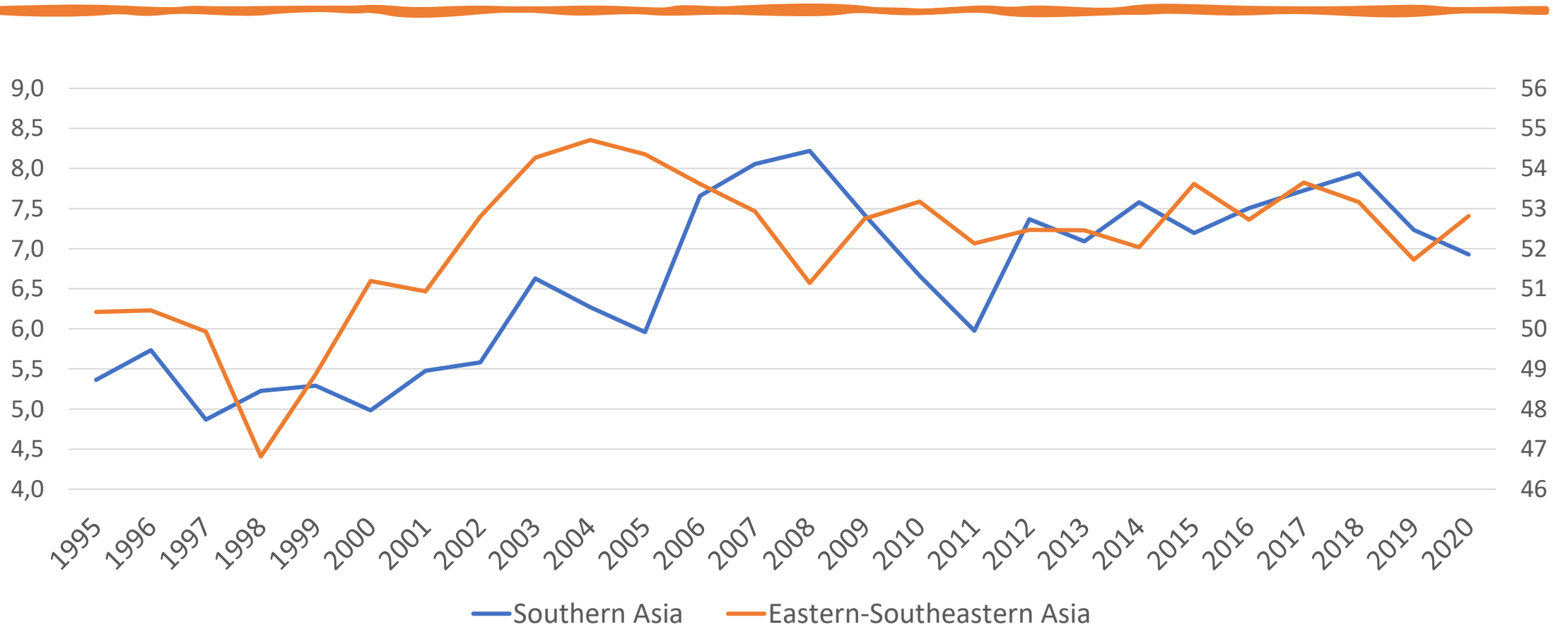
- Intra-regional trade share:

$$S_i = t_{ii}/t_i \qquad 0 \leq S_i \leq 1$$

where:  $t_{ii}$  = 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

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	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

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- *Intra-regional trade intensity*

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

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

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- Geographical neutrality (no preferences)

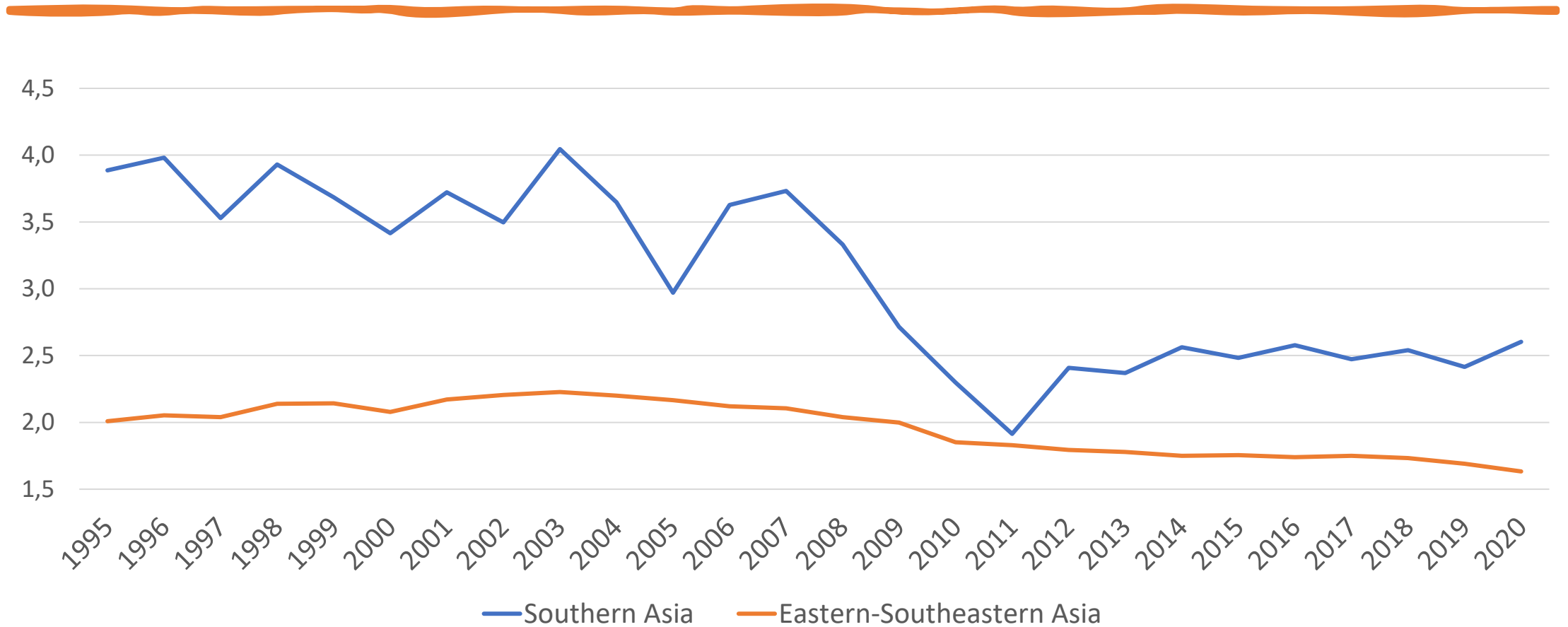
$$I_i = 1 \leftrightarrow E_i = 1$$

- Kunimoto's interpretation (1977)

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

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

# Intra-Regional Trade Intensity Index





# Some limitations of the traditional trade intensity indicator

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- 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

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- 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

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- 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)

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

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

$$SF_i = -SJ_i$$

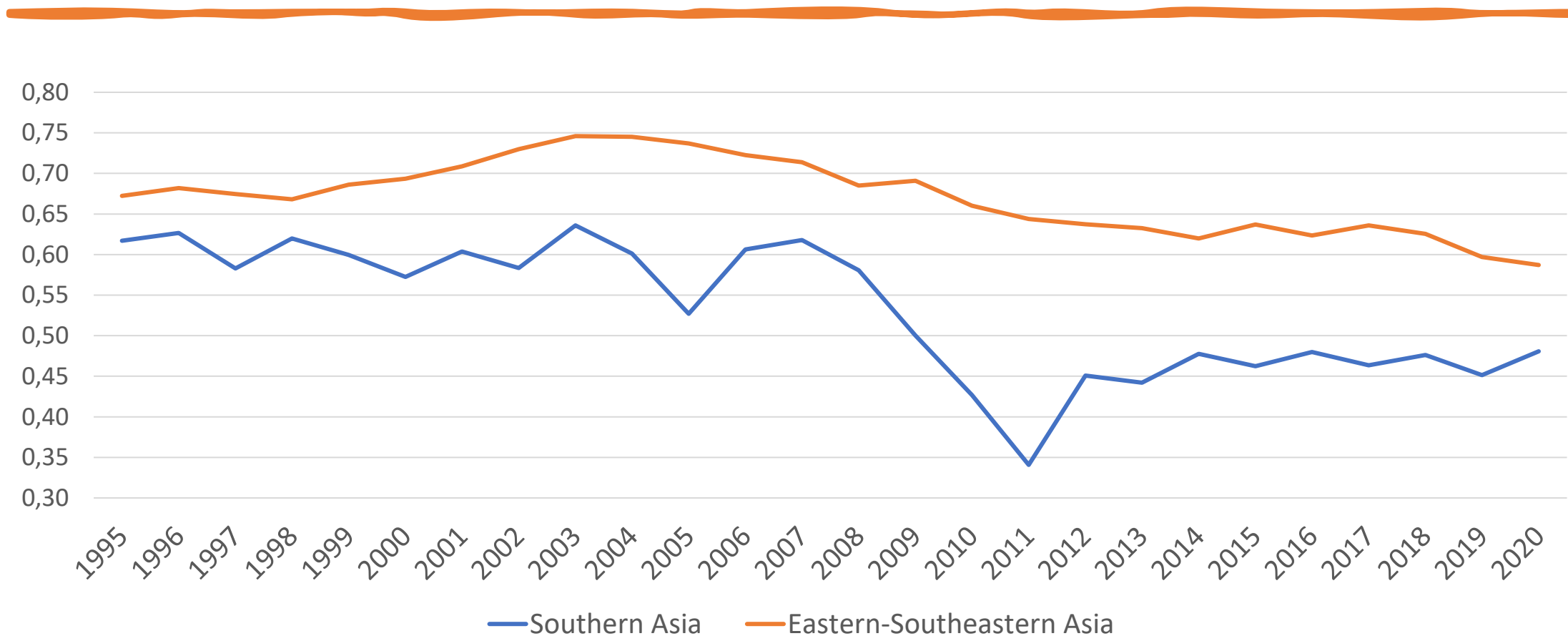
- Geographical neutrality (no preferences)

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

- For  $i = 1, 2$

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

# Revealed intra-regional trade preferences



# Shorter production chains?

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

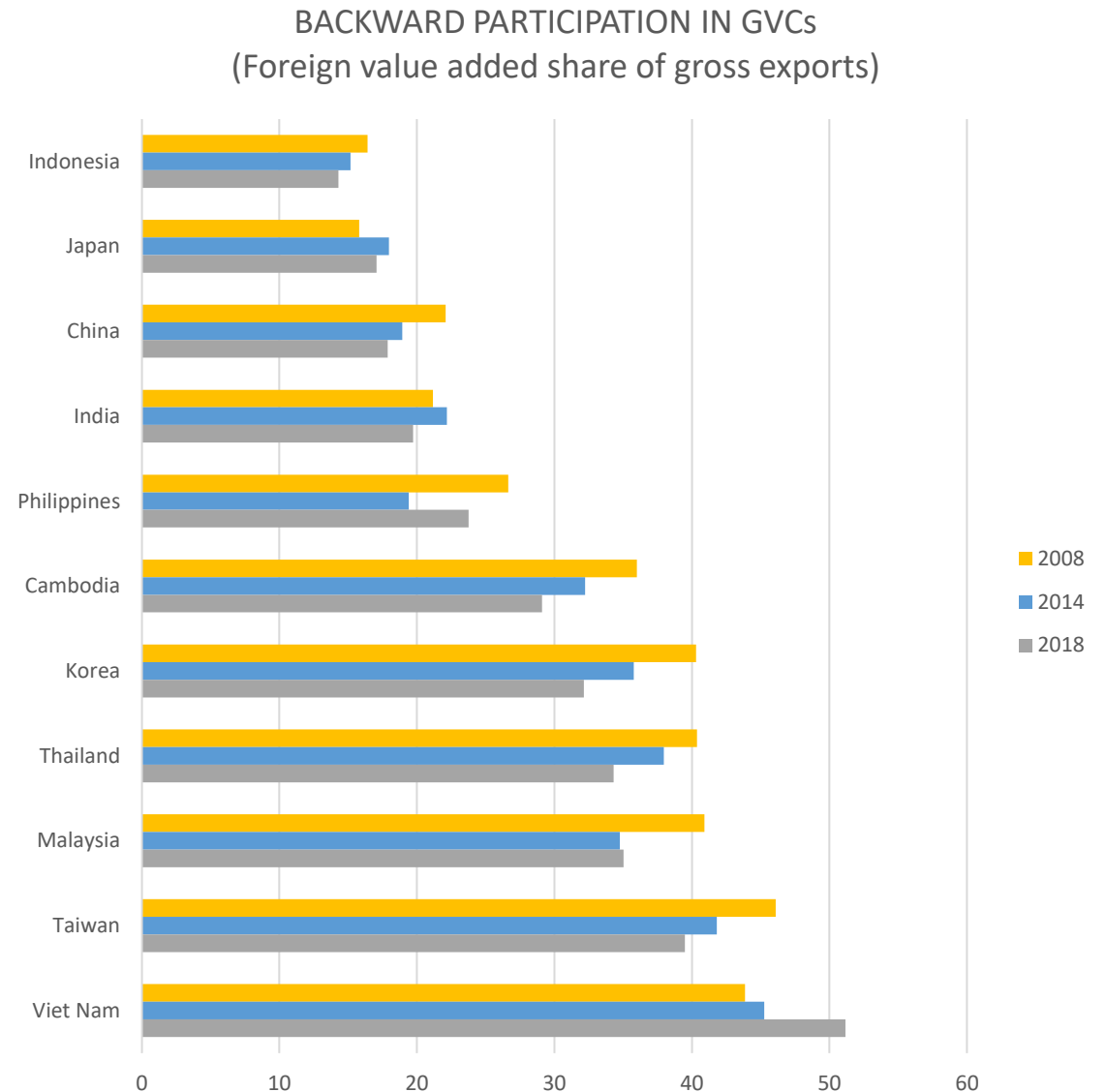
- Preferential Trade Agreements (PTAs);
- Innovations (3D printing, robotization);
- Geopolitical tensions.

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.

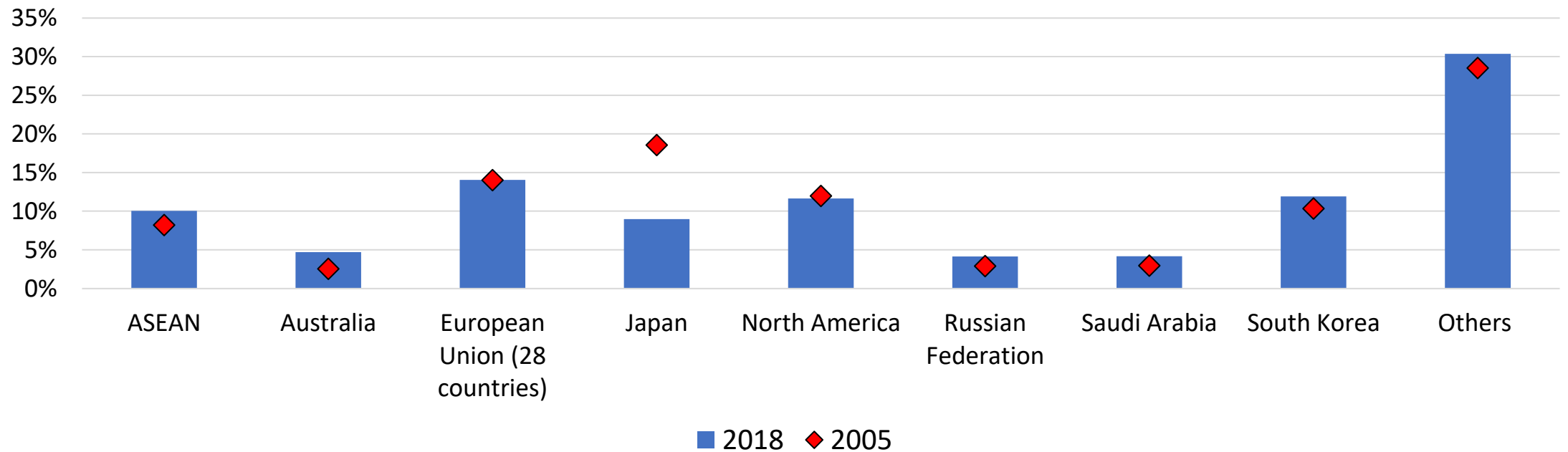
# Backward participation in GVCs (TiVA data)

- 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



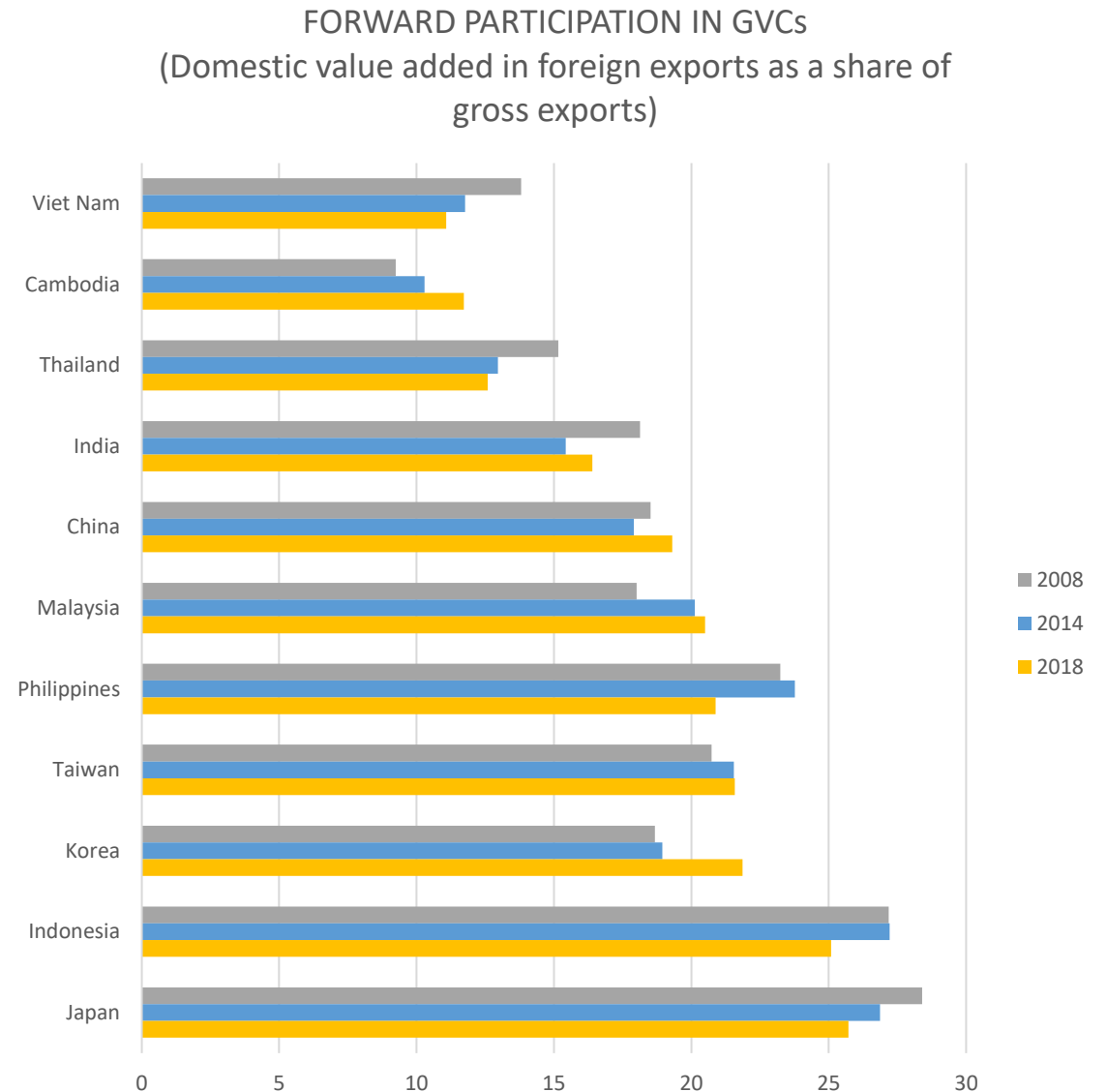
# The origin of inputs used in China's gross exports

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



# Forward participation in GVCs (TiVA data)

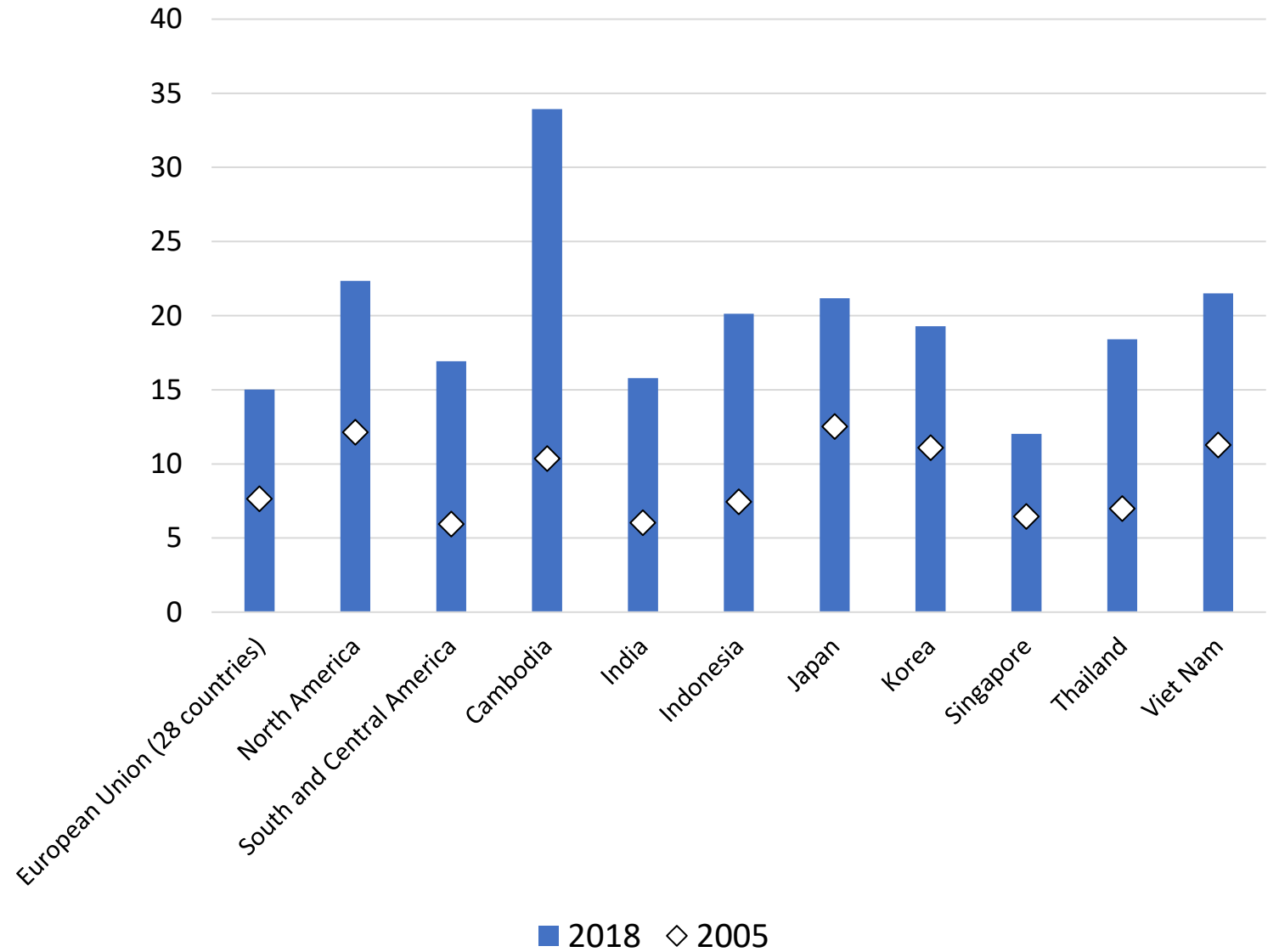
- Domestic value added that crosses at least two borders before reaching final consumption
- Cambodia, China, Malaysia, Taiwan and Korea have moved upstream along GVCs in the last decade





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

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# Using traditional trade data to detect changes in international production networks

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- 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:

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

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

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

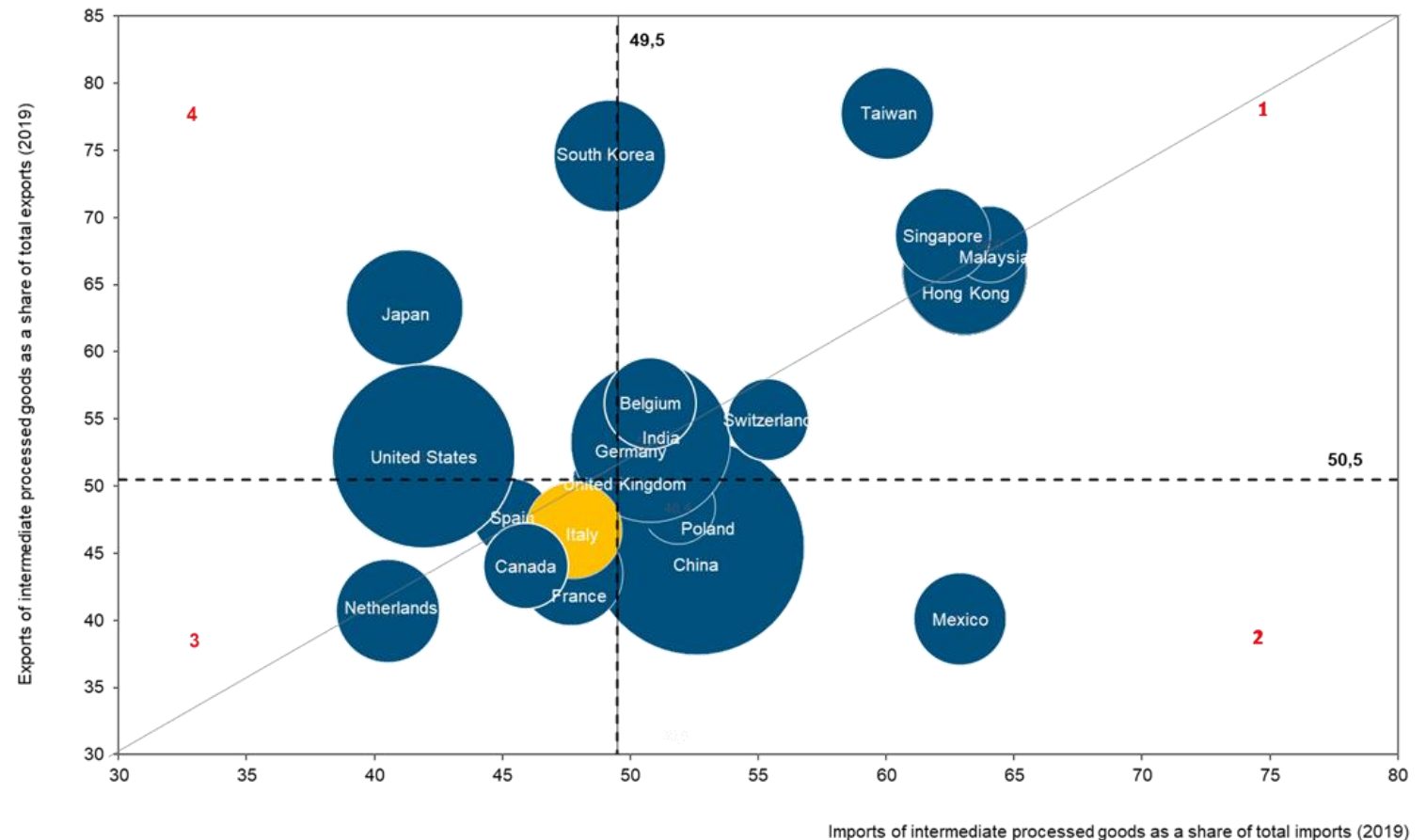


# IPN involvement: trade in processed intermediate goods

## Trade in *processed* intermediate goods as a share of total trade in goods, by country<sup>(1)</sup>

- (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)

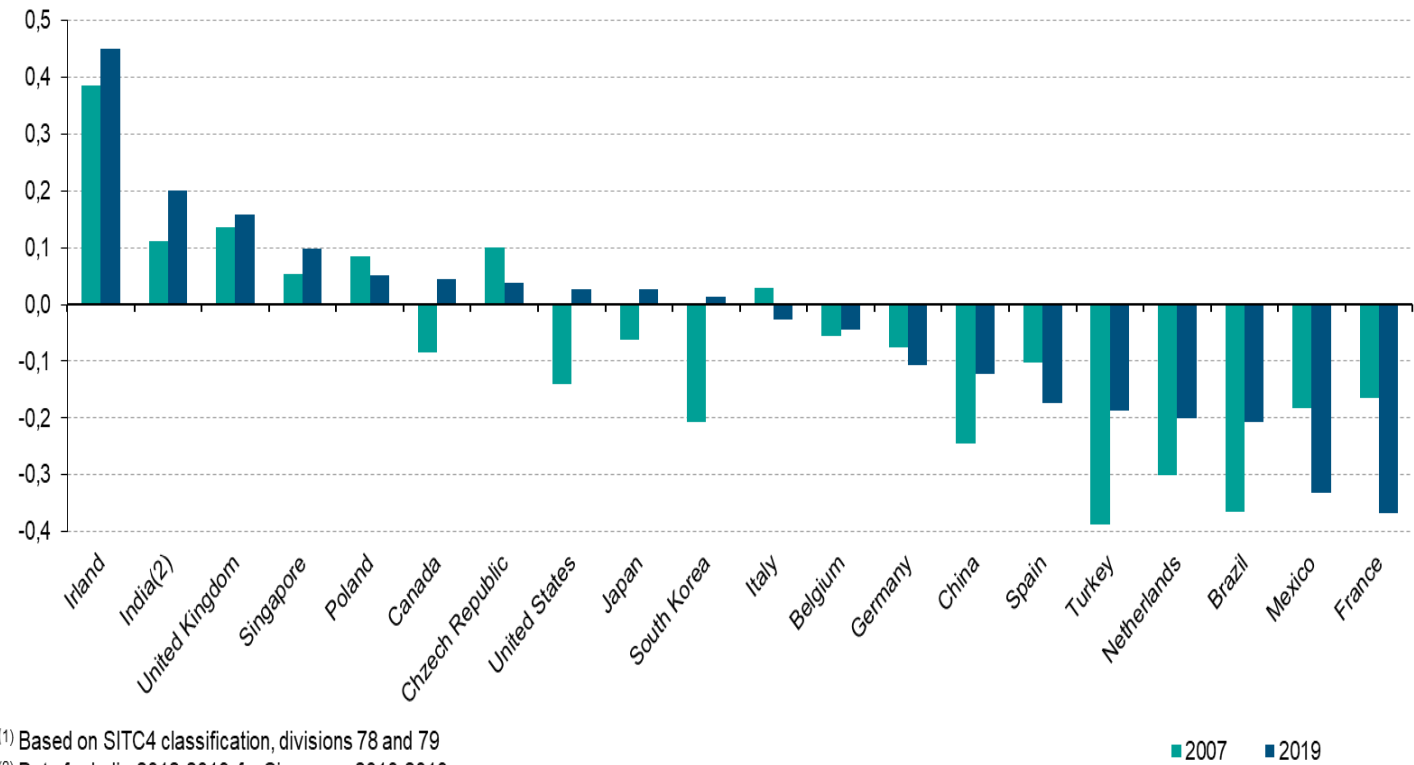
Source: ITA based on data from Eurostat and National Statistics Institutes



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

**Means of transportation: index of relative position in international production networks<sup>(1)</sup>**

- 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.



<sup>(1)</sup> Based on SITC4 classification, divisions 78 and 79

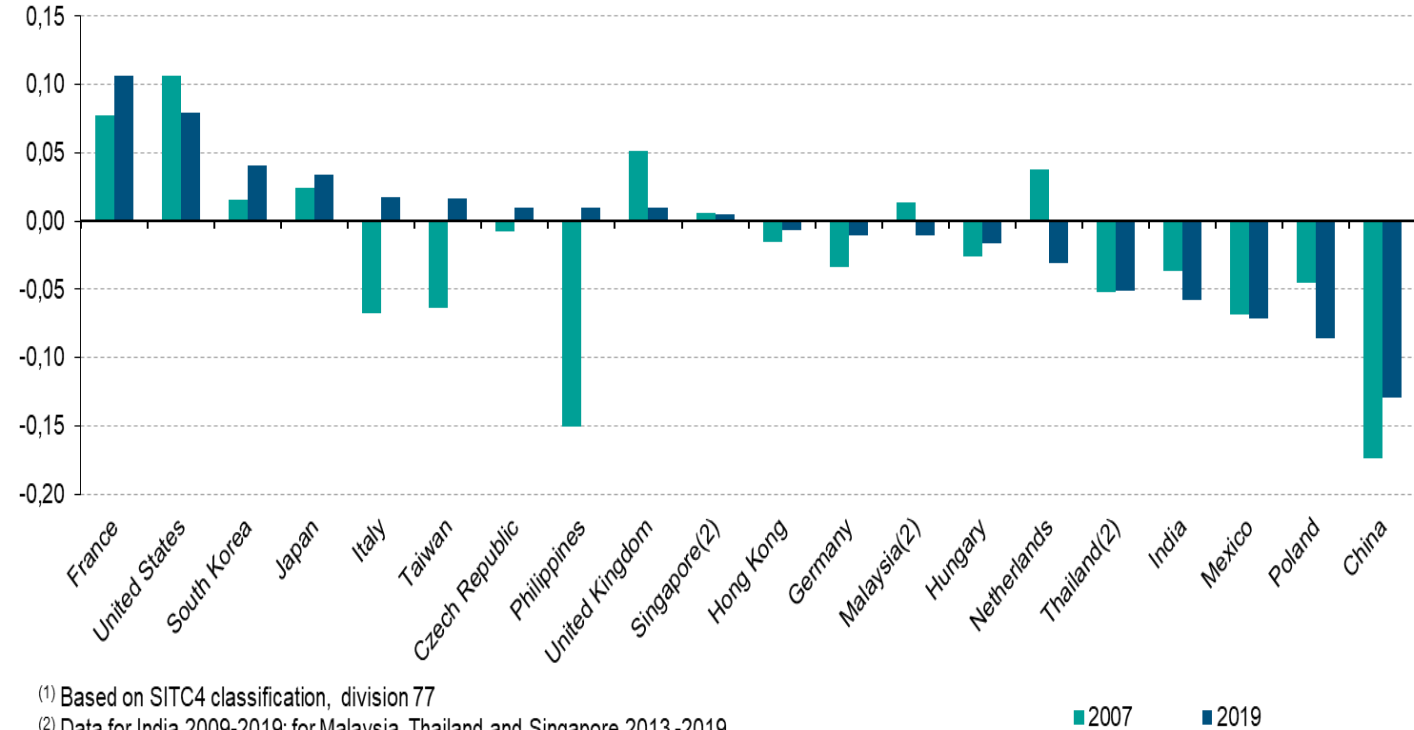
<sup>(2)</sup> Data for India 2012-2019; for Singapore 2010-2019

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

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

## Electrical machinery and appliances: index of relative position in international production networks<sup>(1)</sup>

- 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



<sup>(1)</sup> Based on SITC4 classification, division 77

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

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

# A change in the growth paradigm?

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- 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

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- 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?