Globotics and macroeconomics: Globalisation and automation of the service sector

What is globotics?

RICHARD BALDWIN

PROFESSOR OF INTERNATIONAL ECONOMICS

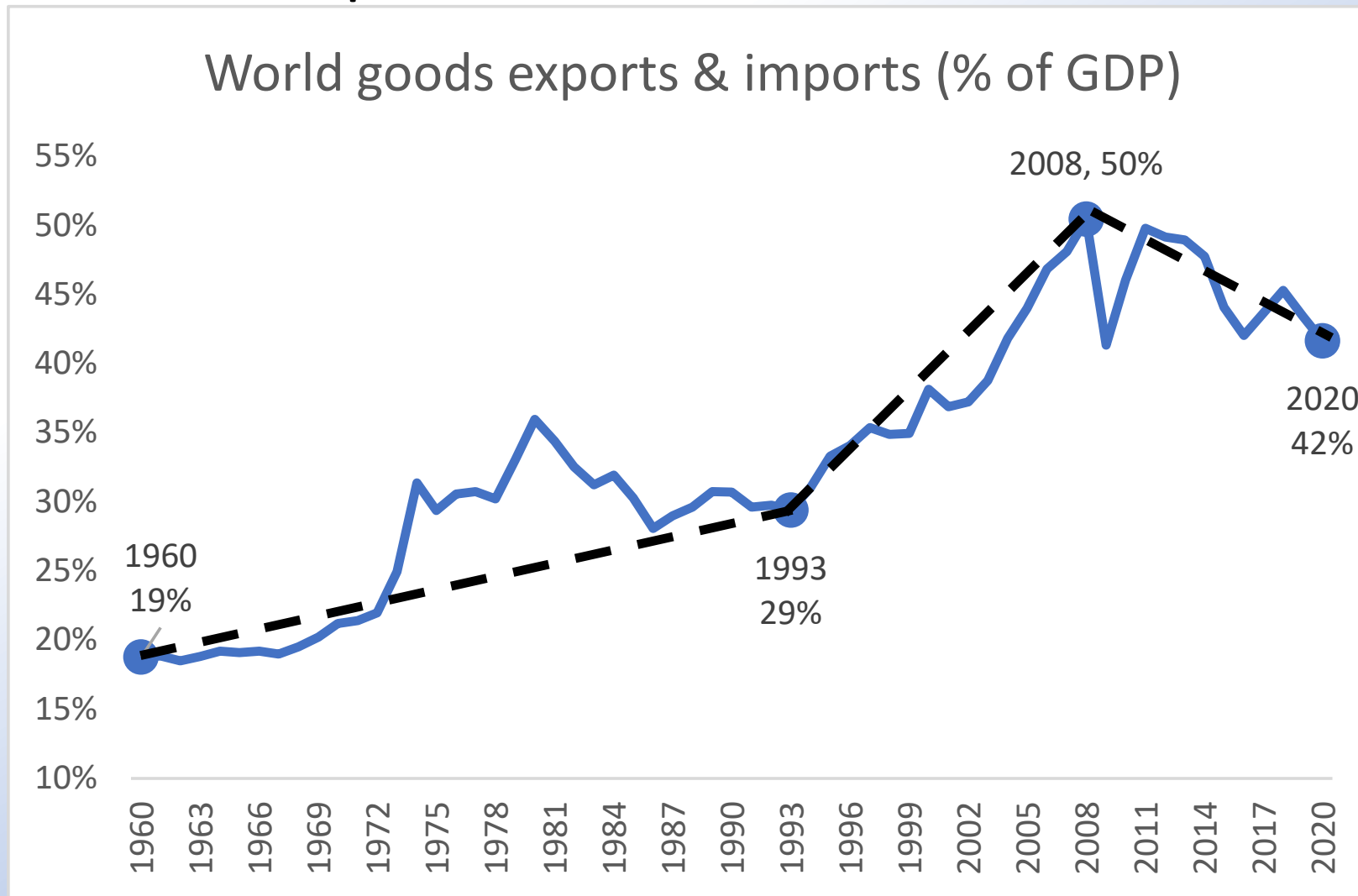**ECB Forum on Central Banking, Sintra, 28 June 2022**
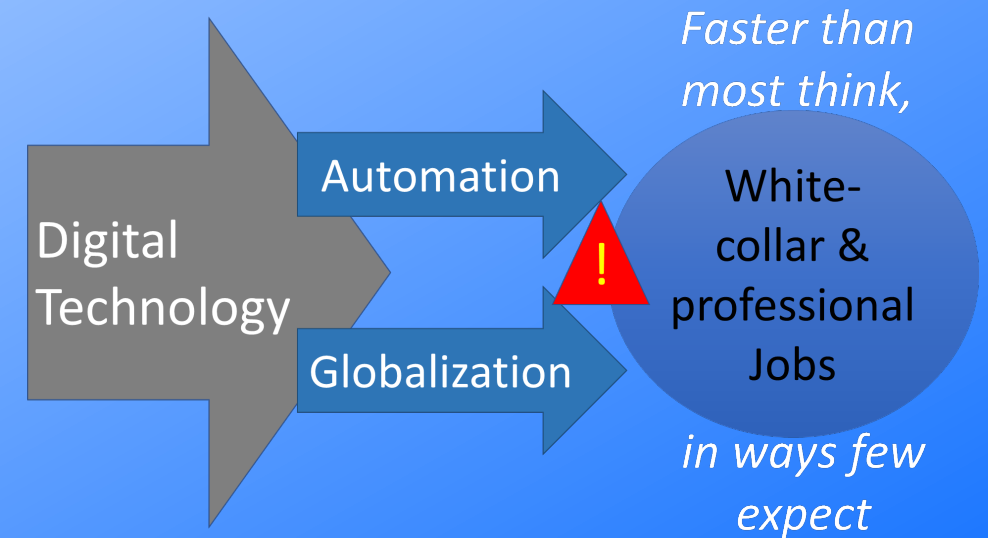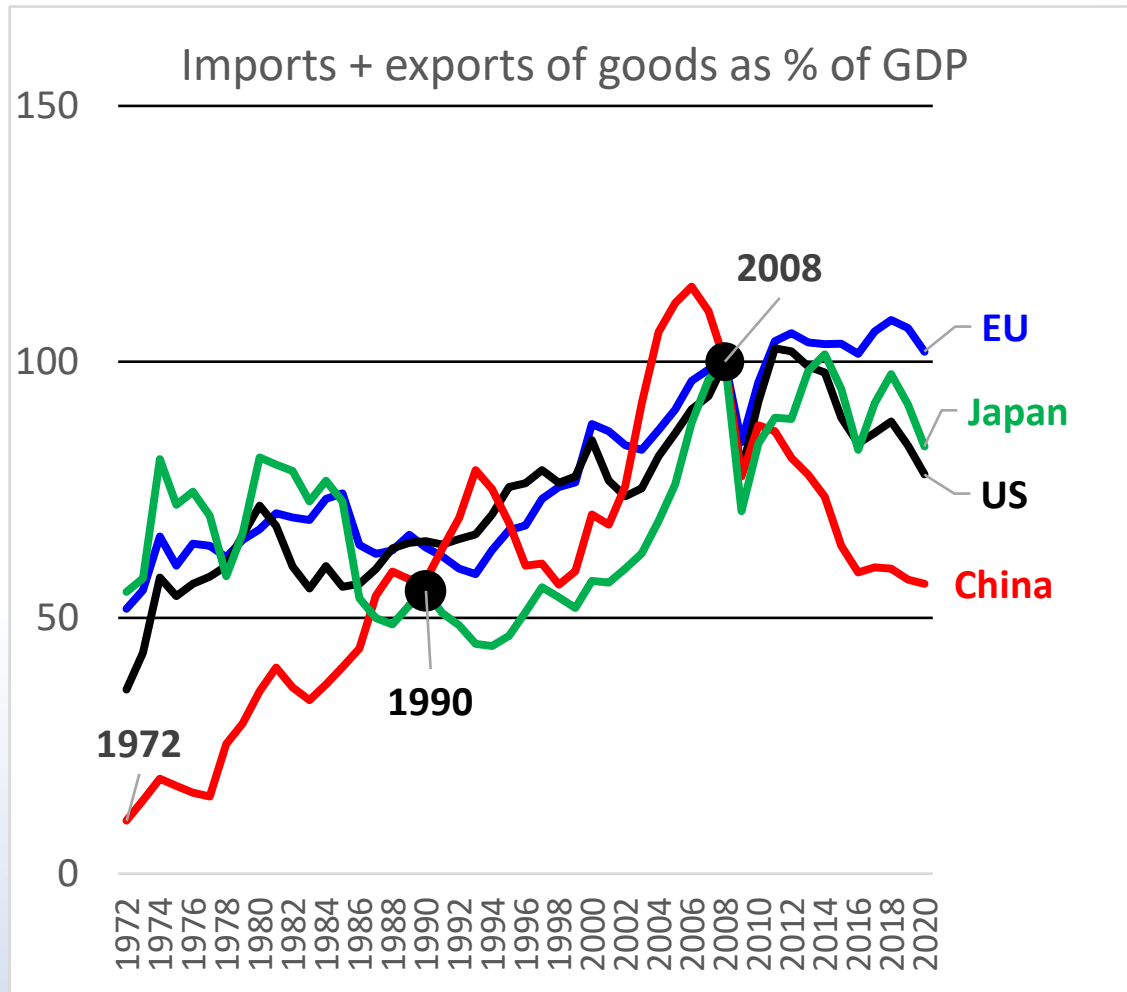
Introduction & outline

- Globalisation is changing
- Services are important but different
- Globotics, services, and HICP developments

Globalisation is changing

# Goods trade peaked: The "offshoring-expansion" phase ended

World goods exports & imports (% of GDP)

2008, 50%

2020
42%

1993
29%

1960
19%

But beware false peaks & lazy narrative

Imports + exports of goods as % of GDP

- China peaked 10yrs before Trump/Brexit
- US peaked 2011
- Jpn peaked in 2014
- EU has stagnated not peaked (mixed trends)

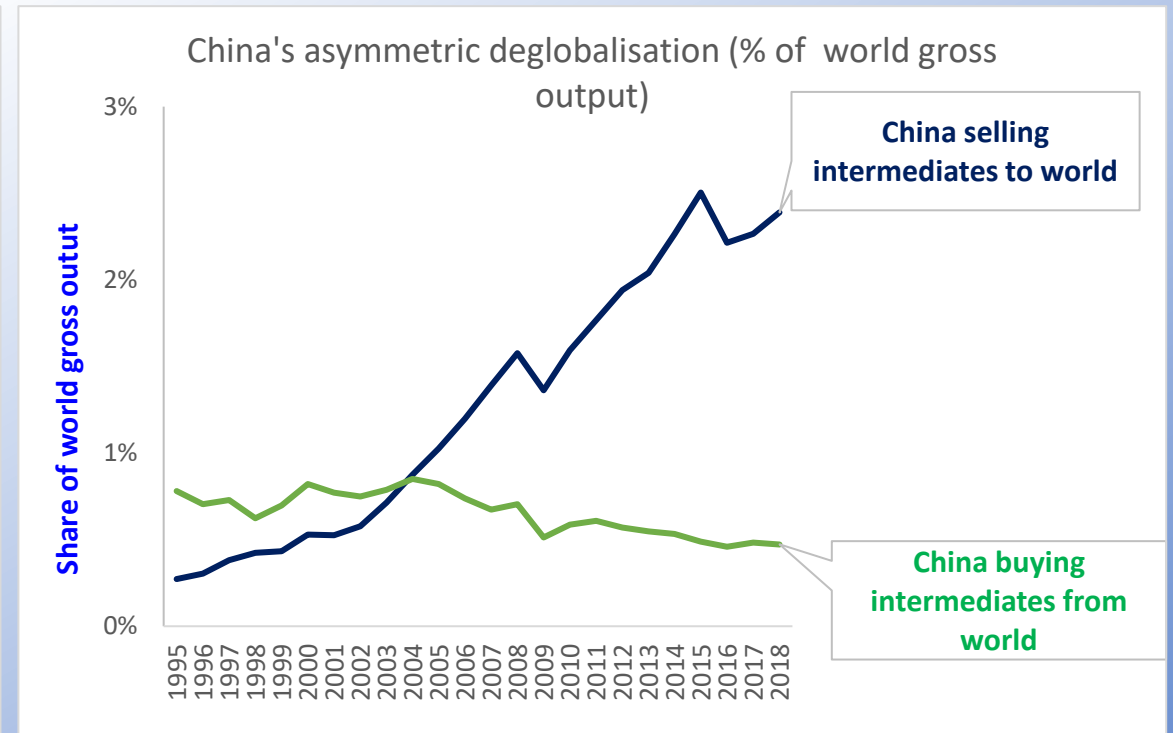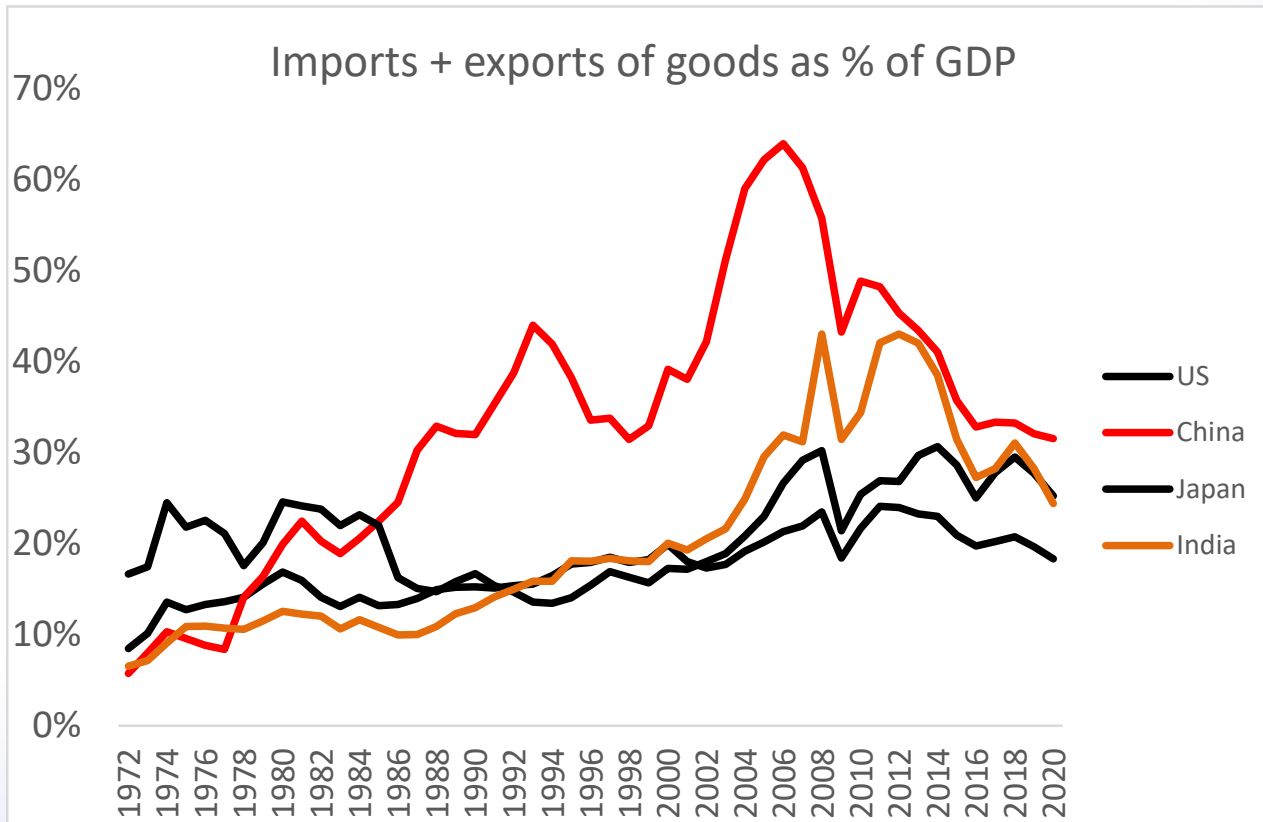Percentage points change (1990 to 2008, x-axis; 2008 to 2020 y-axis)
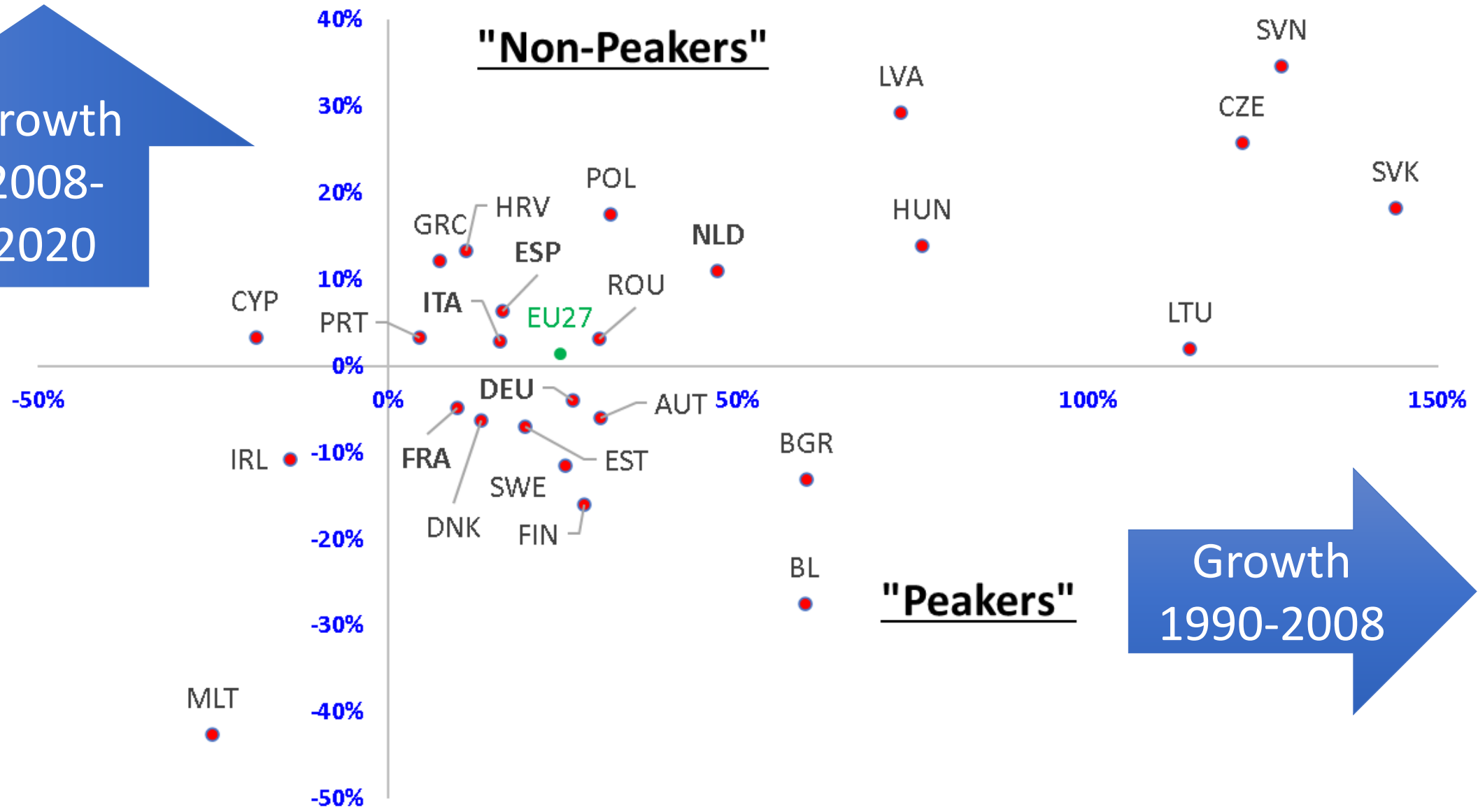
China is key: Becoming normal mega-economies, but with asymmetric supply chain engagement

Imports + exports of goods as % of GDP

China's asymmetric deglobalisation (% of world gross output)

Services trade didn't peak (WORLD)

Cumulative growth in levels of services vs goods trade (1990 = 100)
NB: levels, not trade/GDP

Other Commercial Services, 1150

Goods 506

Share of all trade

Other Commerical Service
All Goods and Services

2020 20%

2008, 12%

1990, 9%
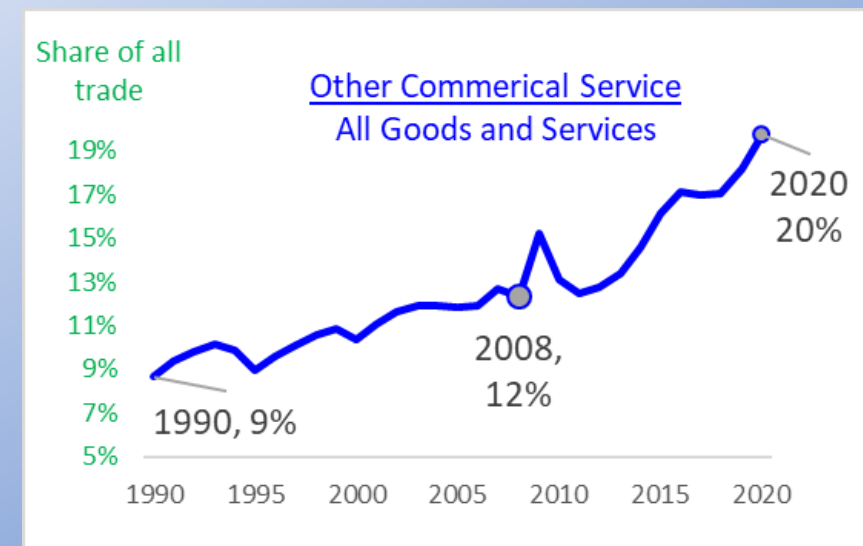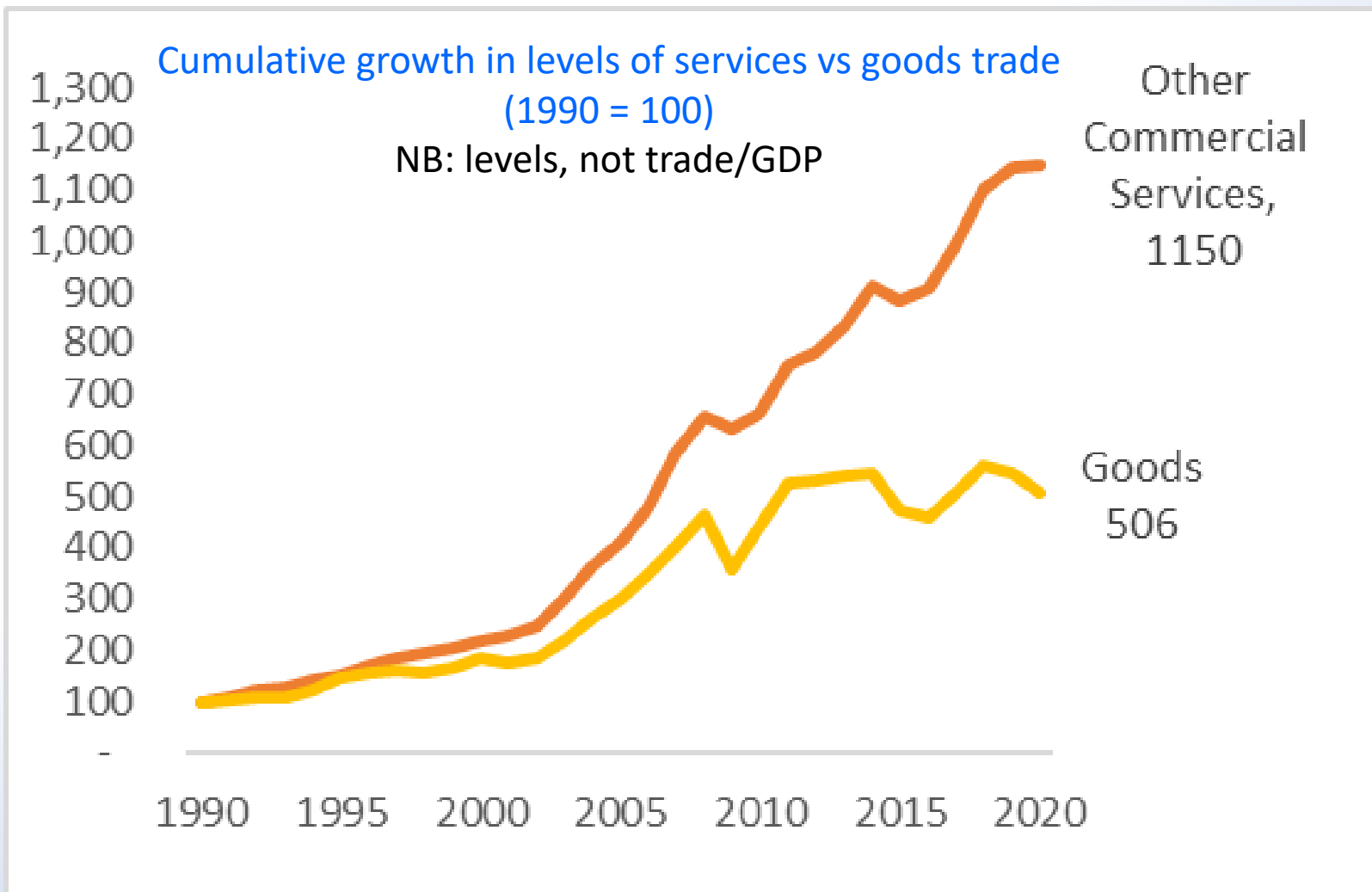
NB: 'Other Commerce Services' = All services less Transport & Travel/Tourism

Services trade has not peaked (EA19)

Cumulative growth in levels of services vs goods trade
(1990 = 100)
NB: levels, not trade/GDP
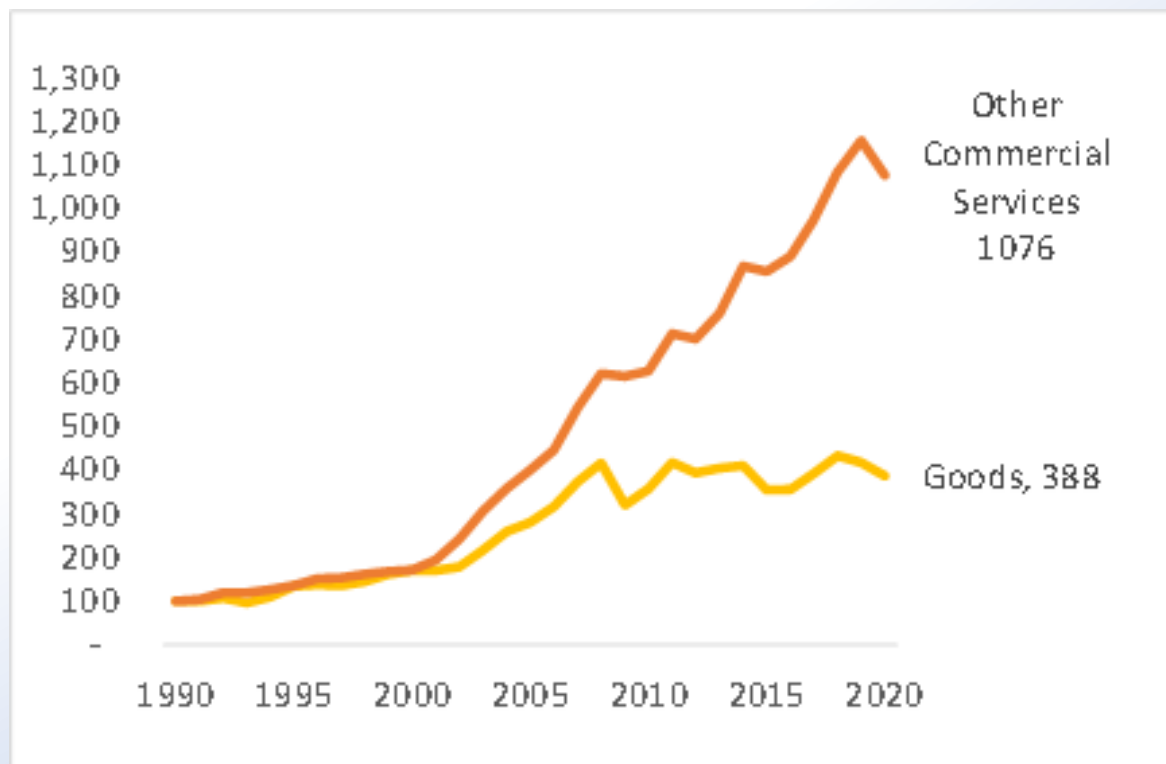
EU Service/GDP peakers & non-peakers

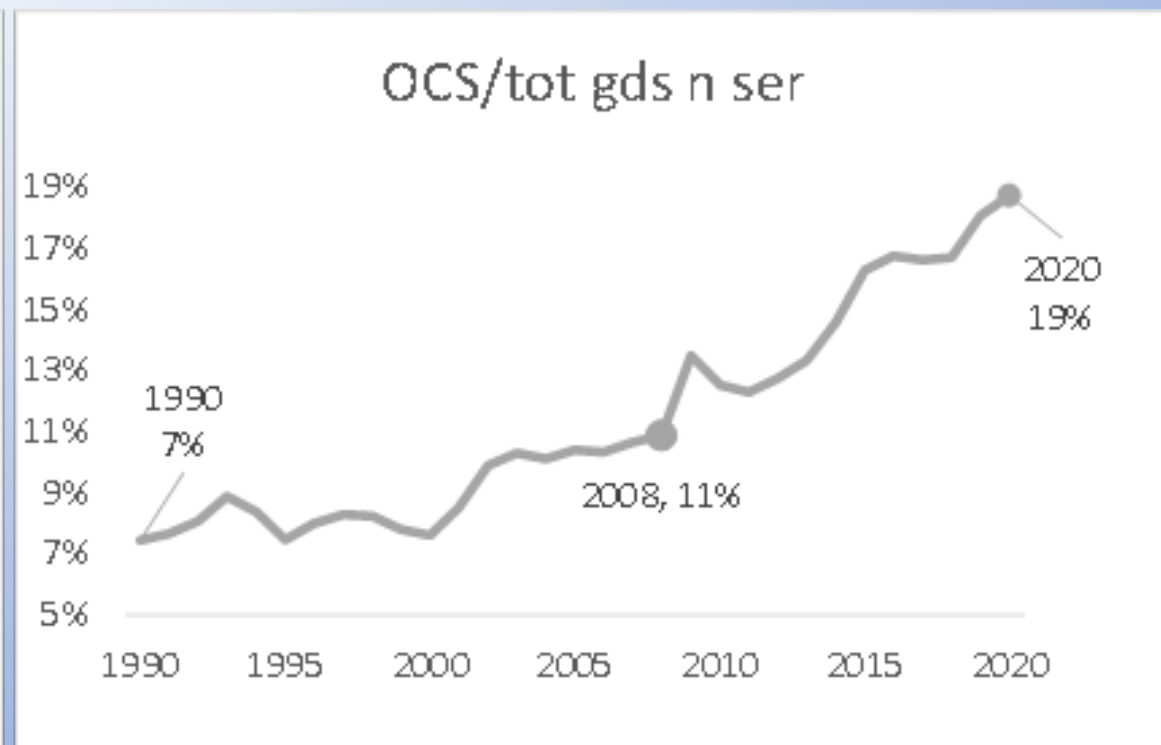Percentage points change (1990 to 2008, x-axis; 2008 to 2020 y-axis)

"Non-Peakers"

"Peakers"

Services/GDP growth 2008-2020

Services/GDP growth 1990-2008
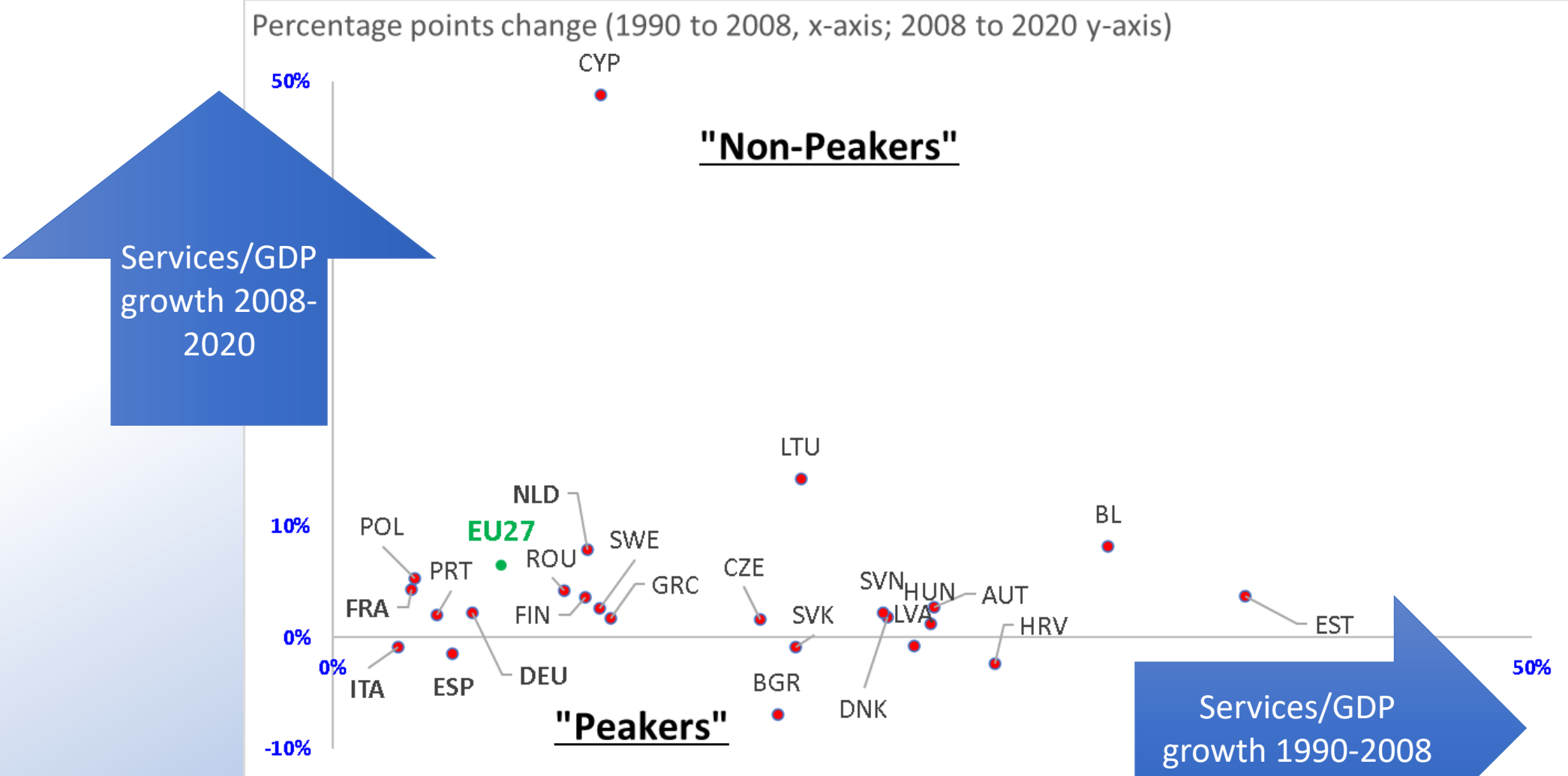
Goods peaked; not services

Why?

The Great Convergence
INFORMATION TECHNOLOGY
AND THE NEW GLOBALIZATION

RICHARD BALDWIN

2016
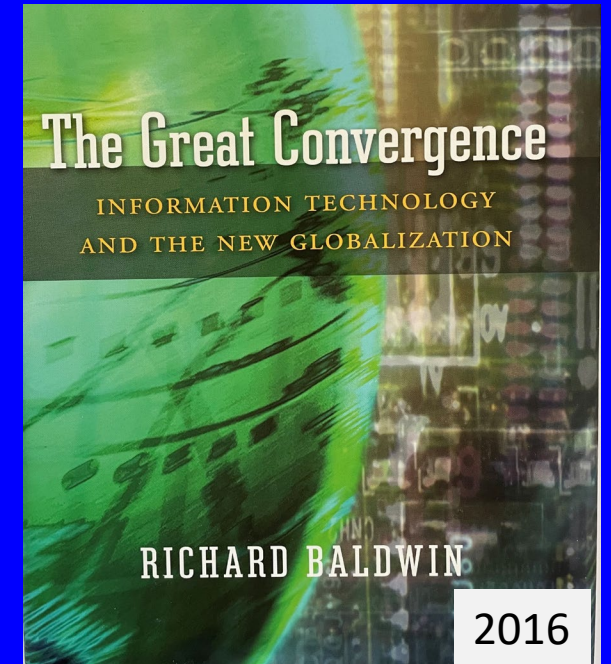
Arbitrage drives globalisation (constrained by 3 costs)

Trade costs
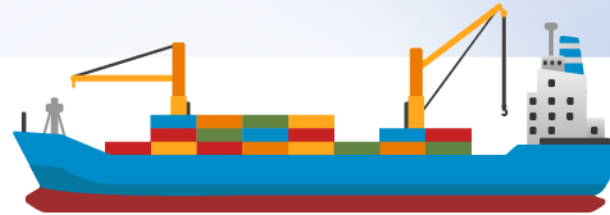
Goods

Communication costs

Knowhow

Face-to-face costs

Labour services

Comparative advantage changed c. 1990

G7 economies

High $\dfrac{\text{Knowhow}}{\text{Labour}}$ + High wages = G7 comparative advantage

EM economies

Low $\dfrac{\text{Knowhow}}{\text{Labour}}$ + Low wages = EM comparative advantage

2-way flow of goods

G7 economies

High $\dfrac{\text{Knowhow}}{\text{Labour}}$ + High wages = G7 comparative advantage

EM economies

Low $\dfrac{\text{Knowhow}}{\text{Labour}}$ Low wages = hybrid comparative advantage

1-way flows of knowhow & 2-way flow of goods

The future of trade is intermediate services

4 facts and a conclusion

1. Barriers to services trade are much higher than barriers to goods trade

2. Most barriers to trade in intermediate services are technology-linked, not policy linked

3. Digitech is lowering barriers to intermediate services at an explosive pace (+ Covid forced adjustment)

4. Demand is huge in rich nations; Capacity is huge in emerging markets

ERGO: Intermediate services trade will grow much faster than goods trade for foreseeable future

(NB: Already 2 to 3 times faster since mid 2000s)

Services are important but different

1. Services in EA are important
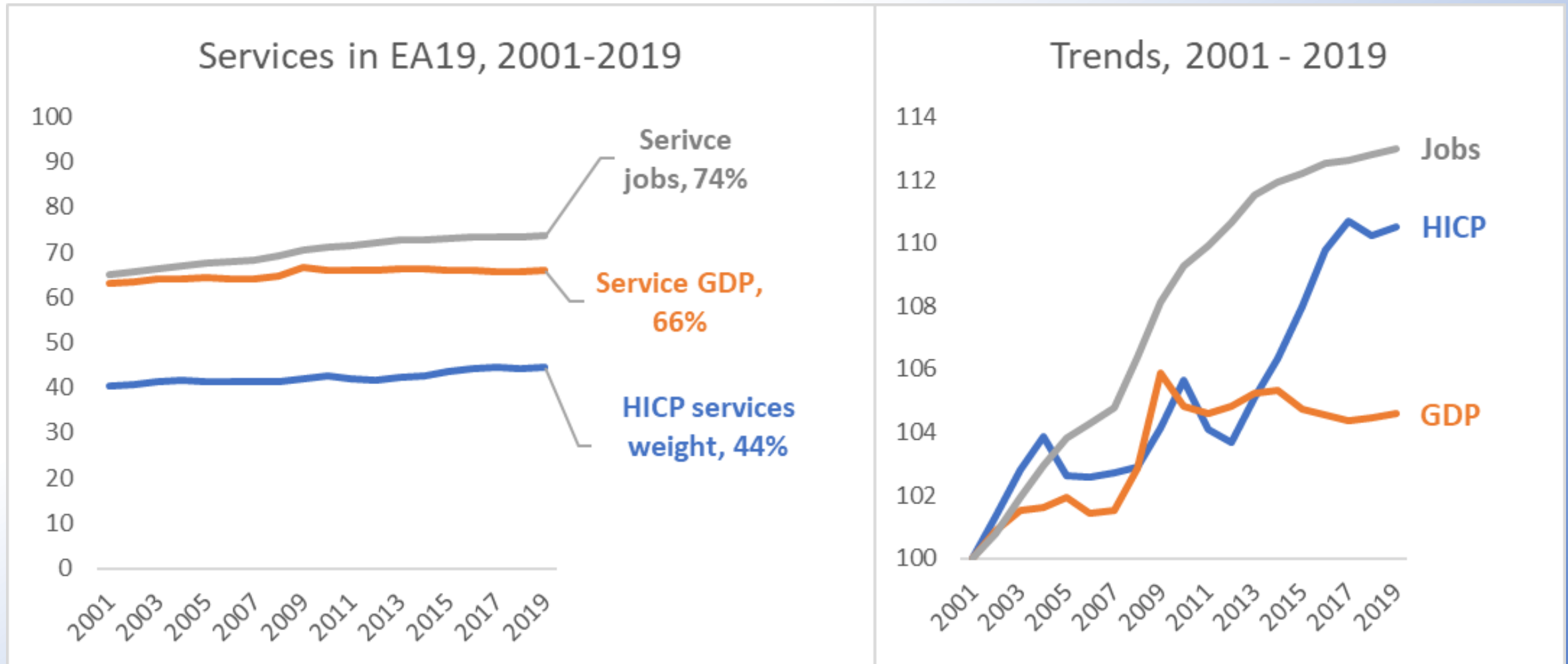
2. FACT: Intermediate inputs are more important in services imports than manufactures imports

Intermediates as a share of imports
Service vs manufacturers
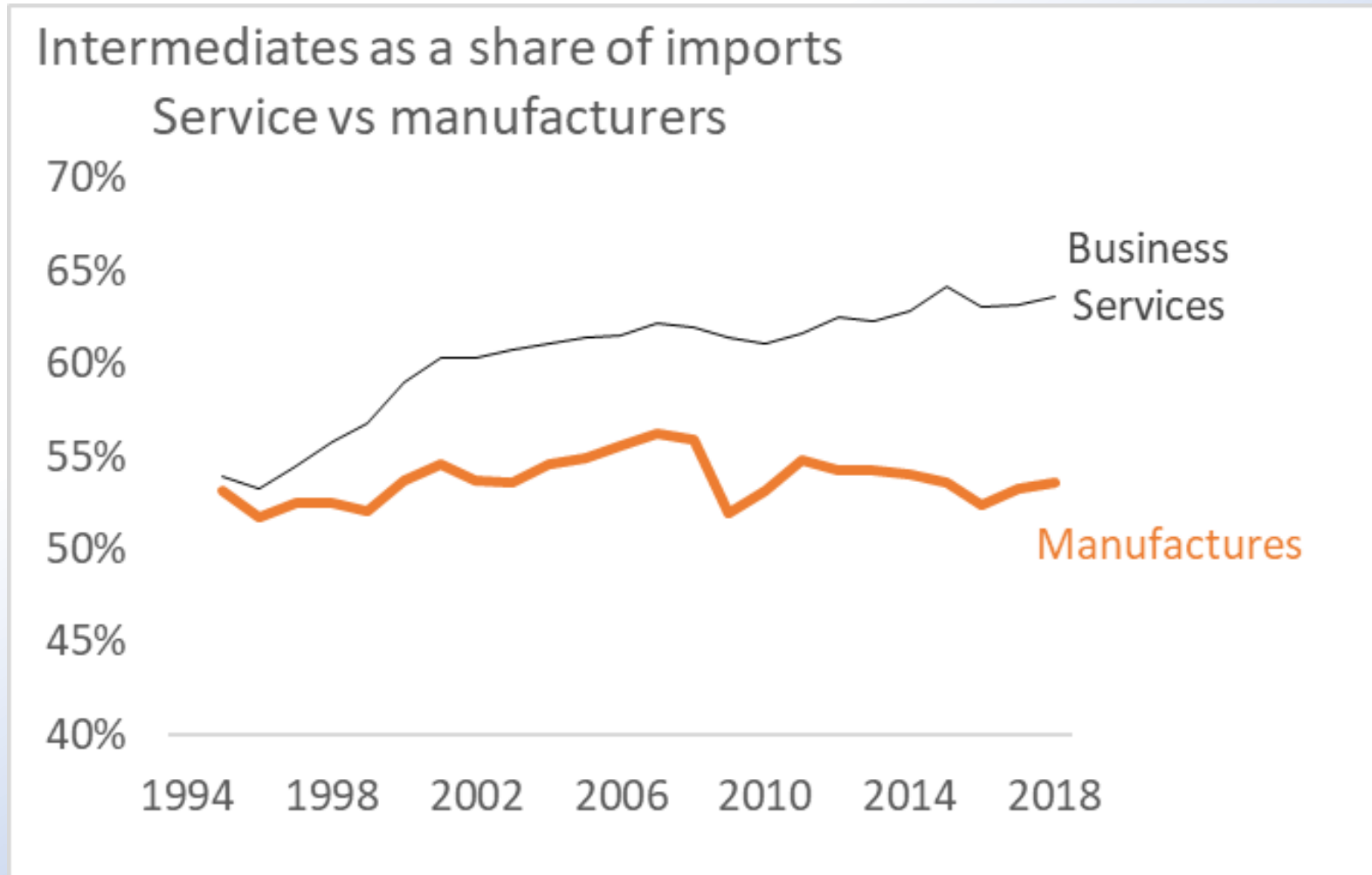
3. FACT: Service intermediates are 3x more important than manufacturing intermediates in overall economy

Column sector's inputs into row sector (gross output) 2018	Service intermediate inputs	Manufactures intermediate inputs		Sector share of total gross output
Service sector	32%	5%		68%
Manufacturing sector	24%	25%		26%
Total economy	30%	11%		100%

Every sector uses service intermediates

Service intermediates as share of sector's output

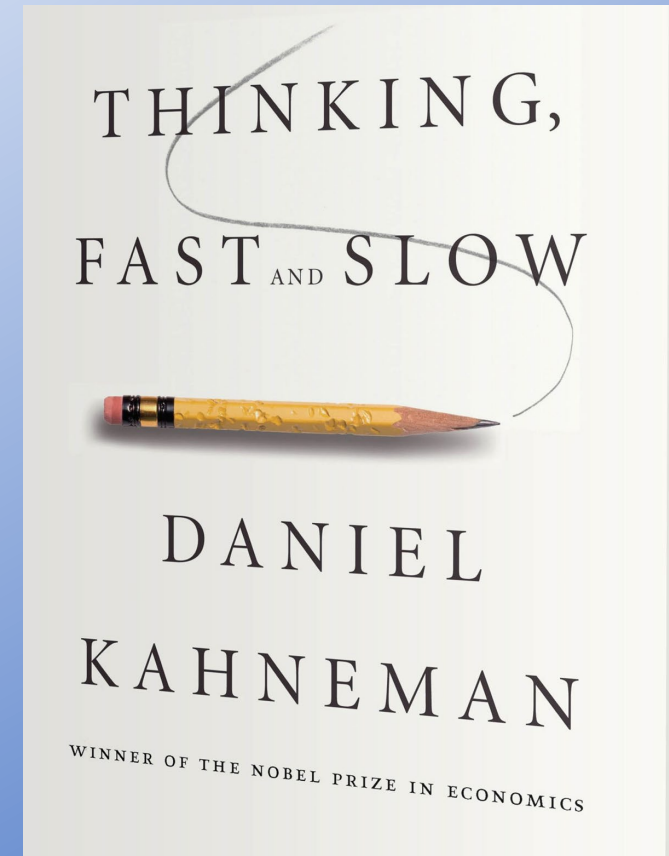| Sector	%
Other services	38%
Land transport and transport via pipelines	39%
IT and other information services	35%
Accommodation and food service activities	25%
Education	12%
Administrative and support services	33%
Public administration and defence; compulsory…	16%
Financial and insurance activities	58%
Human health and social work activities	16%
Real estate activities	13%
Professional, scientific and technical activities	44%
Wholesale and retail trade; repair of motor…	41%
Other secondary	27%
Motor vehicles, trailers and semi-trailers	29%
Chemical and chemical products	29%
Manufacturing nec; repair and installation of…	21%
Other transport equipment	24%
Electricity, gas, steam and air conditioning supply	12%
Construction	21%
Other primary	29%
Food products, beverages and tobacco	32%
Agriculture, hunting, forestry	20%

4. Service automation is different: "White collar robots"

- Computers acquire <u>new cognitive skills</u> since 2016 due to machine learning.
- New skills are automating service sector tasks
  - RPA, Virtual Assistants, IBM Watson, scheduling apps, etc
- What changed?

The programming changed

- Coding = thinking slow

Machine learning = thinking fast

THINKING, FAST AND SLOW

DANIEL KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

5. Service automation & globalisation happen at the job or task level – not the product level
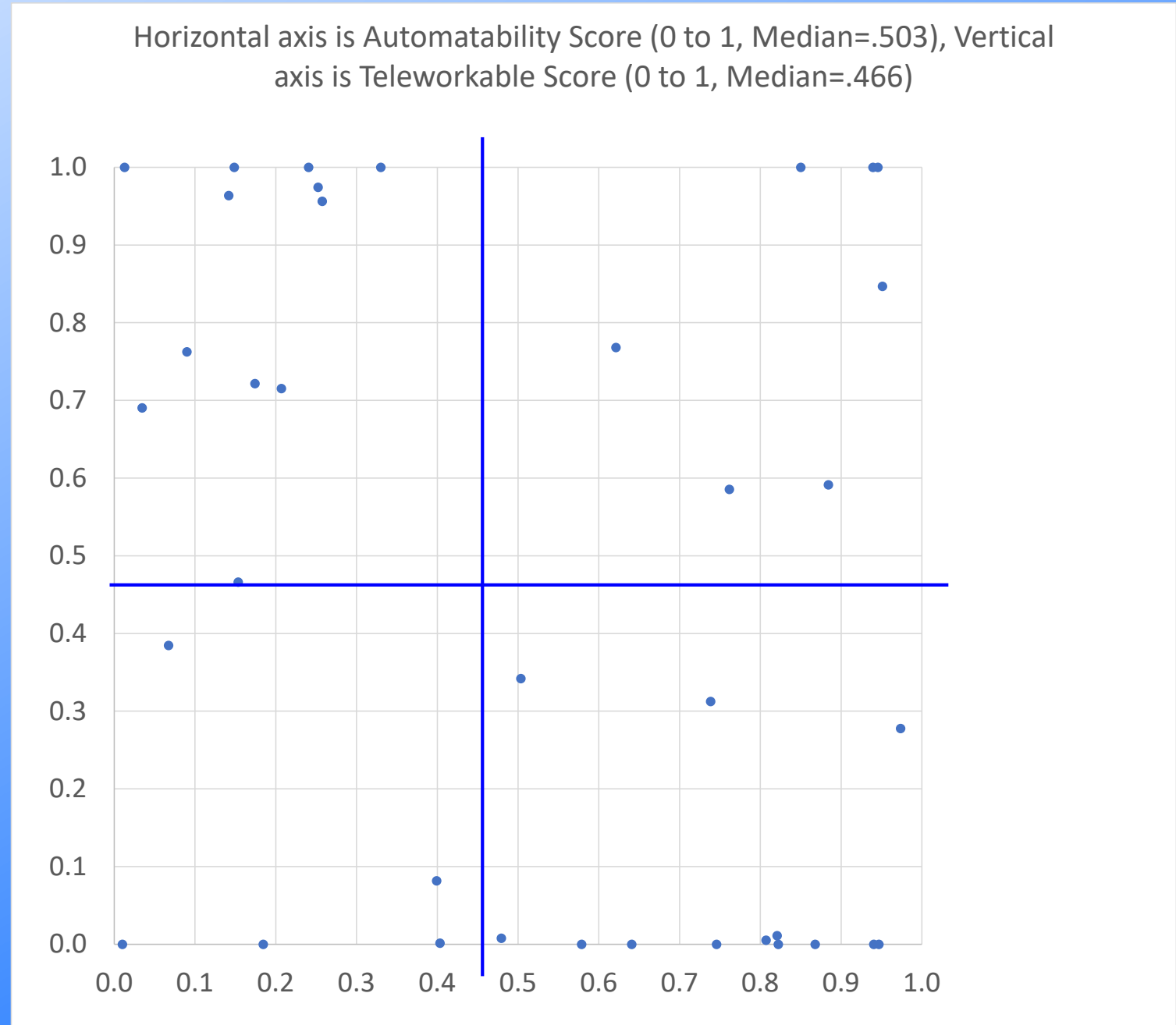
- Service sector automation varies by job (Frey & Osbourne 2013)
- Service sector globalisation (teleworkability) varies by job (Dingel & Neiman 2020)

- By contrast, goods-sector globalisation and automation was at the product level – not job level.

'globotics quadrant'
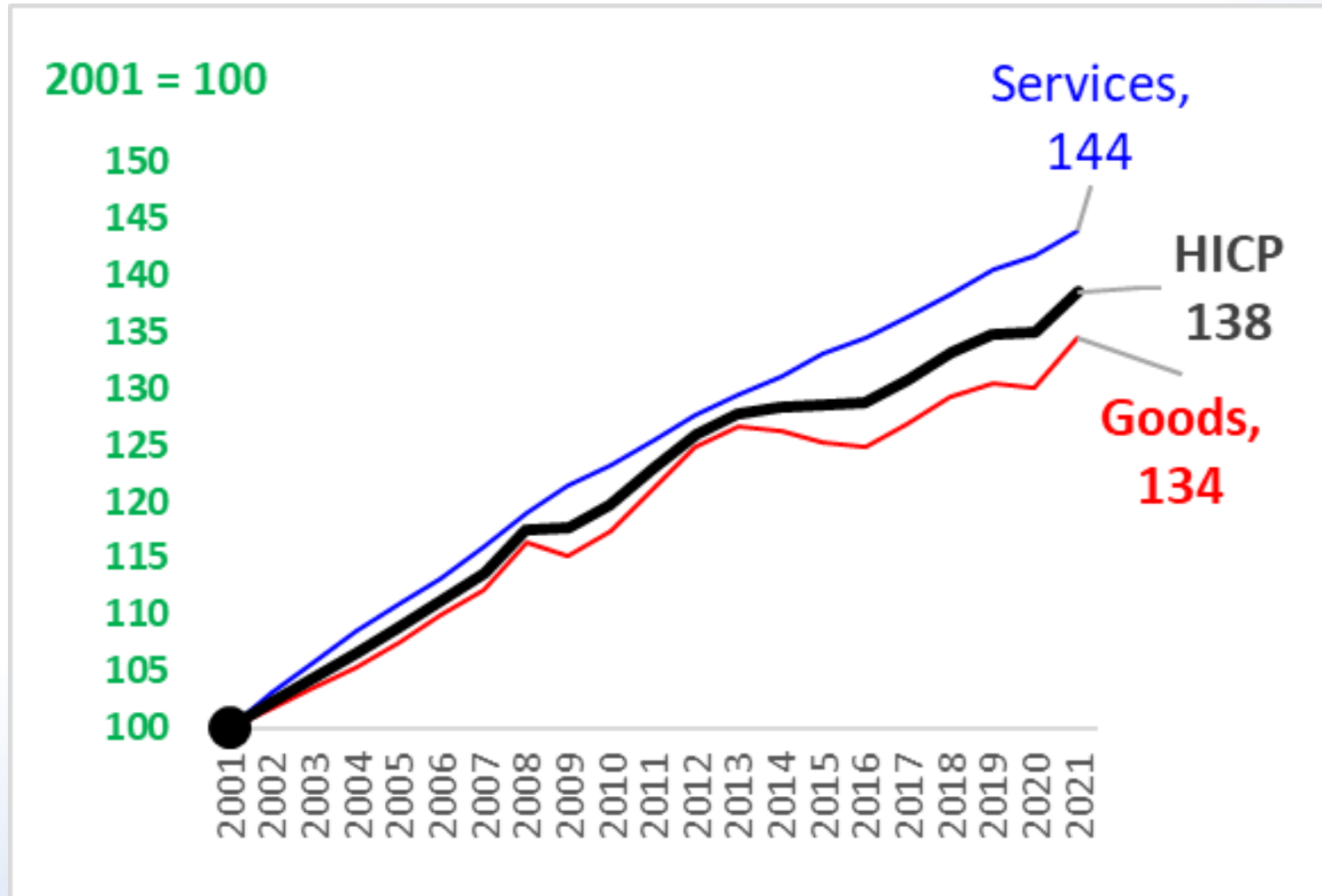
Susceptibility by occupation
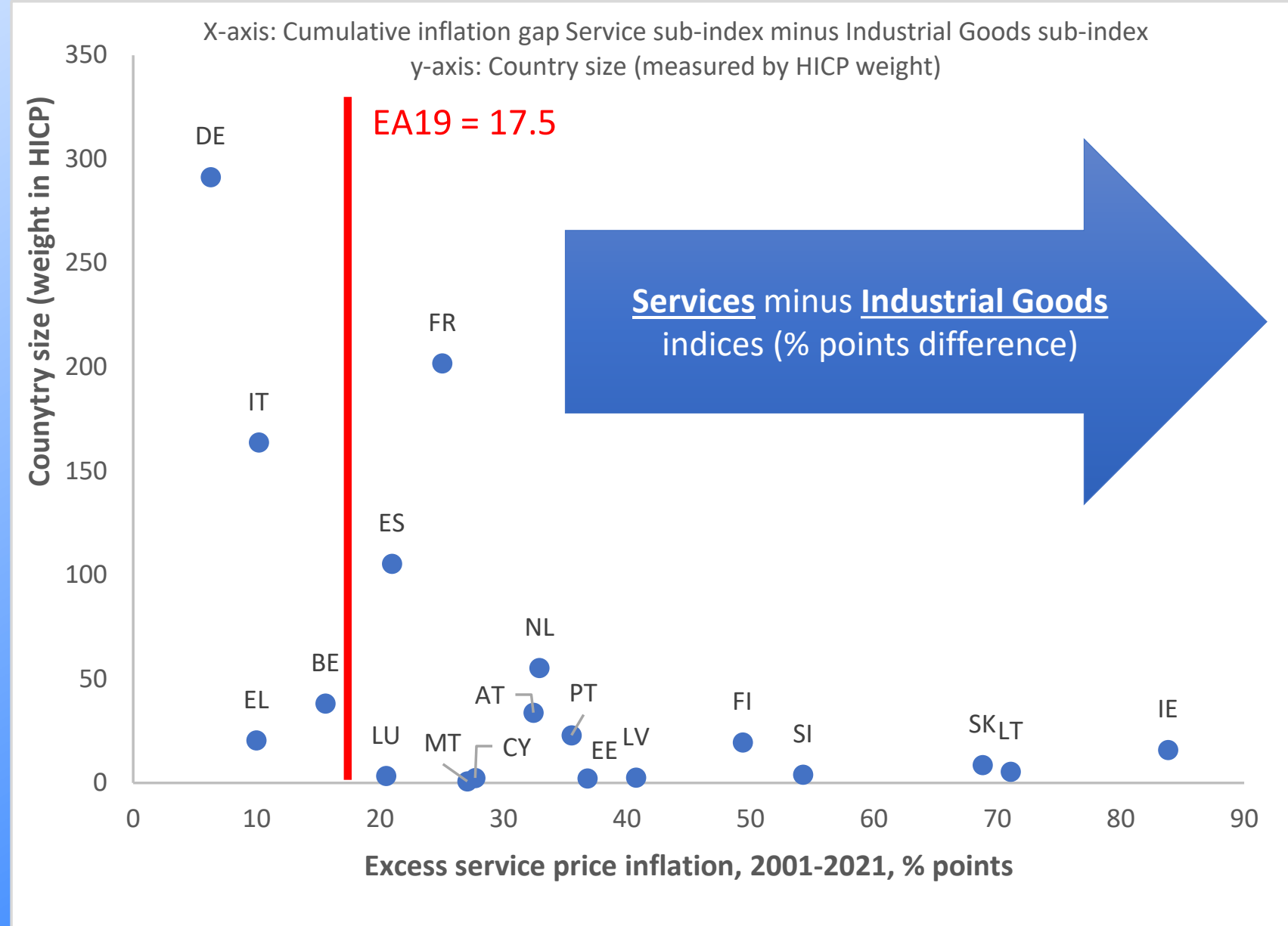
x-axis = automation
y-axis = globalisation

Horizontal axis is Automatability Score (0 to 1, Median=.503), Vertical axis is Teleworkable Score (0 to 1, Median=.466)

Globotics and HICP developments

Services inflation: higher but less volatile

Eo, Uzeda, Wong (March 2022), Bank of Canada working paper

Excess services inflation by EA nations – 2001 to 2020

X-axis: Cumulative inflation gap Service sub-index minus Industrial Goods sub-index
y-axis: Country size (measured by HICP weight)

EA19 = 17.5

Services minus Industrial Goods indices (% points difference)

Counytry size (weight in HICP)

DE
FR
IT
ES
NL
BE
AT
PT
FI
EL
LU
MT
CY
EE
LV
SI
SK
LT
IE

Excess service price inflation, 2001-2021, % points

Services sub indices: fairly homogenous except communications

Service sub-indices, 2001 =100

Transport
Recreation
Miscellaneous
Housing
Communications
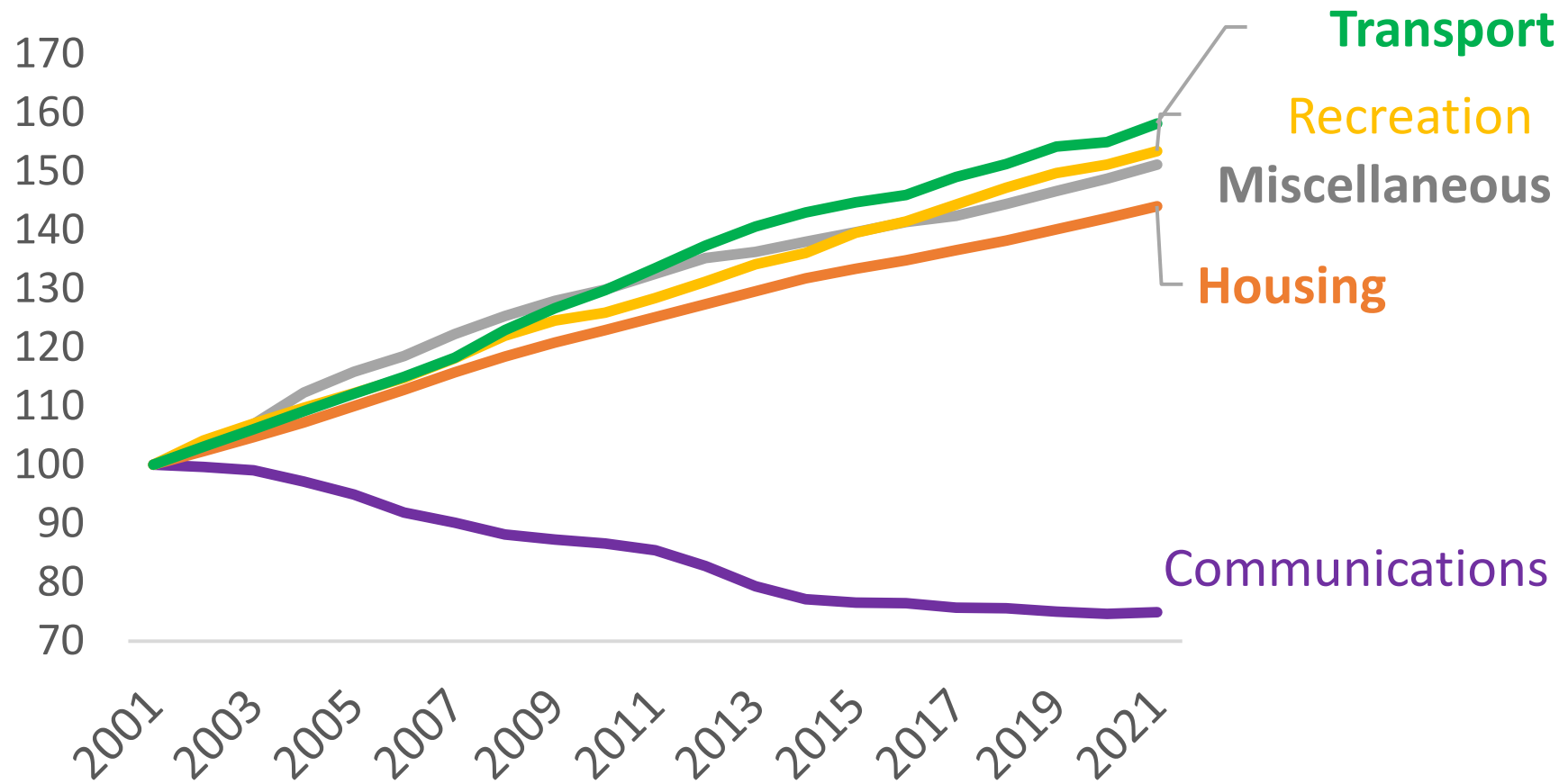
	HICP Weight (bp)
Housing	110
Miscellaneous	84
Recreation	153
Transport	72
Communications	26

Services inflation in context

HIPC & sub-indices, 2001 = 100

Energy
Food
Services
All-items HICP
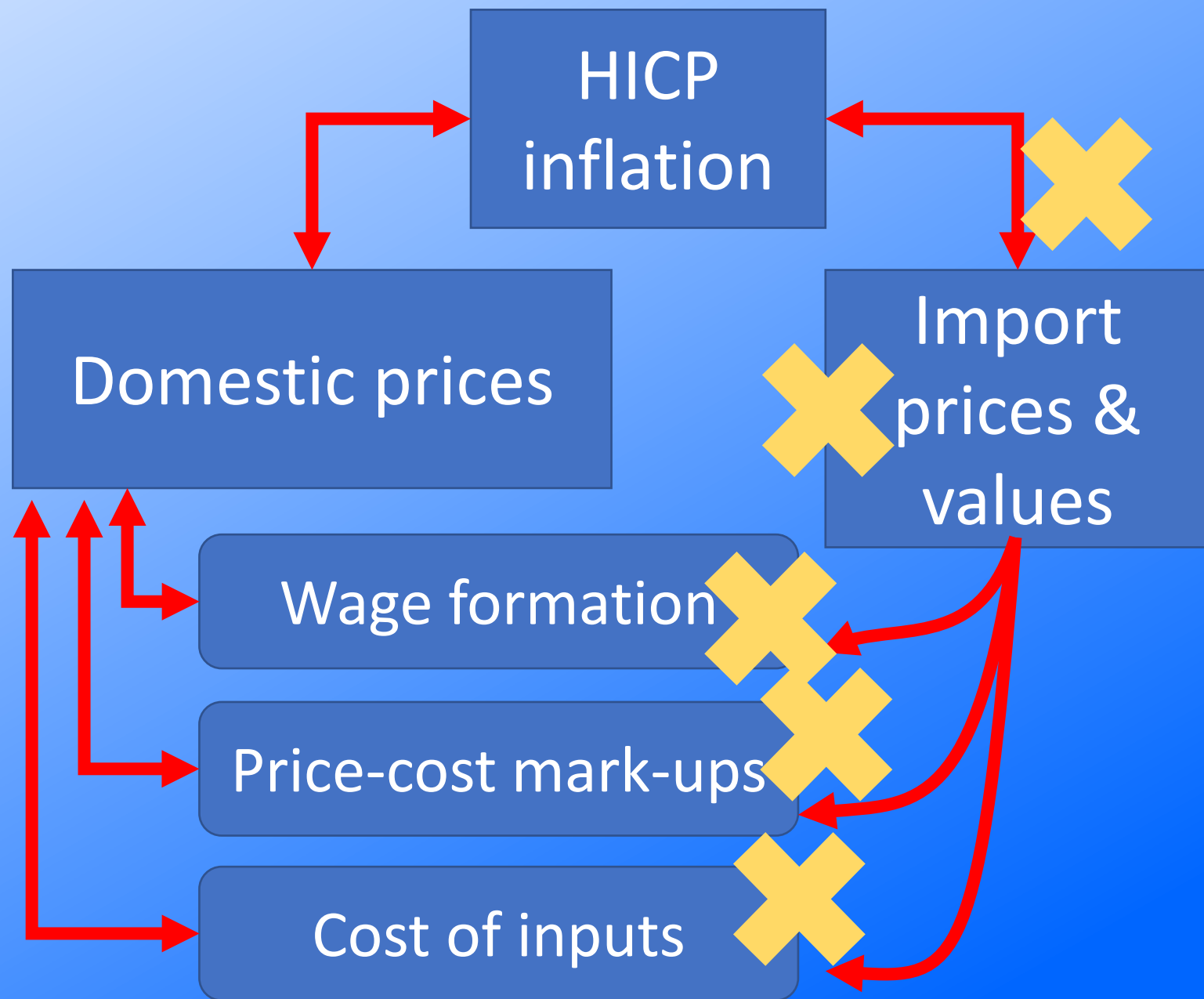All less energy & food
Industrial goods
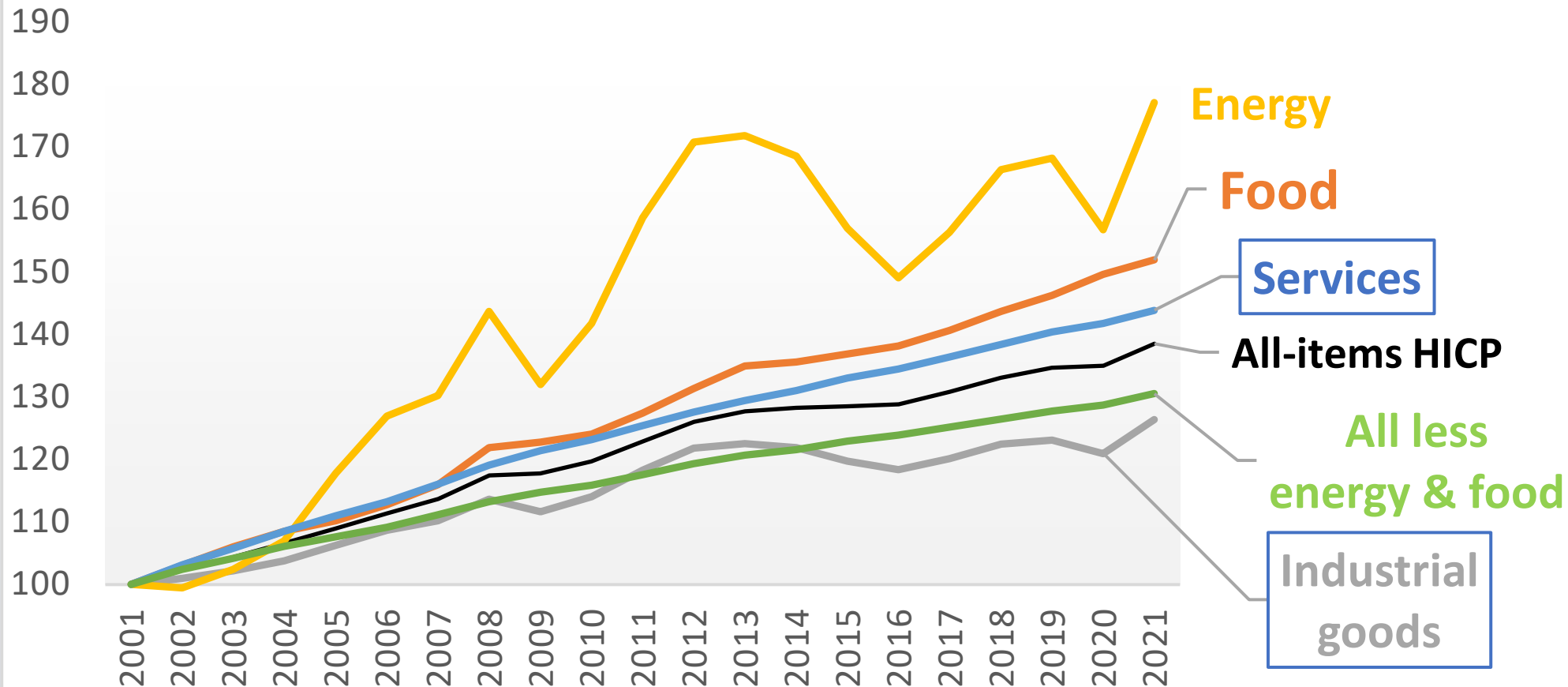
Calculation I would have liked to have done

Calculating the impact of service-sector globalisation
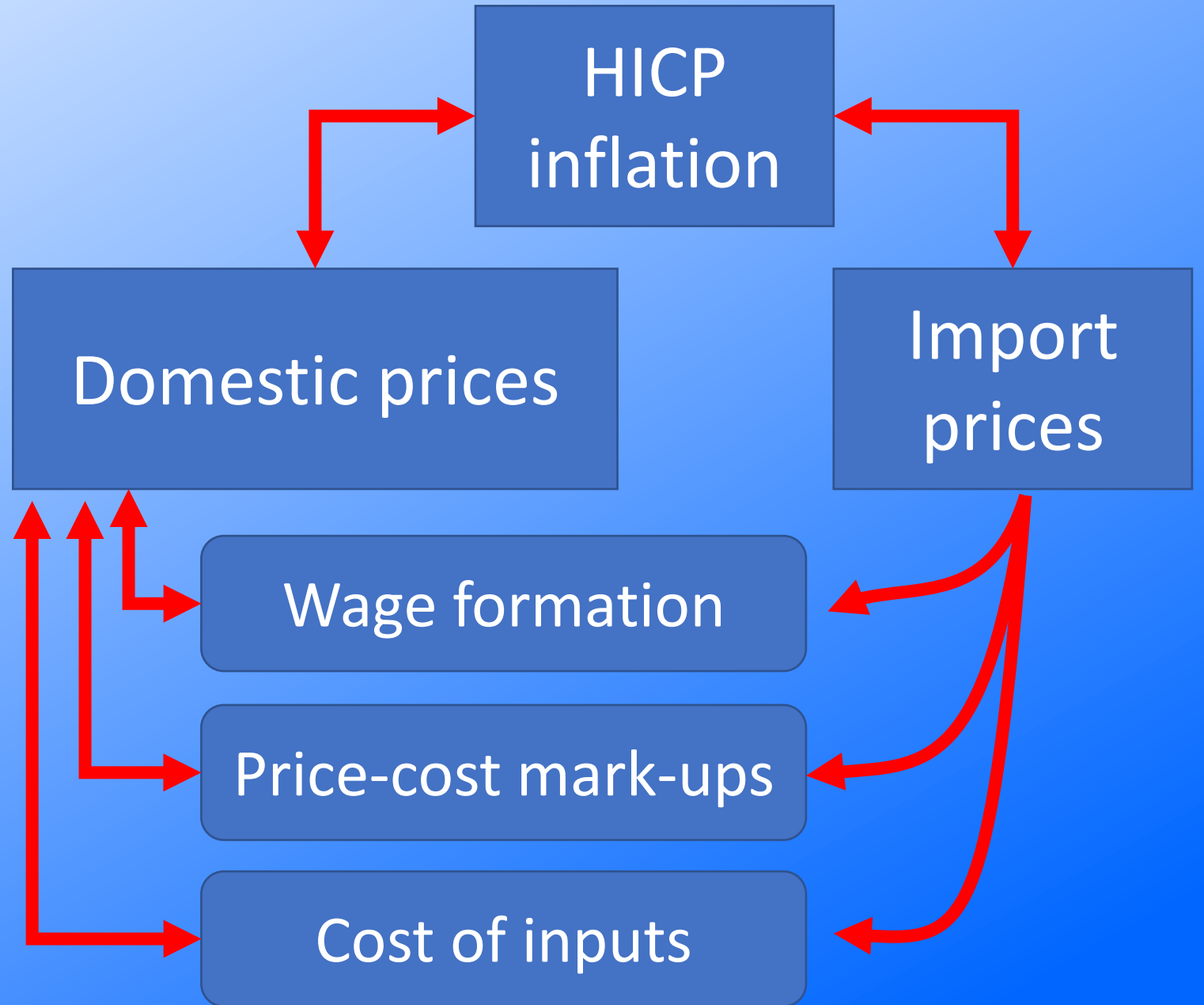
Missing data & mappings

A forward looking research work programme?

- Need price data
- Need mapping of imported services to domestic sectors & jobs

Key points

- Services are important in HICP (45%) and rising
- Service inflation generally higher but steadier
  - "Balassa-Samuelson effect"
- Communication services are very different
- Lots of heterogeneity across euro area members

Thanks for listening

'The best book yet on the new economic era'
Larry Summers, former Chief Economist of the World Bank

THE GLOBOTICS UPHEAVAL

Richard Baldwin

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Globalization, Robotics and the Future of Work

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