

# GEN Annual Conference 2017

RESPONDING TO GLOBAL CHALLENGES

8 December 2017, Te Papa Museum, Wellington

## Technology, 'Tastes', and Trade: National and Regional Perspectives

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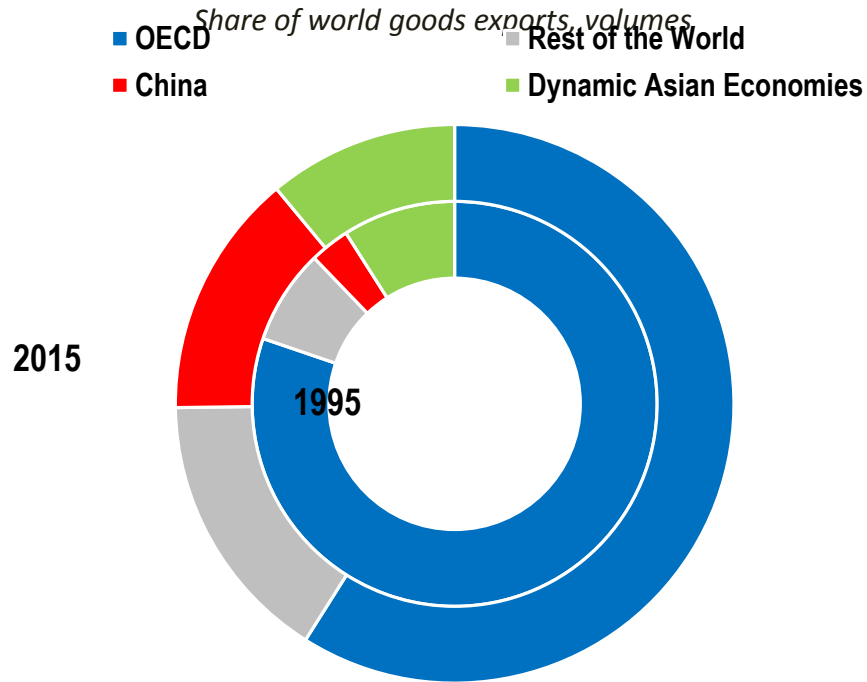


# How is the trade landscape changing?

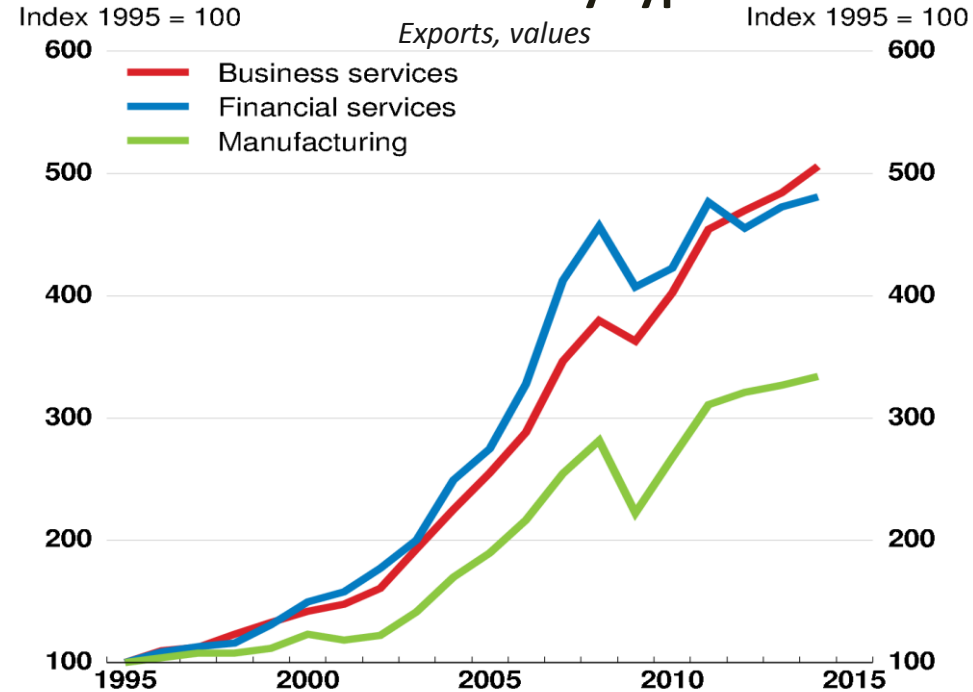
# Shift in specialization, patterns, and growth

*from more open Advanced and Mfg toward less open EME and Services*

## World goods trade



## World trade by type



Note: LHS – Dynamic Asian Economies includes Malaysia, the Philippines, Singapore, Thailand, Vietnam, Chinese Taipei and Hong Kong.

RHS – Business services includes R&D, ICT, real estate and other business activities. Financial services includes financial intermediation, insurance, pension funding and other financial activities. Source: OECD-WTO Trade in Value Added (TiVA) database; UN Comtrade database; and OECD calculations.

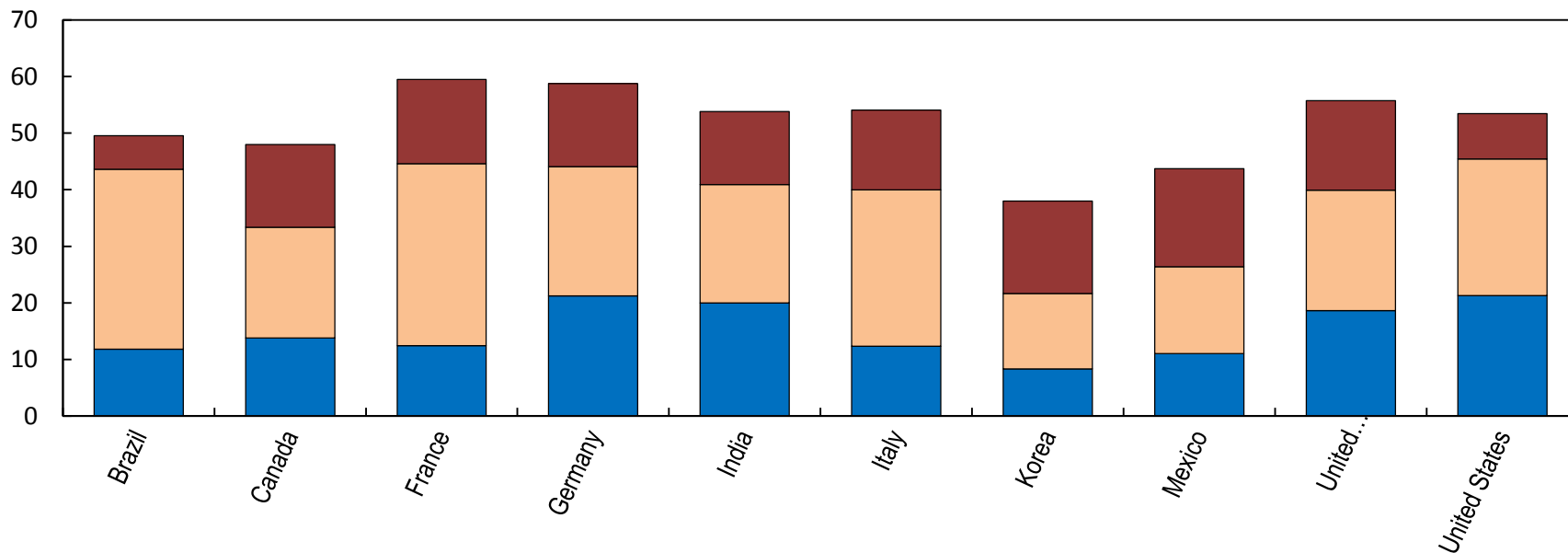
# Services Activities

## *also a key input for manufacturing exports*

### Services value-added in manufacturing exports, 2011

% of export value

■ In-house services ■ Domestic outsourcing of services ■ Offshoring of services (foreign outsourcing)

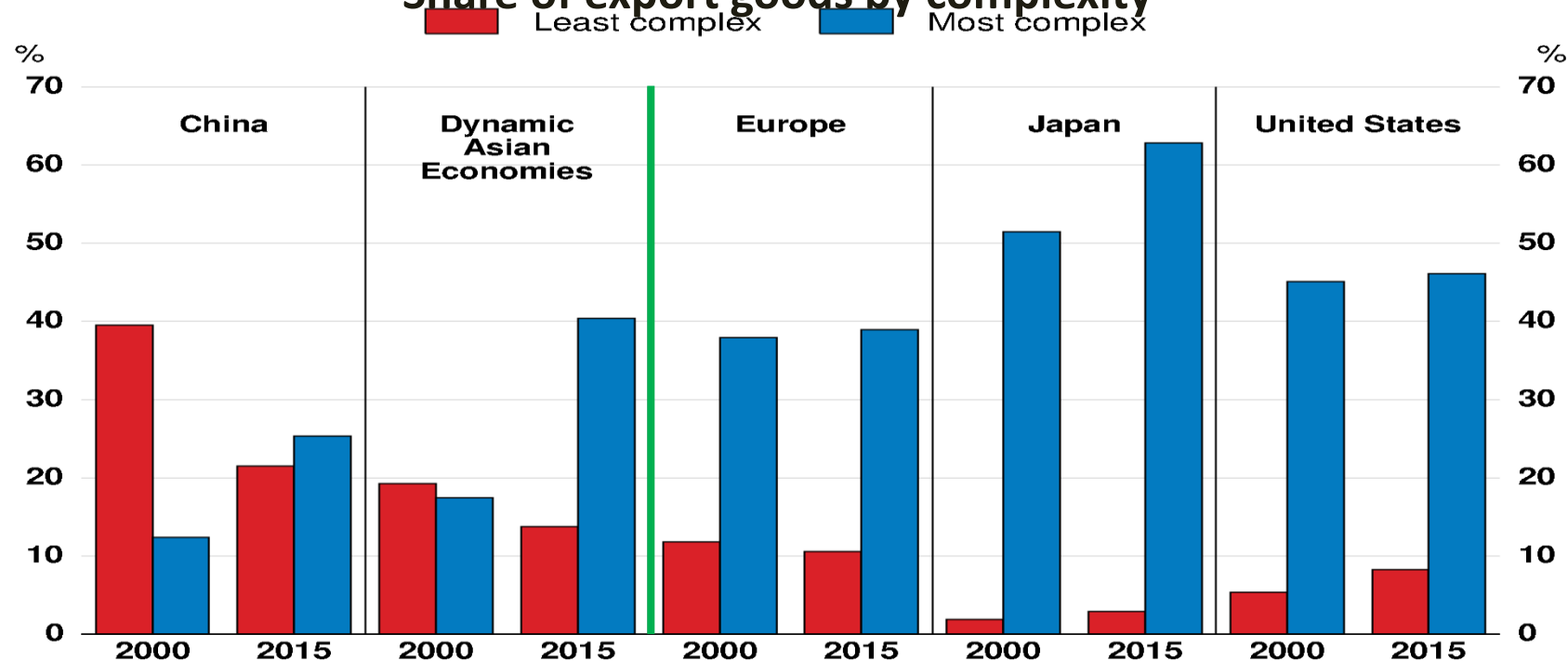


Source: Miroudot and Cadestin (2017), "Services In Global Value Chains: From Inputs to Value-Creating Activities", OECD Trade Policy paper; based on OECD ICIO and occupational data.

# Increased competition in product space

*Products of advanced economies face greater competition  
relatively more from each other, but also increasingly from products of EMEs*

## Share of export goods by complexity



Note: In nominal terms. Least complex is the 1<sup>st</sup> quartile of products by complexity (e.g. crayons), most complex is the 4<sup>th</sup> quartile (e.g. medical equipment), excluding major commodities. Dynamic Asian Economies includes Malaysia, the Philippines, Singapore, Thailand, Vietnam, Chinese Taipei and Hong Kong. Europe is the unweighted average of the Czech Republic, France, Germany, Ireland, Italy, Poland, Portugal and the UK. Source: UN Comtrade database; and OECD calculations.

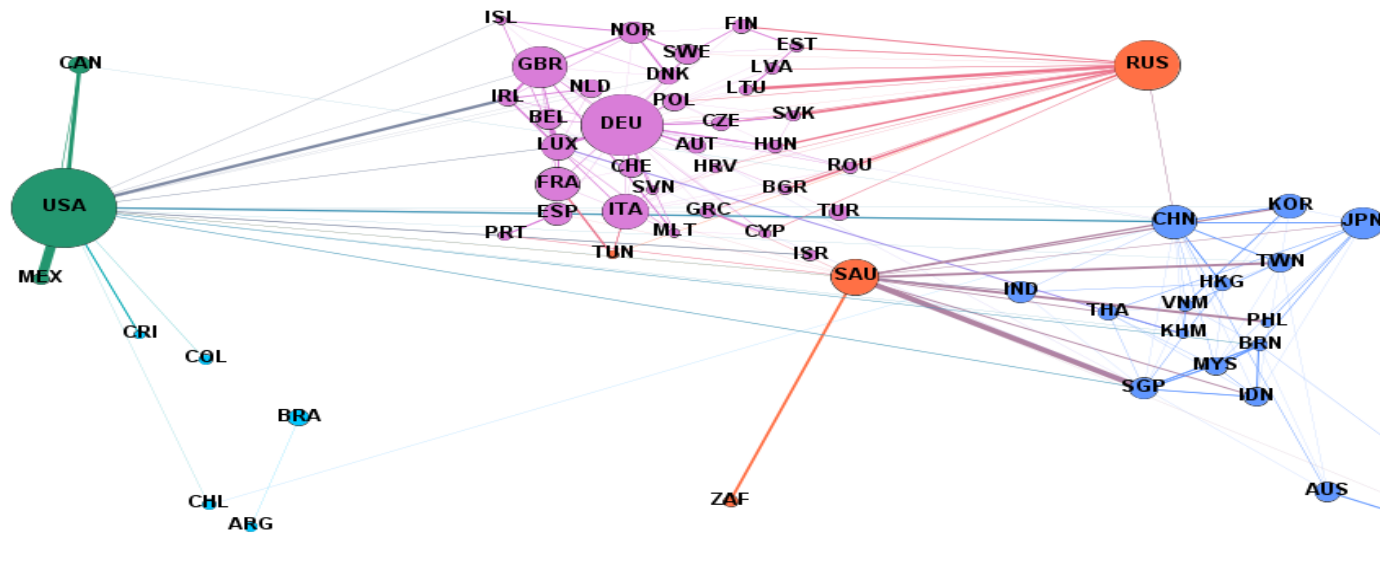
# A new way to look at GVCs

## *Bonacich-Katz eigenvector centrality*

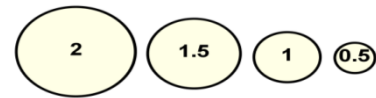
### *strength of direct and indirect connections*

### Hubs and production networks

*Aggregate central and peripheral economies, 2011*



Centrality measured  
using TiVA, 2015  
34 sectors, 62  
economies = 4.4 million  
potential flows.



Note: Economies are placed according to their location. Node size denotes total centrality (forward and backward) aggregated at an economy-level and includes all sectors within global production networks. Edges reflect direct input flows. For clarity only the largest input flows are reflected, those exceeding 2% of total inputs used in the importing or exporting economy.

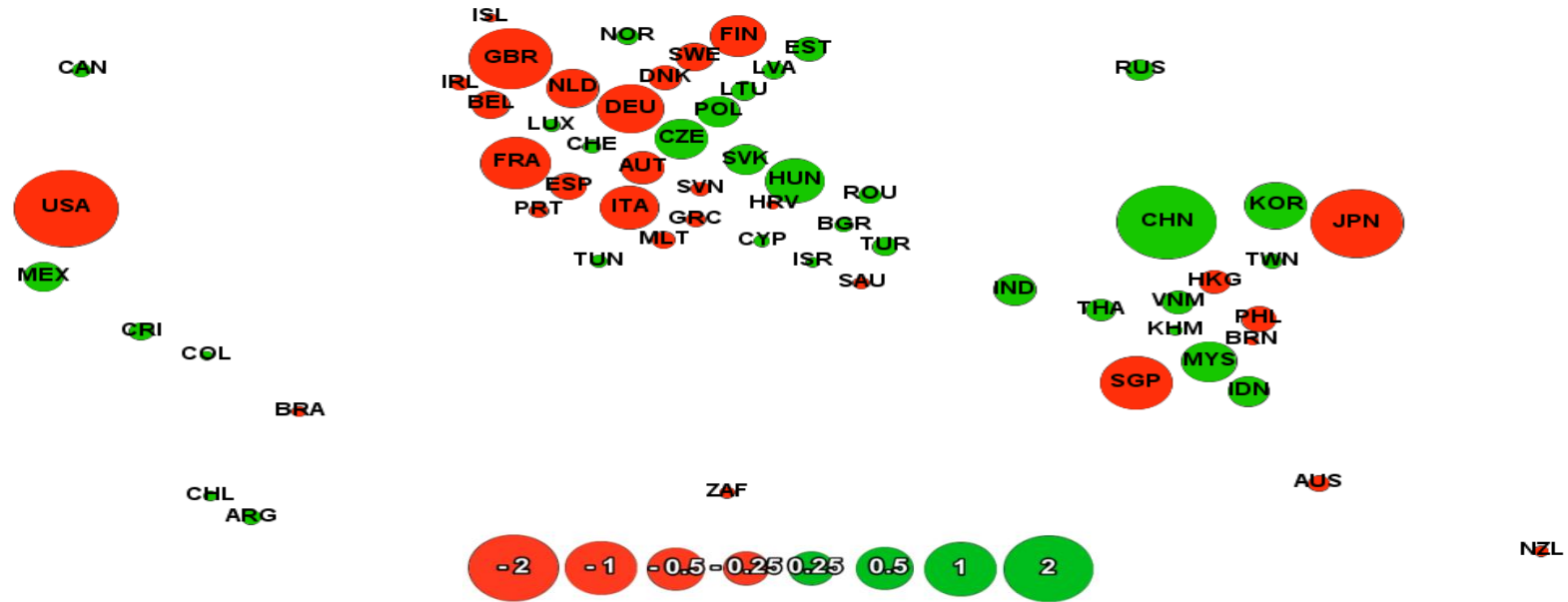
Source: Criscuolo, C. and J. Timmis (2017), "The changing structure of GVCs: Are hubs central for productivity?" (forthcoming), OECD Directorate for Science, Technology and Innovation.

# Changing structure of Global Value Chains

## *example of IT manufacturing shifting hubs east*

### Relative change in computer and electronics manufacturing

From 1995 to 2011



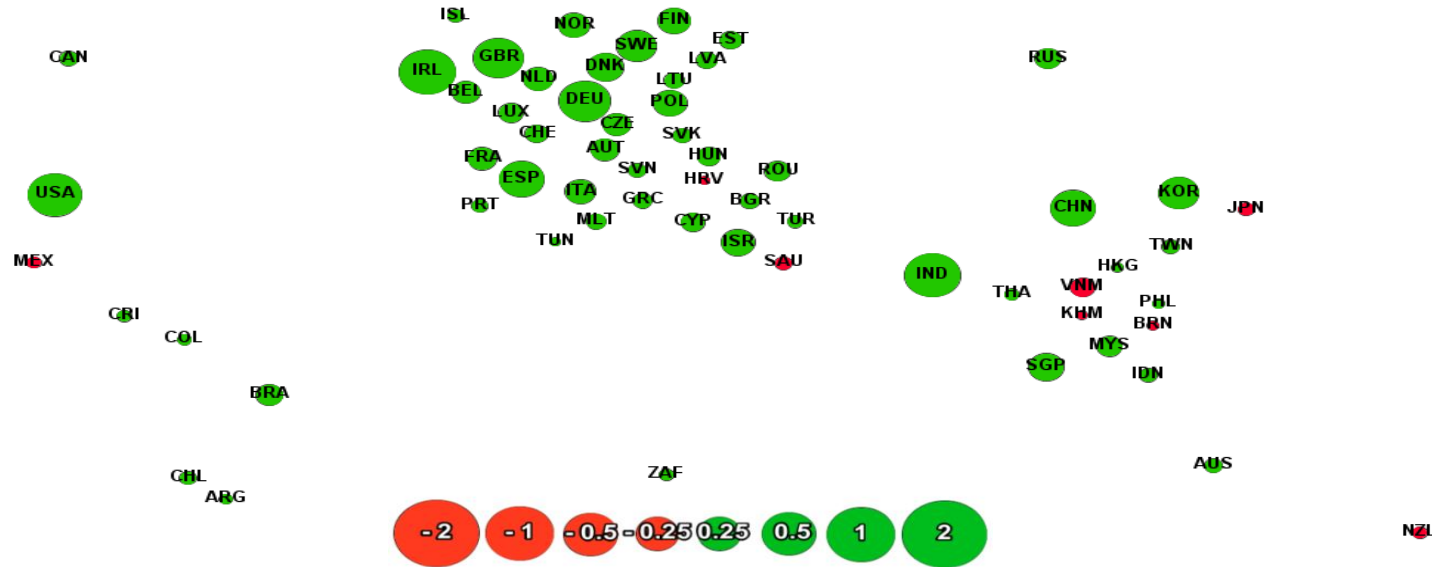
Note: Economies are placed according to their location. Size of the nodes reflects the magnitude of the change (in levels) of total foreign centrality over the period 1995-2011. As reflected in the key, these changes are graphed using a log scale for readability. Green coloured nodes reflect increasing centrality and red denotes falling centrality. Source: Criscuolo, C. and J. Timmis (2017), "The changing structure of GVCs: Are hubs central for productivity?" (forthcoming), OECD Directorate for Science, Technology and Innovation.

# Changing structure of Global Value Chains

## *but IT services increasingly central to all GVCs*

### Relative change in IT Services

From 1995 to 2011



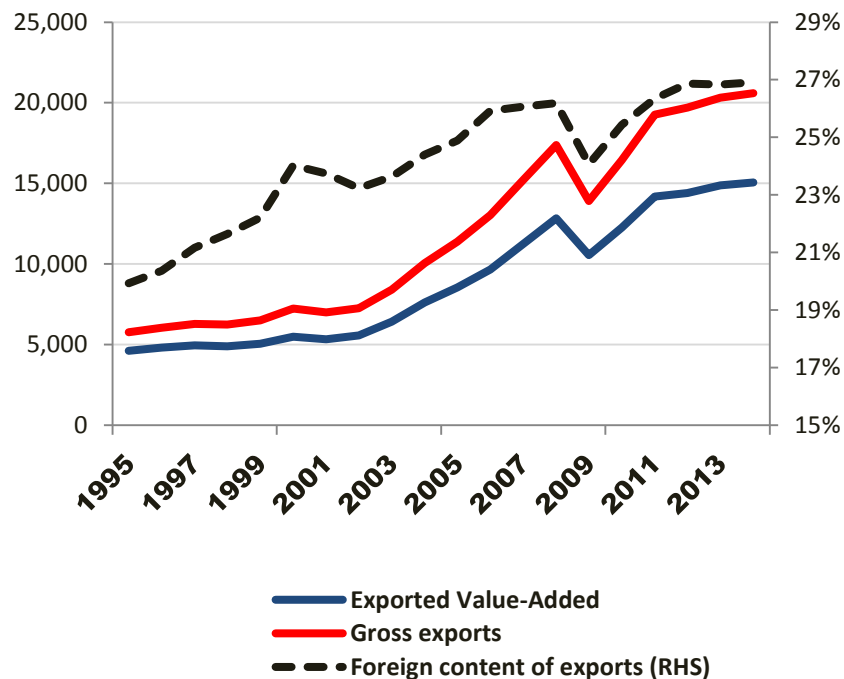
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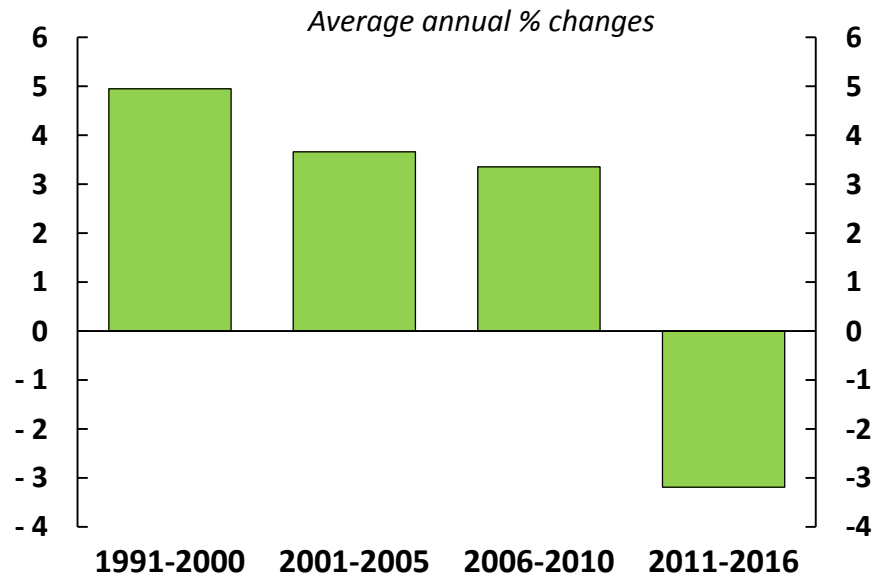
# Fragmentation (GVCs) has even retreated

*GVCs have been a source of tech transfer, economies of scale,  
cluster economies, all supporting productivity growth*

**GVC “nowcast” to 2014**



**GVC “real time” indicator to 2016**



Note: Structural global value chain indicator shown which adjusts for the economic cycle and changes in commodity prices. For further detail see OECD 2016 Economic Policy Paper “Cardiac Arrest or Dizzy Spell: Why is World Trade So Weak and What Can Policy Do About It?”.

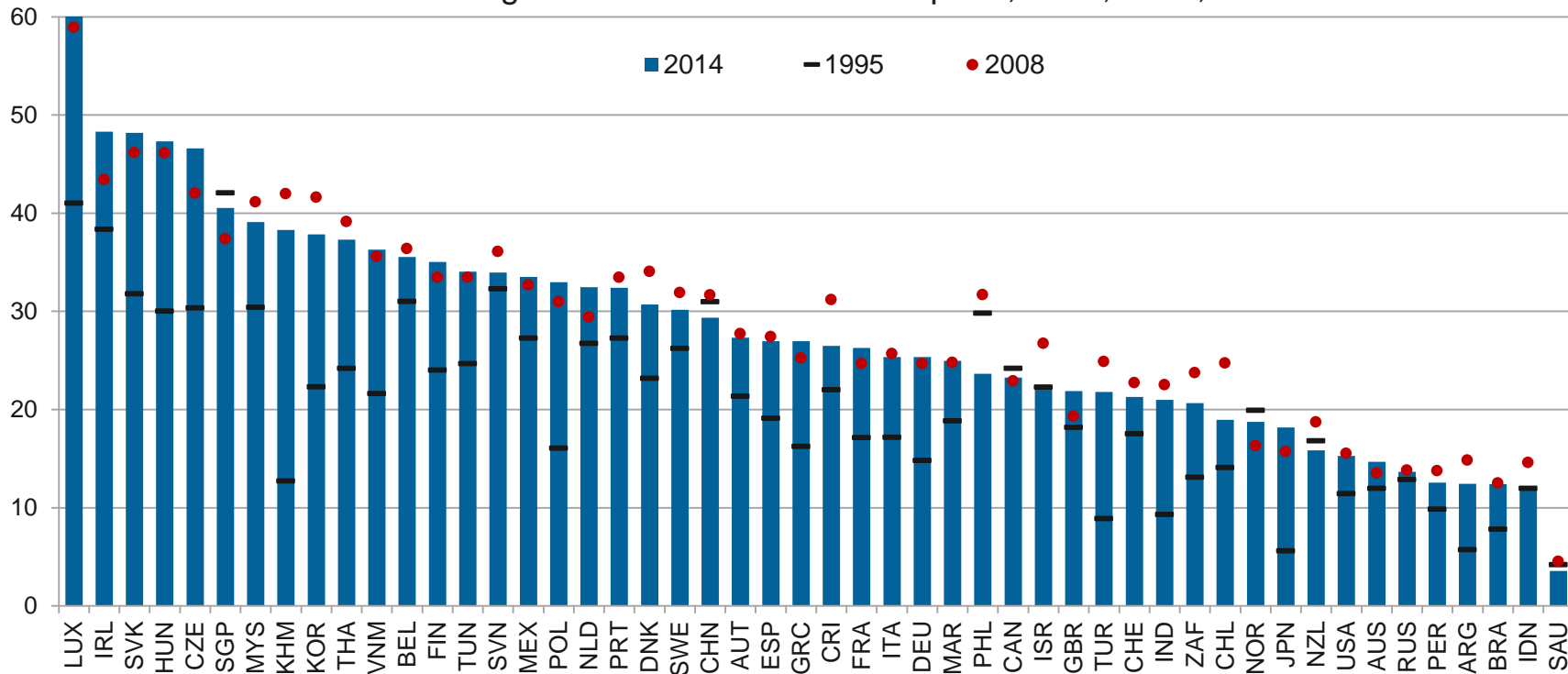
Source: OECD June 2017 Economic Outlook database; OECD STAN Bilateral Trade database; and OECD calculations.

# GVC nowcast detail

*Domestic upgrading, globalization retreat, relatively more in Asia*

*Available for imports, exports, goods, services*

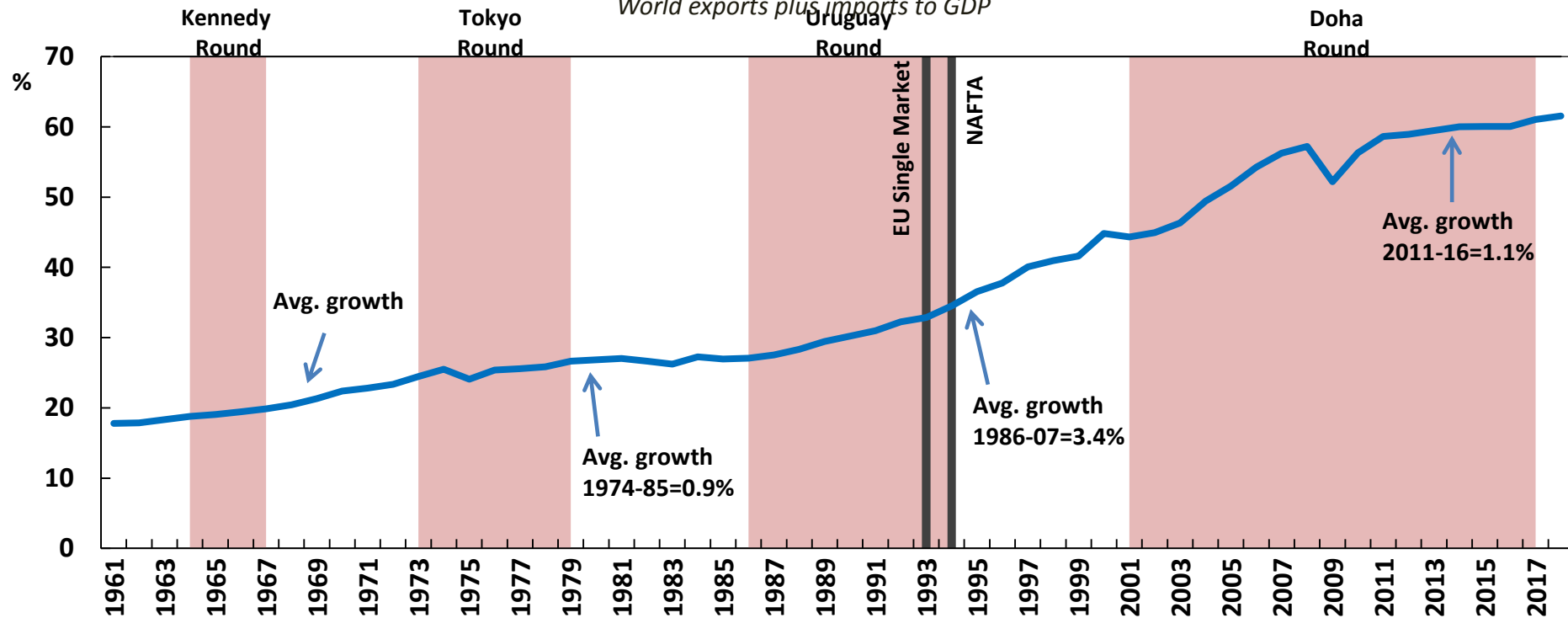
Foreign value added as a % of exports, 1995, 2008, 2014



# Putting it all together, the trade integration process has stalled

## World trade intensity

*World exports plus imports to GDP*



Note: Both world trade and GDP measured at market exchange rates in constant 2010 US dollars.

Source: OECD Economic Outlook database.

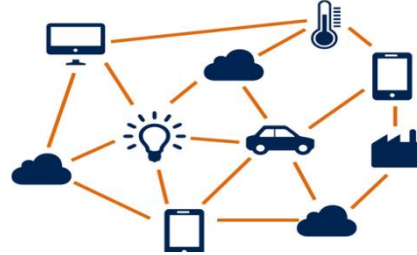


# How is the technology landscape changing?

# Many New Digital Technologies



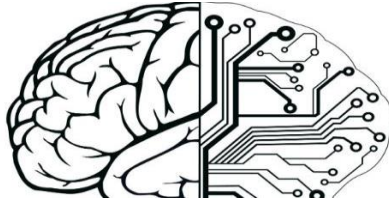
**Cloud computing**



**Internet of Things**



**Big data**



**Artificial  
intelligence**



**3D printing**

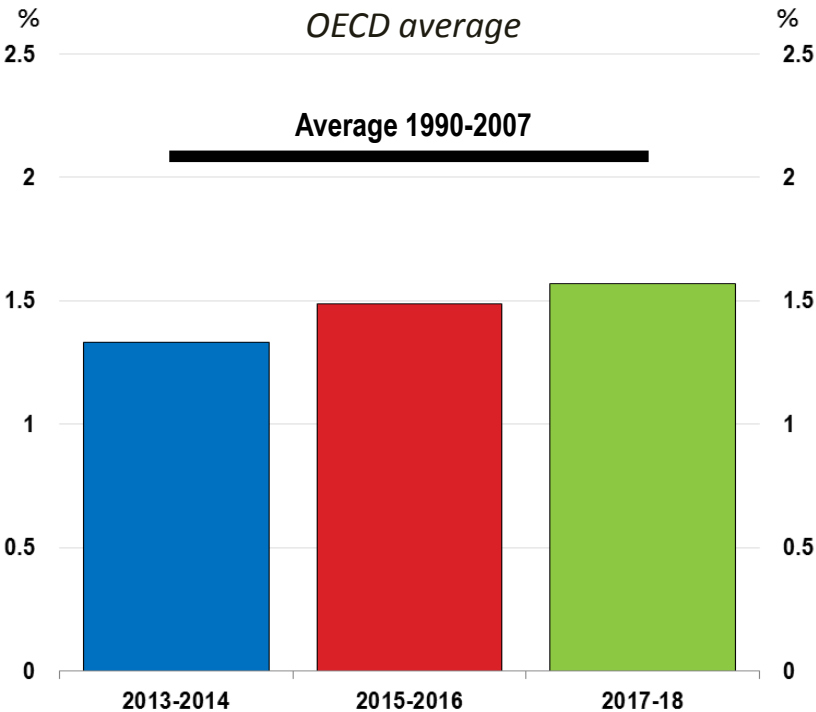


**Blockchain**

# New Technology is Needed

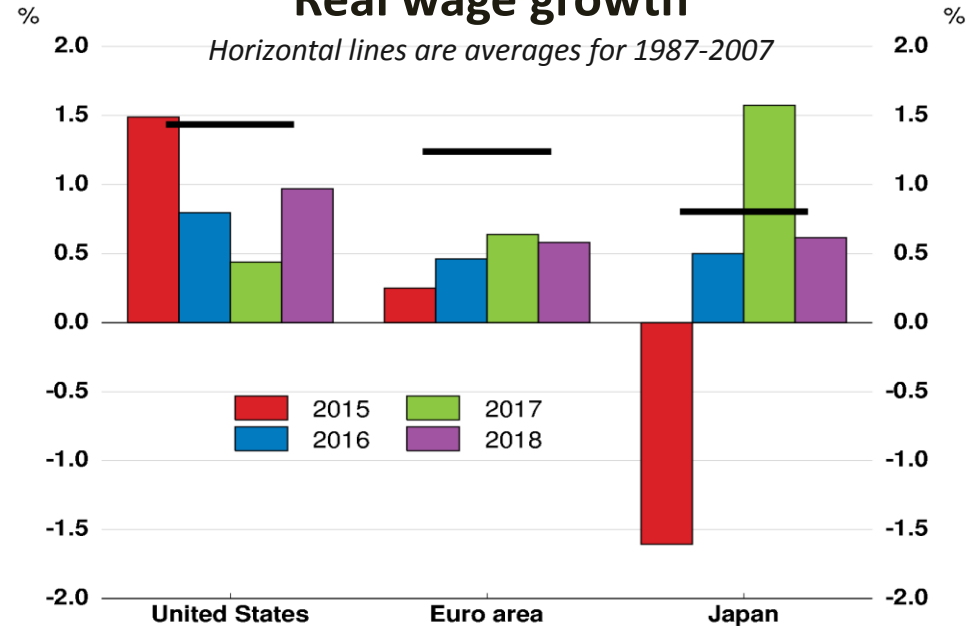
*Productivity and real wage growth lag expectations, commitments*

## GDP growth per person



Source: OECD Economic Outlook database.

## Real wage growth



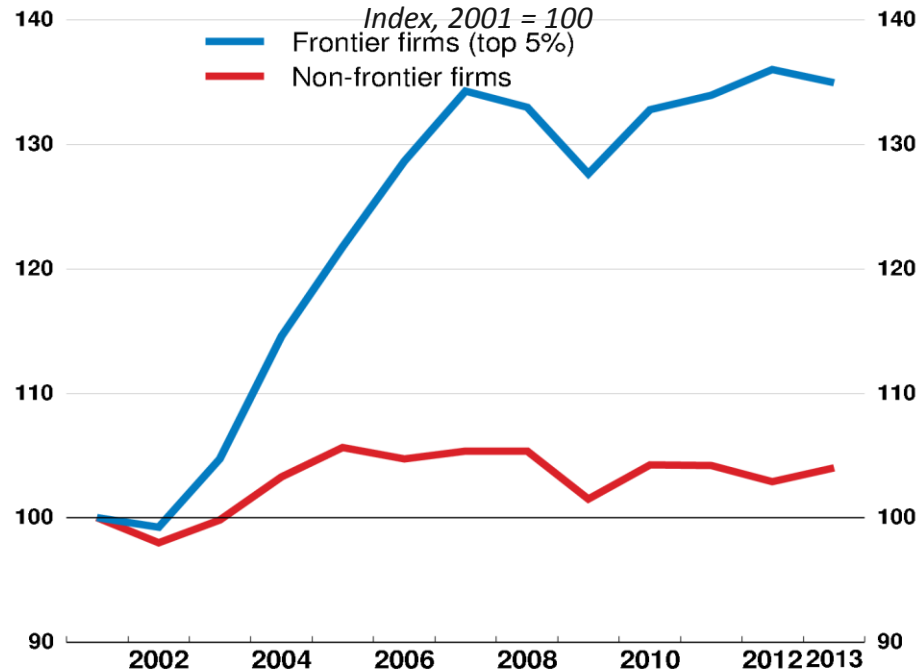
Note: Real wages measured as labour compensation per employee adjusted for the GDP deflator.

Source: OECD June 2017 Economic Outlook database; OECD Employment database; US Bureau of Labor Statistics; Eurostat; and Japan Statistics Bureau.

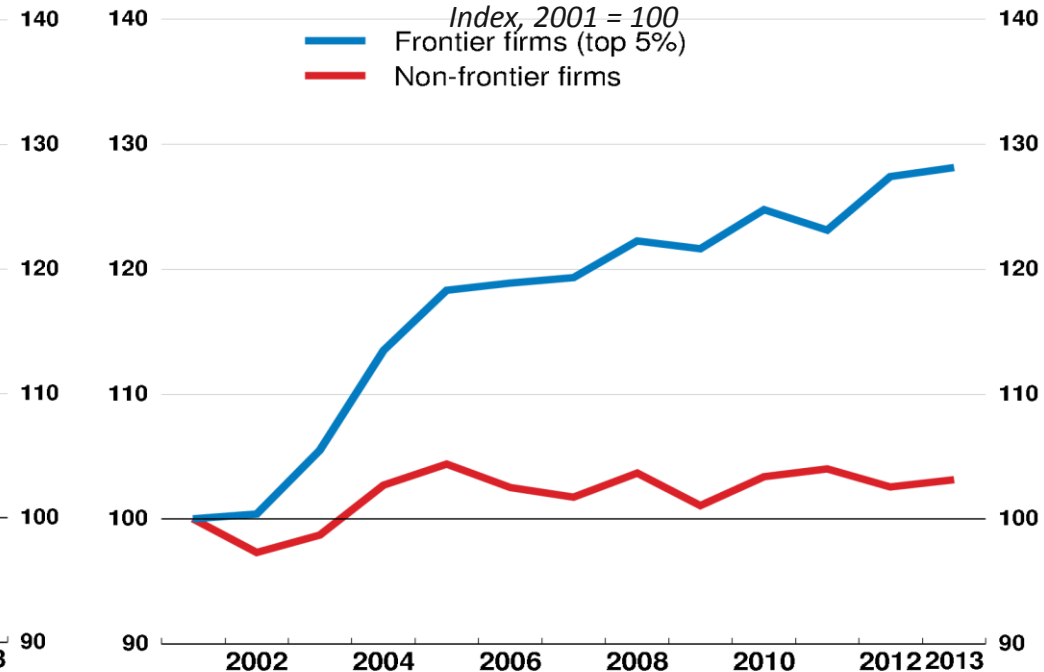
# But, there is a diffusion problem

## *At the firm level, productivity and wage dynamics diverge*

### Labor productivity



### Real compensation per worker

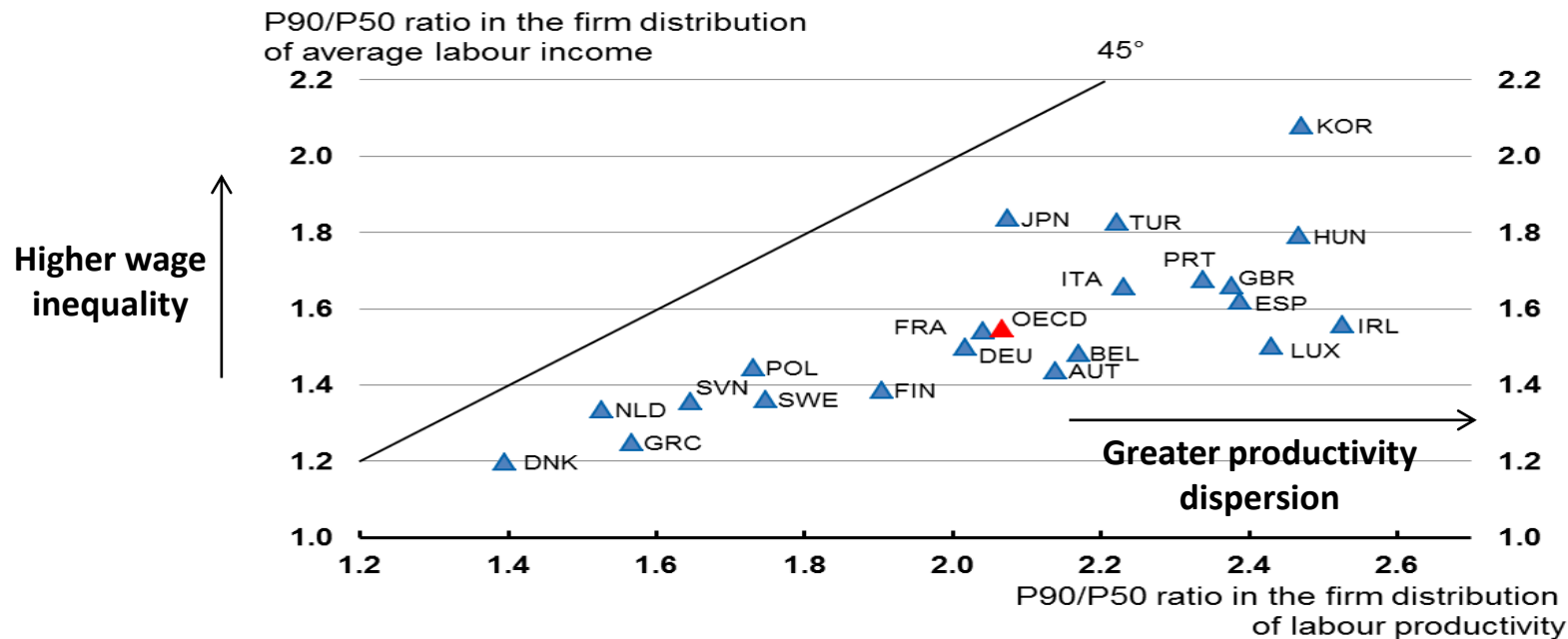


**Note:** Frontier firms are the 5% of firms with the highest labor productivity by year and sector. Included industries are manufacturing and business services, excluding the financial sector, for firms with at least 20 employees. **Source:** Andrews, D., C. Criscuolo and P. Gal (2016), "The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy", OECD Productivity Working Papers, No. 5; Orbis data of Bureau van Dijk; and OECD calculations.

# Wage ⇔ Productivity Dispersion

## *Substantial cross-country variation to exploit in research*

### Wage inequality and productivity dispersion across firms



Note: Data are for 2013. OECD is the unweighted average of the countries for which data are available. The P90/P50 ratio is labour income or labour productivity of the firm at the 90th percentile divided by the corresponding value of the firm at the median. Labour income is total compensation including taxes and the employer's and employee's social security contributions.

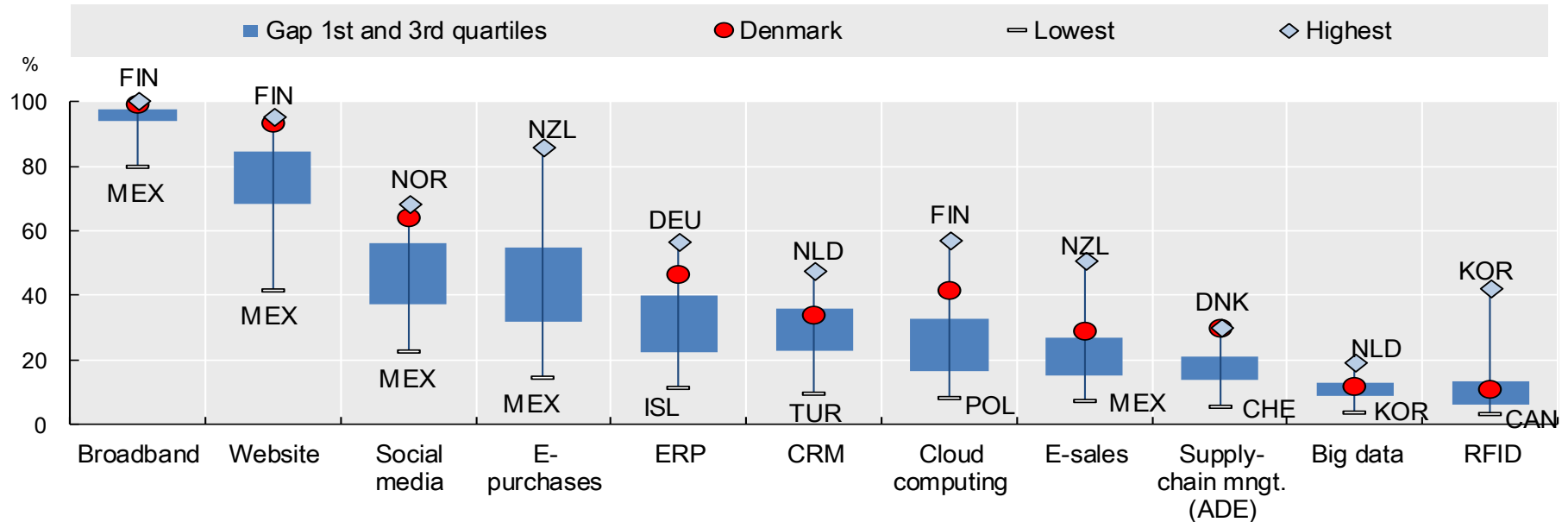
Source: OECD estimations based on Saia and Schwellnus (2016), "Decoupling of Productivity and Median Wage Growth: Micro-Level Evidence", OECD Economics Department Working Papers, forthcoming; Orbis.



# Intensity of ICT use also varies widely

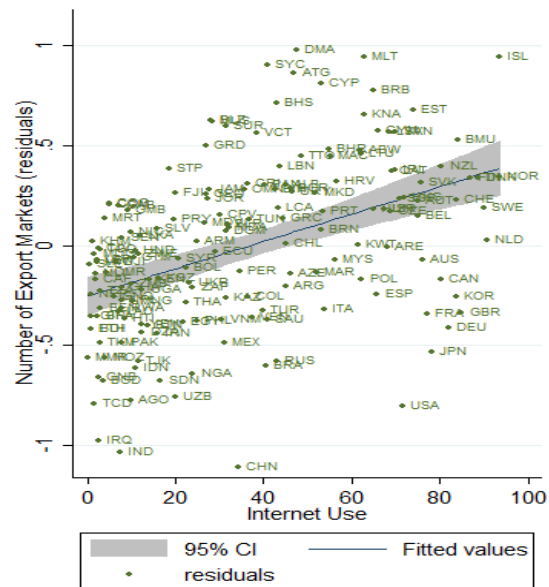
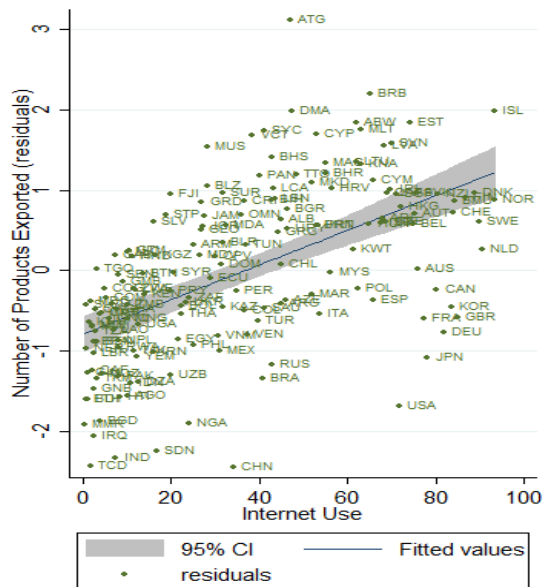
## The diffusion of selected ICT tools and activities in enterprises, 2016

Percentage of enterprises with ten or more persons employed



# Trade and digitalization go hand in hand

More 'connected' countries sell more goods to more destinations



Note: Figures show correlation between internet use per 100 inhabitants, number of products exported and export market. To avoid correlations arising through other variables, such as internet use and income, or number of products and size of markets, the residuals from a regression of the trade outcomes with respect to per capita GDP and size of markets with country specific fixed effects and time dummies are taken.

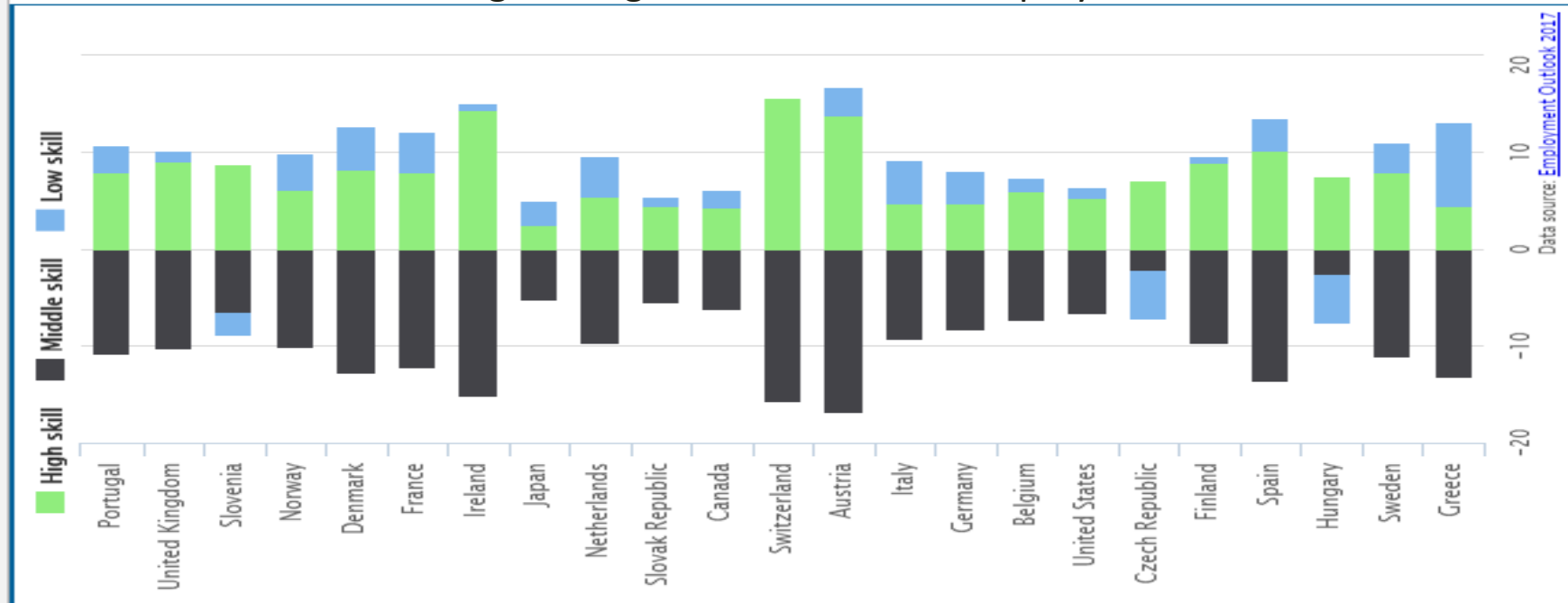


# Trade and Technological Change already posing challenges

# Already job polarization, technology disruption points to more

## Job polarization by country, 1995 to 2015

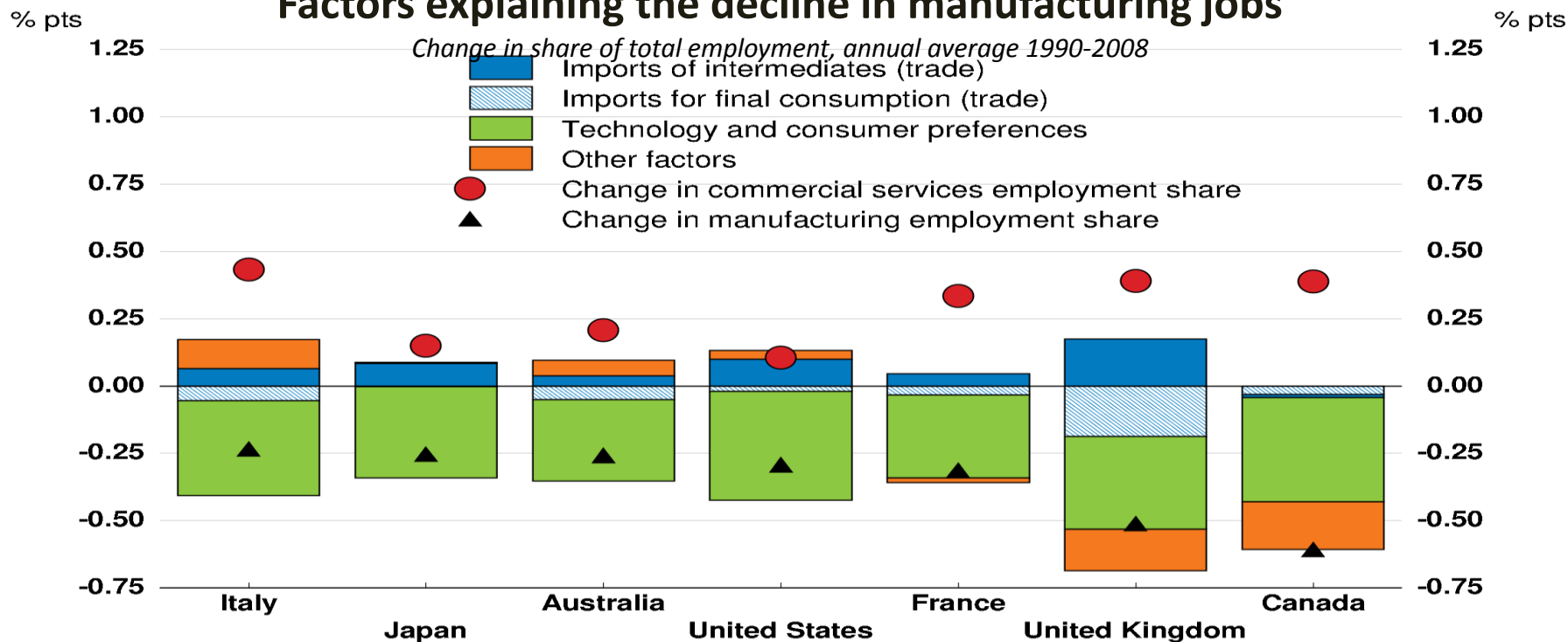
Percentage change in share of total employment, 1995 to 2015



# What about trade, technology, and jobs?

*Technology & "Tastes" dominate role for trade in mfg job loss, but services jobs increasing*

## Factors explaining the decline in manufacturing jobs



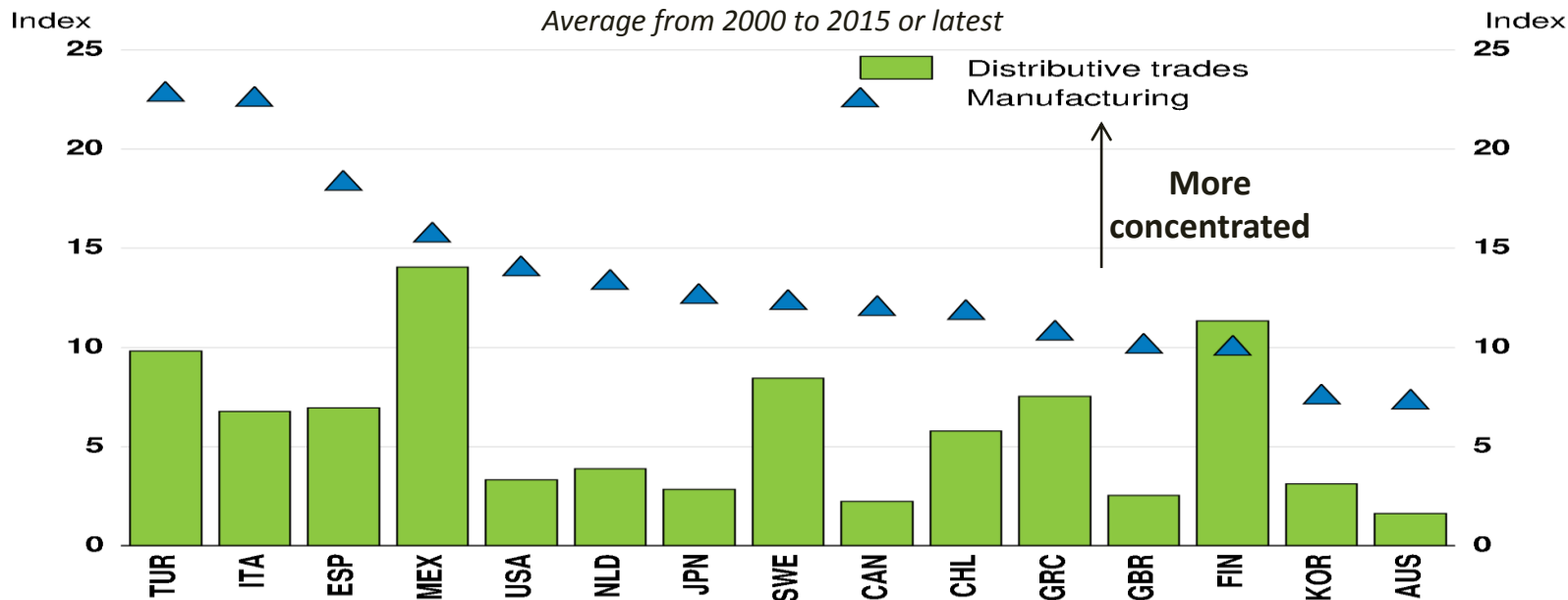
Note: Decomposition based on regression estimation. Each factor is based on the change over the period. Technology and consumer preferences include ICT and machinery investment, changes in the manufacturing consumption share and time specific effects.

Source: OECD Economic Outlook database; STAN database; and OECD calculations.

# Concentration of Production Matters

*example: manufacturing is regionally concentrated but with cross-country variation to exploit in research.*

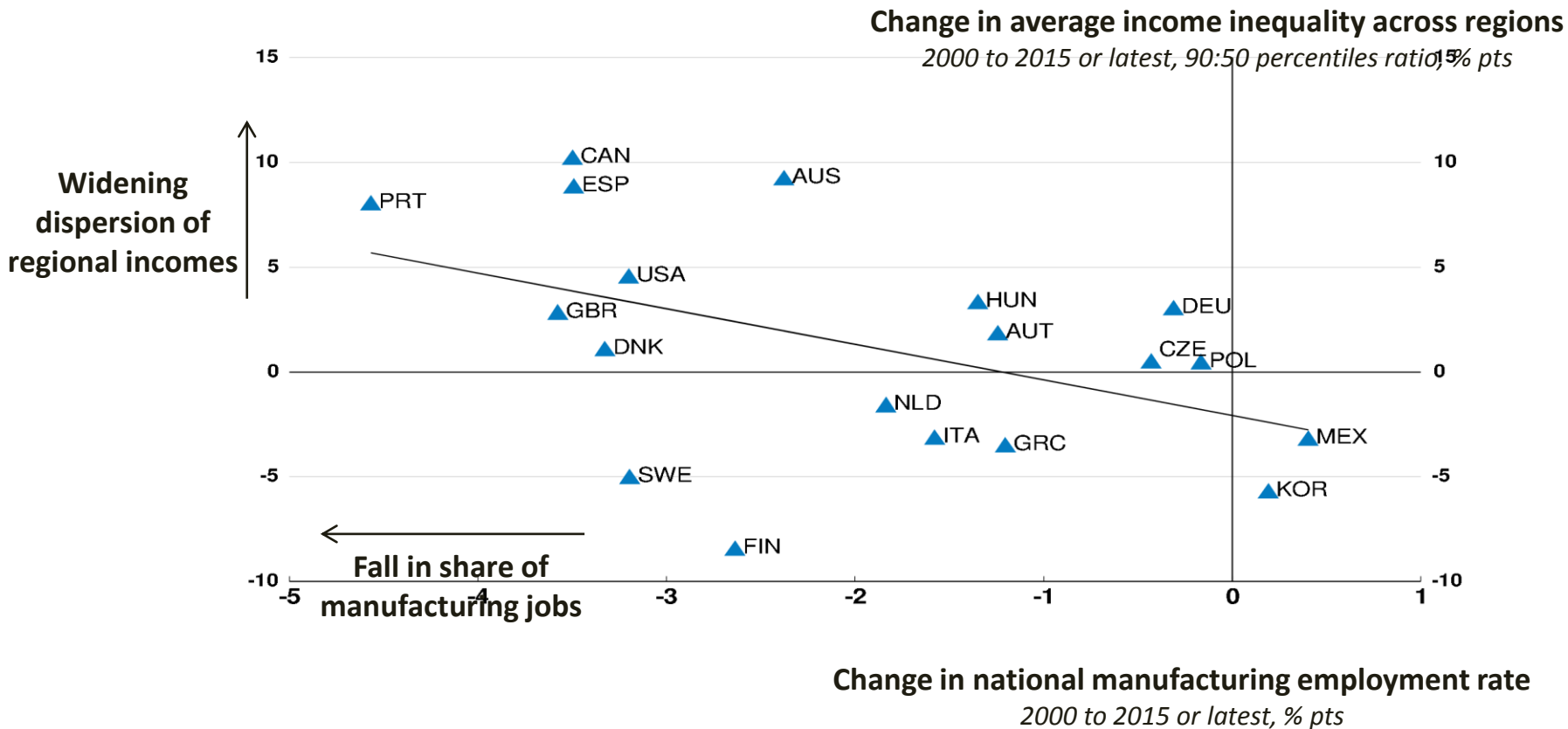
## Geographic concentration index by sector



Note: "Distributive trades" includes distributive trade, repairs, transportation and storage, accommodation and food service activities. Index measures the extent to which employment is concentrated in particular regions, varying between 0 (no concentration, where all regions of a country have the same manufacturing employment rate) and 100 (maximum concentration, where all manufacturing employment is concentrated in the smallest region). The index incorporates the size of the region and is based on OECD (2003) "Geographic Concentration and Territorial Disparity in OECD Countries".

Source: OECD Regional database; and OECD calculations.

# Countries with larger falls in manufacturing jobs have increased regional inequality



Source: OECD Regional database; and OECD calculations.



# So, what to do? Policy Discussion



# What Not To Do:

## Rolling back trade liberalization would hurt output

### Medium-term GDP impact of different trade scenarios



The trade facilitation measures scenario shows the impact of a trade cost reduction by 1.3% across all sectors in all countries, an estimate of the global average derived from the OECD's Trade Facilitation Indicators. The imposing trade restrictions in major economies scenario shows the impact of a goods trade cost increase of 10 percentage points for China, Europe and the United States against all trading partners, equivalent to an average increase in tariffs to 2001 levels, the year when trade negotiations under the Doha Development Round started.

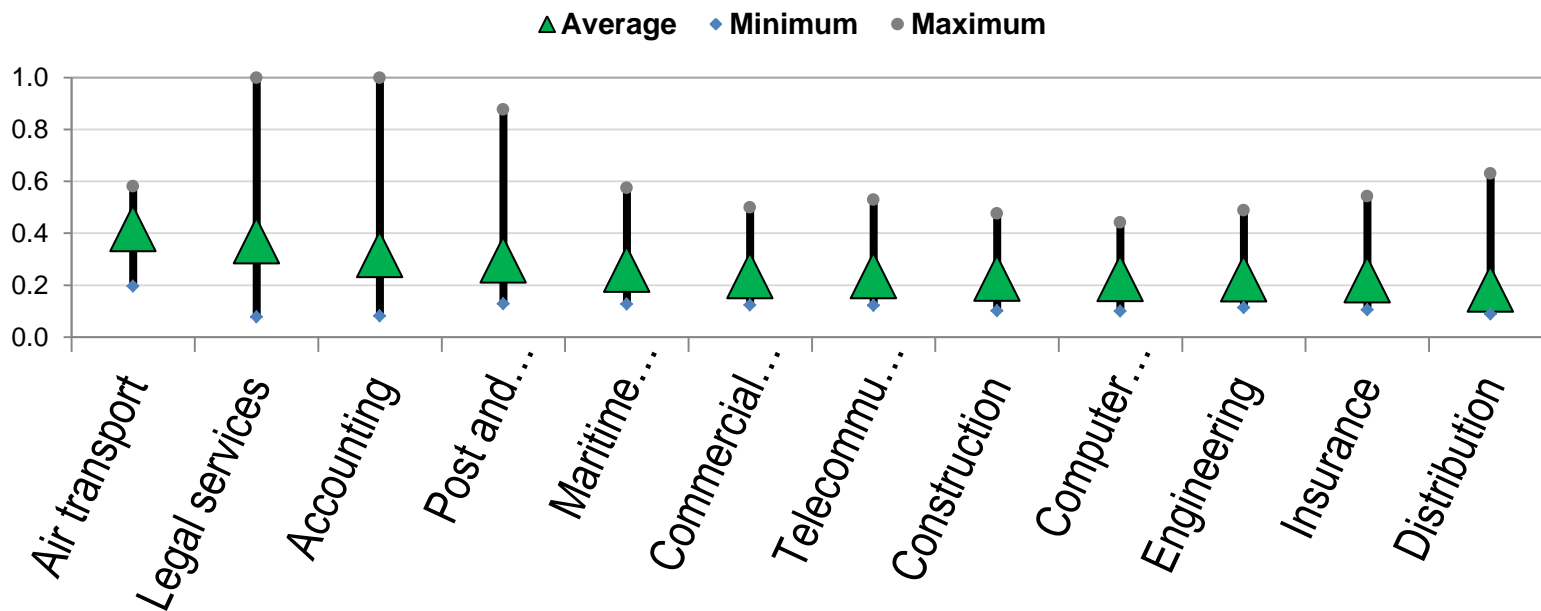
Source: OECD METRO model; and OECD calculations.

# Pursue Services Liberalization

## *Services Remain Restricted*

### Services trade restrictiveness indices

2016, covering 44 countries



Note: Covers the 35 OECD members plus Brazil, China, Colombia, Costa Rica, India, Indonesia, Lithuania, Russia and South Africa.

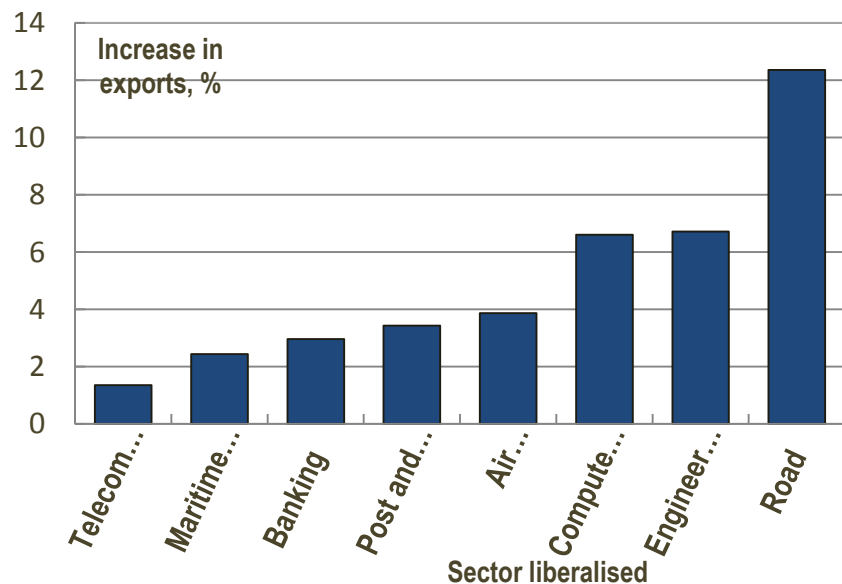
Source: OECD STRI database.

# Gains from Reducing Services Barriers

## *on mfg exports (autos example), trade and FDI, esp small firms*

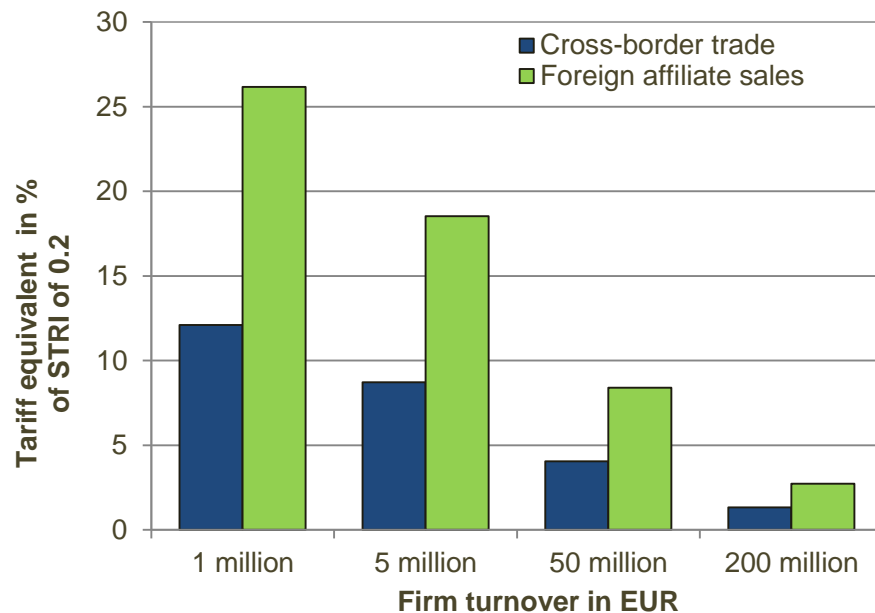
### Spillovers from services regulation to mfg

*Impact of halving the distance to lowest STRI  
on exports of cars and parts, average across countries*



Source: OECD (2017), *Services Trade Policies and the Global Economy*; based on OECD STRI database, UN Comtrade, and OECD calculations.

### The burden of restrictions falls disproportionately on smaller firms



Note:

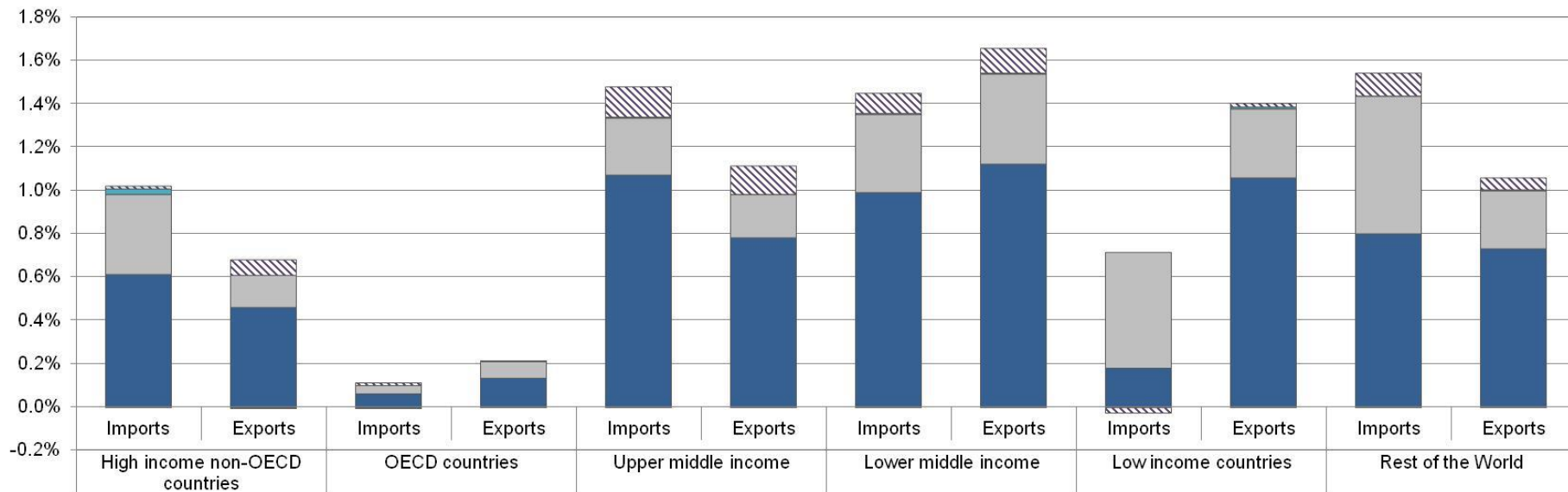
Germany, Italy, Japan, the United Kingdom and the United States. The numbers indicate the ad valorem tariff equivalent of an STRI score of 0.2 on top of what is incurred by firms with turnovers of EUR 500m and above. Source: Rouzet, Benz and Spinelli (2017), "Trading Firms and Trading Costs in Services", OECD Trade Policy paper, forthcoming.

# Trade Facilitation Reforms Support Trade

## *Enhance GVC linkages and competitiveness*

Impacts on imports and exports by income group (% changes to base, short term)

intermediates private consumption government consumption capital goods

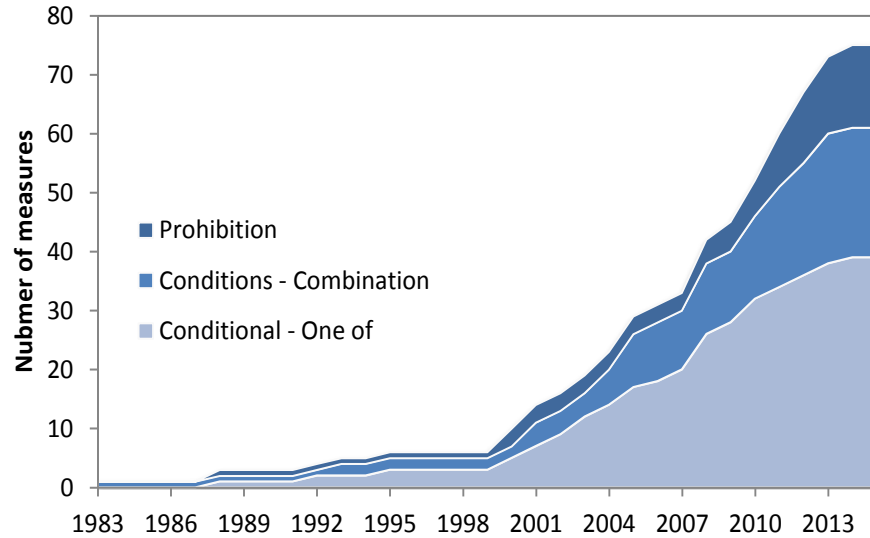


Source: Flaig and Sorescu (2017), "Economy-Wide Impacts of Trade Facilitation", OECD Trade Policy paper, forthcoming.

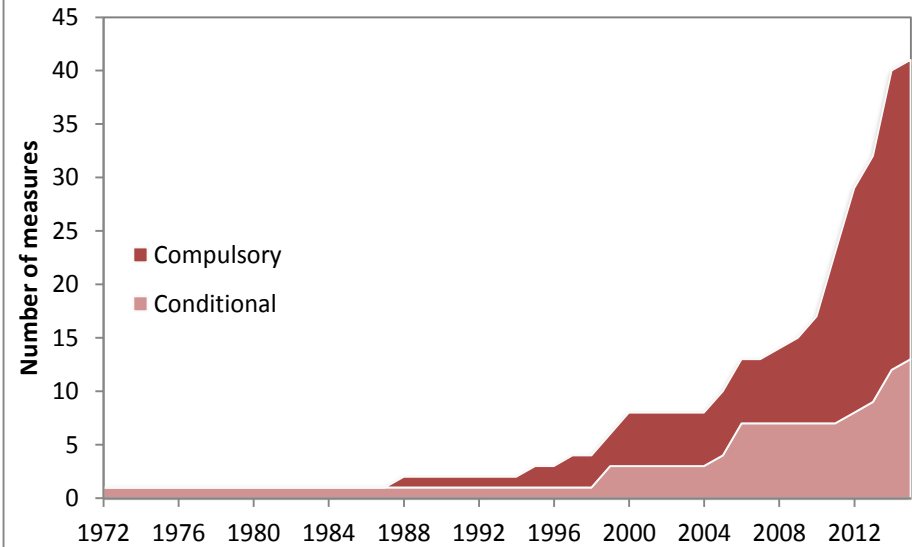
# Temper “data regulation”

*rising number and complexity risks services trade & Industry 4.0*

## Cross-border data transfer restrictions



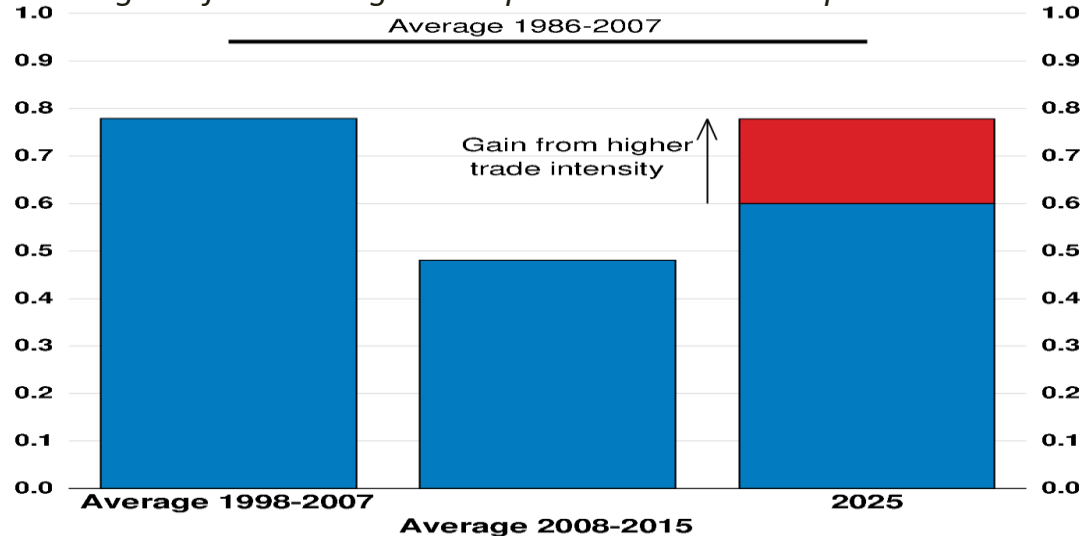
## Local storage requirements



# Reviving trade integration and GVCs could revive productivity

## Productivity gains from higher trade intensity

*OECD annual productivity growth;  
estimated gains from raising trade openness at the same pace as in 1986-2007*



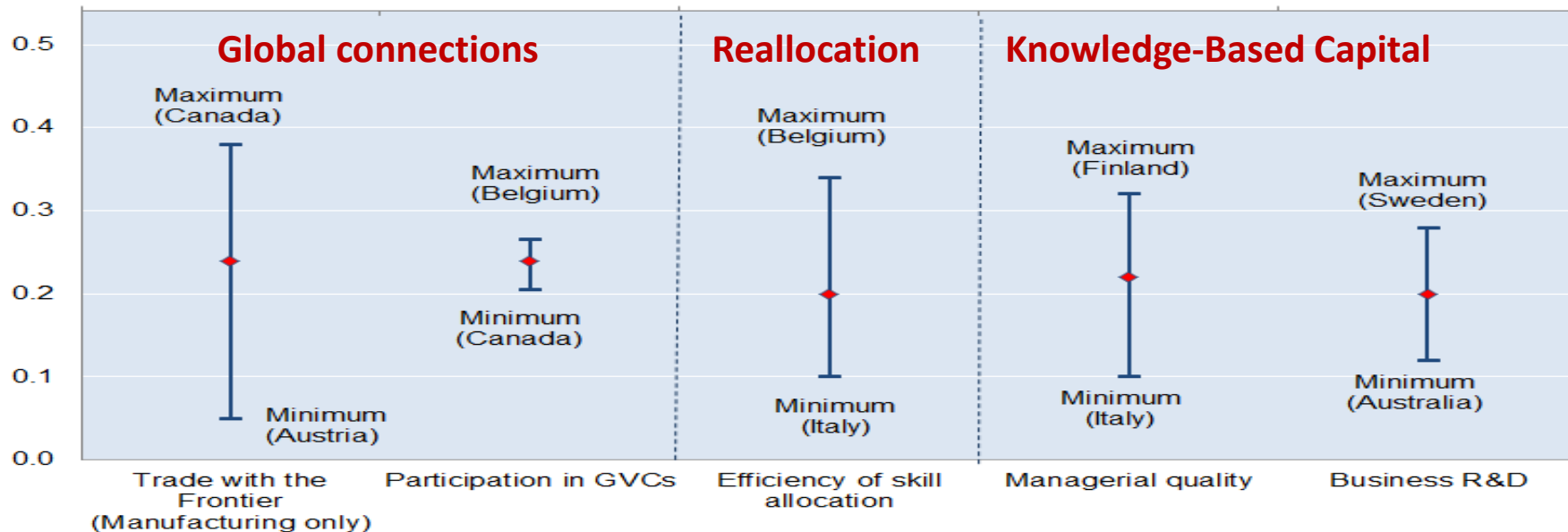
Note: Scenario in which OECD trade openness (exports plus imports as a share of GDP at market exchange rates) increases at the average rate that prevailed over 1986-2007 from 2017 onwards.

Source: OECD Economic Outlook database; Haugh et al. (2016), "Cardiac Arrest or Dizzy Spell: Why is World Trade So Weak and What can Policy Do About It?", OECD Economics Department policy paper; and OECD calculations.

# Policies to Enhance Diffusion

## To close productivity-inclusiveness gaps

Estimated frontier spillover (% pa) associated with a 2% point increase in MFP growth at the global productivity frontier

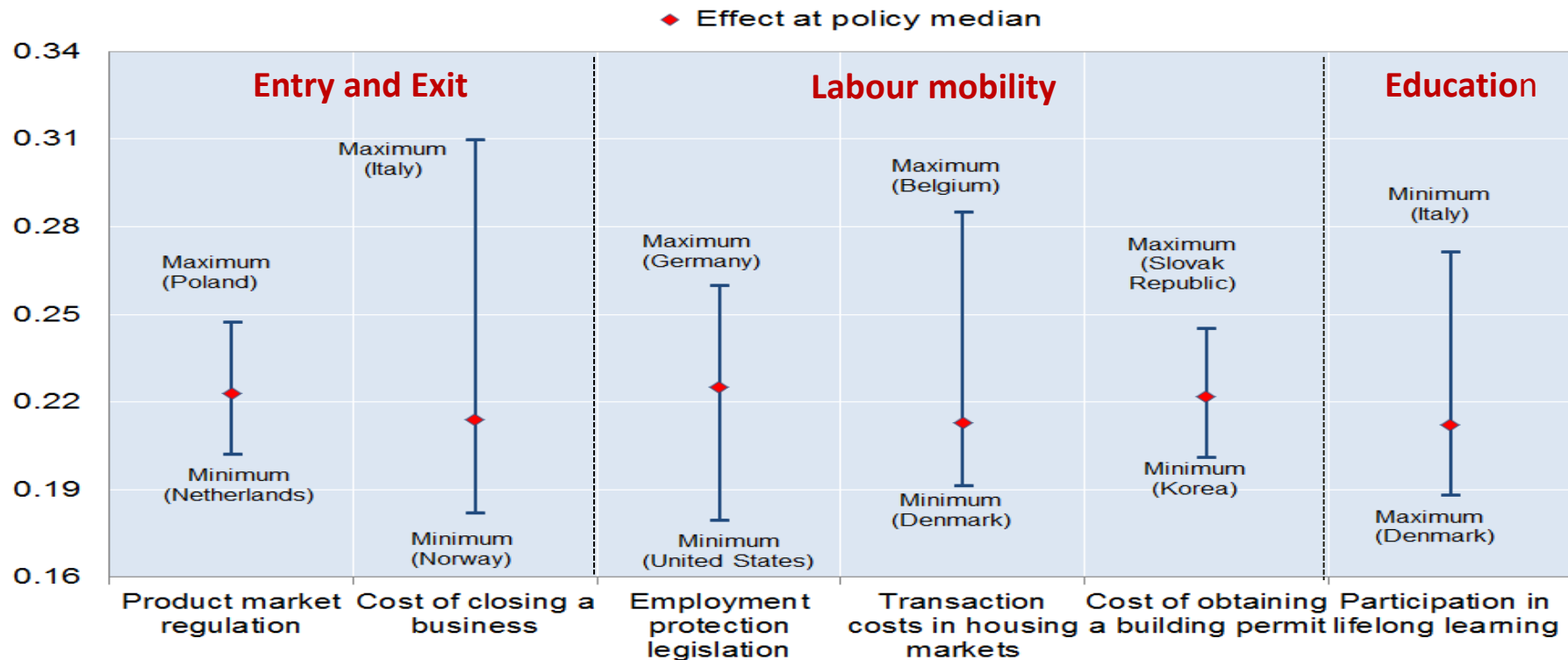


Notes: The chart shows how the sensitivity of TFP growth to changes in the frontier leader growth varies with different levels of policy variables. The diamond refers to the estimated frontier spillover effect associated with a 2% TFP growth at the frontier around the average level of the policy. The label “Minimum” (Maximum) indicates the country with the lowest (highest) value for the given structural indicator in a given reference year. Source: Saia, Andrews and Albrizio (2015)

# Policies to Promote Skill-Matching

## Skill matching raises productivity, reduces inequality

### The probability of skill mismatch and public policies





# Integrated Policy Agenda



# Resources

[How to make trade work for all](#)

[Trade in Value-Added data](#) and [nowcast estimates](#)

[A Guide to GVC Indicators](#)

[Services trade policies](#)

[Trade facilitation](#)

[Regional statistics](#)

[OECD Employment Outlook](#)

[OECD Going for Growth](#)

[OECD Digital Economy Outlook](#)

[OECD Economics Department Working Papers](#)

[OECD Trade Policy papers](#)

[OECD Science, Technology and Innovation Policy Papers](#)

[Global Forum on Productivity](#)

[Ecoscope blog](#)