Productivity, Reallocation, and Equity: Challenges of disruptive technology and trade

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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
Share of world goods exports, volumes

World trade by type
Exports, values

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.
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

Least complex  Most complex

Note: In nominal terms. Least complex is the 1st quartile of products by complexity (e.g. crayons), most complex is the 4th 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.
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)

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.
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

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.

Changing structure of Global Value Chains
example of IT manufacturing shifting hubs east

Relative change in computer and electronics manufacturing centrality
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.

Changing structure of Global Value Chains

IT services increasingly central to GVCs, but widely dispersed

Relative change in IT services centrality

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.

But fragmentation (GVCs) has retreated

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

Source: TiVA nowcast (2017)

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

Source: TiVA nowcast (2017)
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.
Trade and Technological Change already posing challenges
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

Change in share of total employment, annual average 1990-2008

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.
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

Source: Employment Outlook, 2017
Concentration of Production Matters

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

Geographic concentration index by sector

Average from 2000 to 2015 or latest

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

- World
- Major economies imposing restrictions
- Spillovers to other economies

Note: The implementing 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 – example

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

The burden of restrictions falls disproportionately on smaller firms

Note: average effect across sectors and countries based on microdata from Belgium, Finland, 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.

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

Enhance GVC linkages and competitiveness

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

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.
Integrated Policy Agenda

- Make the international system fairer and work better
- Policies to encourage new firms, innovation & job creation
- Targeted policies to help people seize new opportunities

International policies and collaboration

Domestic policies
- National
- Regional? Individual?
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