A DIGITAL PARADOX?

PRODUCTIVITY, BUSINESS DYNAMICS AND POLICY
IN AN ERA OF DIGITAL TRANSFORMATION

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Warsaw, 26 October 2018

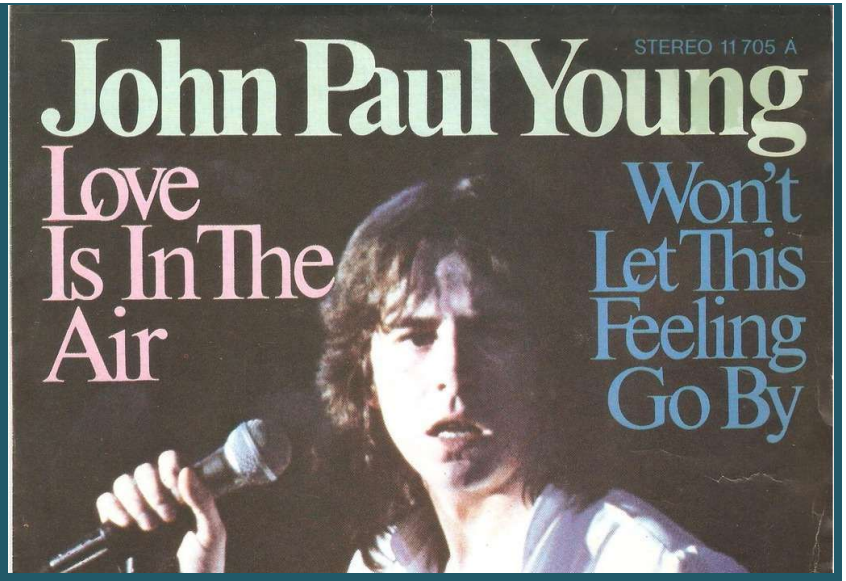
BETTER POLICIES FOR BETTER LIVES

The Digital transformation paradox?

- A new version of Solow's (1987) productivity paradox? Why do we see digital everywhere, but not (yet) in the productivity statistics?

- Is this what we see?
  - Do we see "digital" everywhere?
  - What do we see happening in markets?
    - Leaders "doing well", but
    - laggards not keeping pace and increasingly so,
    - a slowdown in business dynamics and
    - possible changes in competition

DIGITAL IN THE AIR?

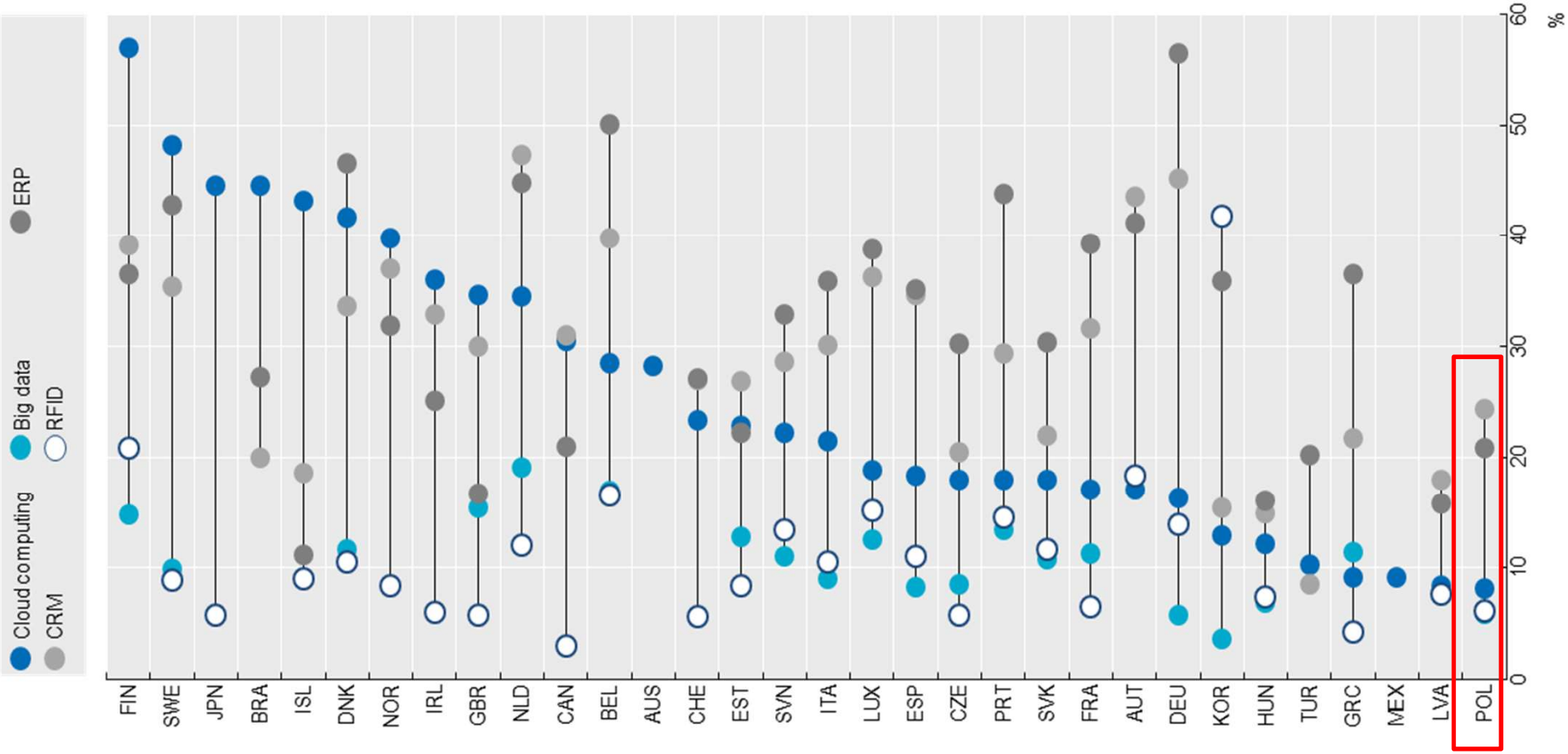


...NOT EVERYWHERE...

Significant differences across countries and technologies

Diffusion of ICT tools and activities in enterprises, by technology, 2016

As a percentage of enterprises with ten or more persons employed

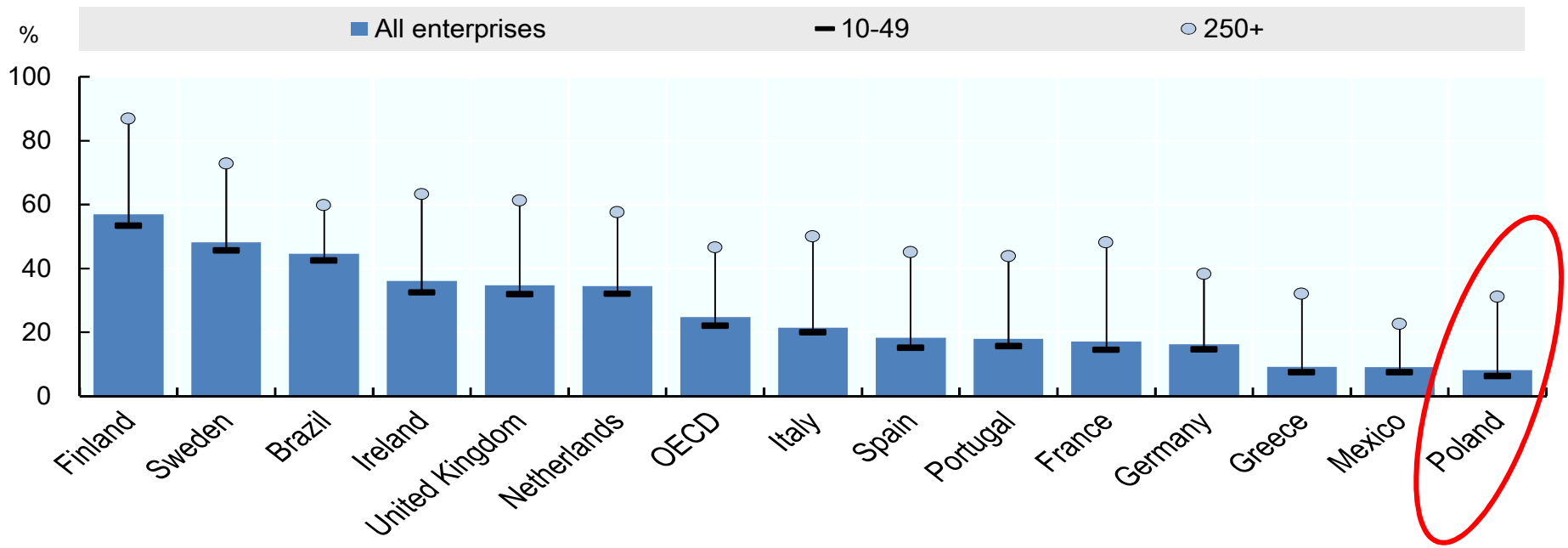


Source: [OECD Science, Technology and Industry Scoreboard 2017](),

… and **SMEs are often lagging**, even in technologies well suited to them

Enterprises using cloud computing services, by firm size, 2016

As a percentage of enterprises in each employment size class

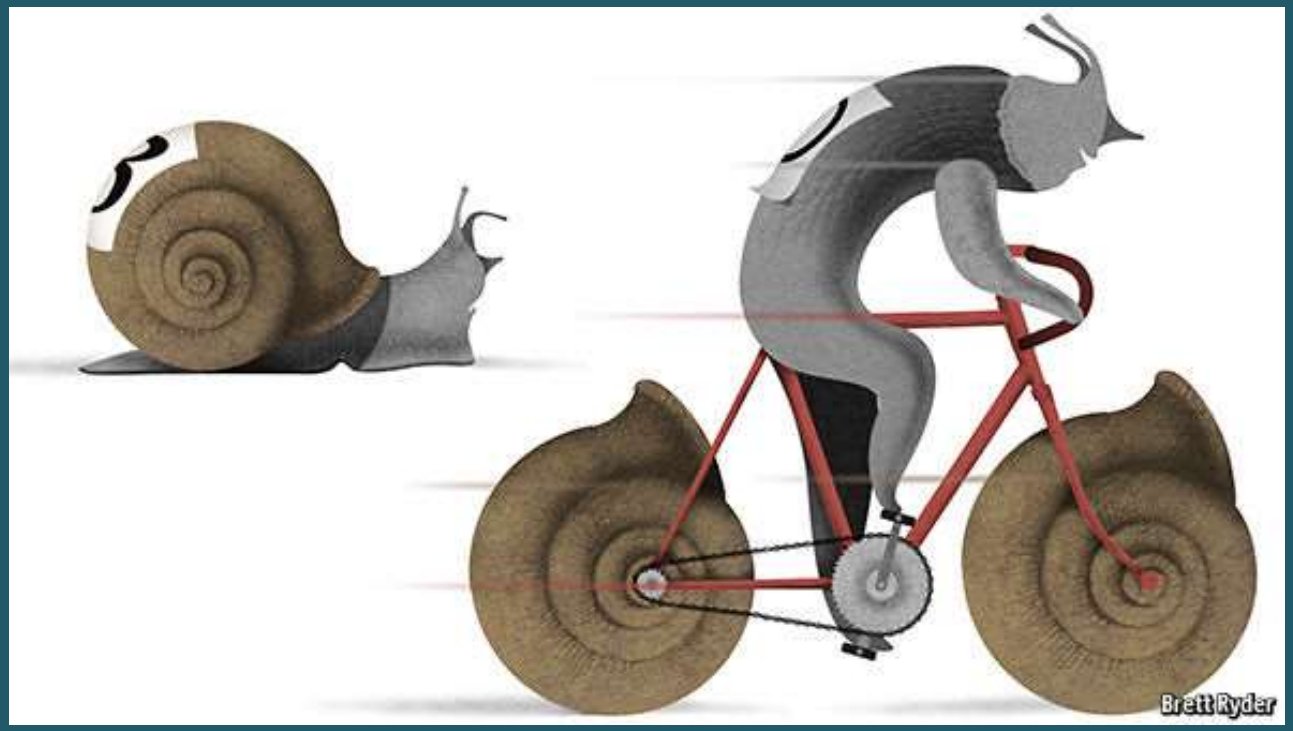


Source: OECD Digital Economy Outlook 2017, StatLink: *http://dx.doi.org/10.1787/888933585495*

…and still large differences in **digital intensity across industries**

Sector (ISIC rev.4)	Quartile of digital intensity: 2013-15
Food products, beverages and tobacco	Low
Textiles, wearing apparel, leather	Medium-low
Wood and paper products, and printing	Medium-high
Chemicals and chemical products	Medium-low
Pharmaceutical products	Medium-low
Rubber and plastics products	Medium-low
Basic metals and fabricated metal products	Medium-low
Computer, electronic and optical products	Medium-high
Electrical equipment	Medium-high
Machinery and equipment n.e.c.	Medium-high
Transport equipment	High
Furniture; other manufacturing; repairs of computers	Medium-high
Wholesale and retail trade, repair	Medium-high
Transportation and storage	Low
Accommodation and food service activities	Low
Publishing, audiovisual and broadcasting	Medium-high
Telecommunications	High
IT and other information services	High
Legal and accounting activities, etc.	High
Scientific research and development	High
Advertising and market research; other business services	High
Administrative and support service activities	High

Source: Calvino et al., 2018



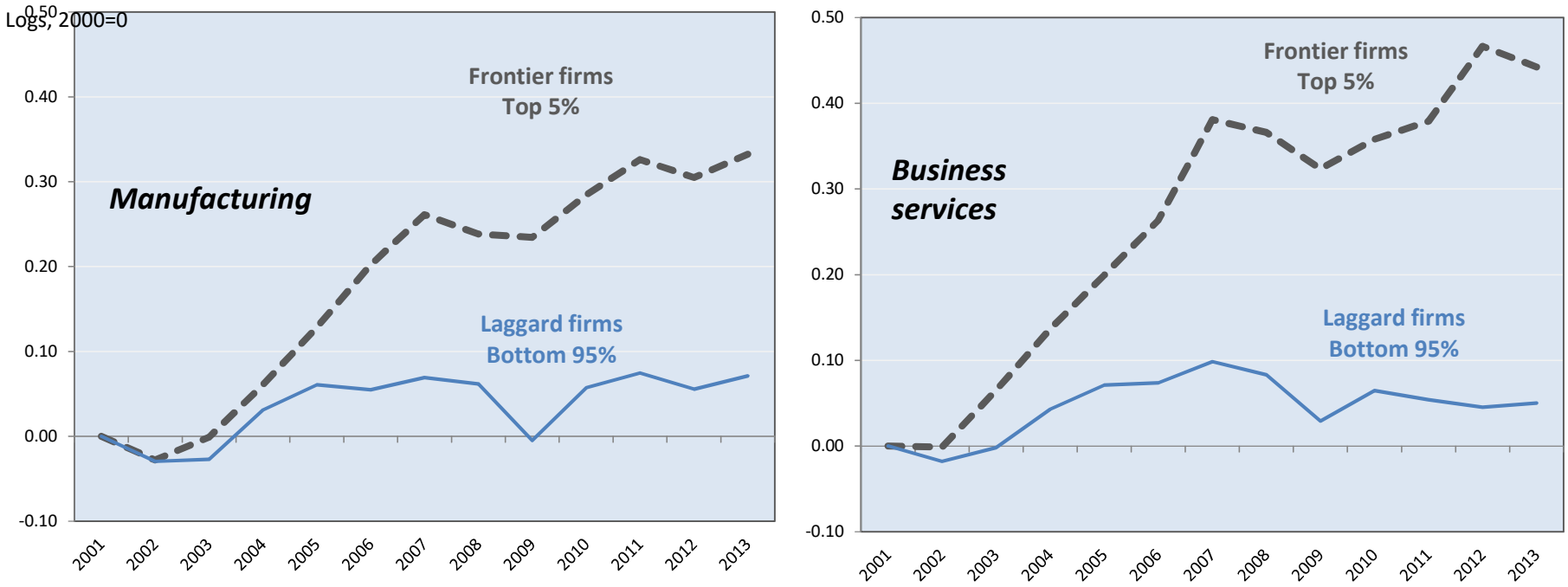
PRODUCTIVITY IN THE NEW MILLENIUM

A STORY OF LEADERS AND LAGGARDS

THE WORLD'S MOST PRODUCTIVE FIRMS STILL MANAGE RAPID PRODUCTIVITY GROWTH

Dispersion in multifactor productivity (MFP) has widened

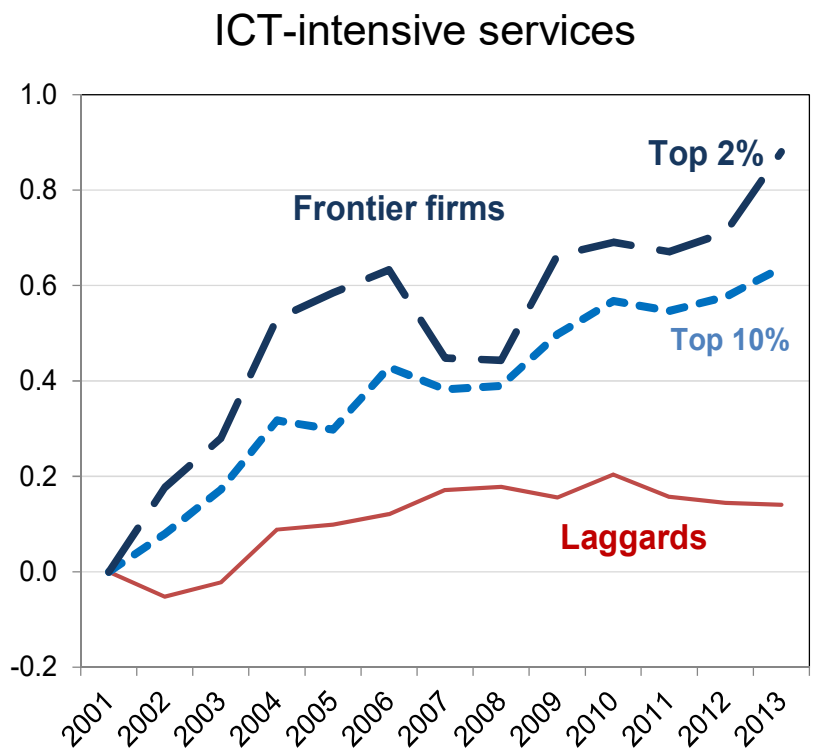
Evolution of MFP of frontier and other firms, 2001-13
(cross-firm, cross-sector averages)

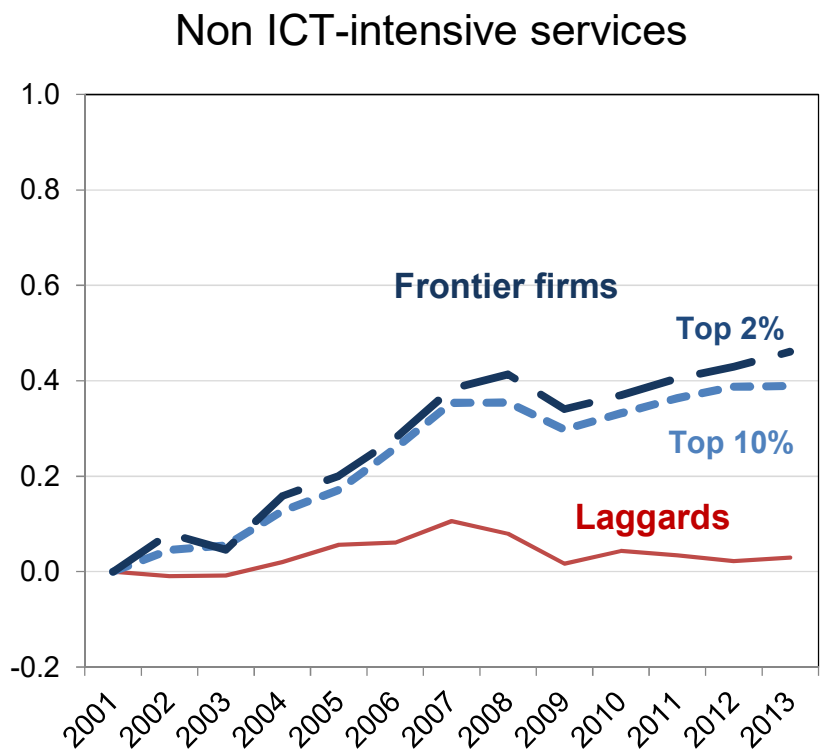


Source: Andrews et al. (2016)

…ESPECIALLY IN DIGITAL SERVICES

The productivity gap between the globally most productive firms and other firms has widened especially in ICT intensive services

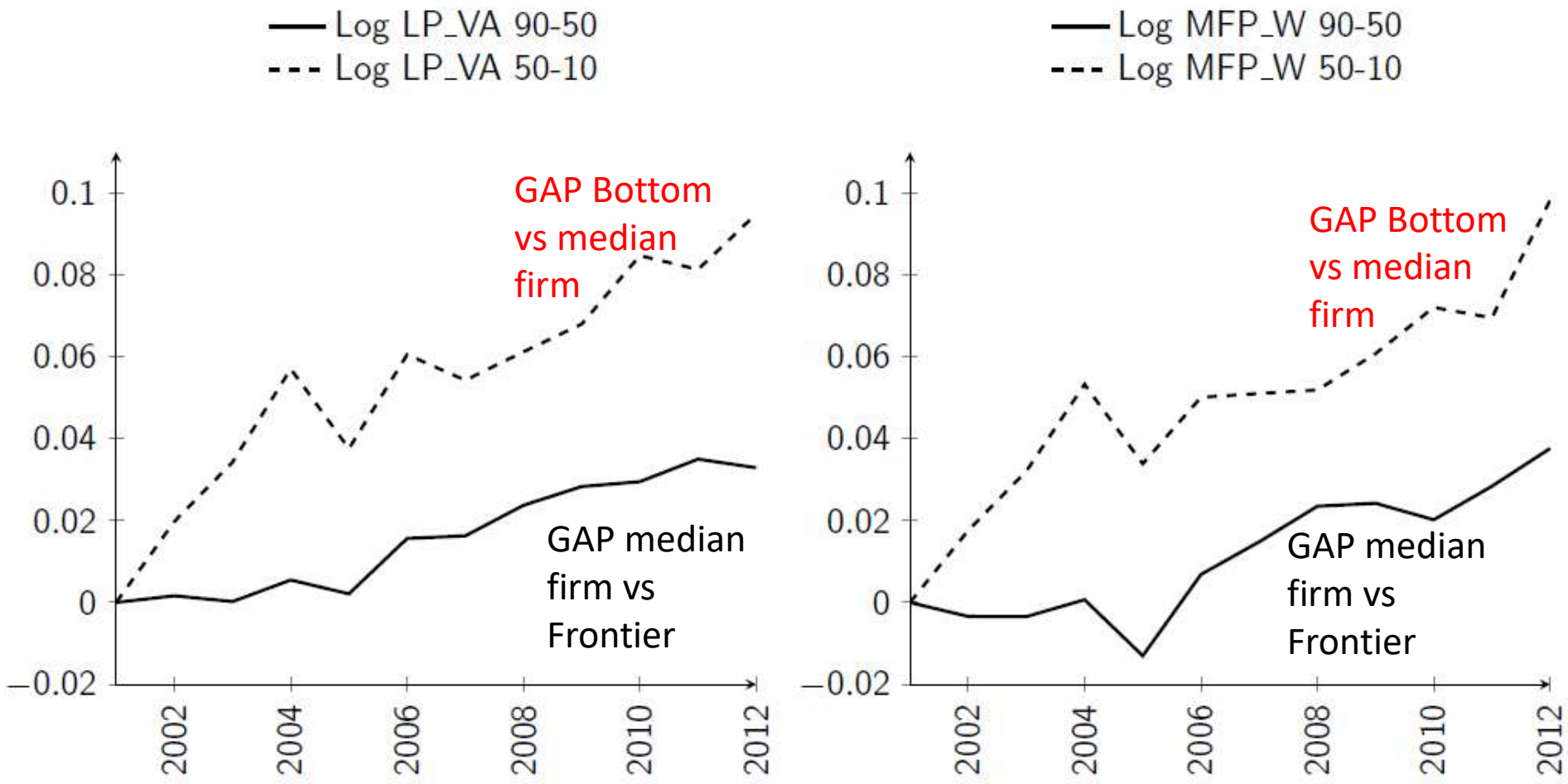




Source: Andrews et al. (2016)

Note: "Frontier firms" is the average labour productivity (value added per worker) of the 2% (10%) globally most productive firms in each two-digit industry. "Non-frontier firms" is the average of all firms, except the 5% globally most productive firms.

…while the bottom seems to struggle to keep up

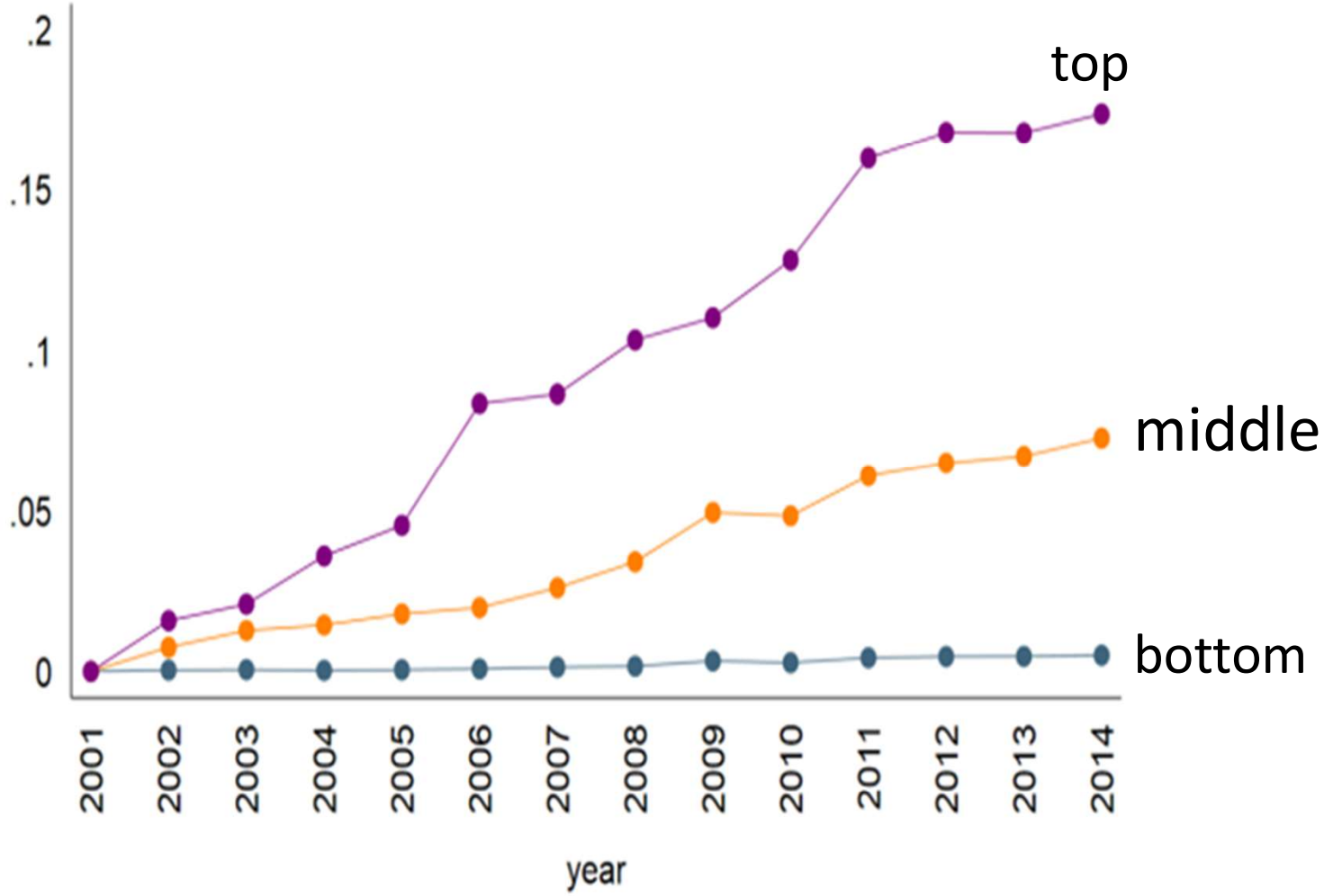


Source: Berlingieri et al., 2017 based on OECD MultiProd project, March 2017.

Note: The figure plots the estimated year dummies of a regression of log-productivity dispersion (labour productivity , LP, on the left, and multifactor productivity à la Wooldridge, MFP_W, on the right), respectively, at the top (90th and 50th percentiles ratio, solid line) and at the bottom (50th and 10th percentiles ratio, dashed line) within country-sector pairs, using data from the following countries: AUS, AUT, BEL, CHL, DNK, FIN, FRA, HUN, ITA, JPN, NLD, NOR, NZL, SWE. The graphs can be interpreted as the cumulated growth rates of dispersion at the top and the bottom of the distribution within each country and sector over the period. For instance, in 2012 LP dispersion in manufacturing is roughly 3% higher than in 2001 for the top, and 10% for the bottom.

WHAT'S HAPPENING TO MARKETS?

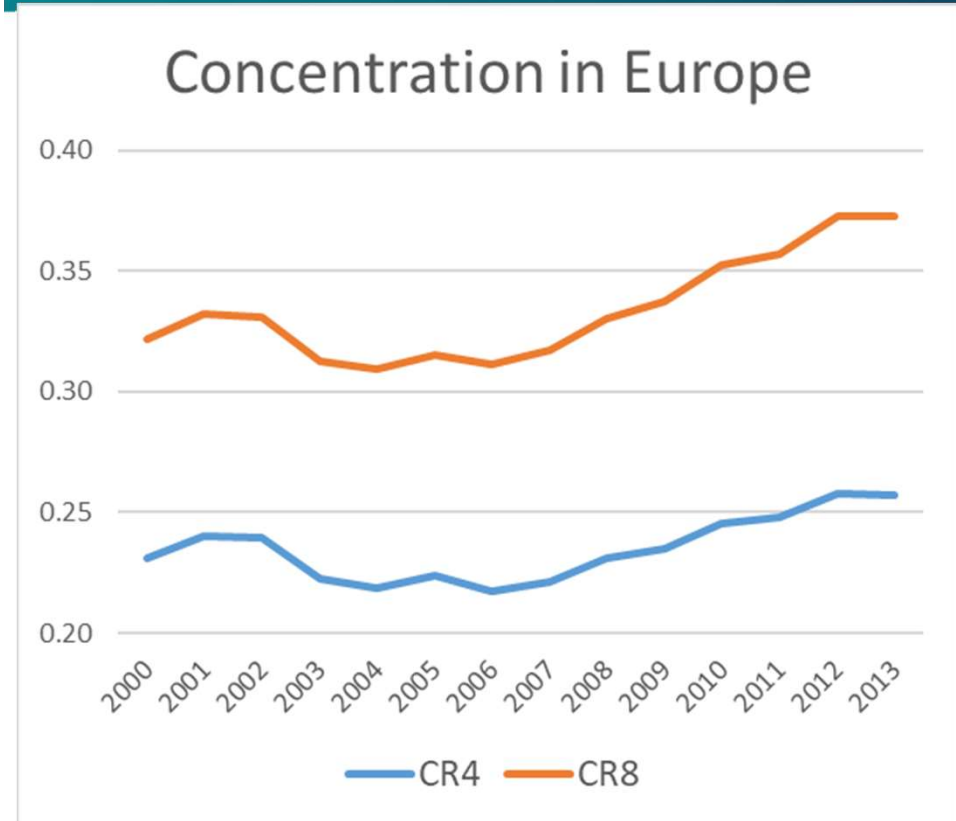
Rising mark-ups pushed by the top

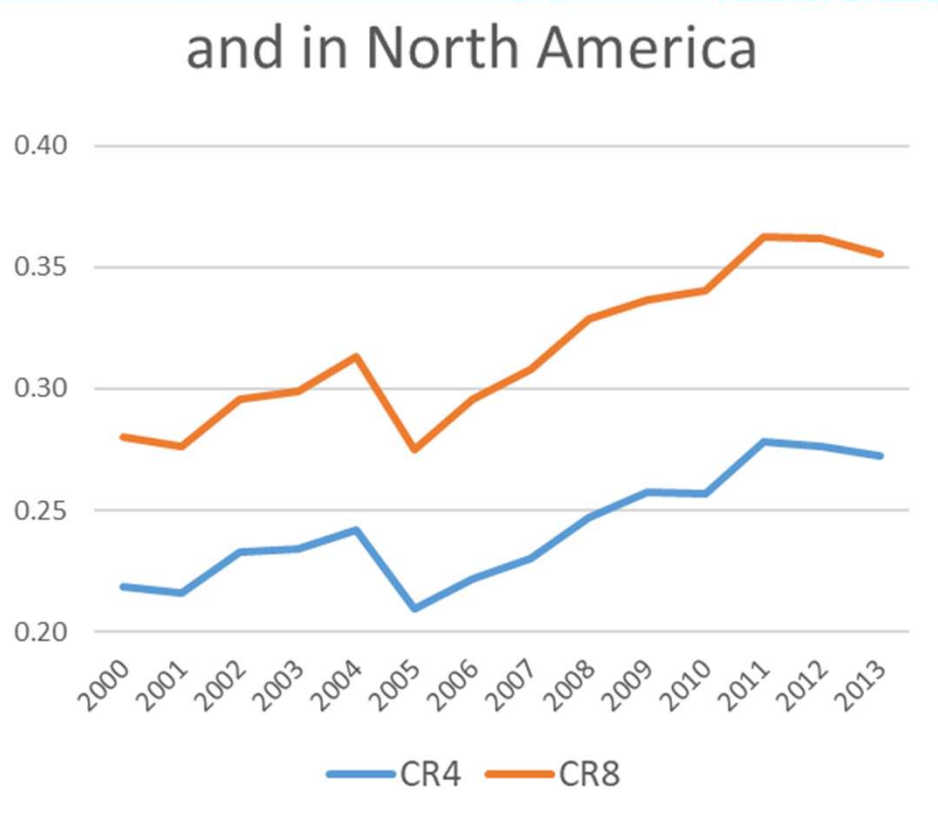


- *Within* the **year 2-digit industry** averaged across sectors;
- Dynamics not due to a particular country. But stronger in digital intensive sectors

Source: Calligaris, Criscuolo and Marcolin, 2018 "Mark-ups in digital era"

Rising concentration across the globe



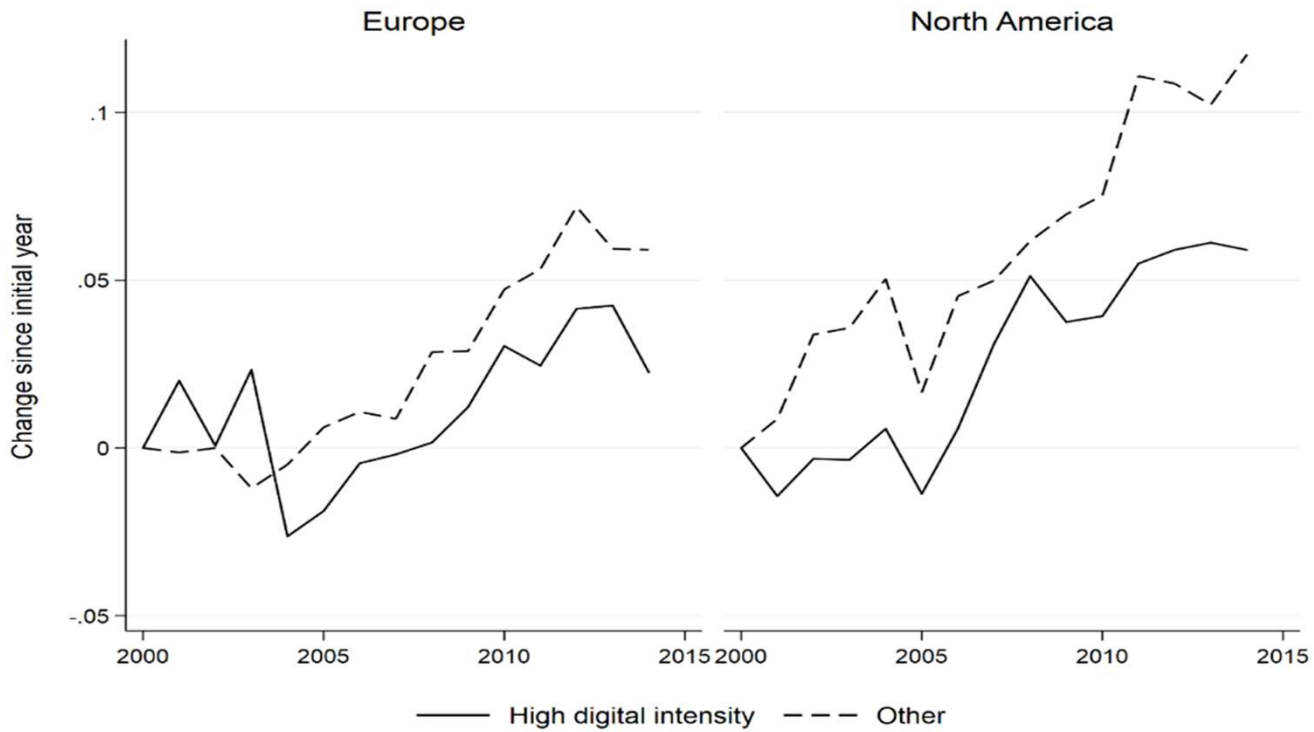


Source: Bajgar et al., (2018) [Industry Concentration in Europe and North America]

Note that the measures capture concentration within the respective global regions (Europe, North America), not within individual countries. The reported figures correspond to averages across all industries in each region and year.
Measure: The share of the top 4 firms (CR4) or the top 8 firms (CR8) in each industry in the total industry sales. The top firms are defined as the 4 or 8 firms with the largest sales in each year.
Data: The sales of top firms are based on a matched Orbis-Worldscope-Zephyr dataset constructed by the OECD. Industry sales come from the OECD STAN industry database (see http://www.oecd.org/sti/ind/stanstructuralanalysisdatabase.htm).
Countries: Europe (BE, DE, DK, EE, ES, FI, FR, GB, GR, HU, HR, IE, IS, IT, LV, NL, NO, PL, PT, RO, SI, SE). North America (CA, US)

…not only in digital

Changes in Concentration for Digital-Intensive vs Less Digital Industries in Europe & North America

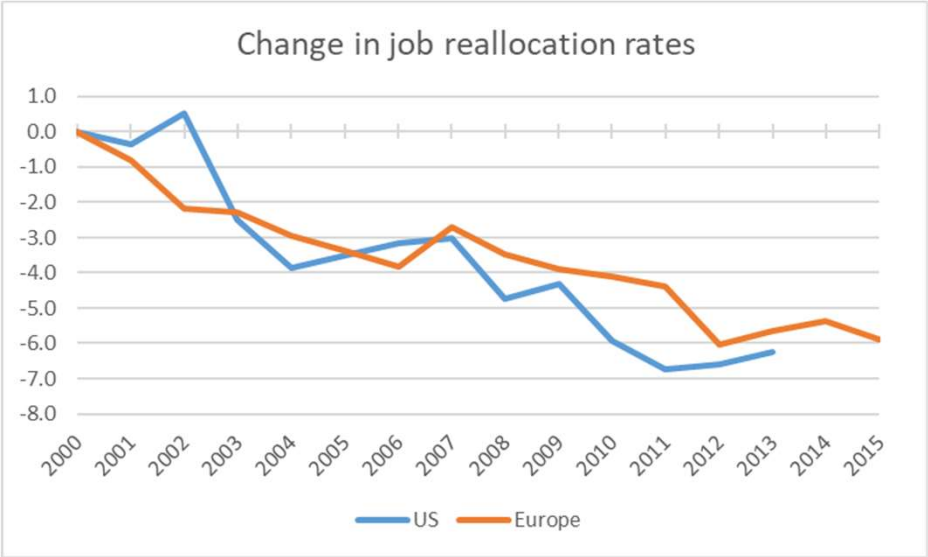


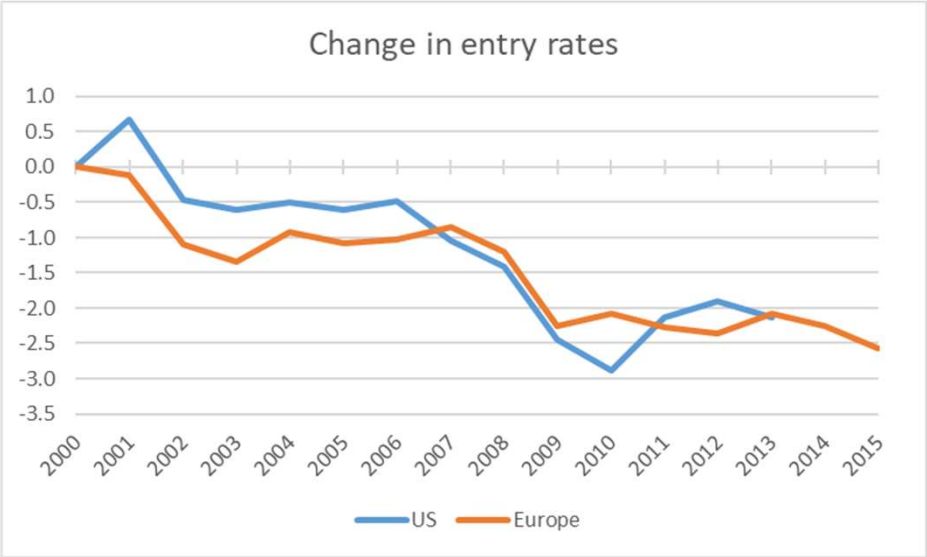
Note: The countries for Europe include BE, DE, DK, EE, ES, FI, FR, GB, GR, HU, HR, IE, IS, IT, LV, NL, NO, PL, PT, RO, SI, SE, and for North America include CA and US. Included industries cover 2-digit manufacturing and non-financial market services. Concentration metrics reflect the share of the top 8 firms in each industry (CR8). The graphs can be interpreted as the cumulated *absolute* changes in levels of sales concentration for the mean 2-digit sector within each region. The digital intensity of sectors is defined using the STAN A38 global digital intensity indicator of 2013-15 constructed by (Calvino et al., 2018). For instance, in 2014 the mean European high digital intensive industry had 0.04 (45%) higher sales concentration than in 2000.

Source: Bajgar et al. (2018a) "Industry Concentration in Europe and North America"

But business dynamism is declining

Entry rates and Job reallocation rates – within country-sector changes

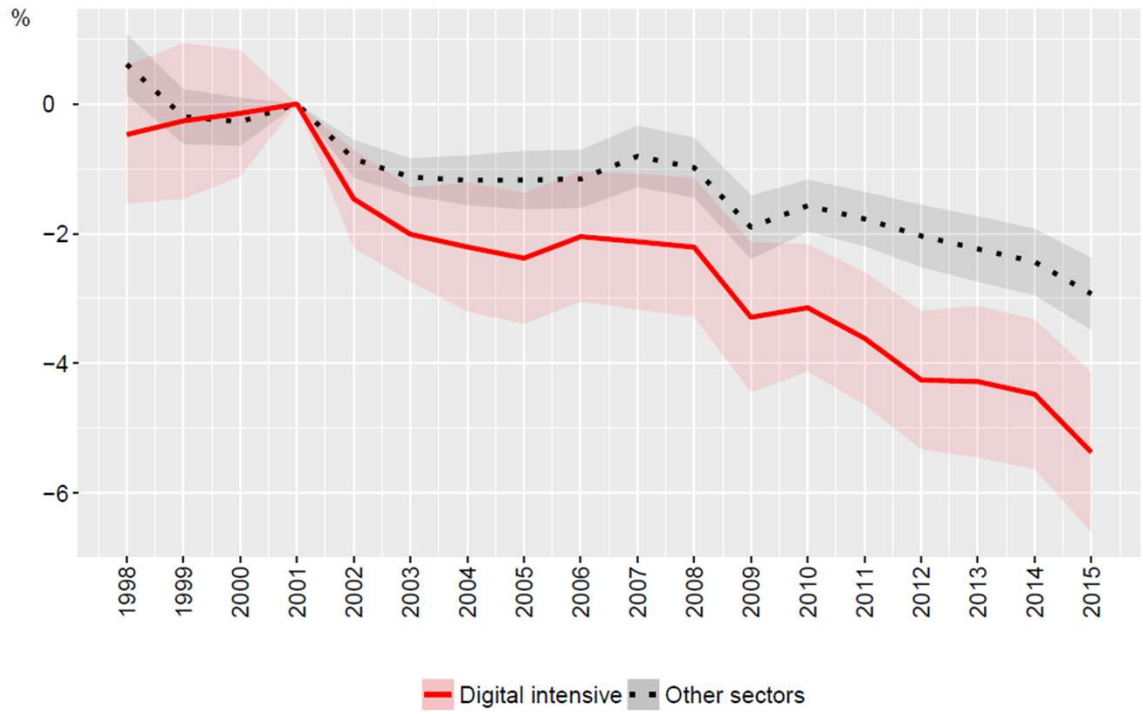




Source: "Declining Business Dynamism; Evidence and Causes", F. Calvino, C. Criscuolo, R. Verlhac, based on OECD DynEmp v.2 and DynEmp3 database.

…especially in digital intensive sectors

Entry rates



Source: Calvino and Criscuolo, 2018 “Business Dynamics and Digitalisation” based on OECD DynEmp3 database, August 2018.

SUMMING UP …
…AND WHAT CAN POLICY DO?

Digitalisation raises a number of challenges…

A digital "paradox"? Not so sure…

- Digital adoption boosts productivity, but…
- … productivity gains from adoption stronger at the top when firms have complementary intangible assets and this makes it harder for laggards to keep up
- … changes in the business environment: concentration, declining dynamism, etc.

→ **Challenges for policies: digitalisation can increase productivity dispersion and affect wage inequality**

But policies can ensure that gains from digital adoption are widely shared

Closing the digital divide :

1. **Roll-out of broadband** high-speed internet (key enabler)
2. Upgrading **ICT capabilities** via schooling, on and out of the job training, LL learning (complementarities)
3. Strengthening **market incentives** (competition, labour market flexibility) fostering **business dynamism** (low administrative burdens, efficient regulation, managerial talent, skills) and financing **risk** (venture capital)

→ Large role for structural policies to diffuse adoption and boost productivity

→ Exploit Policy complementarities for best results!

→ Exploit double dividends

…in the meantime…

Come to London
Or simply tune in!

Department for Digital, Culture Media & Sport

OECD
BETTER POLICIES FOR BETTER LIVES

Department for Business, Energy & Industrial Strategy

IMPLICATIONS OF THE DIGITAL TRANSFORMATION FOR THE BUSINESS SECTOR

London, 8 and 9 November 2018, BEIS Conference Centre

Thursday, 8 November 2018

http://www.oecd.org/going-digital/conference-implications-of-digital-transformation-for-the-business-sector.htm

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http://oe.cd/goingdigital

OECD Global Forum on Productivity:
http://www.oecd.org/global-forum-productivity