WORKSHOP PORTUGAL 2030

GOING DIGITAL

Trends and Key Policy Issues for Digital Transformation

Workshop on Portugal's 2030 Agenda
Lisbon, 28 November 2017

Molly Lesher, OECD

OECD
BETTER POLICIES FOR BETTER LIVES

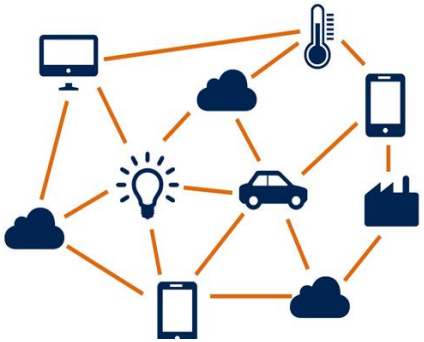
Outline

- Trends in Digital Transformation
- The OECD Going Digital Project

Trends

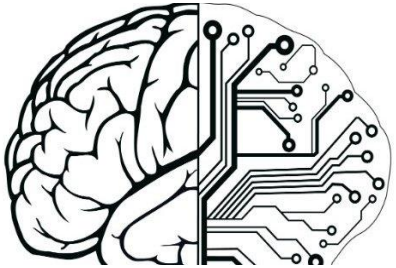
A wide range of new digital technologies have emerged…

Cloud computing



Internet of Things

Big data



Artificial intelligence

3D printing

Blockchain

…that are affecting all economic activities.

Energy

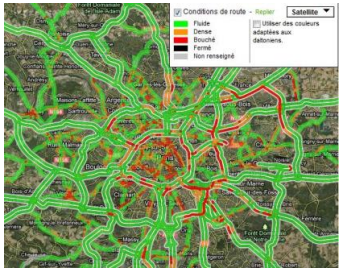
Health

Public Administration

Digitalisation

Agriculture

Manufacturing

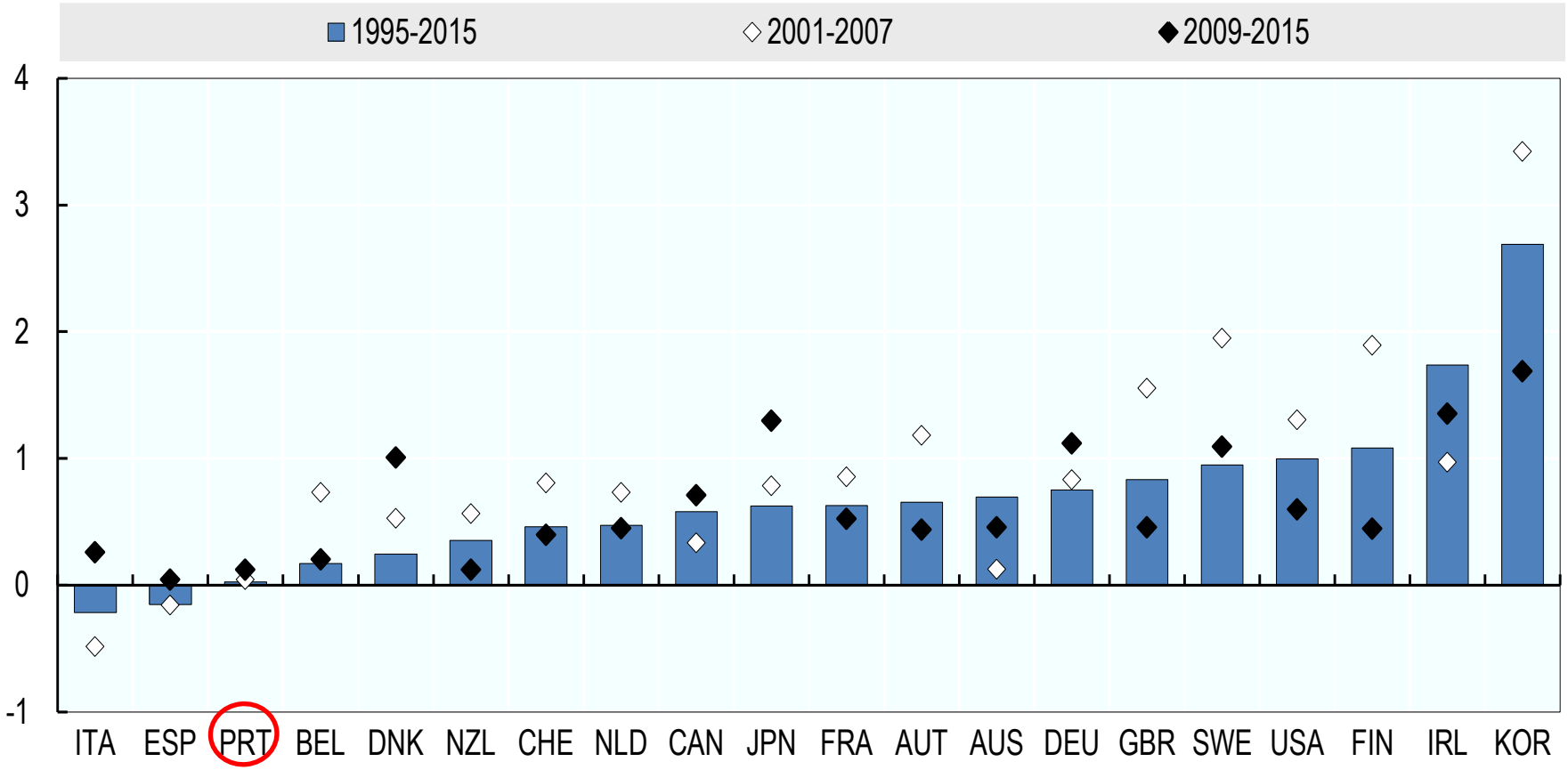


Transportation

The potential productivity benefits of these new technologies are urgently needed...

Multi-factor productivity growth

Total economy, percentage change at annual rate



Note: Data for Ireland, Spain and Portugal correspond to the periods 1995-2014 and 2009-2014.

Source: OECD Productivity Database, April 2017. Statlink: http://dx.doi.org/10.1787/888933477326

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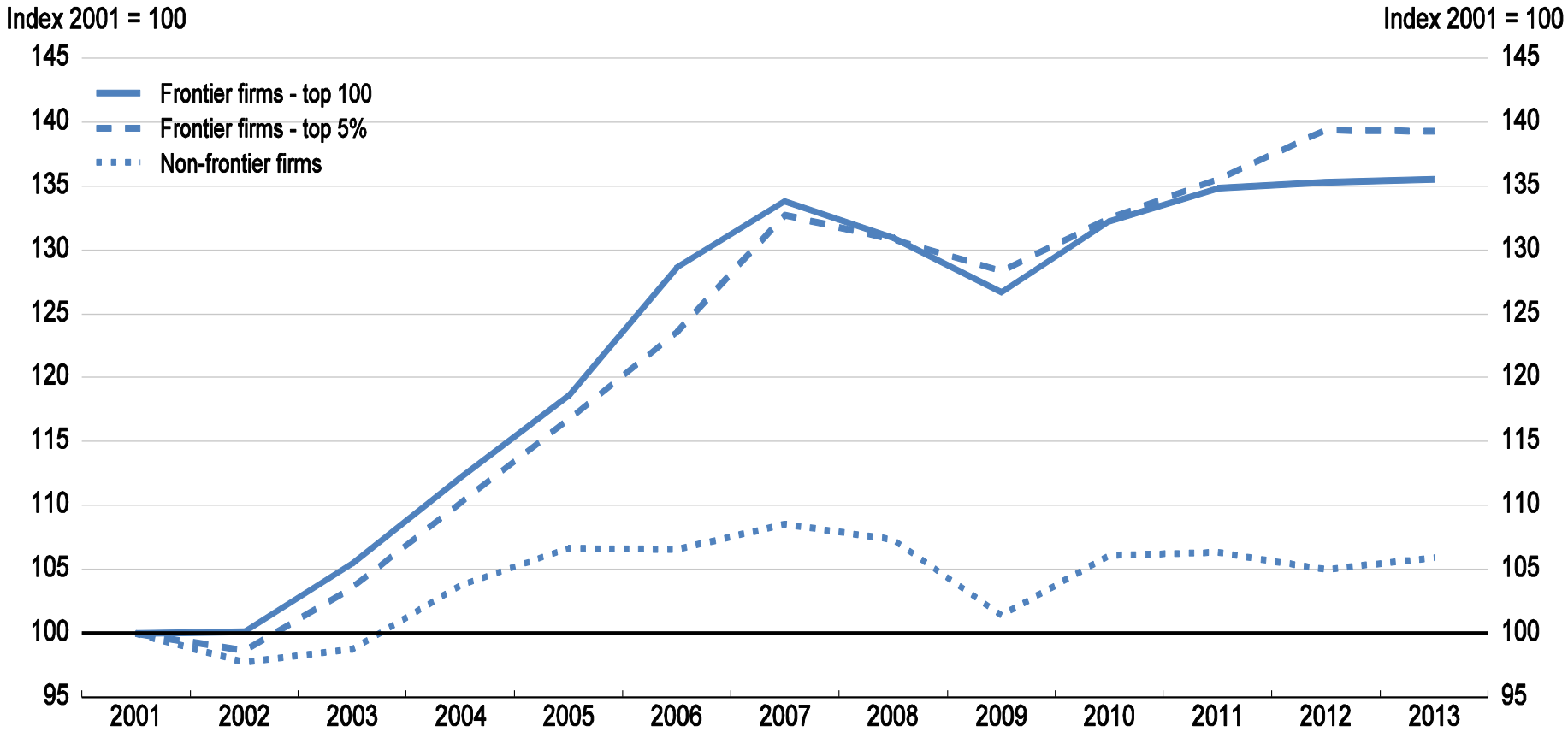
…although today, many firms find it difficult to turn new technology into productivity growth.

The productivity gap between the globally most productive firms and other firms has widened

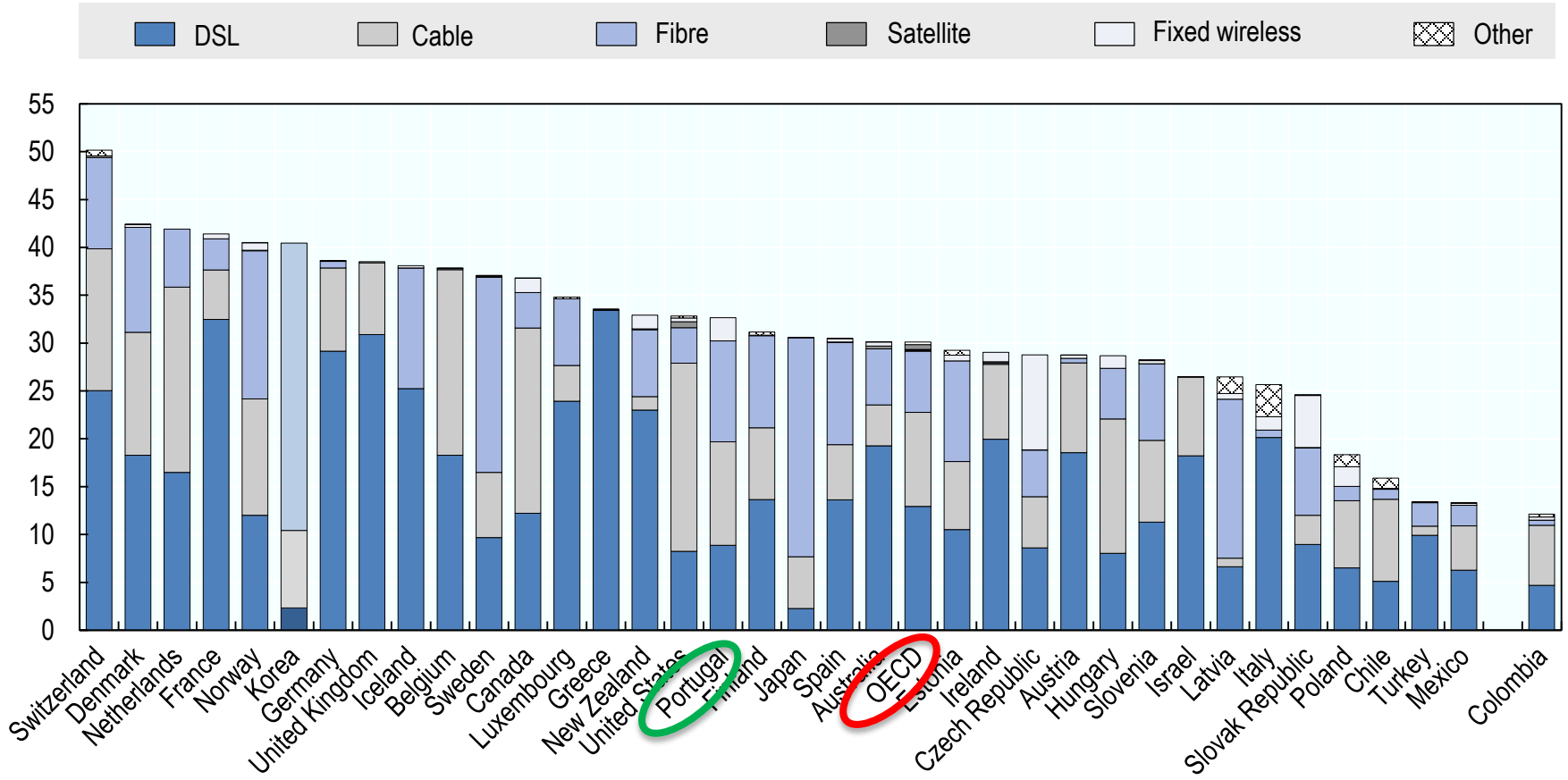


Note: "Frontier firms" is the average labour productivity (value added per worker) of the 100 or 5% globally most productive firms in each two-digit industry. "Non-frontier firms" is the average of all firms, except the 5% globally most productive firms.
Source: OECD preliminary results based on Andrews, D., C. Criscuolo and P. Gal (2016), "Mind the Gap: Productivity Divergence between the Global Frontier and Laggard Firms", OECD Productivity Working Papers, forthcoming; Orbis database of Bureau van Dijk.

Fixed broadband subscriptions are strong in Portugal…

Fixed broadband subscriptions, December 2016

By technology per 100 inhabitants



OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264276284-en

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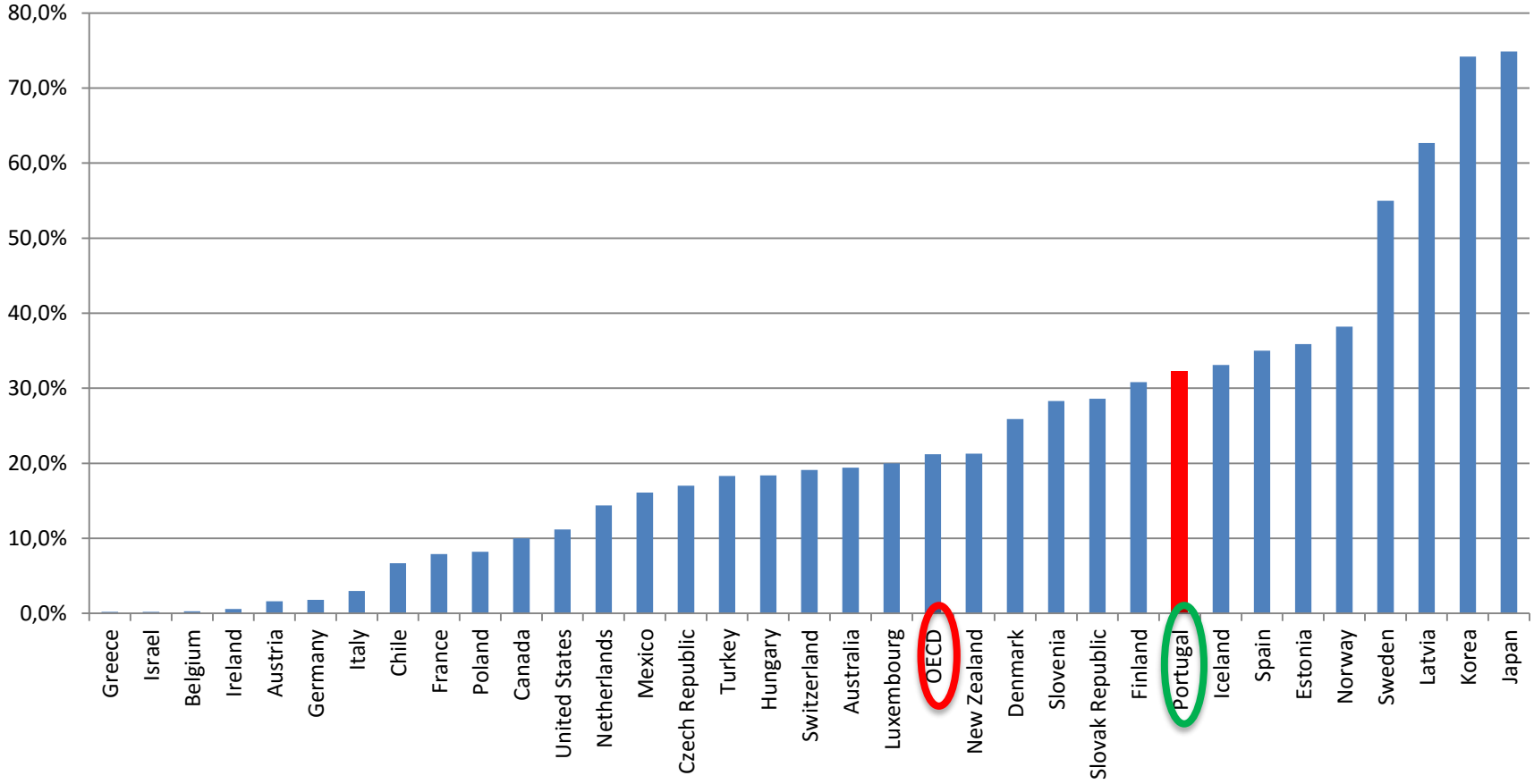
… and Portugal is among the top of the OECD on fibre connections…

Percentage of fibre connections in total broadband subscriptions
December 2016



OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm

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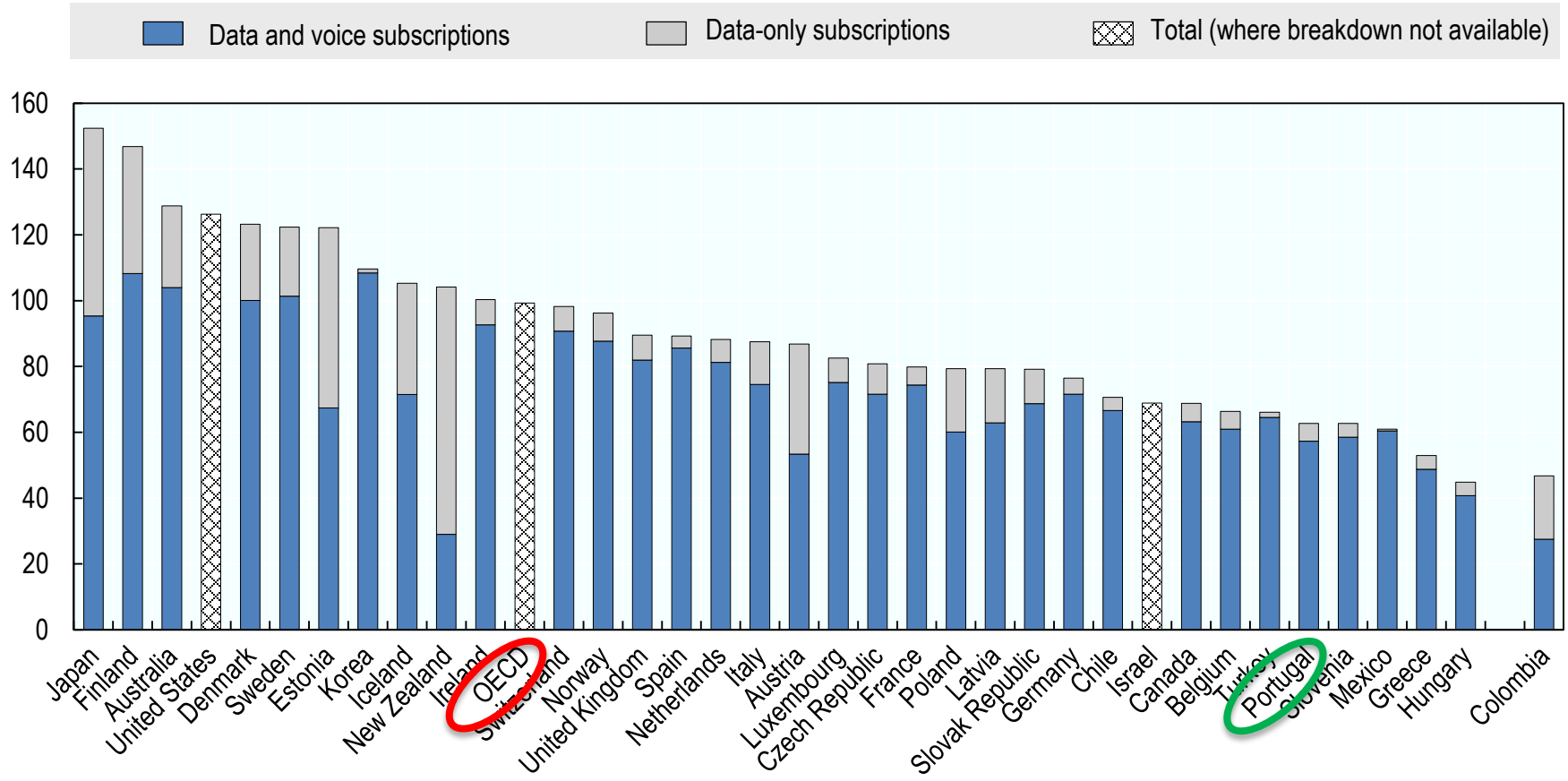
…but mobile broadband subscriptions lag…

Mobile broadband subscriptions, 2016

Subscriptions per 100 inhabitants



OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris.
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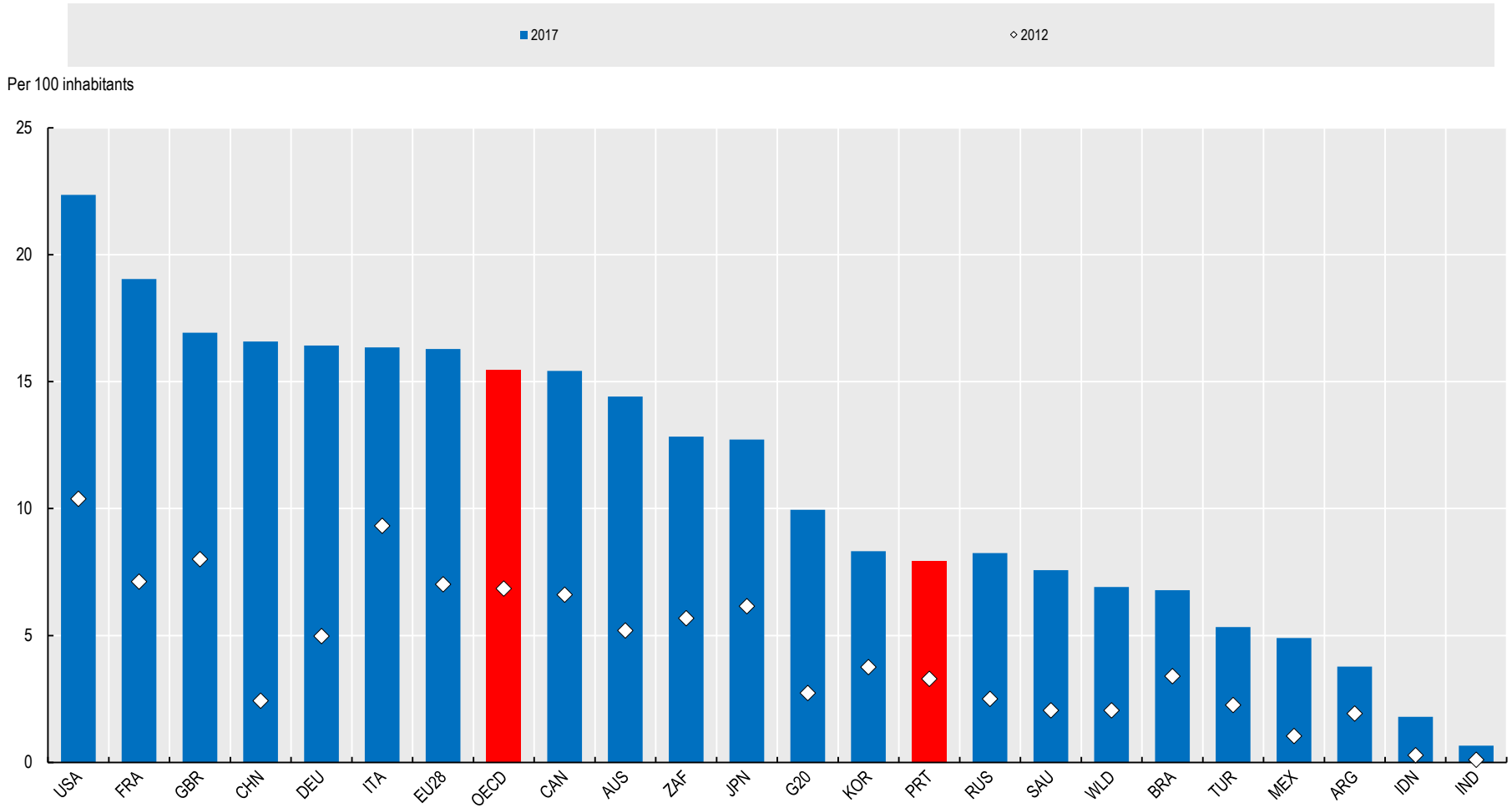
…and mobile infrastructure is essential to the Internet of Things.

M2M SIM card penetration, June 2017

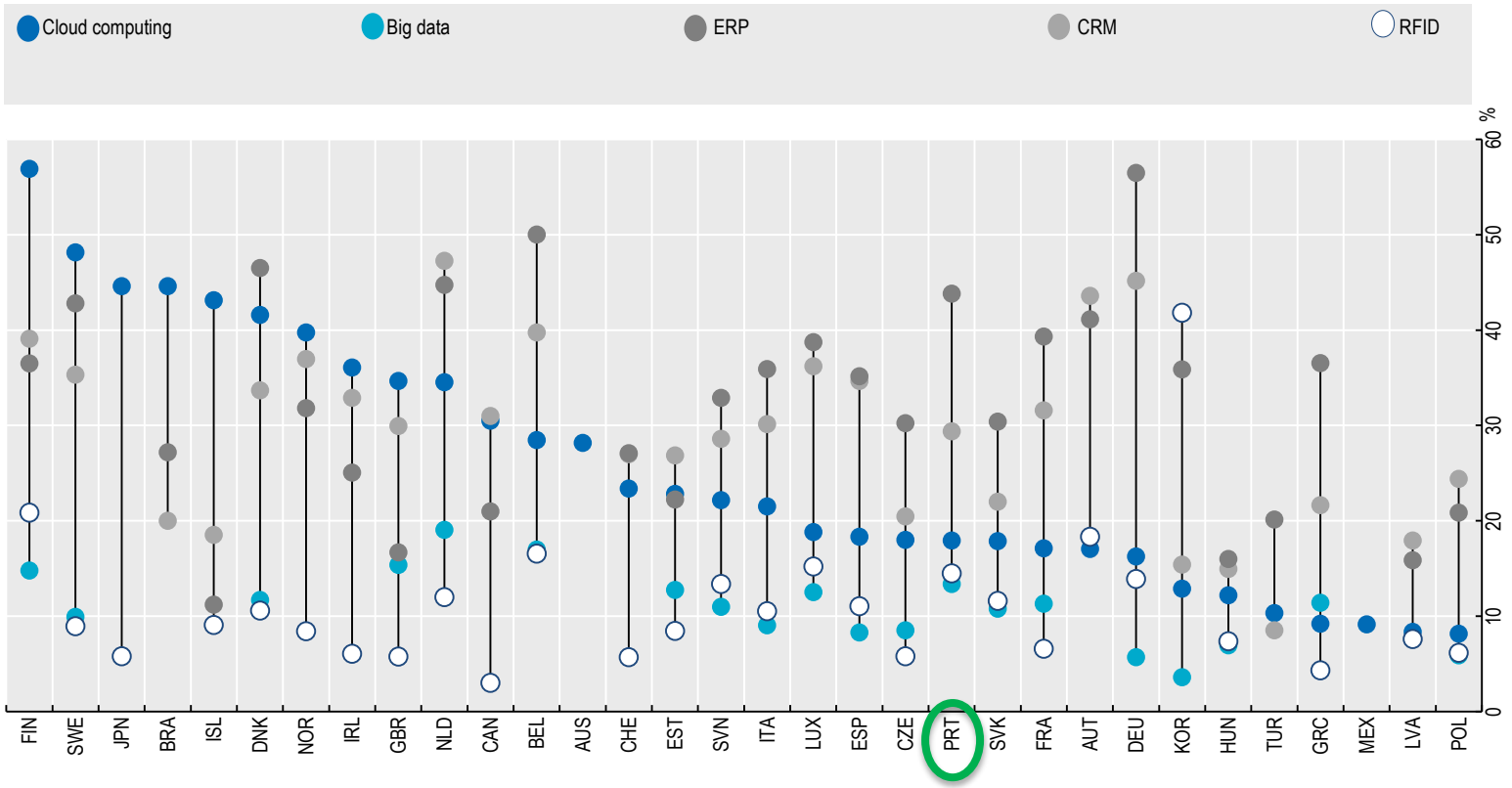
Per 100 inhabitants



OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264268821-en

Effective use of digital technologies varies…

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



OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264268821-en

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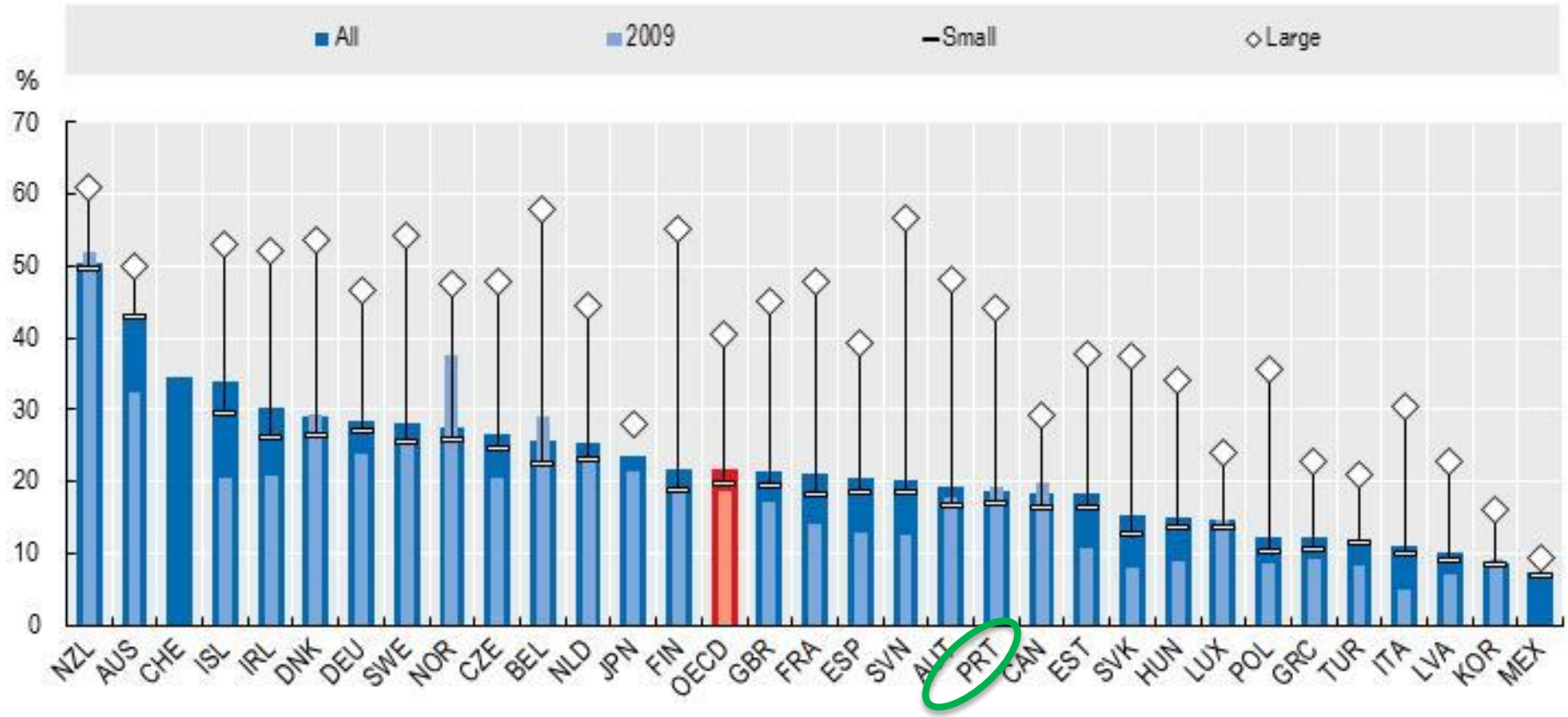
…and small firms in Portugal lag large firms in engaging in e-commerce.

Enterprises engaged in sales via e-commerce, by size, 2015

As a percentage of enterprises in each employment size class

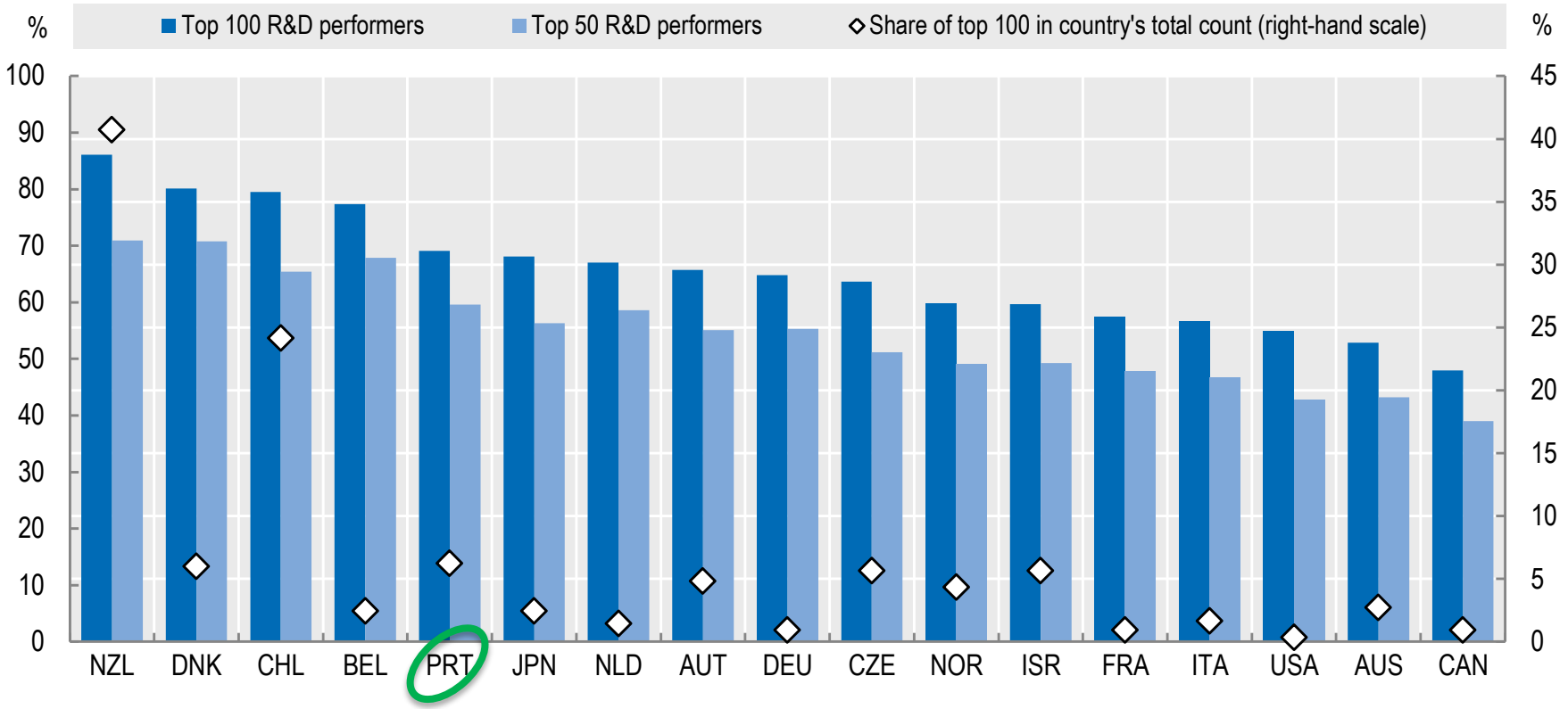


In 2015-16, 95% of firms in reporting countries had a broadband connection, but only 22% made sales via e-commerce – **OECD STI SCOREBOARD 2017**

Portugal's innovation performance is robust…

Concentration of business R&D: top 50 and top 100 performers, 2014

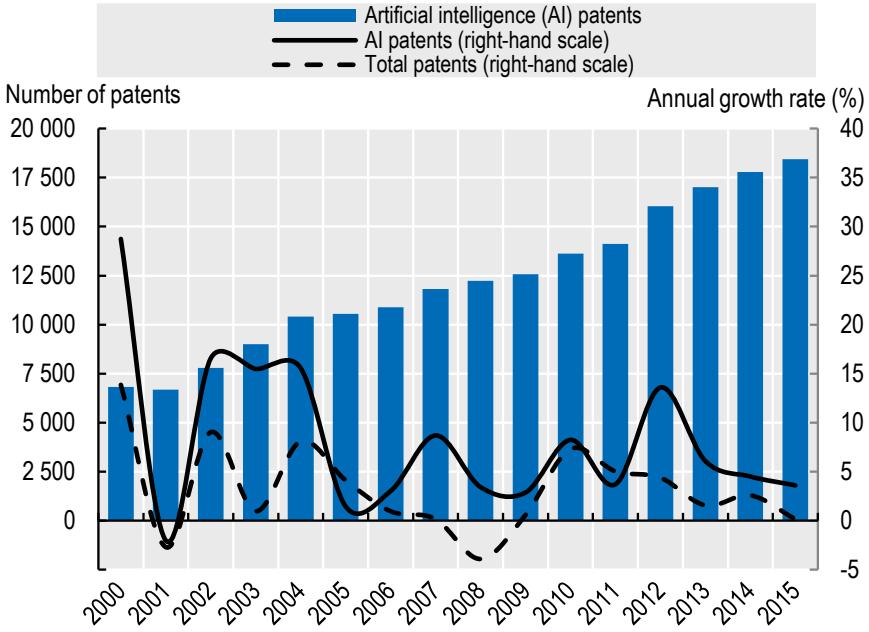
As a percentage of domestic business R&D expenditure and of total count of performers

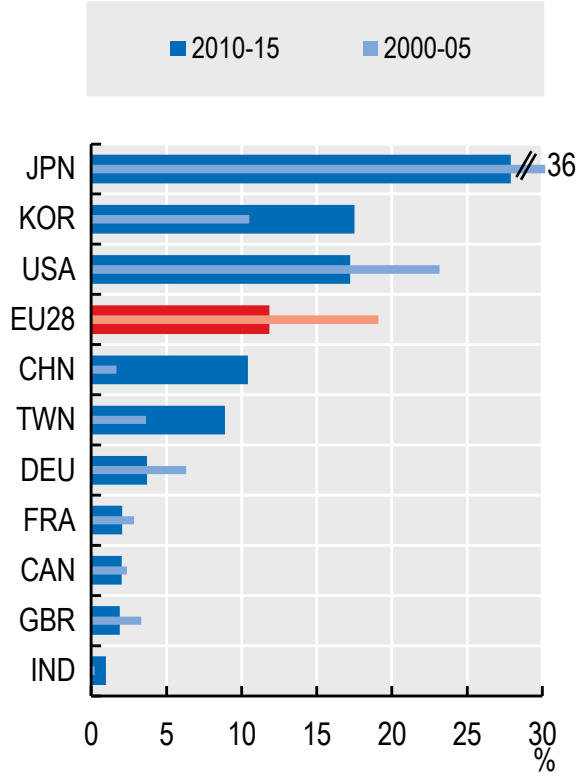


The 100 largest domestic R&D performers represent 0.3% of performers in the US and account for 55% of business R&D efforts – **OECD STI SCOREBOARD 2017**

…but a handful of other countries lead in AI research.

Artificial Intelligence technologies





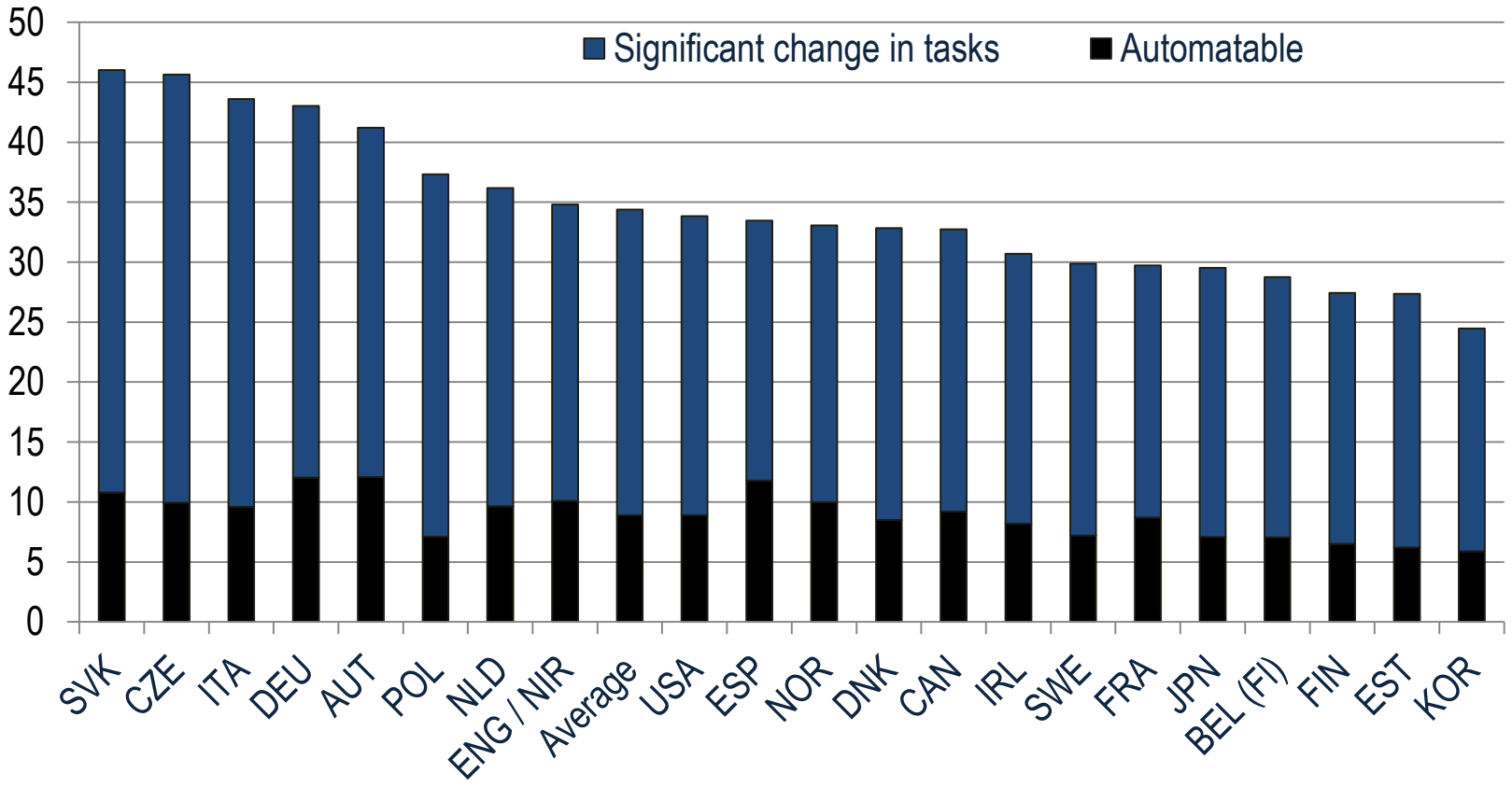
30% of patent filed in medical diagnosis incorporate embedded AI-related components

OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264268821-en

Many jobs will be affected by digital transformation…

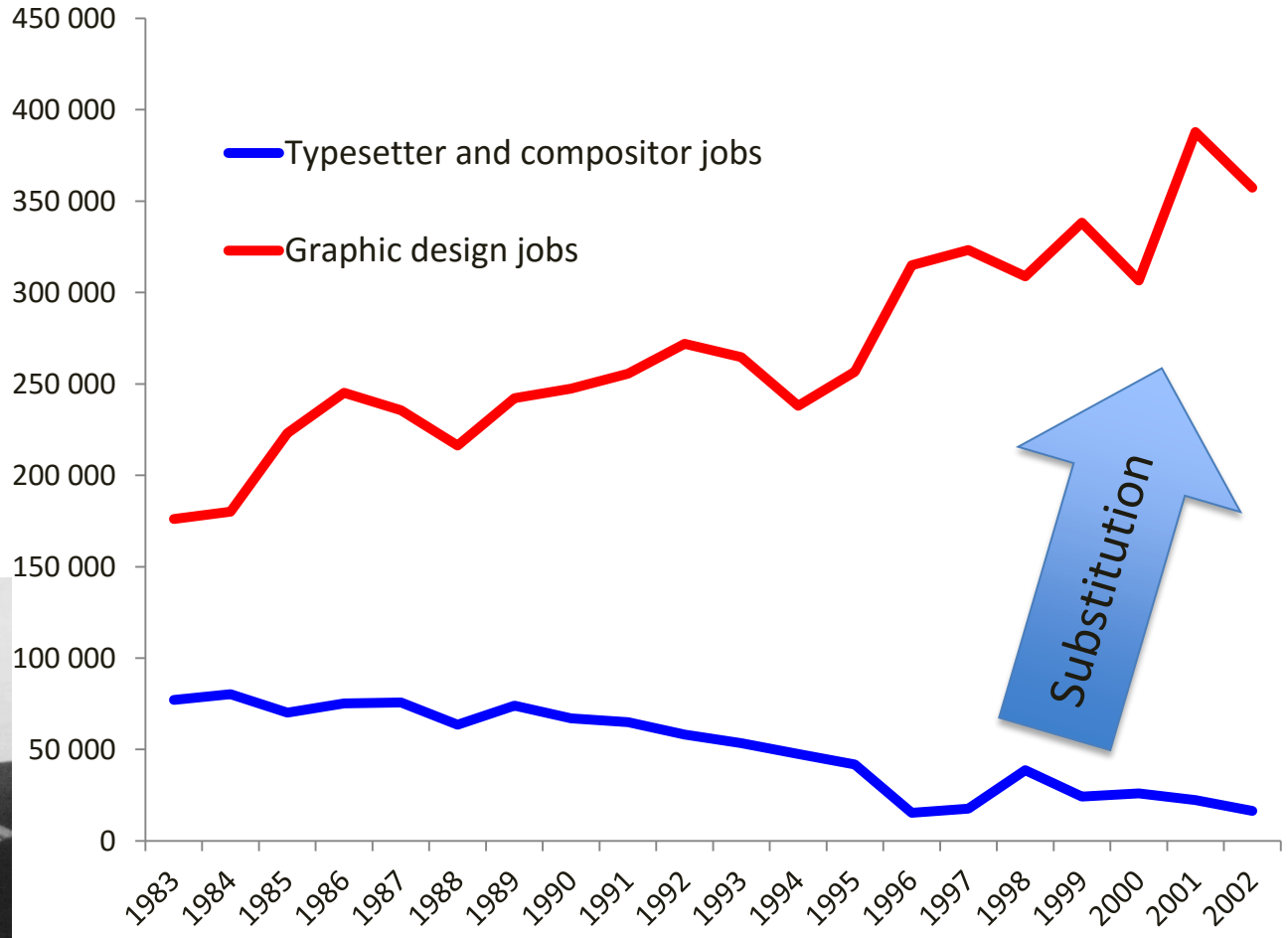
Jobs with high and medium potential for automation

Percentage of jobs with 70 % and between 50-70 % of substitutable tasks



Source: Survey of Adult Skills (PIAAC); Arntz et al (2016)

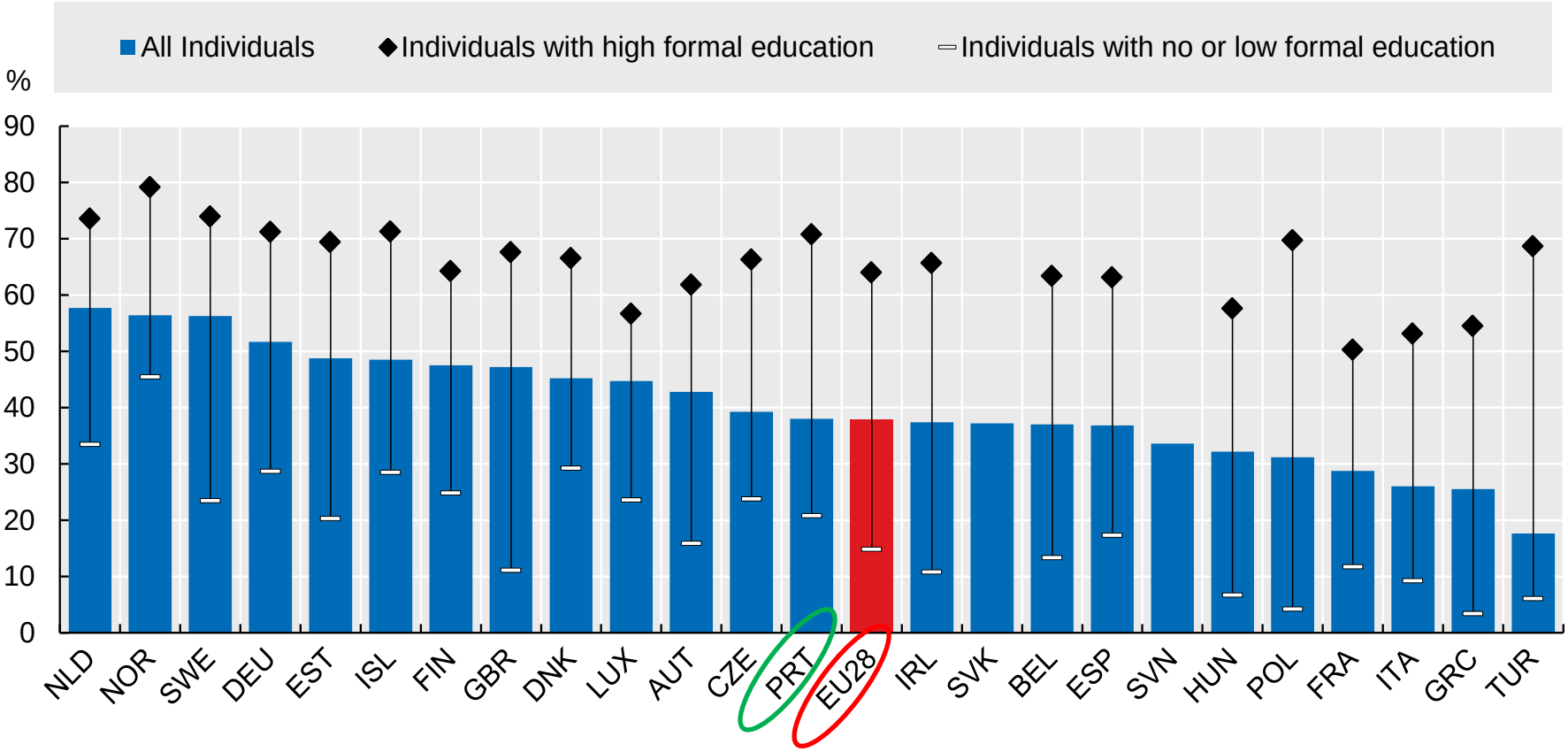
… but history suggests new jobs will also emerge, complementary to new technology.



Source: Presentation by Professor James Bessen at OECD workshop, 24 April.

A range of new (and old) skills will be needed…

Individuals who judge their computer skills to be sufficient if they were to apply for a new job within a year, 2013 (as a percentage of all individuals)

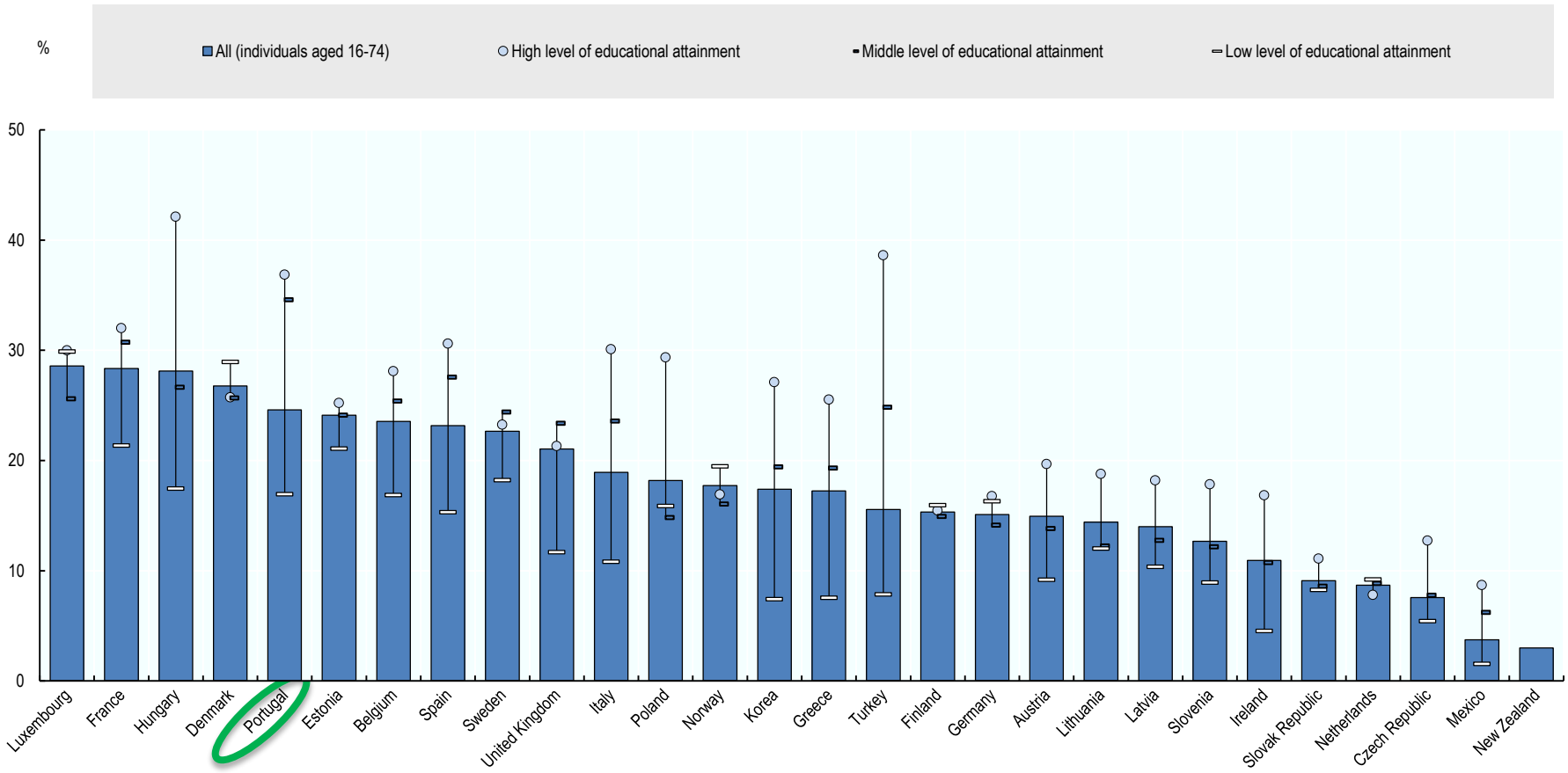


Source: *OECD Measuring the Digital Economy: A New Perspective, 2014,* http://dx.doi.org/10.1787/888933148354.

…as well as societal trust in digital transformation.

Digital security incidents experienced by individuals, 2015 or later

As a percentage of all individuals and by level of educational attainment

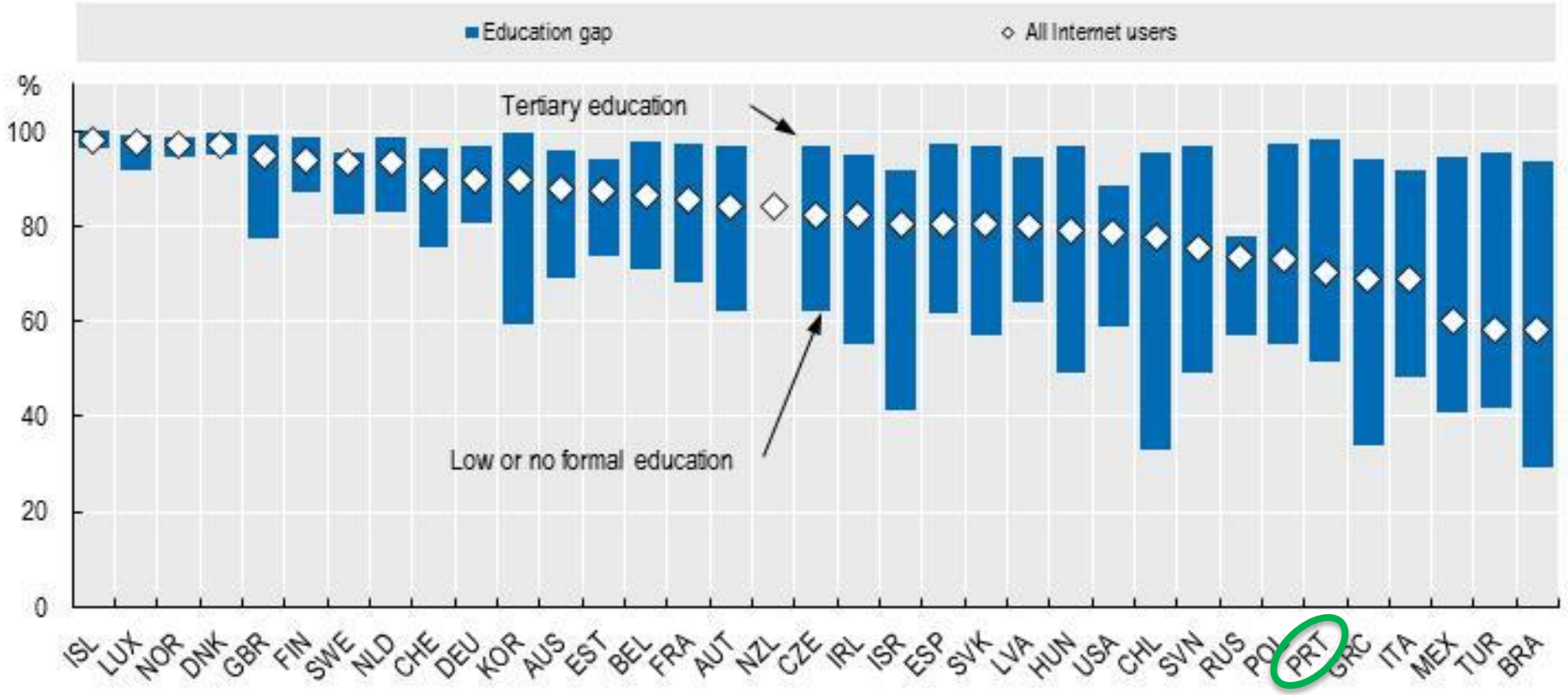


OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264276284-en

Digital divides need to be addressed...

Gap in Internet use by educational attainment, 2016

As a percentage of enterprises in each employment size class



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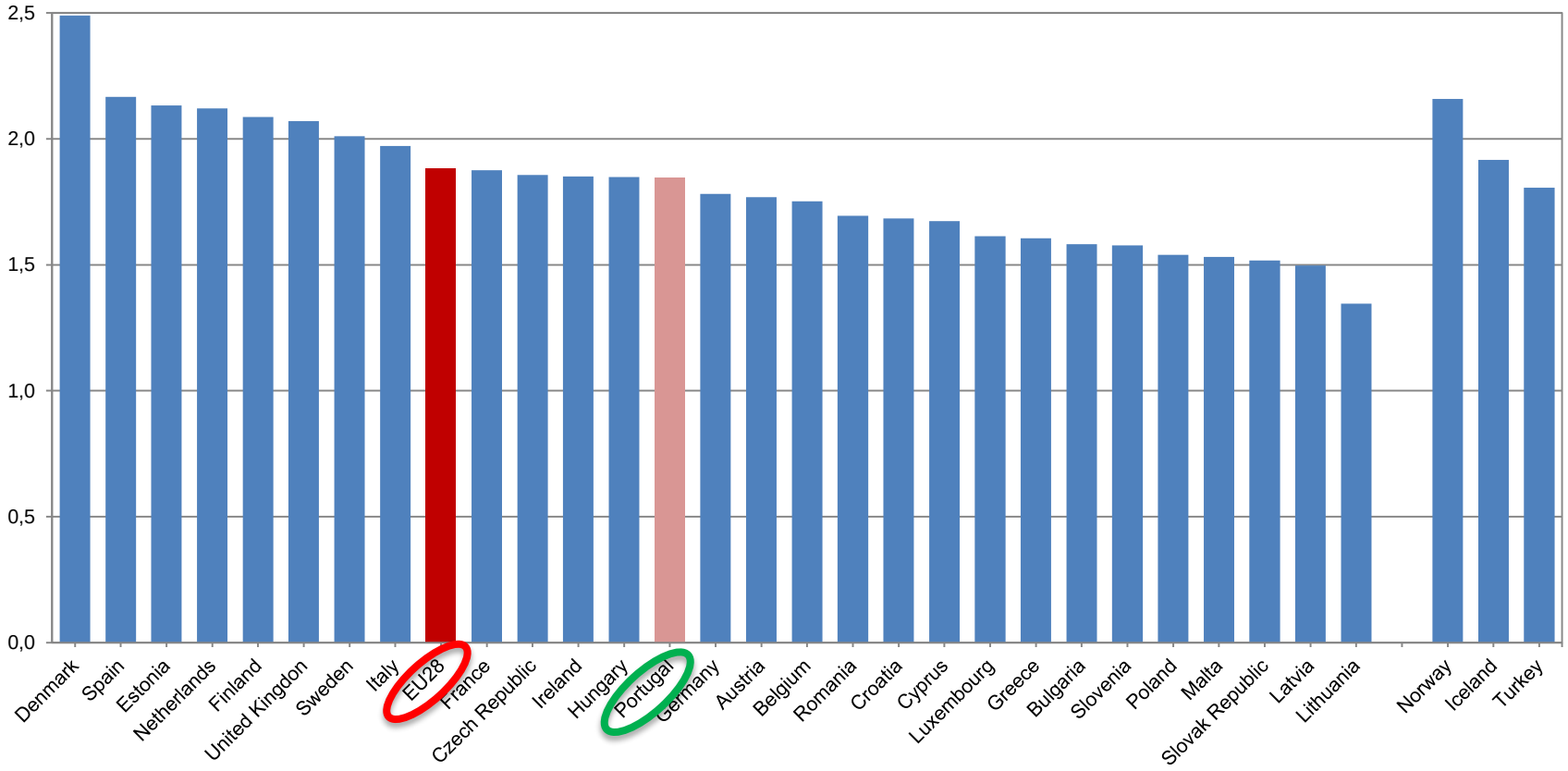
…as well as broader well-being.

Composite index of eHealth adoption among general practitioners, 2013



Note: The maximum score for this indicator is 4
Source: OECD/EU (2016), *Health at a Glance: Europe 2016: State of Health in the EU Cycle*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264265592-en

Governments also need to Go Digital…

Improve efficiency and targeting of *existing* policies

- **Monitoring of imperfectly observable outcomes** → **Fraud detection**
- **Monitoring of dynamic phenomena and emerging risks** → **Nowcasting and rapid response**
- **Compliance and enforcement**

Improve policies: design and impact

- **Broaden suite of policy instruments** → **Better service delivery**
- **Feedback to final users**
- **Policy experimentation and evaluation** → **Better policy design and evaluation**

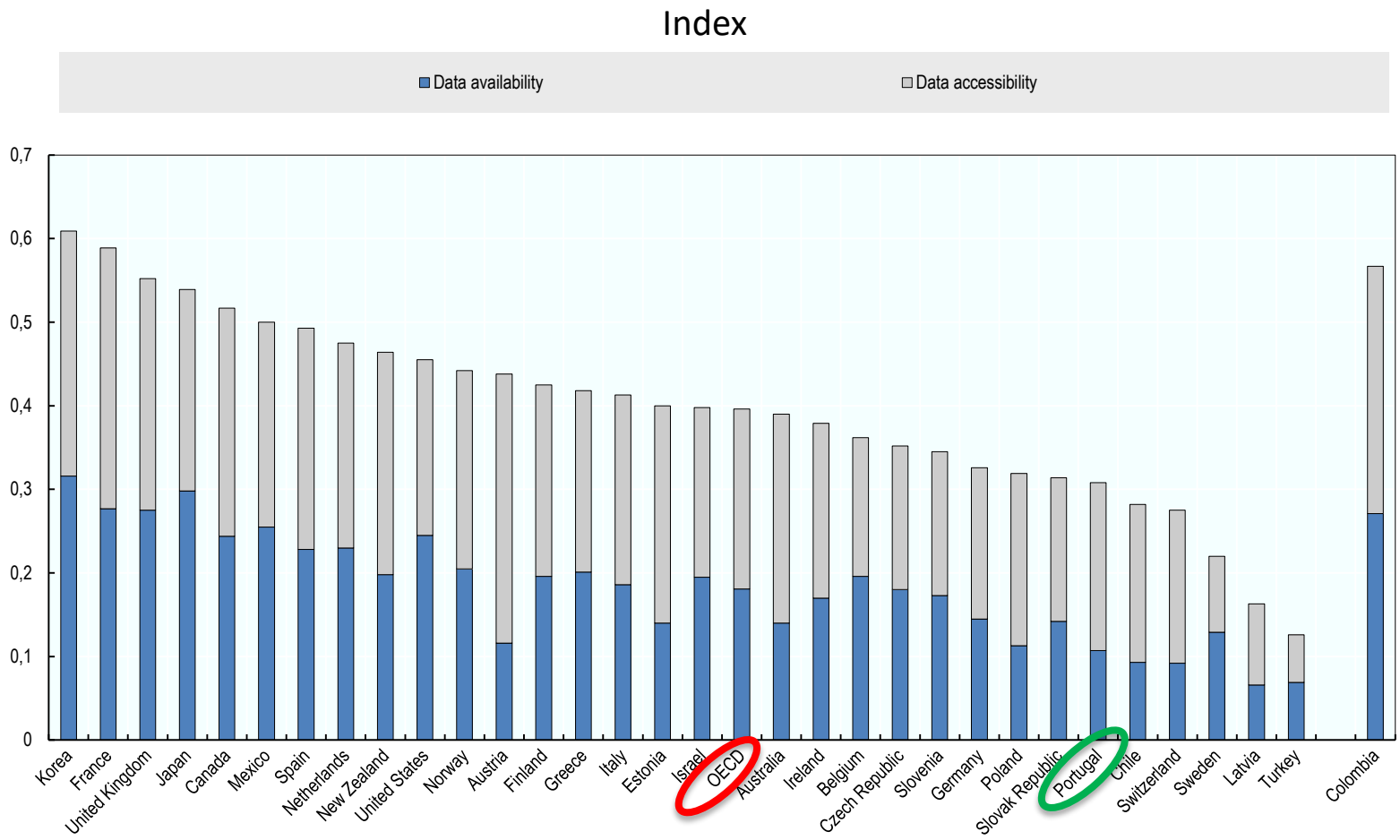
Expand stakeholder engagement

- **Data collection**
- **Participation in design and implementation** → **Engagement with citizens and regulatees**

[DSTI/CIIE(2017)20]

…including with respect to open data.

Open government data availability and accessibility, 2017



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OECD Going Digital Project

Going Digital Objectives

- **Understand the digital transformation and its impacts on the economy and society;**

- **Provide policymakers with the tools needed to develop a forward-looking, whole-of-government policy response;**

- **Help overcome the gap between technology and policy development.**

Project structure

Pillar 1

Horizontal activities

Understanding

1 report on the vectors of digital transformation

Responding

1 paper on an Integrated Policy Framework

Transversal issues

1 report on Strategic Foresight

1 report on Policy Design

1 Workshop on Digital security

Pillar 2

Committee-specific work

Analysis in one particular policy domain

More than 70 reports, from over 80 projects, from over 12 policy domains

Pillar 3

Cross-cutting modules

Jobs and Skills

1 synthetic report
2 working papers
Contributions to the 2019 Skills Outlook
Contributions to the 2019 Employment Outlook
A workshop in North America

Productivity, Competition and Market Openness

1 synthetic report
STI Scoreboard
5 working papers
2 Workshops at the Global Forum on Productivity

Well-being

1 synthetic report
2 working papers
Statistical and policy tools

Measurement

5 papers
2 workshops
Online portal
Detailed guidance on statistical frameworks

Highlight Pillar 1:
Vectors of Digital Transformation

Scale, scope and speed

Ownership, assets and economic value

Relationships, markets and ecosystems

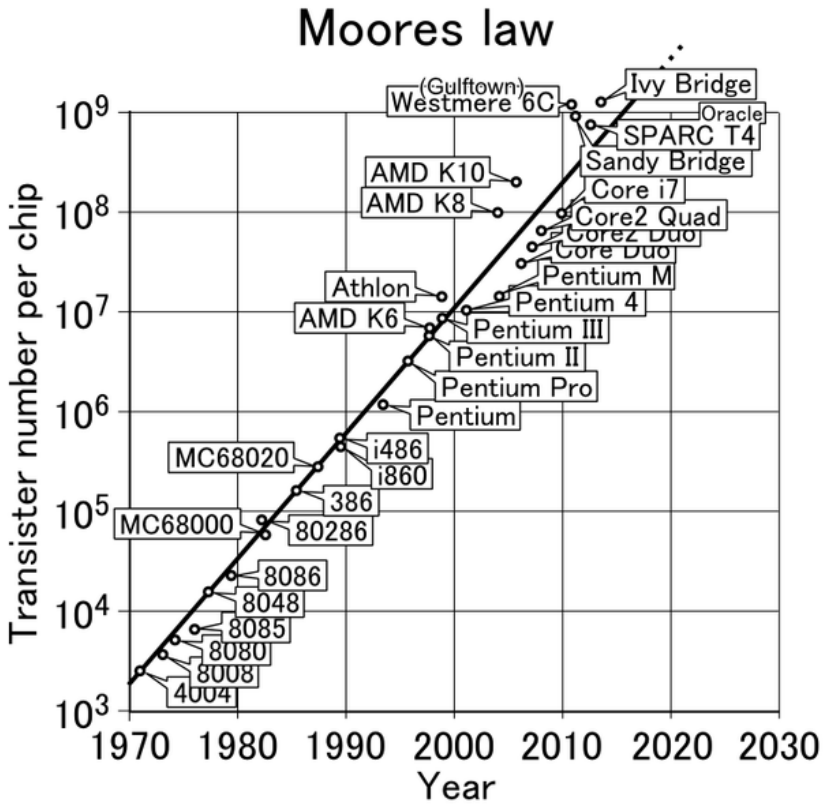
[DSTI/CDEP/GD(2017)4/REV1]

Highlight Pillar 1:
Vectors of Digital Transformation

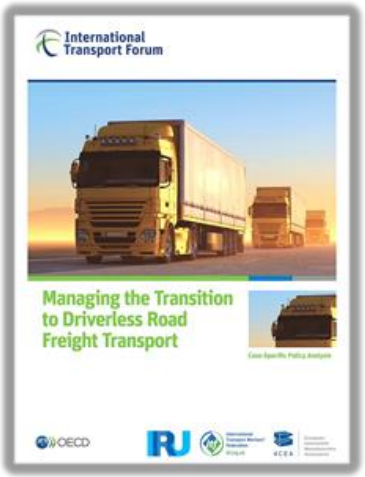
Data: A fundamental driver

- Properties of data that underpin digital transformation
  - Non-rivalrous
  - Non-depreciable
  - Flows easily across borders
  - Facilitates innovation and value creation
  - Acts as an essential 21st century infrastructure

- Challenges
  - Trade-off between openness and privacy
  - Questions of ownership, valuation and sovereignty



Highlight Pillar 2:
Automated vehicles and Computers in education



Managing the Transition to Driverless Road Freight Transport

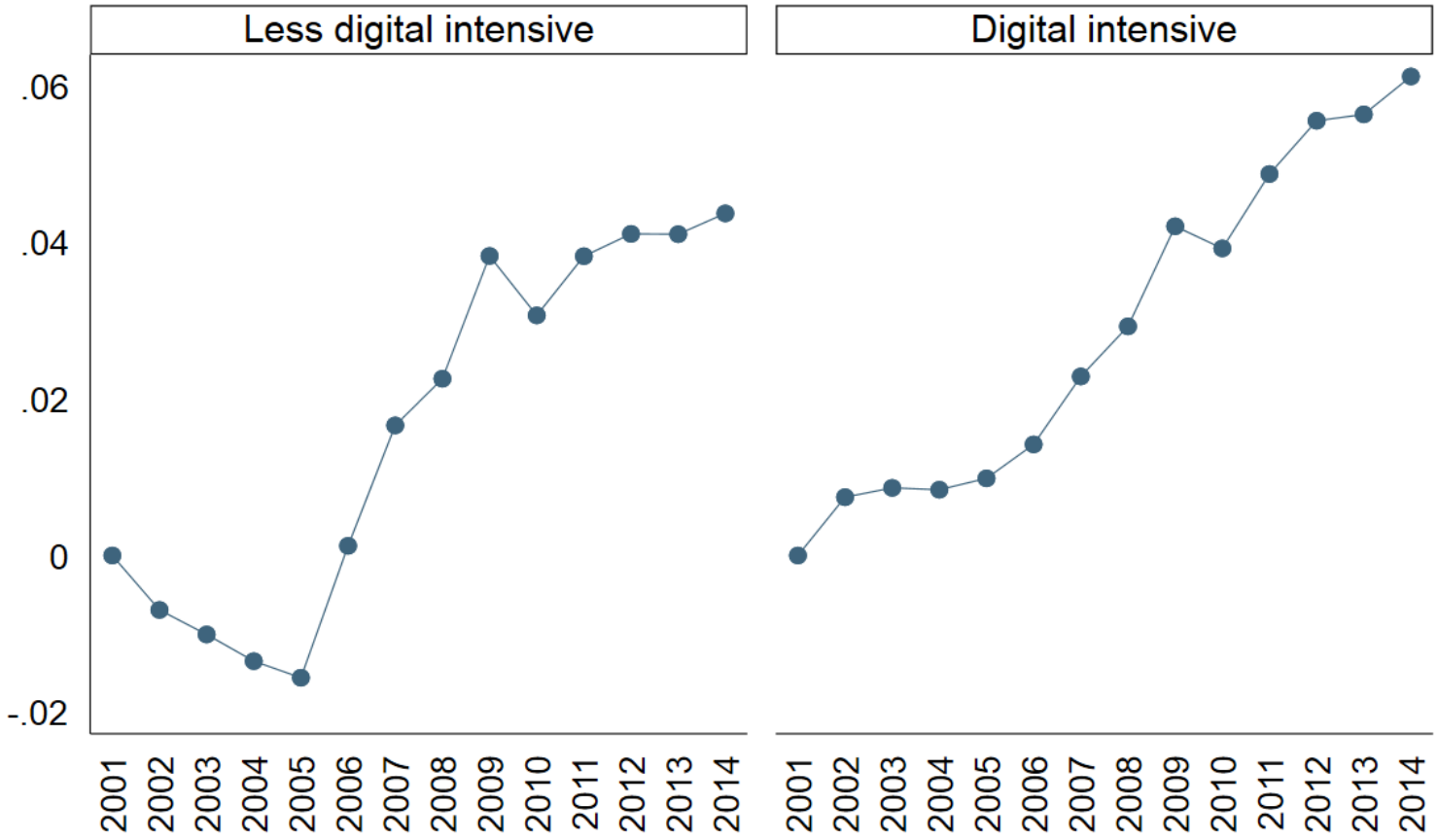
- Case study of level 4-5 automation (no driver)
- 30% cost reduction = forces a tipping point
- By 2030: 3-4m/6.4m displaced drivers;
- AV Permit funds used for assistance.

Rethinking Education and Skills Development Mechanisms for the Digital Age

- Just 13% of OECD workers use literacy, numeracy and problem solving skills on a daily basis at a higher proficiency that of computers;
- Implies employment prospects will rest on skills beyond literacy, numeracy and problem solving.

Highlight Pillar 3:
Productivity and competition

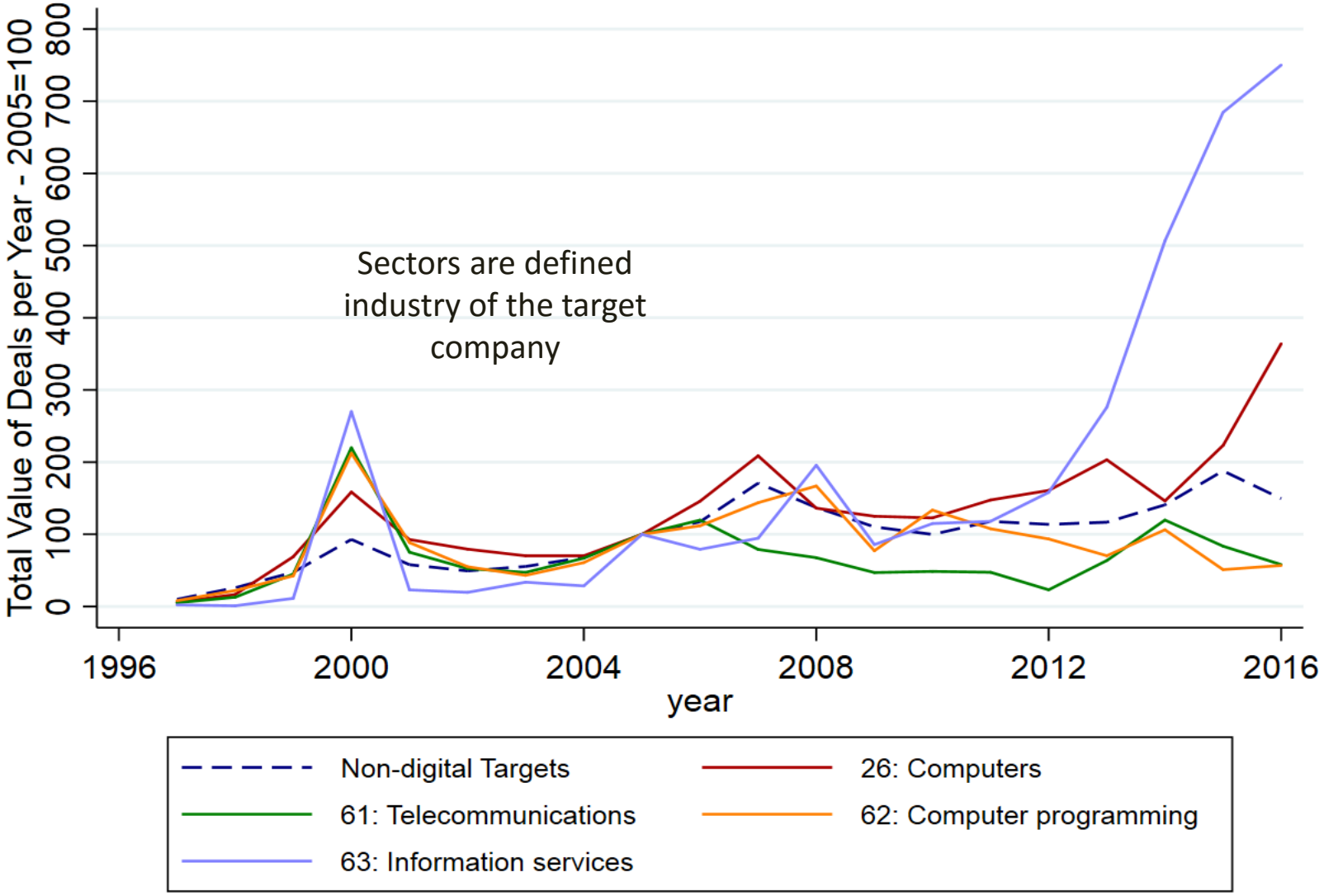
Mark-ups are consistently steady and higher in digitally intensive industries.



Source: : Digital Market Transformations" DSTI/CIIE(2017)16 – forthcoming

Highlight Pillar 3:
Productivity and competition

Value of M&As in Digital Sectors – Normalised (2005 = 100)



Digital transformation brings opportunities and challenges

- The World (and Portugal) is facing a massive **economic and social transformation**, driven by a wide range of new technologies and business models
- This offers **many new opportunities** for stronger productivity growth, new jobs, and new solutions to help address global and social challenges.
- But these potential **benefits are not automatic** and will require a comprehensive and pro-active policy response; leadership and vision will be key.
- There is a **growing gap between technology and policy** - policy will need to move to a digital era – better understanding the changes will help.
- There is much scope for **learning across countries**.

Towards a policy strategy for digital transformation

- **Access**
  - Promote investment in digital infrastructures, including key enablers
  - Foster competition in the provision of high-speed networks and services
  - Promote connectivity for all
- **Use**
  - Facilitate education, training and skills development
  - Promote digital security and privacy
  - Help SMEs invest in digital technologies
- **Innovation**
  - Use digital technologies to spur innovation
  - Seize opportunities and address sector-specific challenges
- **Jobs**
  - Promote effective adjust mechanisms
  - Ensure that social safety nets are in place
- **Trust**
  - Develop national strategies for digital privacy and security
  - Protect consumers online
- **Well-being**
  - Promote social inclusion by using digital technologies, while mitigating the potential challenges
  - Ensure effective digital security, privacy and safety
- **Digital Government**
  - Encourage new forms of partnerships and engagement
  - Promote new skills and accountability models for the public sector
  - Foster access, reach and quality of digital public services
  - Share and use data across the public sector

Thank you!

OECD Going Digital Project

Contact: Molly.Lesher@oecd.org

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