Promoting Competitiveness in the Digital Economy, Fribourg, 8 October 2018

GOING DIGITAL – MAKING THE TRANSFORMATION WORK IN SWITZERLAND

Dirk Pilat

Deputy Director, Science, Technology and Innovation

dirk.pilat@oecd.org

OECD

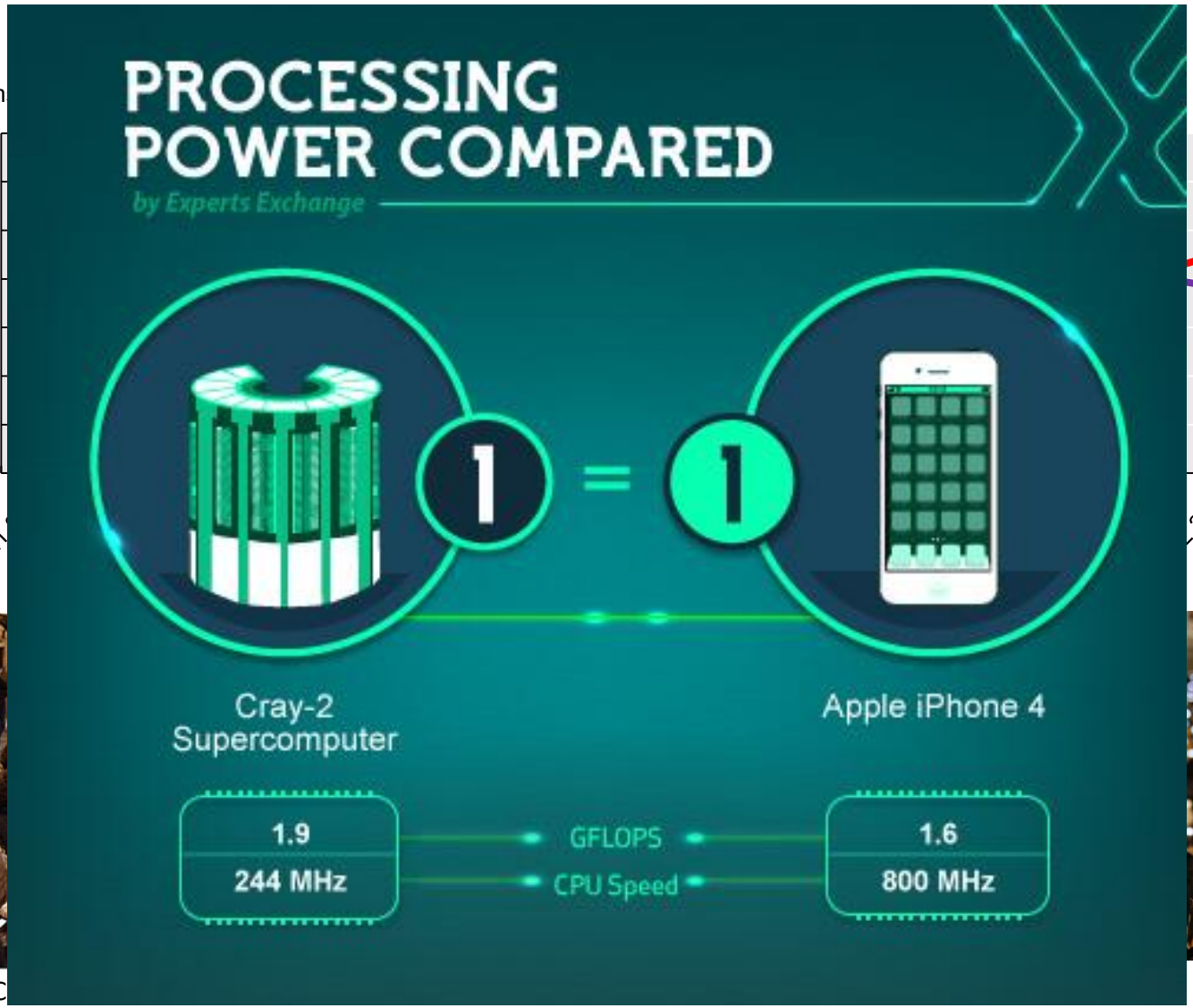
BETTER POLICIES FOR BETTER LIVES

Outline

1. Digital Transformation – The Challenge for Policy
2. Framing the Policy Response
3. Some Policy Messages for Switzerland
4. Next Steps at the OECD

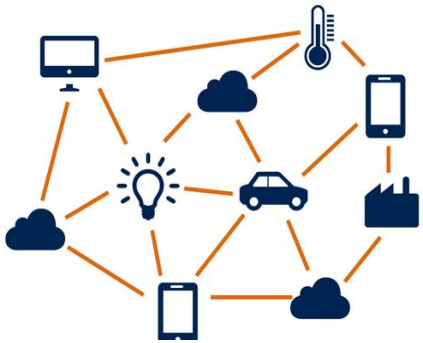
1. DIGITAL TRANSFORMATION – THE CHALLENGE FOR POLICY

1. We are in a new phase of the digital transformation. …



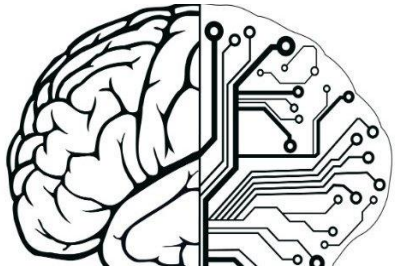
… with a wide **range of new digital technologies** emerging …

Cloud computing



Internet of Things

Big data



Artificial intelligence

3D printing

Blockchain

…, that provide new opportunities across **the economy**

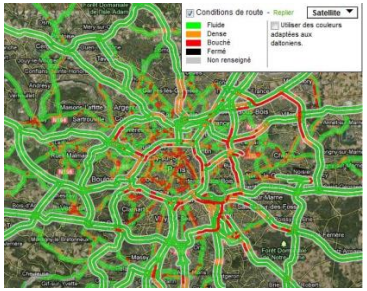
Public Admin.

Health

Retail

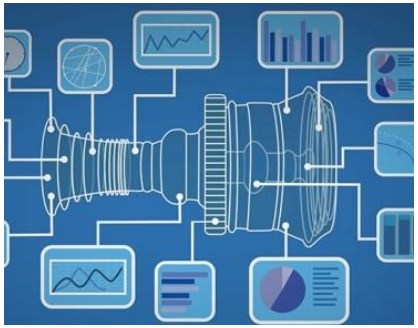
Digitalisation

Agriculture



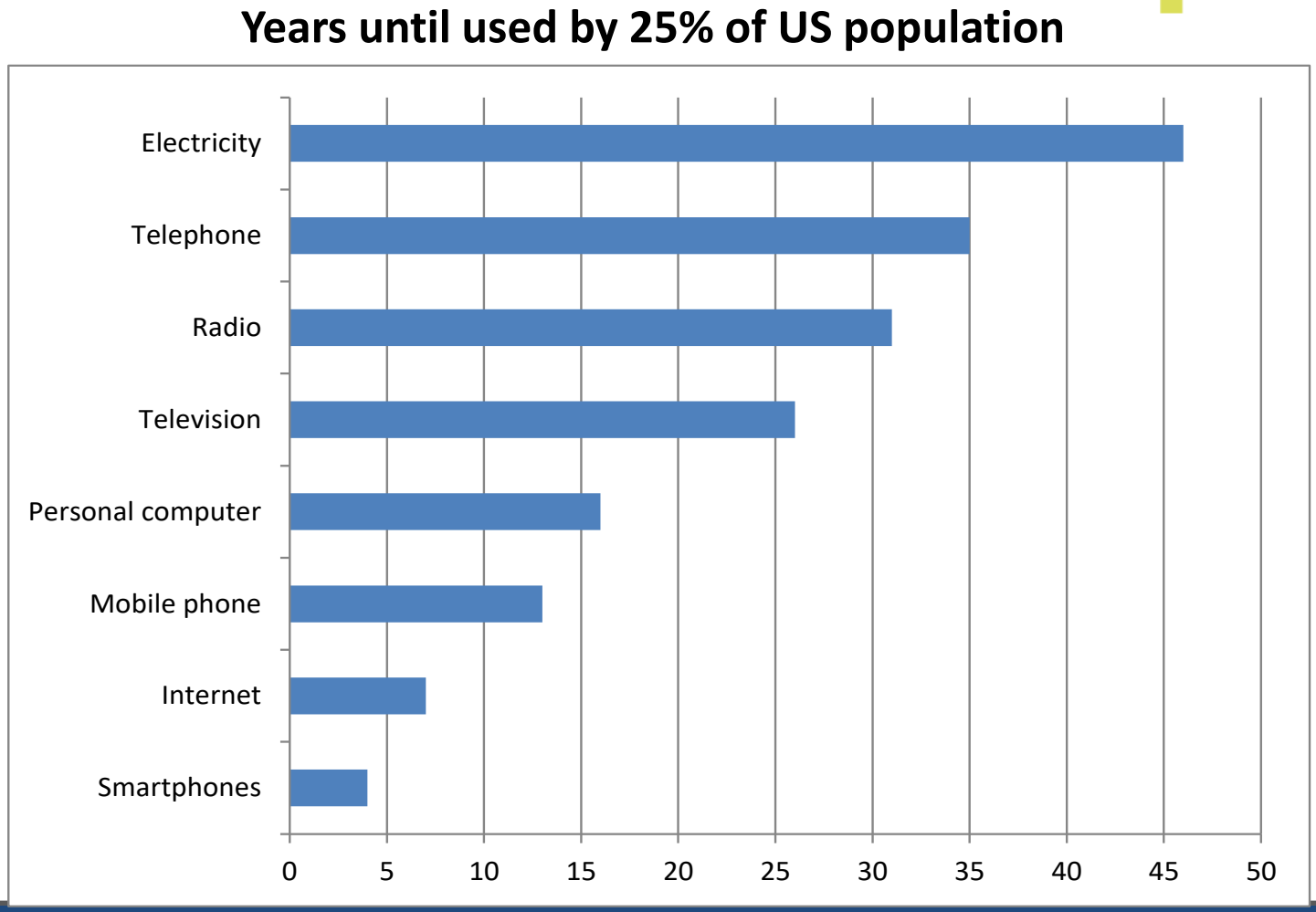
Transportation

Science & Education



Manufacturing

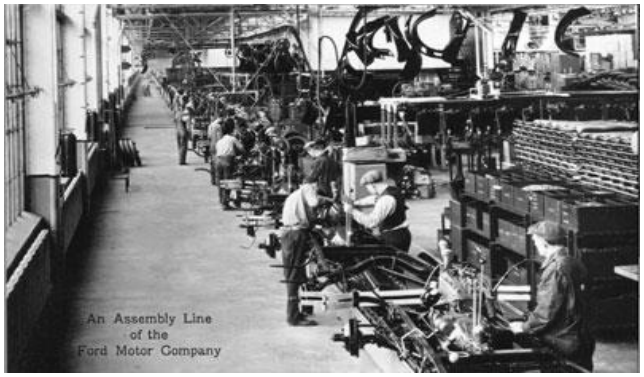
But Digital Transformation challenges existing policies, e.g. due to **its high speed, … …**



Challenges legacy policies and slow policy making - speed may promote policy "arbitrage" strategies

Source: US Census, Wall Street Journal

… the **changing nature** of value creation, …



Intangible assets

Servicification

Challenges policies directed at capital and value creation, e.g. tax incentives or accounting, trade policy (goods vs services), innovation

… and many more

Location no longer matters, e.g. education at a distance

From ownership to services, e.g. mobility, rental

Networks – from centralised to decentralised

From employment to gigs

upwork

2. FRAMING THE POLICY RESPONSE

OECD Going Digital Project - Objectives

- Improve understanding of the digital transformation and its impacts on economy & society;
- Provide policymakers with tools that can help develop a forward-looking, whole-of-government policy response;
- Explore ways of changing policy making itself and address the gap between technological change and policy development.

The Going Digital Project

Pillar 1

Horizontal activities

- **Understanding the Digital Transformation**
- **Responding: Development of an Integrated Policy Framework**
- **Transversal issues**
  - Strategic Foresight
  - Policy Design
  - Digital security

Pillar 2

Domain-specific work

- **Analysis in particular policy domains (e.g. trade, education, labour, tax, ..)**

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

Pillar 3

Cross-cutting work on key policy questions

- **Jobs and Skills**
- **Productivity, Competition and Market Openness**
- **Well-being**
- **Measurement**

An Integrated Policy Framework for the Digital Age

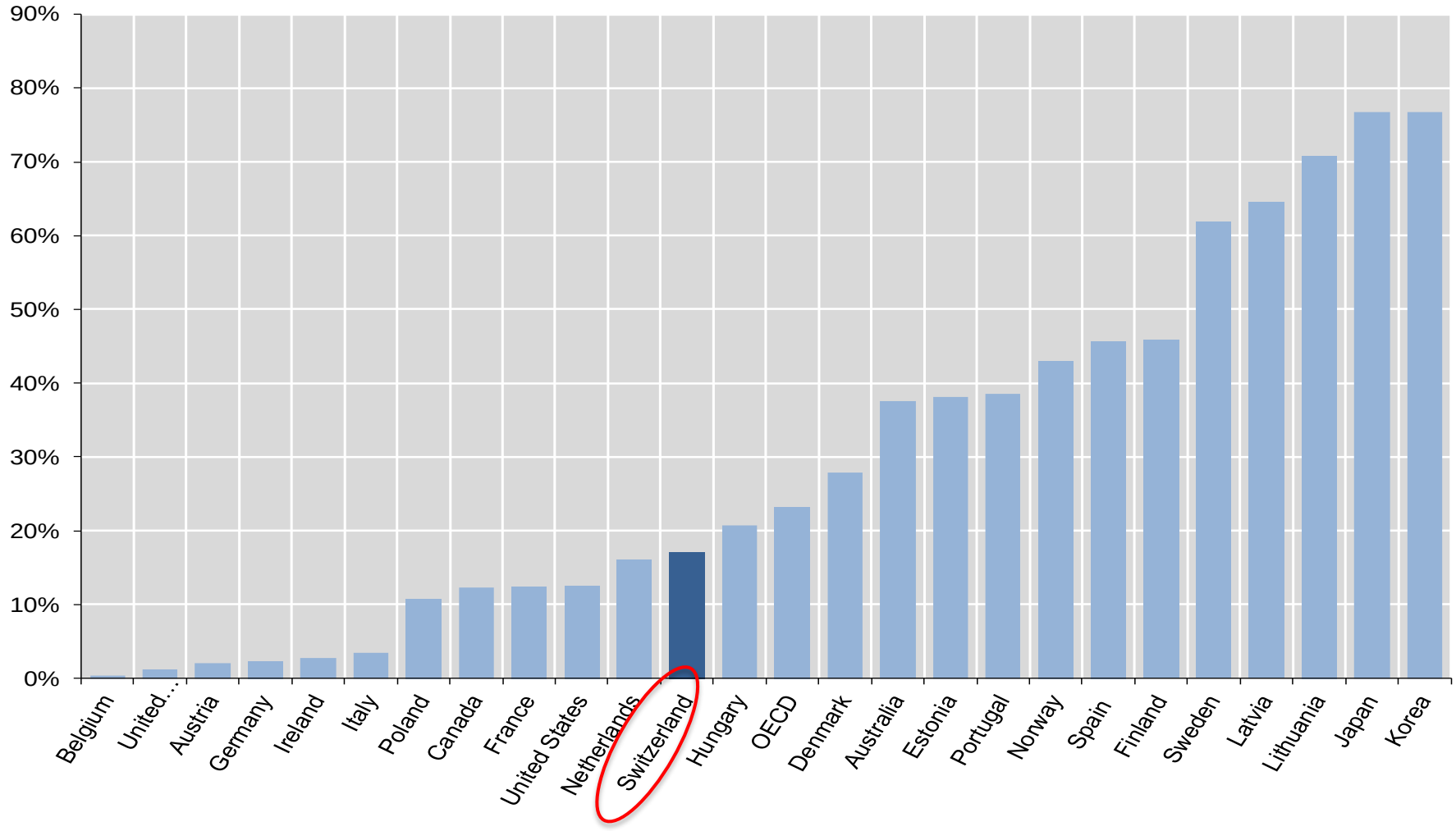
Main Policy Issues:

1. **Access**
2. **Use**
3. **Innovation**
4. **Jobs**
5. **Society**
6. **Trust**
7. **Market Openness**

Leading to an Integrated Strategy for Growth and Well-Being

1. Access: Connectivity has grown, but digital divides remain …

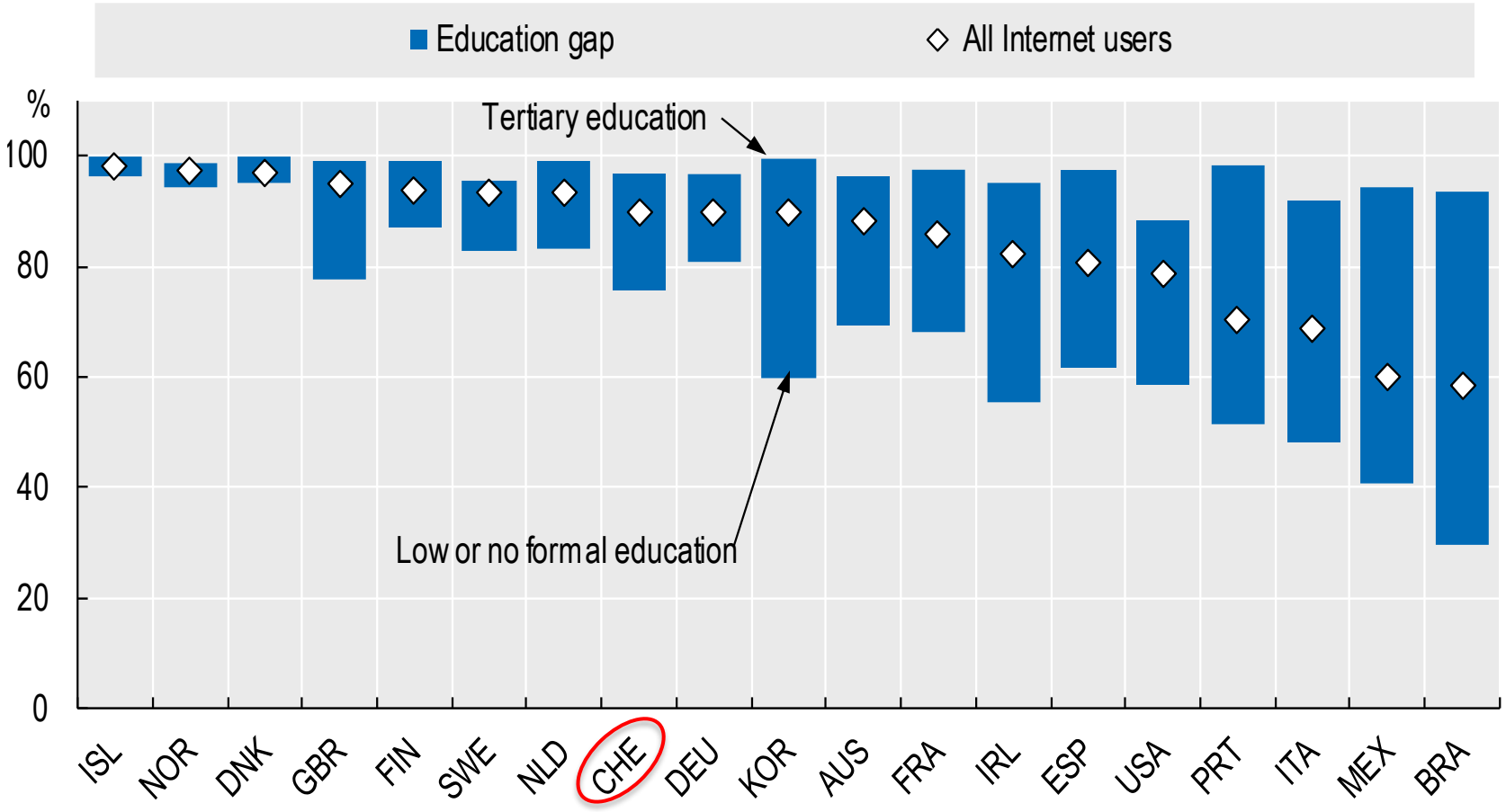
Percentage of fibre connections in total broadband subscriptions, December 2017



Source: OECD Broadband Portal, February 2018, http://www.oecd.org/sti/broadband/broadband-statistics/

… also **within** countries

Gap in Internet use by educational attainment, 2016
As a percentage of the population in each category



Source: OECD Science, Technology and Industry Scoreboard 2017,
StatLink: http://dx.doi.org/10.1787/888933620056

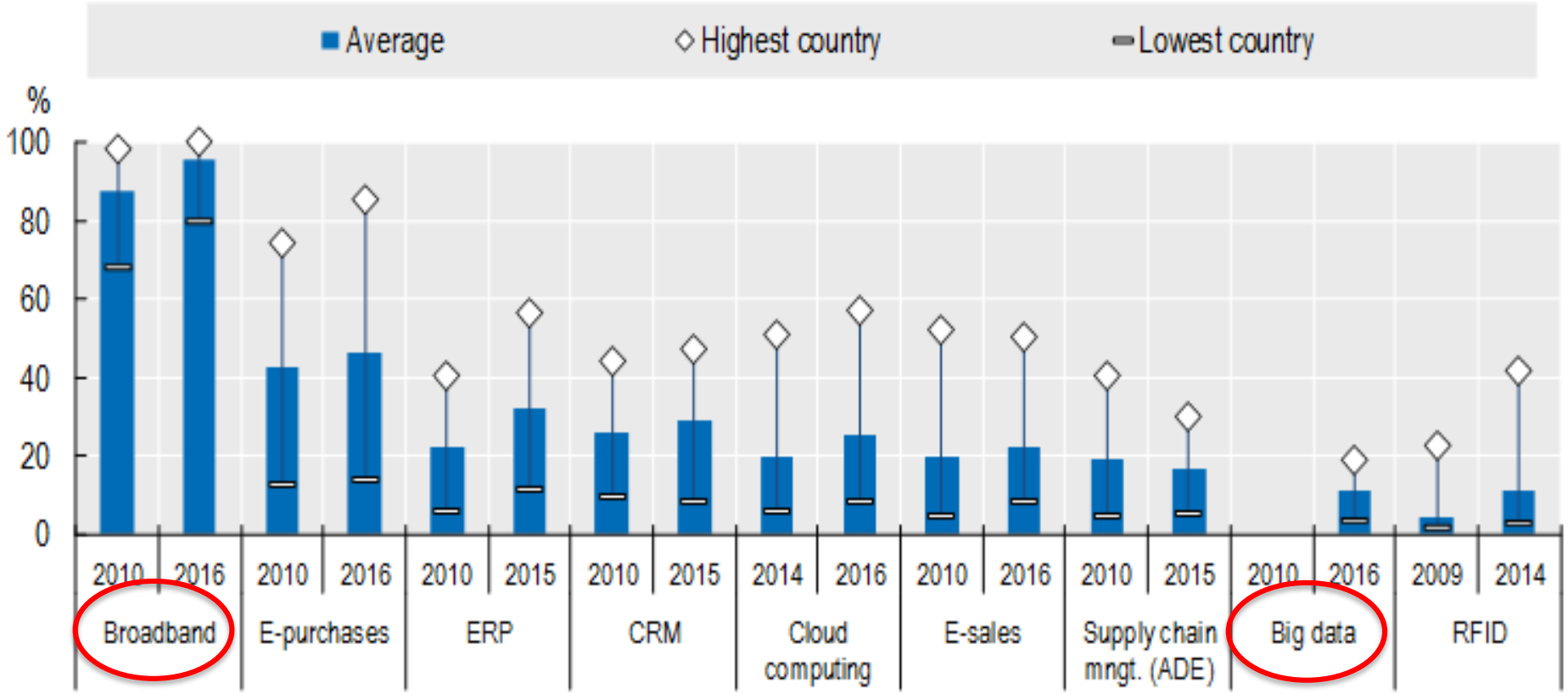
1. Key policies to enhance access

- Sound competition in telecommunications markets combined with national broadband strategies, including for future networks, e.g. 5G. Fibre will be key.
- Government may need to invest to reduce specific (e.g. regional) digital divides
- Facilitate financing for investments in connectivity and infrastructure
- Improving regulation and access, also for new technologies, e.g. 5G, IoT, driverless cars – spectrum is important too.

2. Use: Most firms are connected, but few make **effective use** of advanced ICTs …

Diffusion of selected ICT tools and activities in enterprises, OECD countries, 2010 and 2016

As a percentage of enterprises in each employment size class

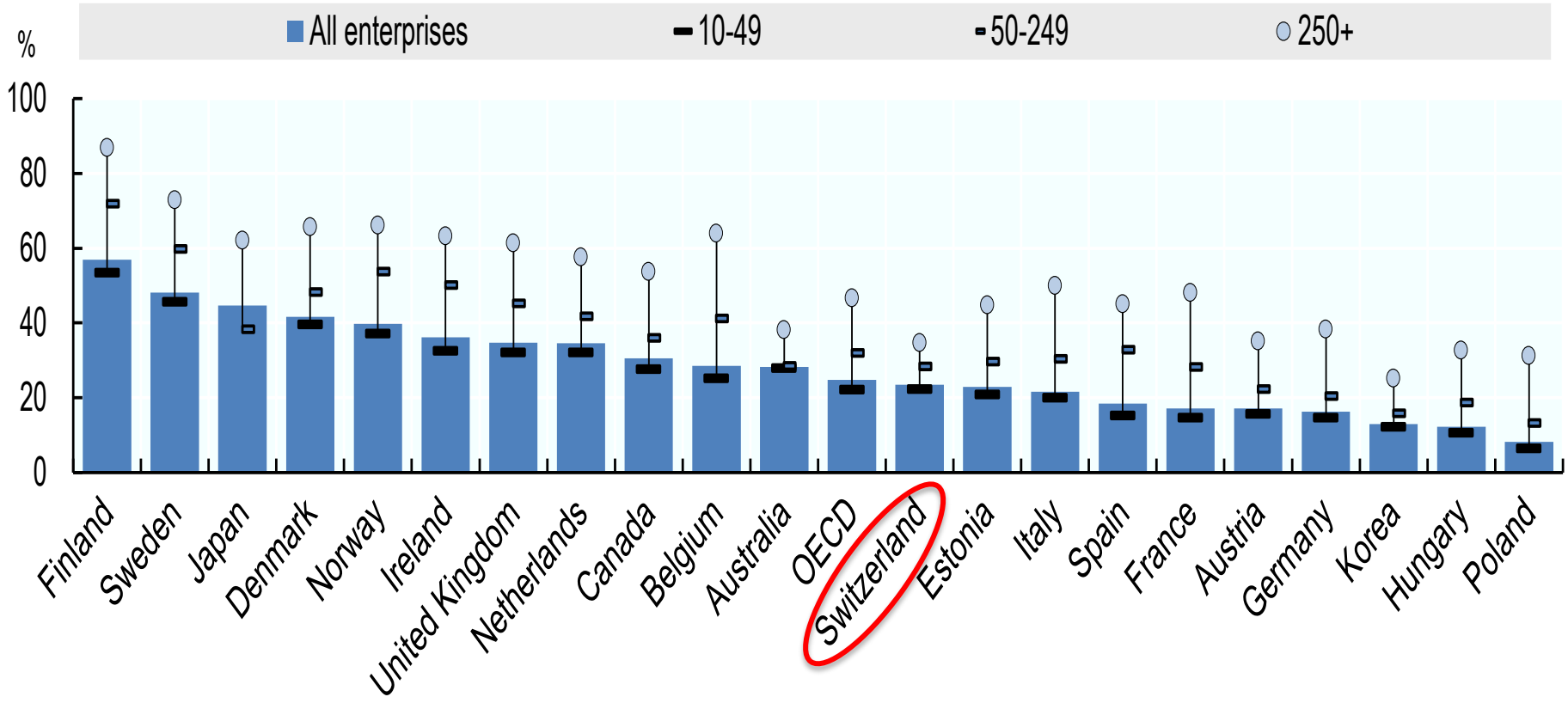


Source: OECD Science, Technology and Industry Scoreboard 2017,
StatLink: *http://dx.doi.org/10.1787/888933619600*

… 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



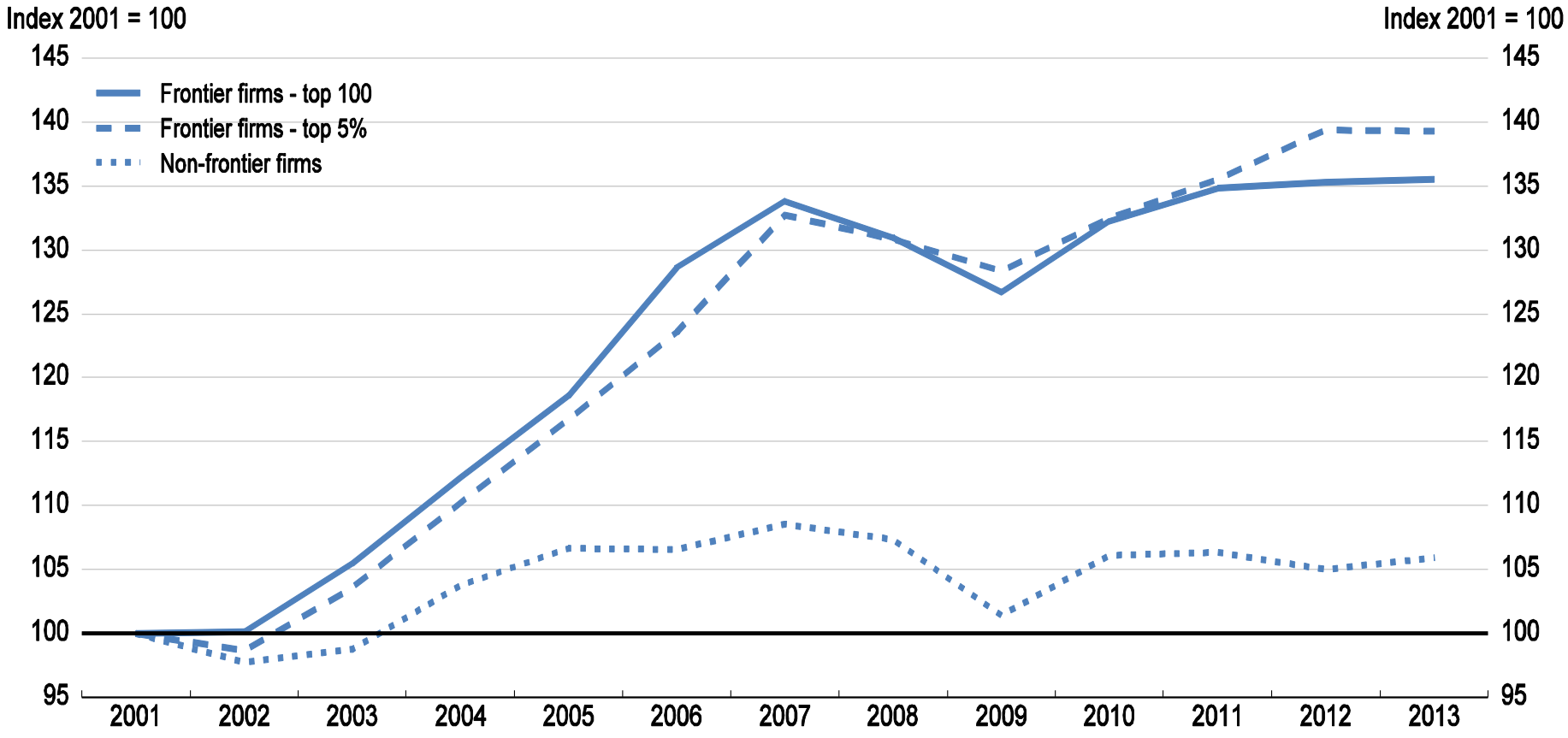
Source: OECD Digital Economy Outlook 2017, StatLink: http://dx.doi.org/10.1787/888933585495

2. Key policies to strengthen the use of digital technologies

- Foster business dynamism to allow successful start-ups to scale and less successful ones to exit
- Modernise regulation – enable flexibility and experimentation
- Foster the use of digital tools in SMEs
- Invest in the skills needed for a digital economy and society
- Foster investment in intangible assets that complement digital technologies (e.g. R&D, data, IPR)

3. **Innovation** and Productivity: the world's **most productive firms** have rapid 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.

Innovation and the **productivity paradox**

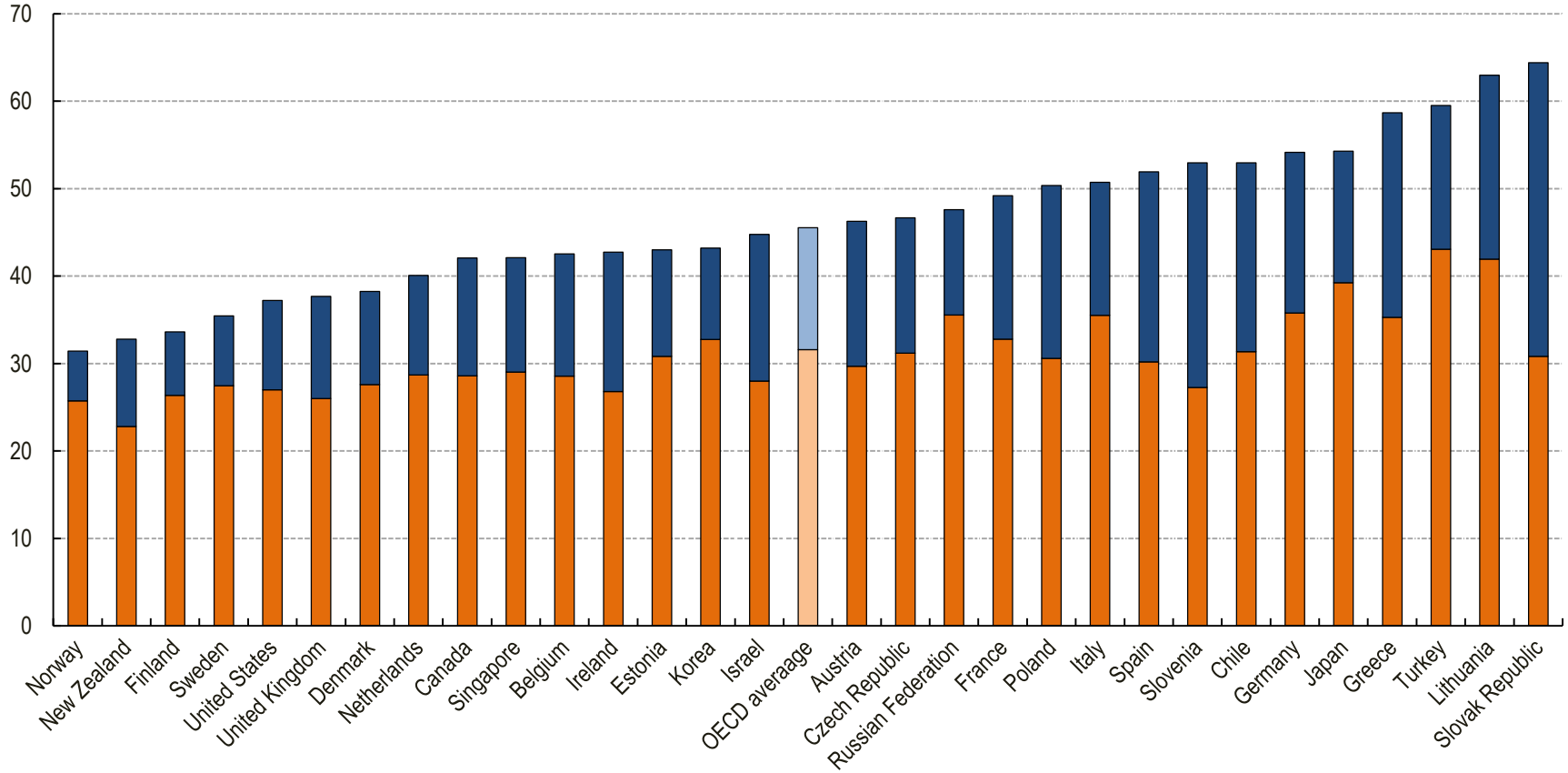
- The **diffusion** of advanced digital technologies (e.g. big data, robotics, AI) in OECD countries **is still underway** – it will take more time, especially for SMEs, and in many sectors.
- It's **not just about technology diffusion** – changes in organisations, business models, worker's skills and processes take even more time (and may be more difficult for many firms).
- The impacts of digital technologies will also **require more structural change** within & across industries, as digitally-intensive firms grow and less digitally-intensive firms decline.
- The **slow pace of structural reform** in many OECD economies may also limit the impacts of digital technologies
- There are questions and some emerging evidence on the state of **competition in the digital economy**

3. Key policies to strengthen digital innovation

- Invest in basic research and innovation
- Foster knowledge diffusion – e.g. through technology extension services, cooperation between science and business
- Encourage entrepreneurship and the emergence of new firms
- Promote competition and new, innovative business models
- Boost innovation in sectors by engaging in innovation-promoting structural reform

4. **Jobs:** OECD estimates suggest that the **risk of automation** is (likely) smaller than thought …

SHARE OF JOBS AT **SIGNIFICANT RISK (50-70%)** AND OF **HIGH RISK (>70%)** OF AUTOMATION, BY COUNTRY, %



Source: OECD, 2018.

… and history suggests new **jobs will emerge too, complementary to** digital technologies

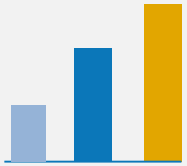
Source: Wall Street Journal, "Workers, fear not the Apocalypse", 5 September 2017

The risk of automation is highest for **low-skilled low-paid workers**

Highest risk in **routine jobs** with low skill and education requirement BUT low risk applies to a broad range from **professionals to social workers**

The risk of automation also falls with **educational attainment**

Automation mostly affects **manufacturing industry and agriculture** BUT some service sectors are highly automatable too.



No evidence of **polarisation or rising risk at the high end**: automation risk declines with skills, education and hourly wages

The risk of automation falls monotonically with **hourly wages**

Young people are the most at risk of automation, followed by older workers, with disappearing student jobs and entry positions.

4. Key policies to foster jobs in the digital economy

- Ensure a well-functioning labour market - Facilitate redeployment and geographic mobility
- Use formal and informal learning mechanisms to ensure workers have the right mix of skills
- Develop new forms of education and approaches to adult learning – apply digital tools
- Facilitate co-ordination among education and training institutions, employers and social partners
- Provide social and employment protection, especially for non-standard, irregular workers
- Foster social dialogue
- Develop an adaptation agenda – build confidence in society's ability to change and people to benefit

5. **Society**: Digital transformation creates opportunities and challenges

Dimension of well-being	Opportunities	Challenges
Education	Online education, digital learning resources	Digital divide, digital distractions, need for constant re-skilling
Employment	New jobs, better job matches, higher quality jobs	Job polarisation, jobs lost to automation, possible loss in job quality
Health	Improvements in health care and new medical technologies	Digital addiction, possible impacts on mental health
Environment	Reduced energy use, enhanced options for sharing	Electronic waste, enhanced energy use, rebound effects
…	…	…

5. Policies to Make Going Digital work for Society

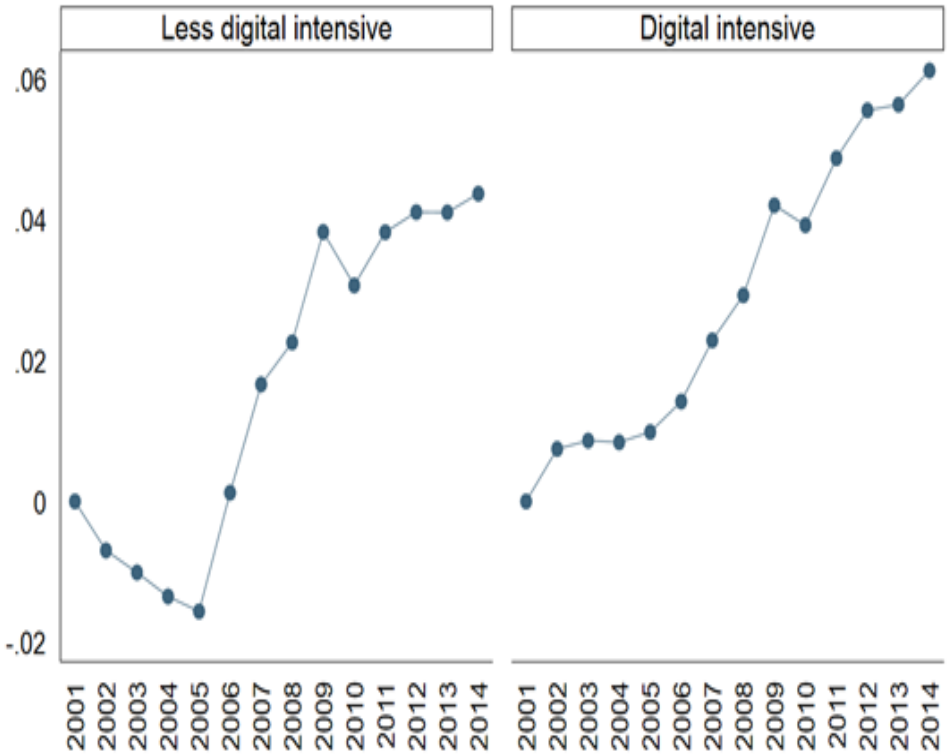
- Place people's well-being at the heart of digital strategies
- Use social policies to address digital divides – e.g. by geography, skills, age, gender, income
- Consider adjustments to tax and benefit policies to ensure no one is left behind
- Consider adjustments to health and environmental policies to balance digital opportunities and challenges
- Use digital tools and (public) platforms to increase civic engagement and reduce burdens on citizens

6. Policies to ensure trust

- Digital security should be approached from a strategic, economic and social perspective
  - Improve awareness
  - Flexible approach to digital security governance
  - Ensure security and resilience for critical infrastructures and essential services
  - Responsibility is shared among all stakeholders
- Promote privacy protection
  - Develop national privacy strategies and ensure interoperability of privacy frameworks
- Protect consumers online
- Support SMEs in ensuring trust in the online environment

7. Market openness: Key to benefit from new opportunities

Mark-up growth in digital intensive vs less digital intensive sectors, 2001-2014



Source: OECD estimates based on Orbis® data.

7. Policies to foster market openness

- Foster the interoperability of regulatory approaches across countries, e.g. as regards data flows and payment systems
- Approach market openness holistically, e.g. as regards goods and services
- Ensure sound competition - consider whether adjustments to competition policy need to be made
- Ensure open markets – adjust to digital trade

Innovative practice: Denmark's tech ambassador

3. SOME POLICY MESSAGES FOR SWITZERLAND

Key **policies** to benefit from digital transformation (1)

1. **Access**: Ensure the **rolling out of fibre** networks to every citizen, region and firm to ensure nobody is left behind. Competitive telecom markets and national broadband strategies are key.
2. **Use**: Facilitate the **diffusion** of advanced technologies and knowledge, notably to **SMEs and lagging regions ; Ensure that regulatory frameworks** are adapted to new technologies and business models
3. **Innovation**: Foster **innovation and entrepreneurship** by investing in the future, including in **advanced technologies. Public investment in R&D and innovation matters.**
4. **Jobs**: Invest in **education** and support **skills** development to ensure nobody gets left behind; Support **workers displaced** by the digital transformation. Foster **social dialogue**.

Key **policies** to benefit from digital transformation (2)

5. **Society:** Place people's wellbeing at the heart of digital strategies, address societal issues linked to the digital transformation.
6. **Trust**: Ensure trust by protecting **privacy, security & consumers rights ;** develop more strategic approaches to these issues.
7. **Market openness**: Foster the **scaling** of new business models and start-up firms; ensure sound **competition;** Facilitate **e-commerce and digital trade**
8. **Strategy**: Leverage digitalisation **within government (**e.g. by integrating data**);** develop an **comprehensive strategy for digital transformation**

Some **challenges**

1. **Access**: The connectivity agenda is ever evolving as new technologies emerge (e.g. 5G). Fibre, spectrum and access arrangements will be key.
2. **Use**: Scaling of new firms is often difficult; SMEs risk falling behind.
3. **Innovation**: Can Switzerland overcome the productivity paradox?
4. **Jobs**: Polarisation is a challenge. There are few **models of life-long learning** in the digital age; risk of some workers (e.g. older workers with low levels of literacy) being left behind. **Experimentation** with new approaches to education and training will be valuable.
5. **Society:** Critical for the long-term success of digital transformation. New **concerns** are emerging, e.g. mental health, early childhood development.
6. **Trust**: Policies for **privacy, security & consumers rights may** need a more strategic approach, e.g. as regards **managing digital security risks**.
7. **Market openness**: Will be key for small economies, as **e-commerce and digital trade** will offer new opportunities and markets. Ensuring **sound competition** may become a challenge in high-tech markets.
8. **Strategy**: Comprehensive strategies may be easier for small countries, including in making digitalisation work **within governments and involving stakeholders.**

Does digital transformation require **a new approach to policy making**?

- **Review policies** to identify whether those based on analogue concepts still work: e.g. physical locations, physical movement
- Avoid narrow, specific regulations or rigid standards that may quickly become obsolete – rather **set broad principles** (lines on the road);
- **Use experimental policies and iteration**, e.g. through sandboxes, facilitate risk-taking and innovation**.**
- **Revisit policies frequently** to ensure that they remain "fit for purpose"; don't be satisfied with regulate and sit, rather iterate;
- Improve understanding of the digital transformation with government (**CTOs, geeks for/in government**)
- **Use data and digital technologies** for better policy making

Can we make digital transformation work for everyone?

- The digital transformation is an **opportunity that needs to be shaped by policy** – people-centred policies will be key
- **Ensuring access for all** – people, firms and regions – can create opportunities for all to participate and benefit
- **Investment in education and skills** can help people adjust to the new opportunities linked to digital transformation
- **Competition policies, market openness & business/SME policies** are important to avoid winner-take-most outcomes – enabling the scaling of new business models and facilitating diffusion to SMEs will be important too.
- **But there is a risk of some groups being left behind – good social policies will be important too.**

4. NEXT STEPS

Next steps at the OECD

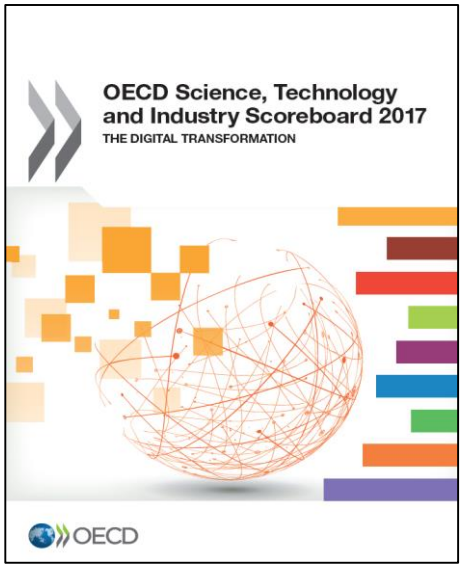
- Ongoing analysis, e.g. on **training and skills development**.
- Thematic **stand-alone reports on key aspects**
- Range of **flagship reports** with a focus on digitalisation, e.g. 2019 Employment Outlook, 2019 Skills Outlook, etc.
- Final **synthesis report** at the end of the project (March 2019), with report on **Measuring the Digital Transformation**
- **Going Digital Summit** planned for 11-12 March 2019
- Beyond the book, including **Going Digital toolkit** that will provide tools and innovative practices for the digital age
- **National Going Digital Reviews** to come – Sweden launched on 15 June, Colombia underway, several other countries have requested a review
- **Going Digital Phase II** being planned for 2019-2020

Going Digital Summit - March 2019

Thank you

Contact: dirk.pilat@oecd.org

OECD Going Digital website:
http://oe.cd/goingdigital



41