High-Level Roundtable on Data-Driven Innovation:
Productivity, Jobs, Growth and Wellbeing in the Age of Big Data
Lisbon Council – 6 October 2015

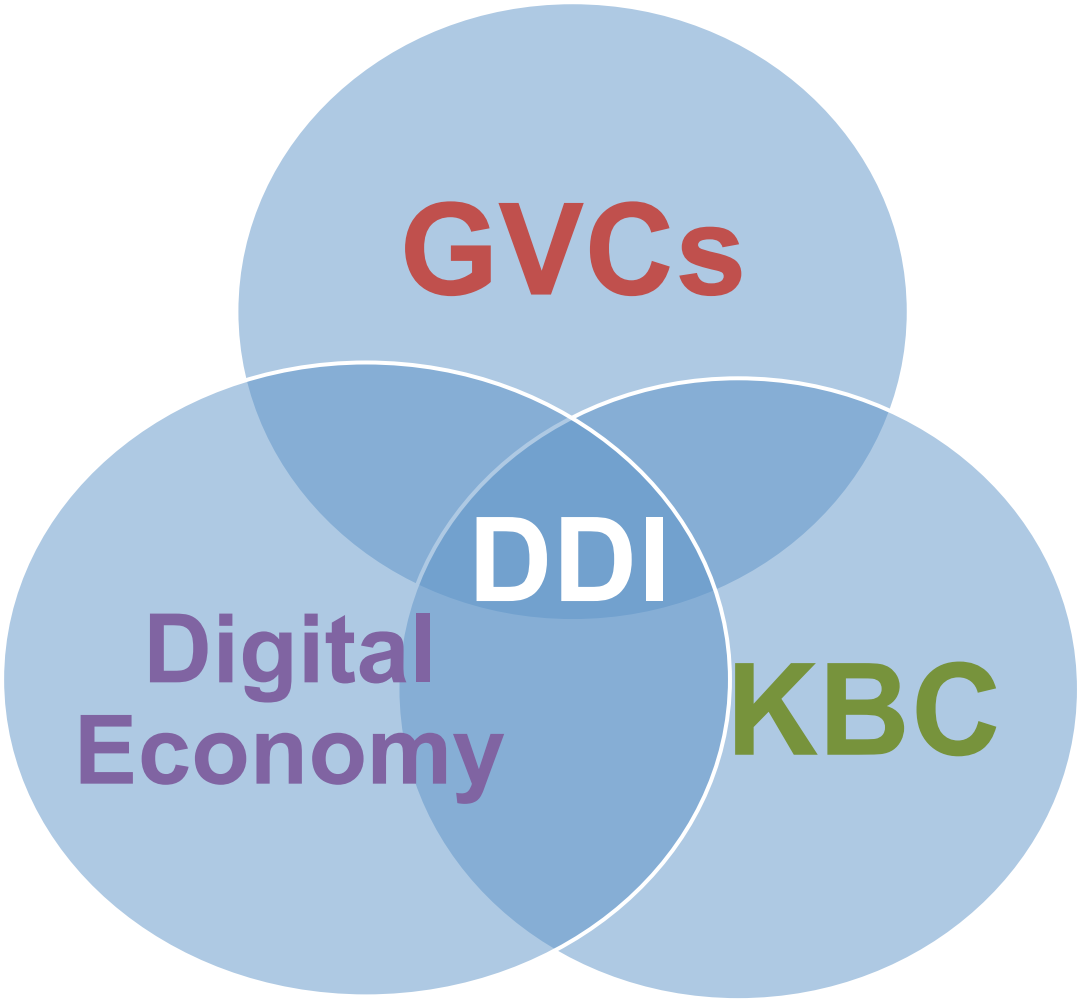
DATA-DRIVEN INNOVATION

(DDI) for Growth and Well-Being

Find out more about our work at:
http://oe.cd/bigdata

OECD
BETTER POLICIES FOR BETTER LIVES

Key drivers of 21st century economies



What is data-driven innovation (DDI)?

DDI refers to the **use of data and analytics** to improve or foster new products, processes, organisational methods and markets

Data is the "new R&D" for 21st century innovation systems

Public Administration

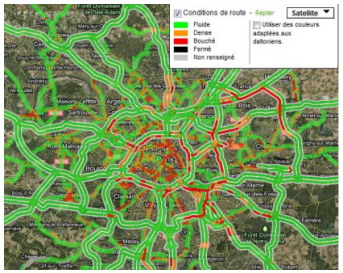
Health

Retail

Data

Agriculture

Science and Education



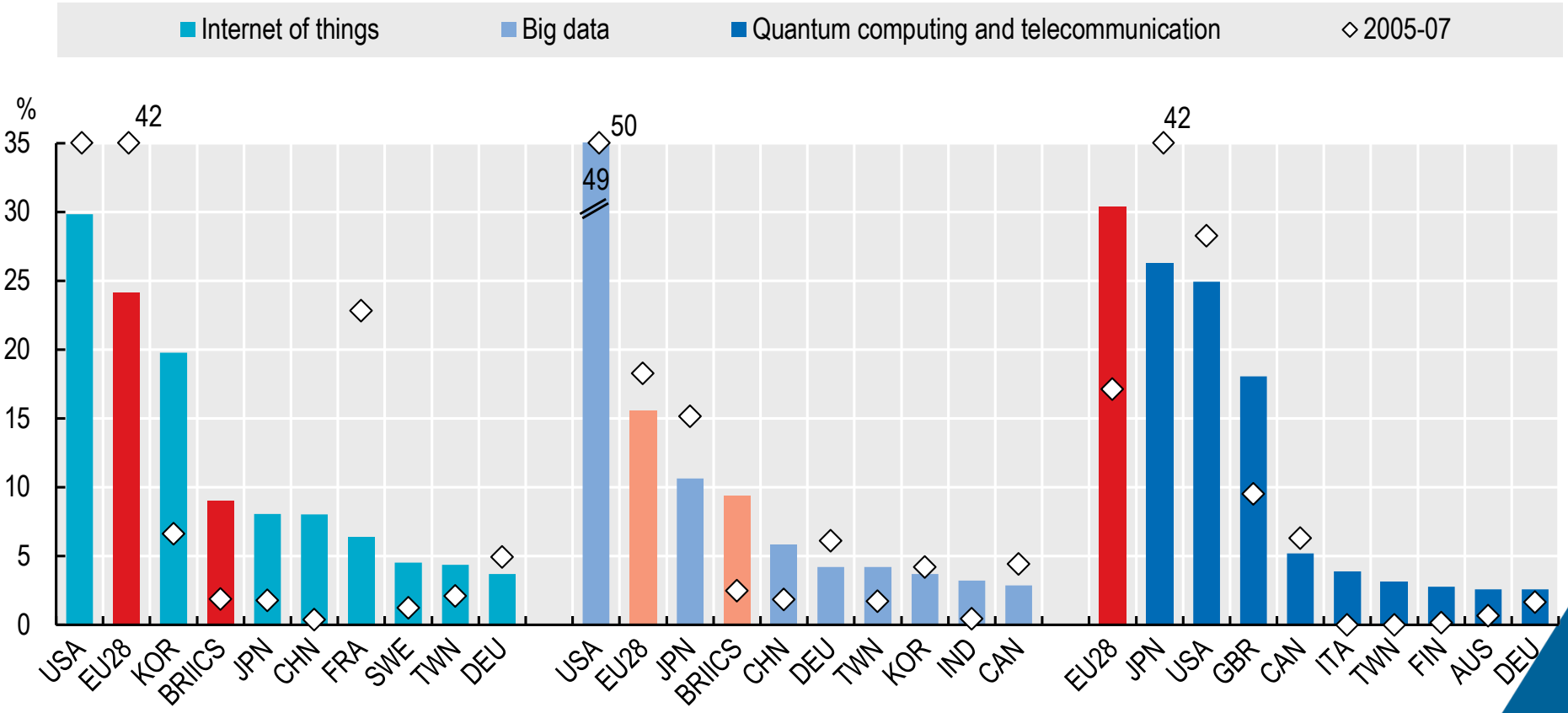
Transportation

Data is not oil, but an infrastructure

- **Data is non-rivalrous (but excludable)**
  - Data re-use and non-discriminatory access can maximize its value
  - Data enables multi-sided markets
- **Data is a capital with increasing returns**
  - Data can be re-used as input for further production
  - Data linkage is a key source for super-additive insights
- **Data is a general purpose input with no intrinsic value**
  - Data are an input for multiple purposes
  - Its value depends on complementary factors related to the capacity to extract information (e.g. skills, software)

Top players in key technologies could benefit from first mover advantages

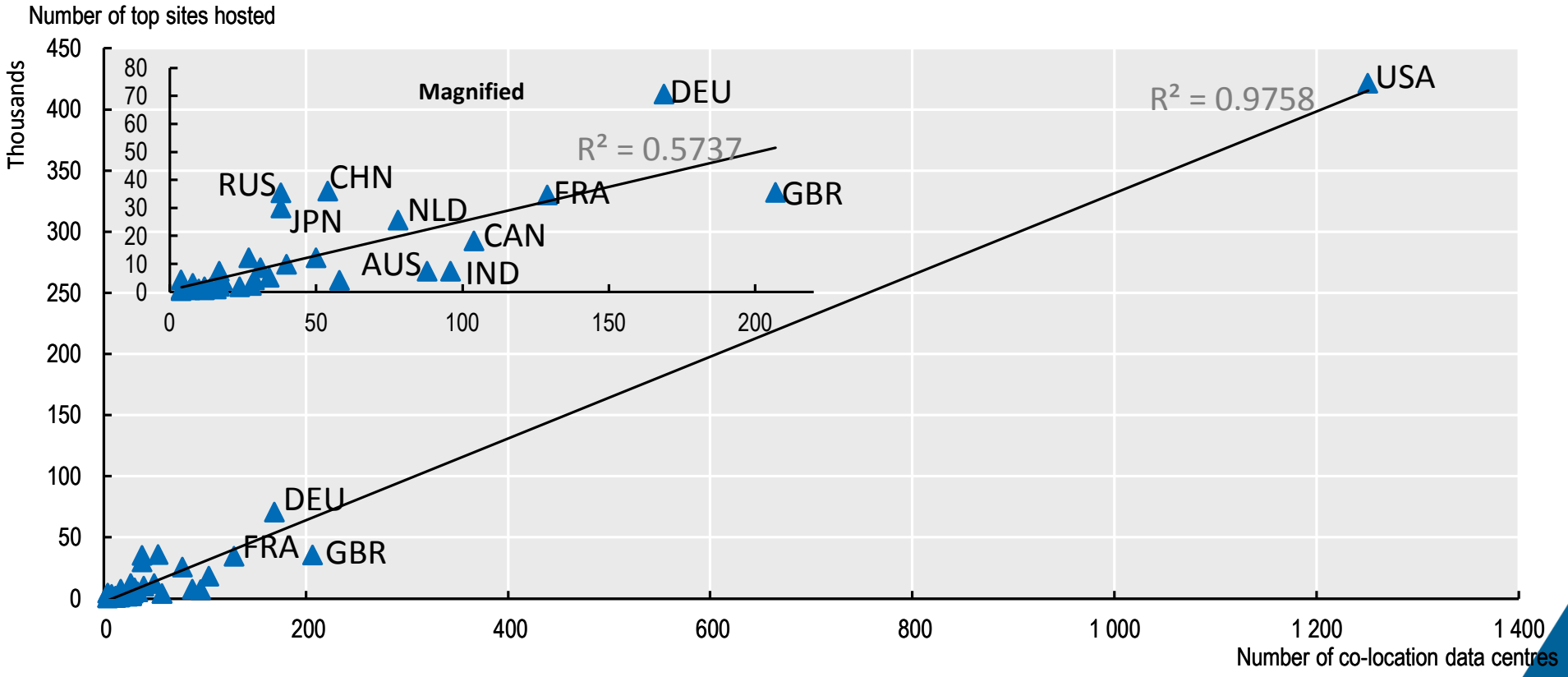
Economies' share of IP5 patent families filed at USPTO and EPO, selected ICT technologies (2005-07 and 2010-2012)



Source: *OECD Science, Technology and Industry Scoreboard 2015 (forthcoming)*.

The emerging global data ecosystem

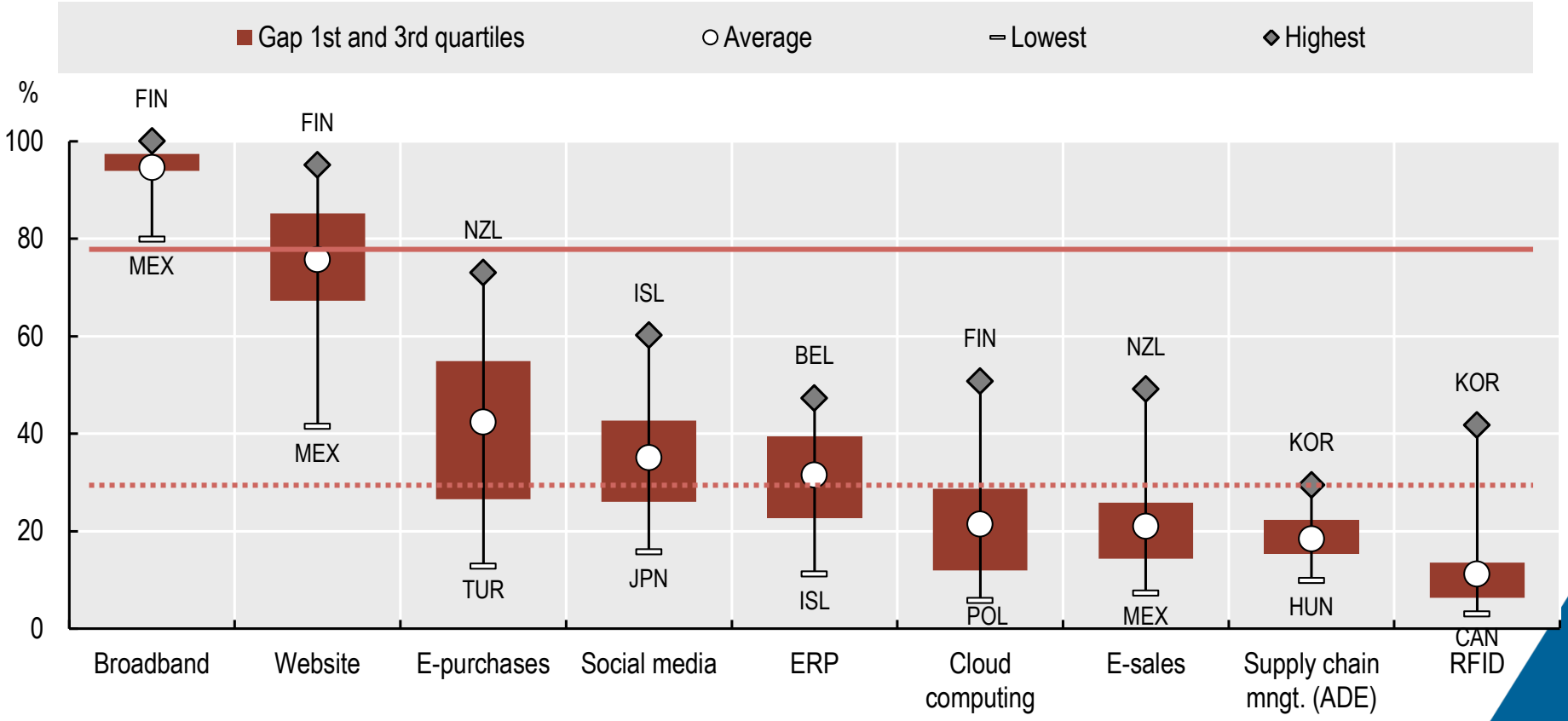
Top locations by number of colocation data centres and top sites hosted



Source: OECD (2015), *Data-driven Innovation: Big Data for Growth and Well-Being*, OECD Publishing

Encouraging adoption of DDI and related technologies in businesses …

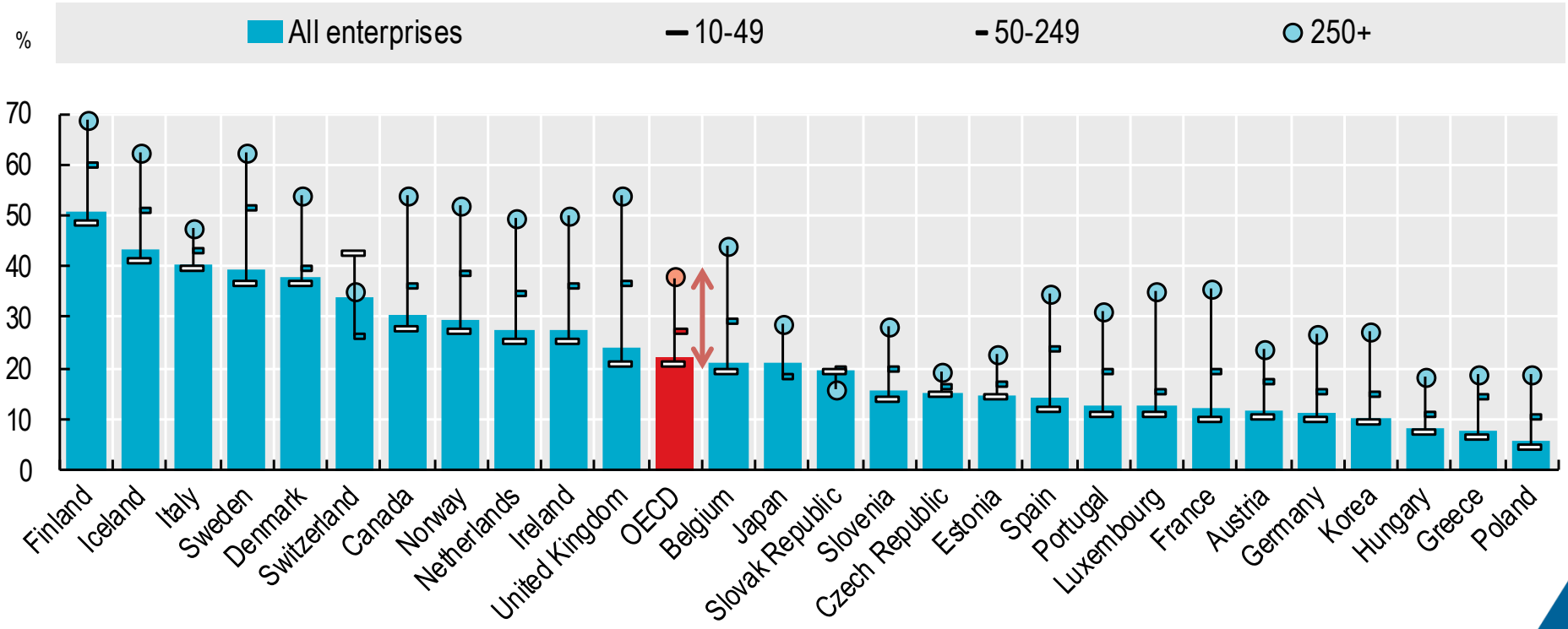
The diffusion of selected ICT tools and activities in enterprises, 2014
Percentage of enterprises with ten or more persons employed



Source: Based on OECD Science, Technology and Industry Scoreboard 2015 (forthcoming), OECD, ICT Database; Eurostat, Information Society Statistics and national sources, July 2014.

… with a focus on small and medium enterprises

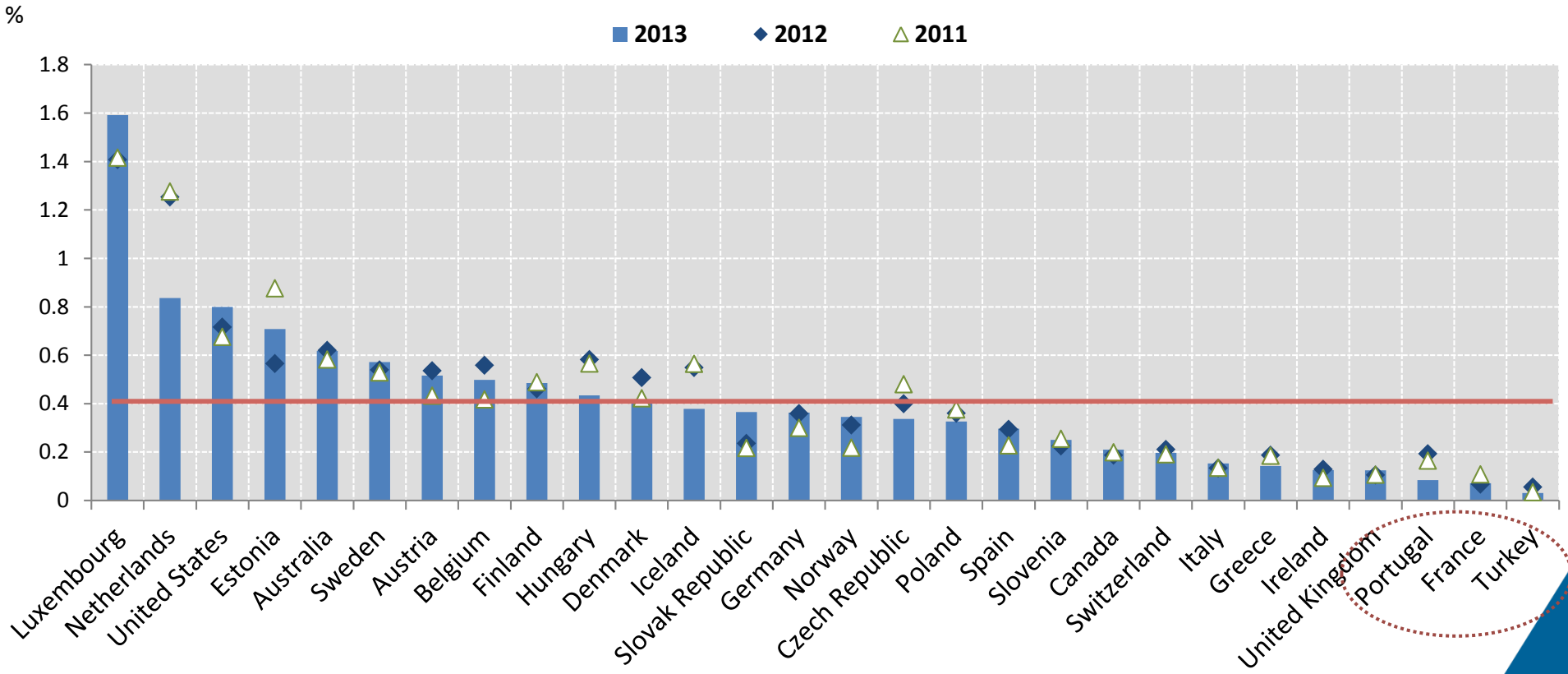
Use of cloud computing as a percentage of enterprises in each employment size class, 2014



Source: OECD, ICT Database; Eurostat, Information Society Statistics and national sources, January 2015.
http://dx.doi.org/10.1787/888933224863

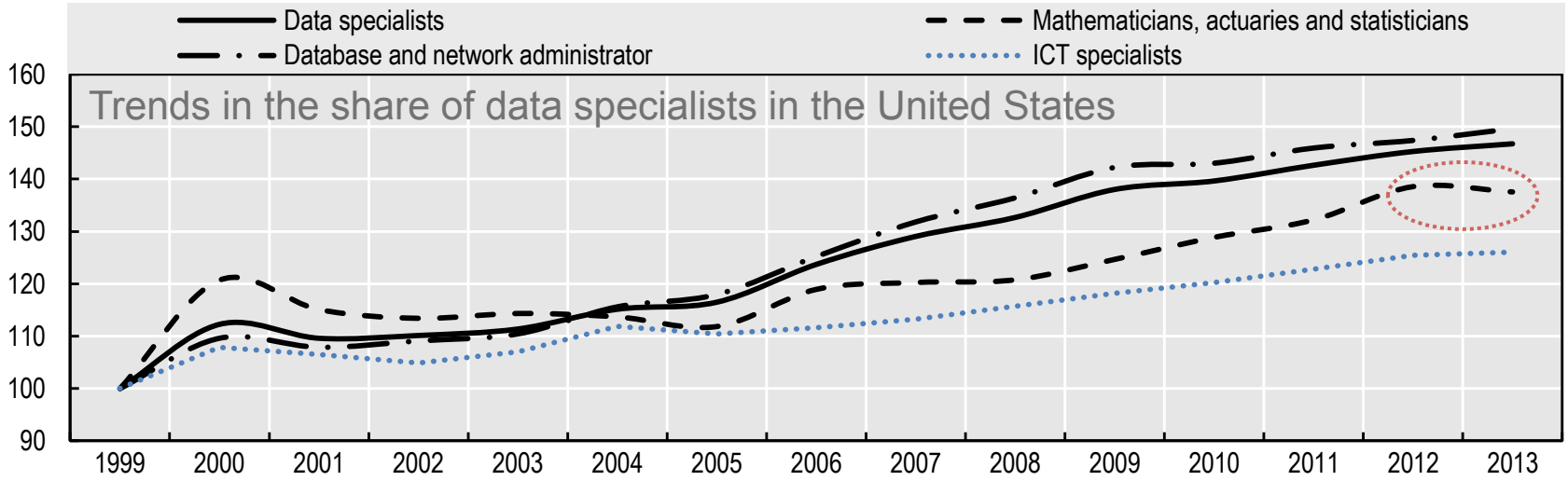
The lack of data specialists is also a missed opportunity for job creation

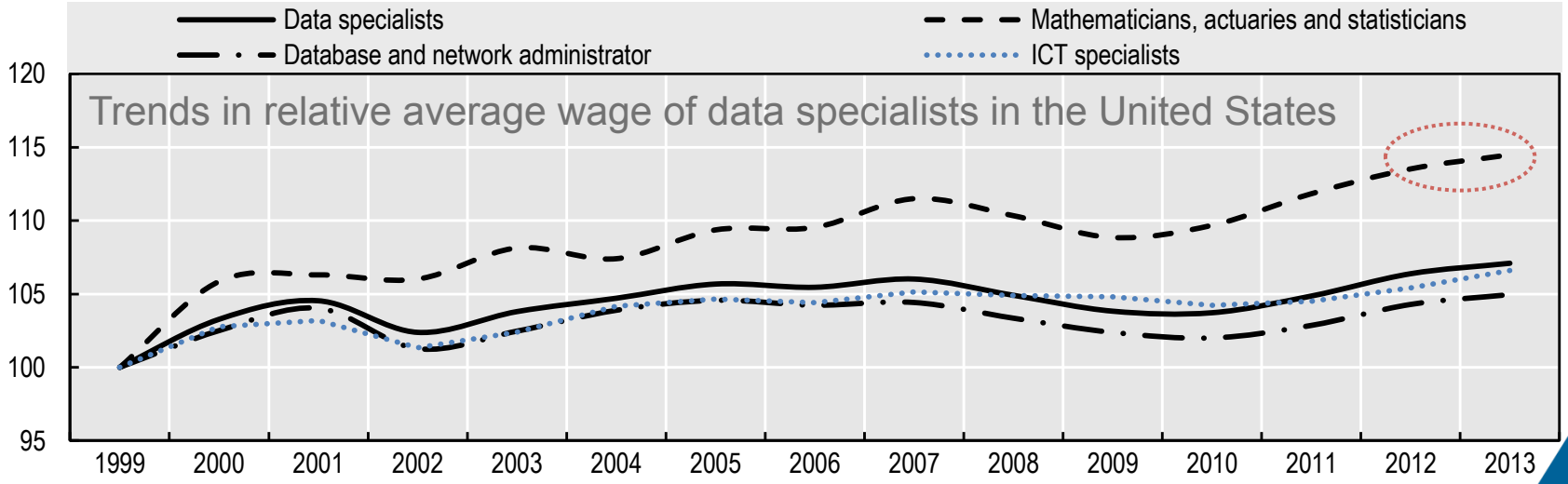
Data specialists as a share of total employment in selected OECD countries



Source: OECD based on data from Eurostat, Statistics Canada, Australian Bureau of Statistics Labour Force Surveys and US Current Population Survey March Supplement, February 2015.

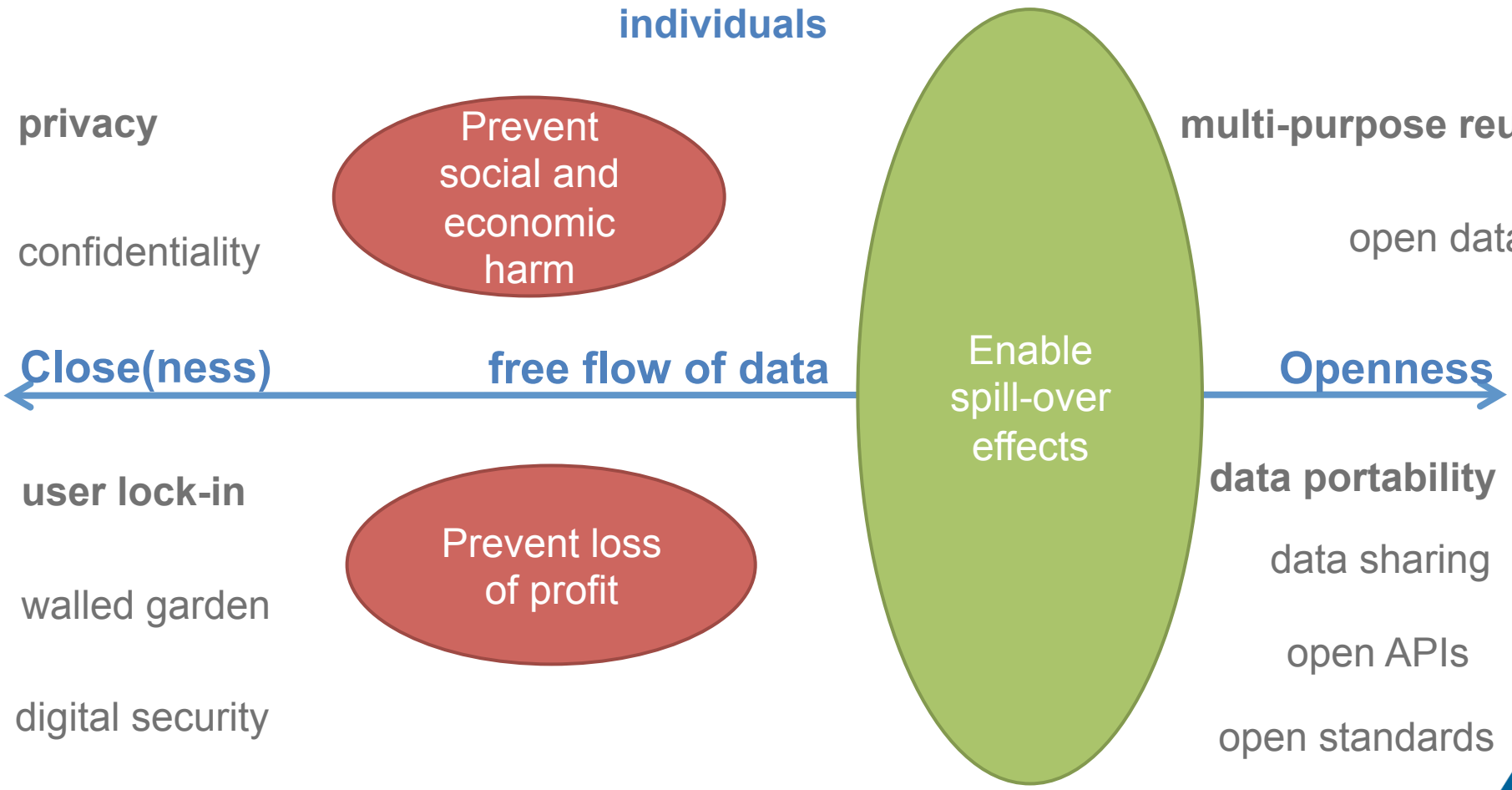
Tackle skills shortages and mismatch





Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), November 2014.

Striking the right balance between "openness" and "closeness"



Main policy considerations

1. Recognise that infrastructure in the digital economy includes not only broadband networks, but also data
2. Encourage investments in data, data sharing and reuse, and reduce barriers to data flows that could disrupt GVCs
3. Balance between the benefits of openness and legitimate concerns over privacy and intellectual property rights
4. Focus on SMEs which face severe barriers to the adoption of DDI-related technologies
5. Address shortages of data specialist skills, which point to missed opportunities for job creation
6. Anticipate and address the disruptive force of DDI that could lead to a new digital data divide
7. Take a whole-of-government strategic approach that leverages data as the “new R&D” in innovation systems

OECD Horizontal Project on DDI

- **Ch.1** The Phenomenon of data-driven innovation
- **Ch.2** Mapping the global data ecosystem and its points of control
- **Ch.3** How data now drive innovation

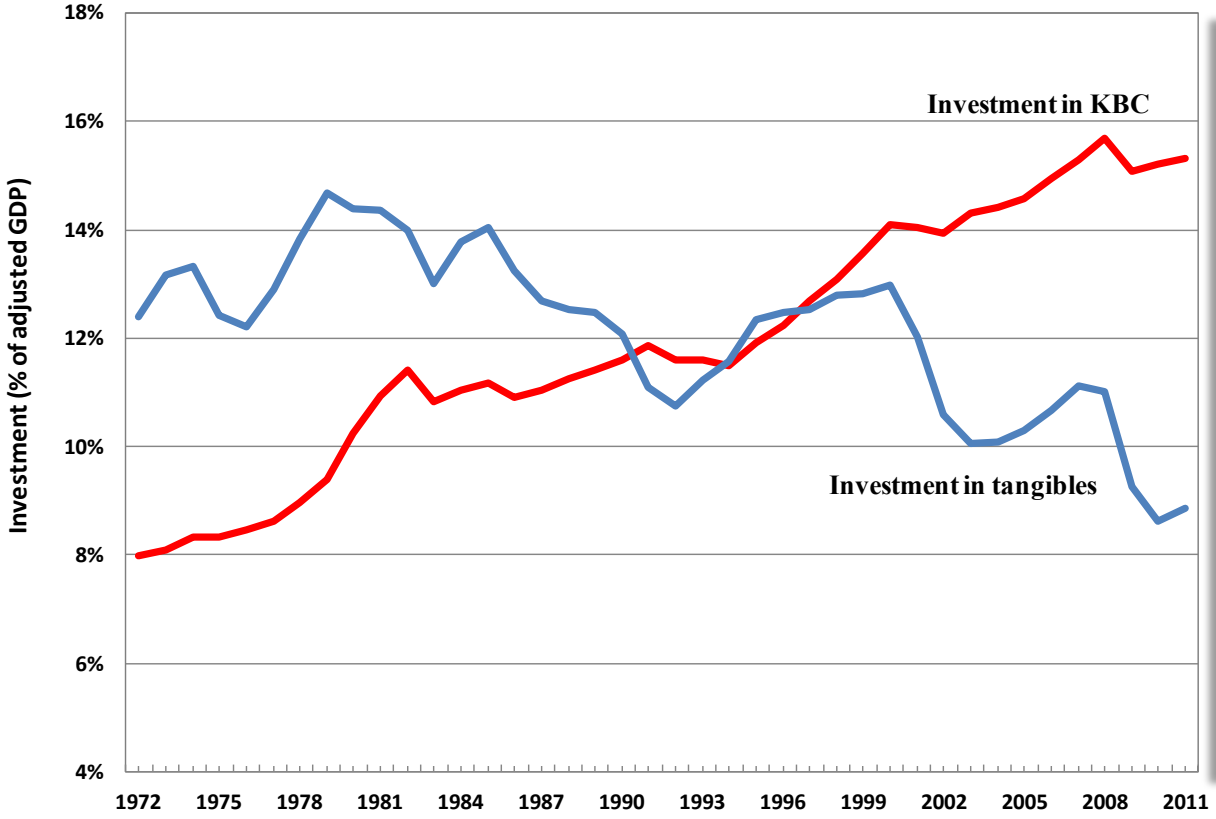
- **Ch.4** Drawing value from data as an infrastructure
- **Ch.5** Building trust for data-driven innovation
- **Ch.6** Skills and employment for a data-driven economy

- **Ch.7** Promoting data-driven scientific research
- **Ch.8** The evolution of health care in a data-rich environment
- **Ch.9** Cities as hubs of data-driven innovation
- **Ch.10** Governments leading by example with public sector data

Find out more about our work at http://oe.cd/bigdata
Contact: Christian.Reimsbach-Kounatze [aatt] oecd.org

Investments in knowledge-based capital (KBC) is a source of growth …

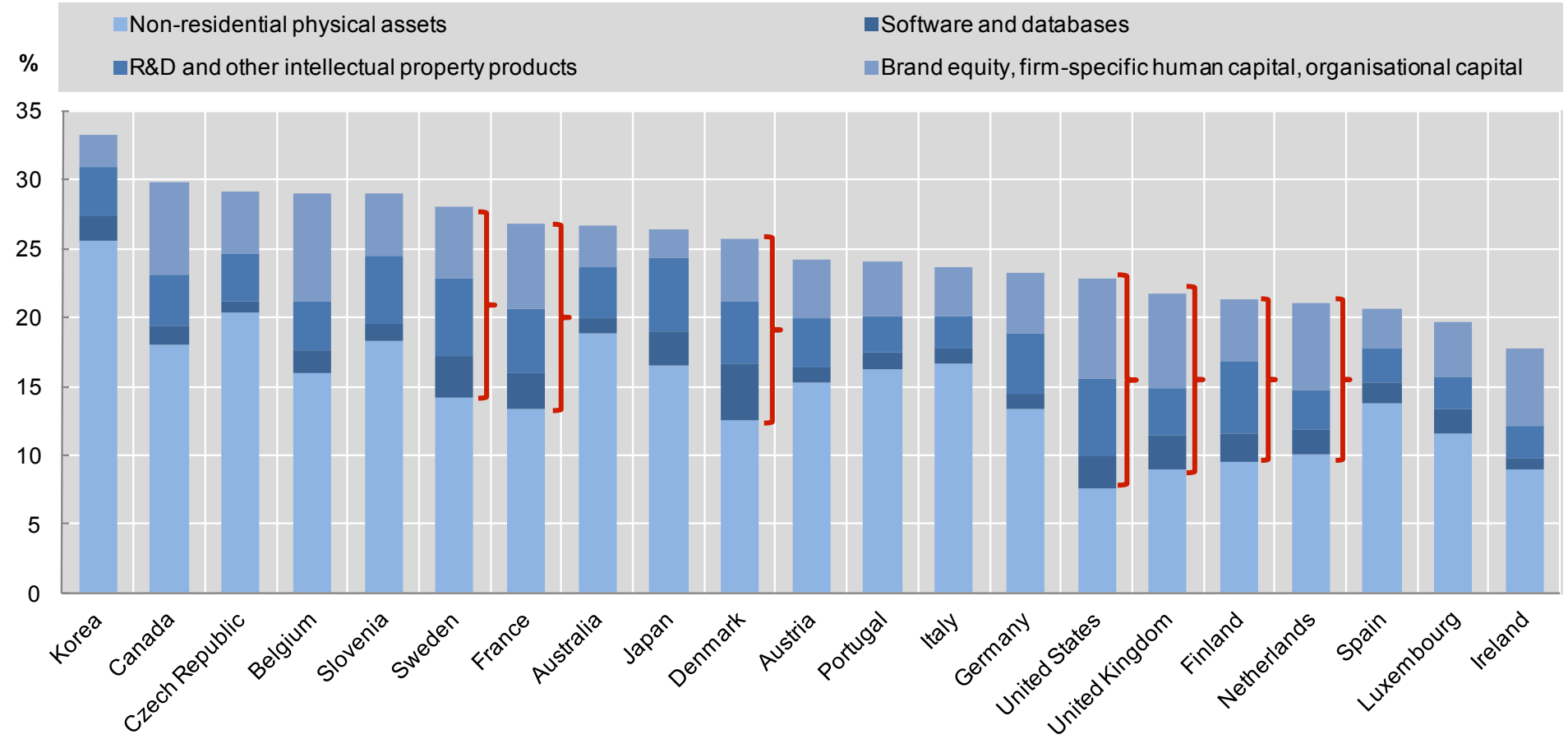
Business investment in intangible (knowledge-based) and tangible assets in the United States, as % of GDP



Source: Corrado, Hulten, and Sichel (2012)

… including investments in databases and software

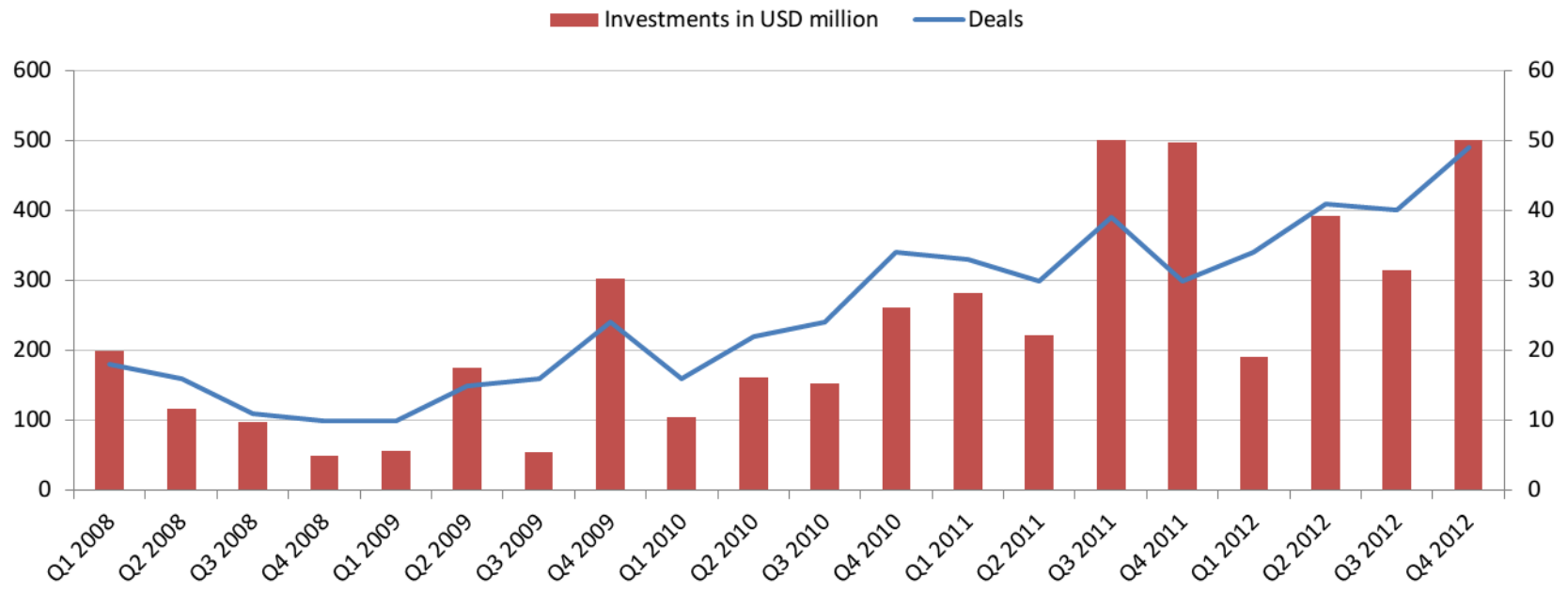
Investment in physical and knowledge-based capital, 2010 (As a percentage of value added of the business sector)



Source: OECD Science, Technology and Industry Scoreboard 2013.
http://dx.doi.org/10.1787/888932889820

… and VC investments in big data

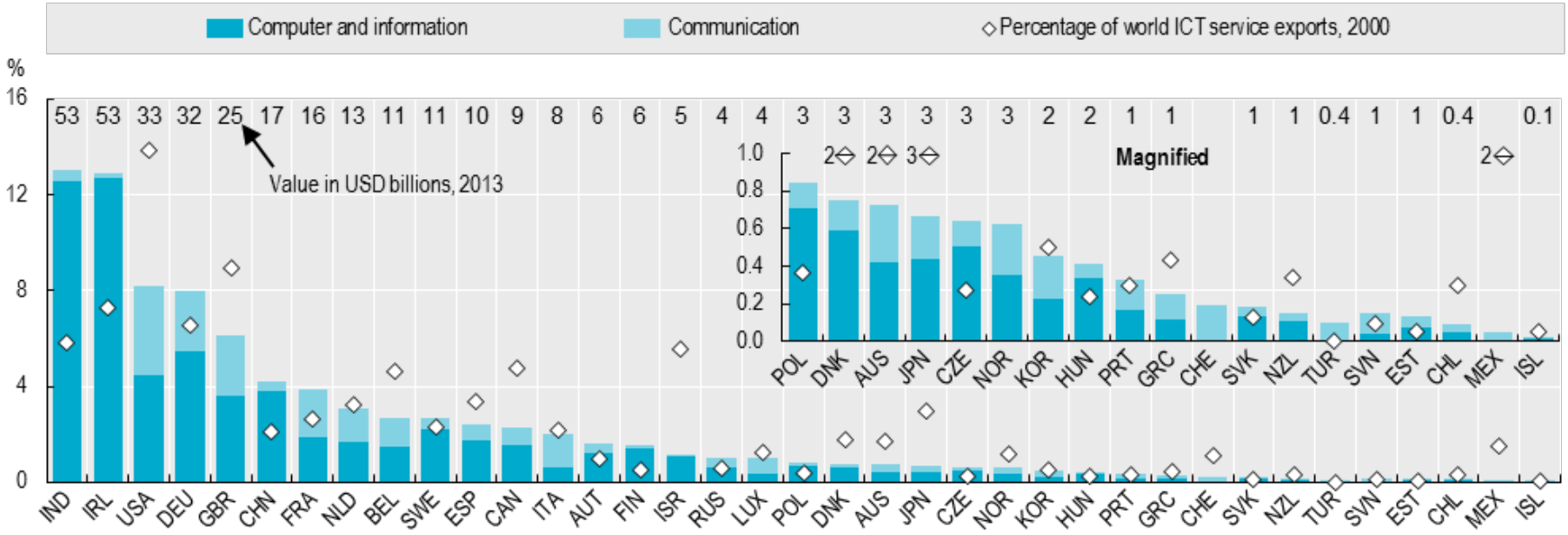
Big data-related venture capital activities, Q1 2008 - Q4 2012
Volume of investments (left scale) and number of deals (right scale)



Source: OECD based on Orrick (2012)

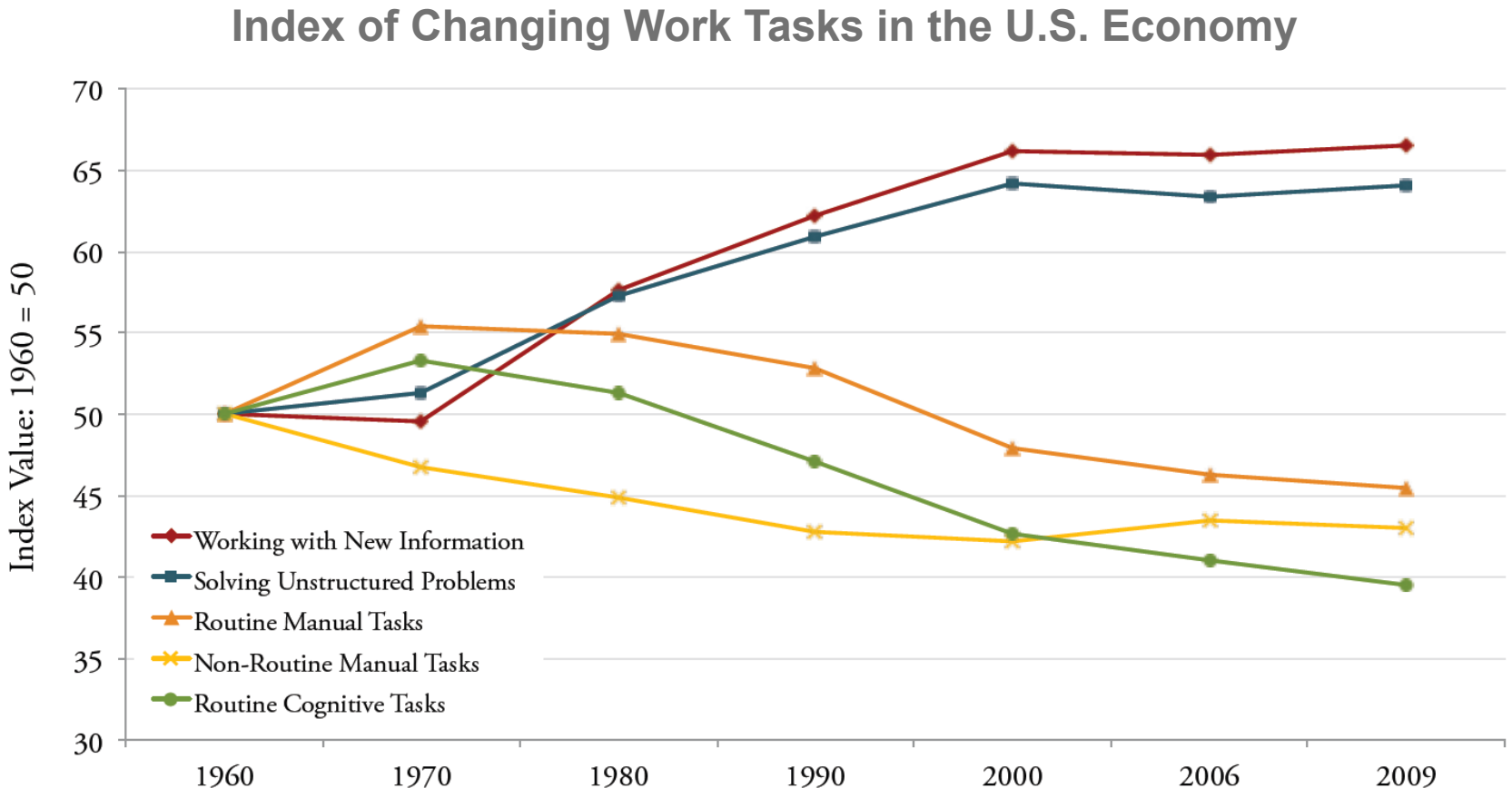
Data, digital trade and GVCs

OECD and major exporters of ICT services, 2000 and 2013



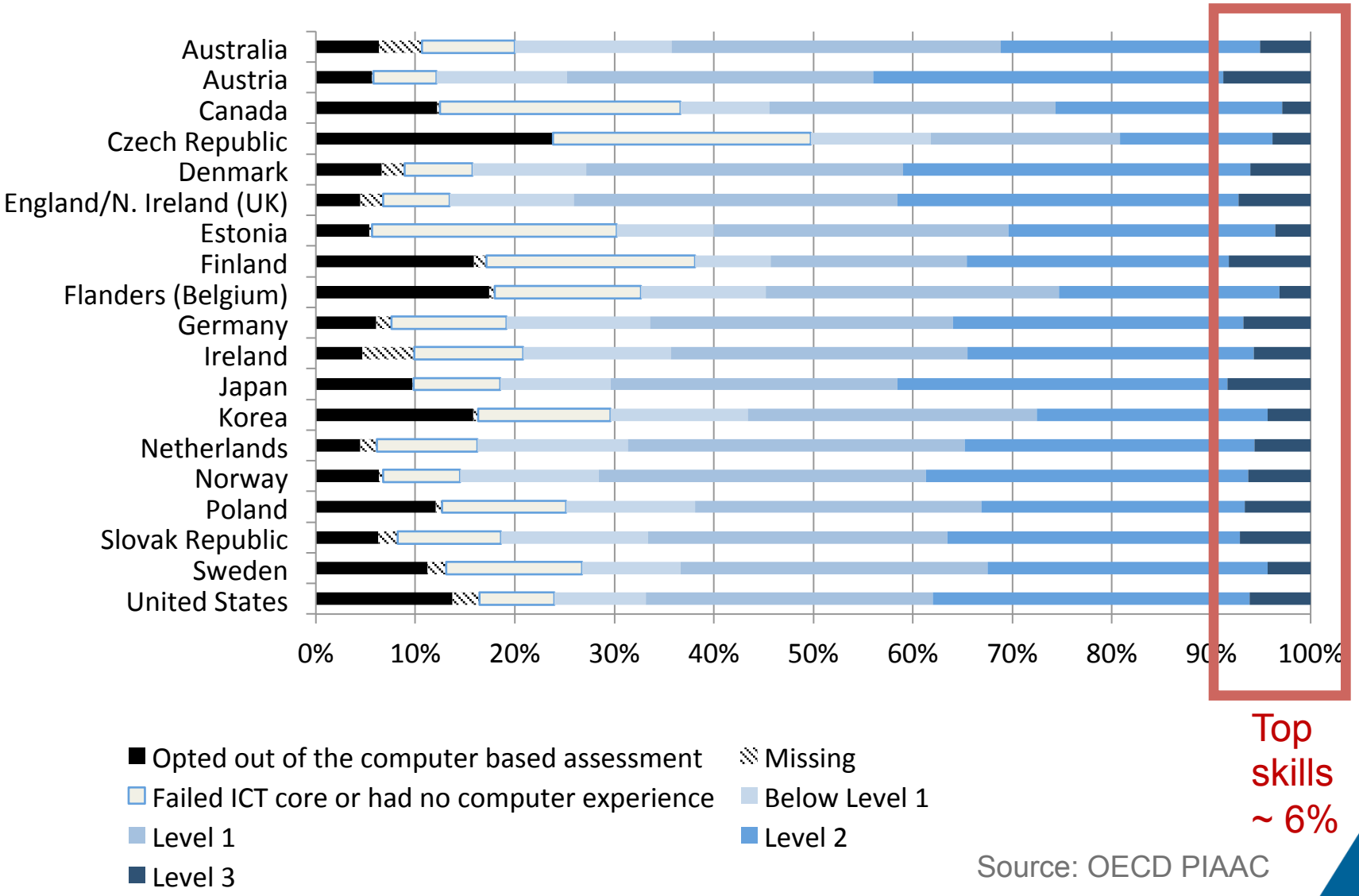
Source: OECD (2014e), Measuring the Digital Economy: A New Perspective, based on UNCTAD, UNCTADstat, June 2013.

Labour in the 21st century will increasingly rely on data and analytics



Source: Levy and Murnane, 2013

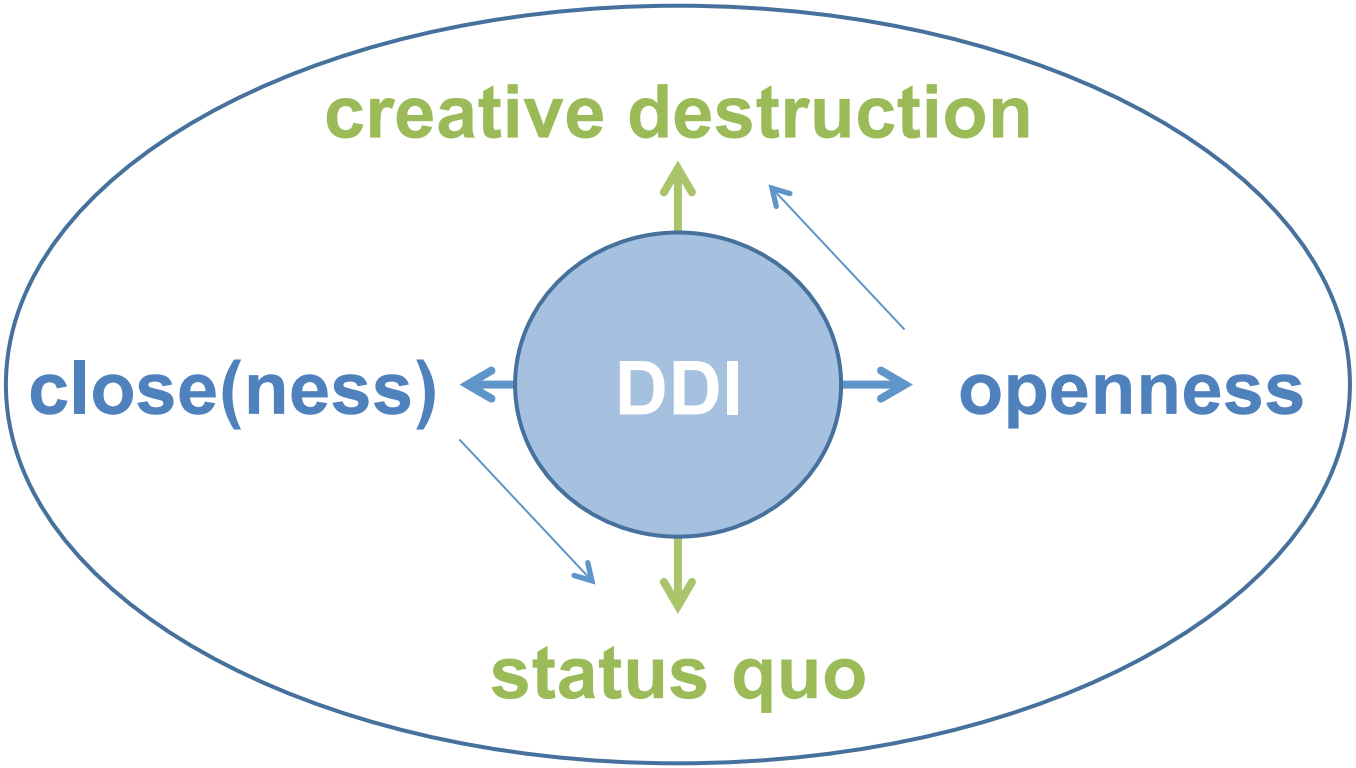
The large majority of the population still lack the most basic ICT skills



Source: OECD PIAAC

Ease two major tensions to unleash DDI

First tension: balance of interests



Second tension: structural change

Second tension: creative destruction