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Strengthening Innovation – Some Insights From OECD Work

Dirk Pilat, Deputy Director
Directorate for Science, Technology and Innovation
dirk.pilat@oecd.org

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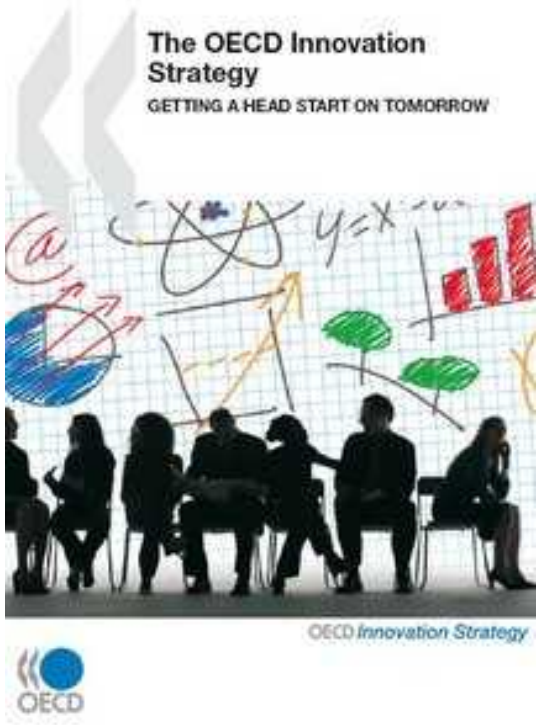
The OECD Innovation Strategy

May 2007, the OECD Ministerial Council Meeting mandated the OECD to develop an Innovation Strategy:

- The Context:
  - Reflected need to strengthen productivity and long-term growth.
  - Growing urgency to address global problems, e.g. climate change;
  - Changing nature of innovation
  - Lack of a comprehensive approach to innovation



Five pillars of the OECD's Innovation Strategy (2010)

1. **Empowering people to innovate,** focusing mainly on the role of people in the innovation process.
2. **Unleashing innovations**, focusing on framework conditions for innovation, and the role of policies to foster business innovation.
3. **Creating and applying knowledge**, focusing on the role of knowledge institutions and how to diffuse and commercialise knowledge.
4. **Applying innovation to address global and social challenges**, focusing on the application of innovation.
5. **Improving the governance and measurement** of policies for innovation

Revisiting the Innovation Strategy

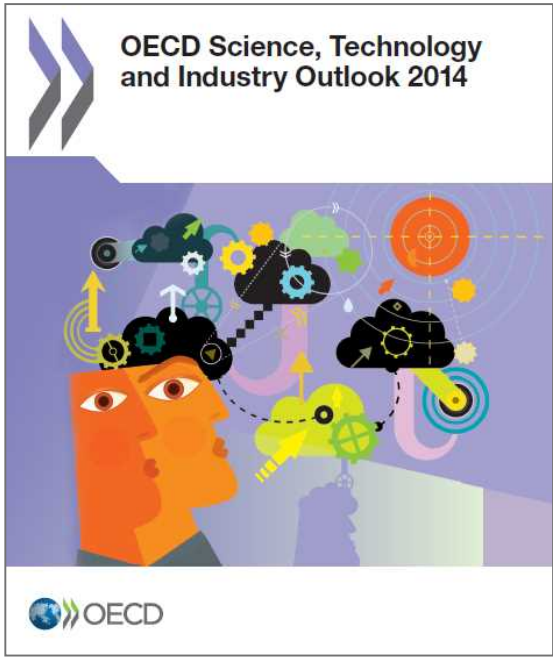
Mandate given by the OECD Ministerial of 2014 (chaired by Japan).

Some new themes:

- Knowledge-based capital (i.e. beyond R&D)
- Global challenges (ageing, environment)
- New instruments (e.g. P/PPs)
- Changing context – low budgets and slow growth
- Inclusiveness – addressing inequality
- Greater focus on implementation of national strategies

Latest developments in STI

See STI Outlook 2014, Chapter 1



Impact of the crisis on innovation:

- Business R&D, initially hit (dip in 2009), then recovered
- Innovative entrepreneurship: strongly hit, has not recovered
- Government budgets for research and innovation initially surged; now under strong pressure
- Social and income inequalities have progressed
- Role of government better recognised

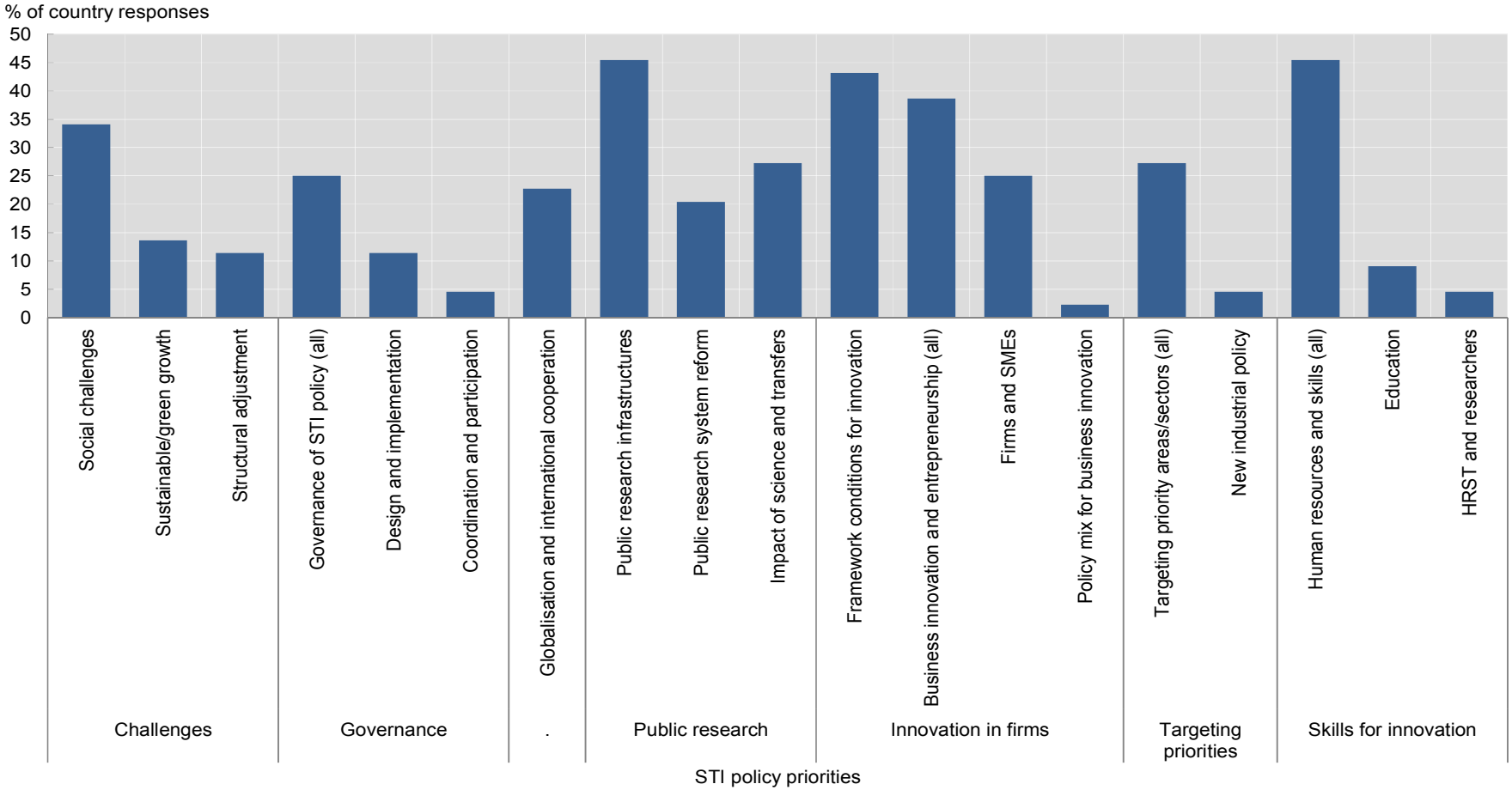
National innovation strategies

Source: STI Outlook questionnaire, 2012 and 2014

- All OECD countries and major non OECD have a national strategy regarding innovation and research
- Major objectives are the same in most countries:
  1. Competitiveness, green, social
  2. Strengthening the capacities to research and innovate: human resources, public research.
- Time horizon: 5 to 10 years

Policy priorities differ across countries ..

(Priorities based on self-assesment, % of countries)



Source: *OECD Science, Technology and Industry Outlook 2014*.
http://dx.doi.org/10.1787/888933151619

National innovation strategies

Cross country variations in emphasis:

- smaller countries focus more on internationalisation;
- more advanced countries focus more on research and on green/societal goals (with economic goals as well in mind);
- some countries include implementation (governance, instruments) in the strategy while others keep them separate

The process is as important as the Strategy

The process of making an innovation strategy is perhaps more important than the product

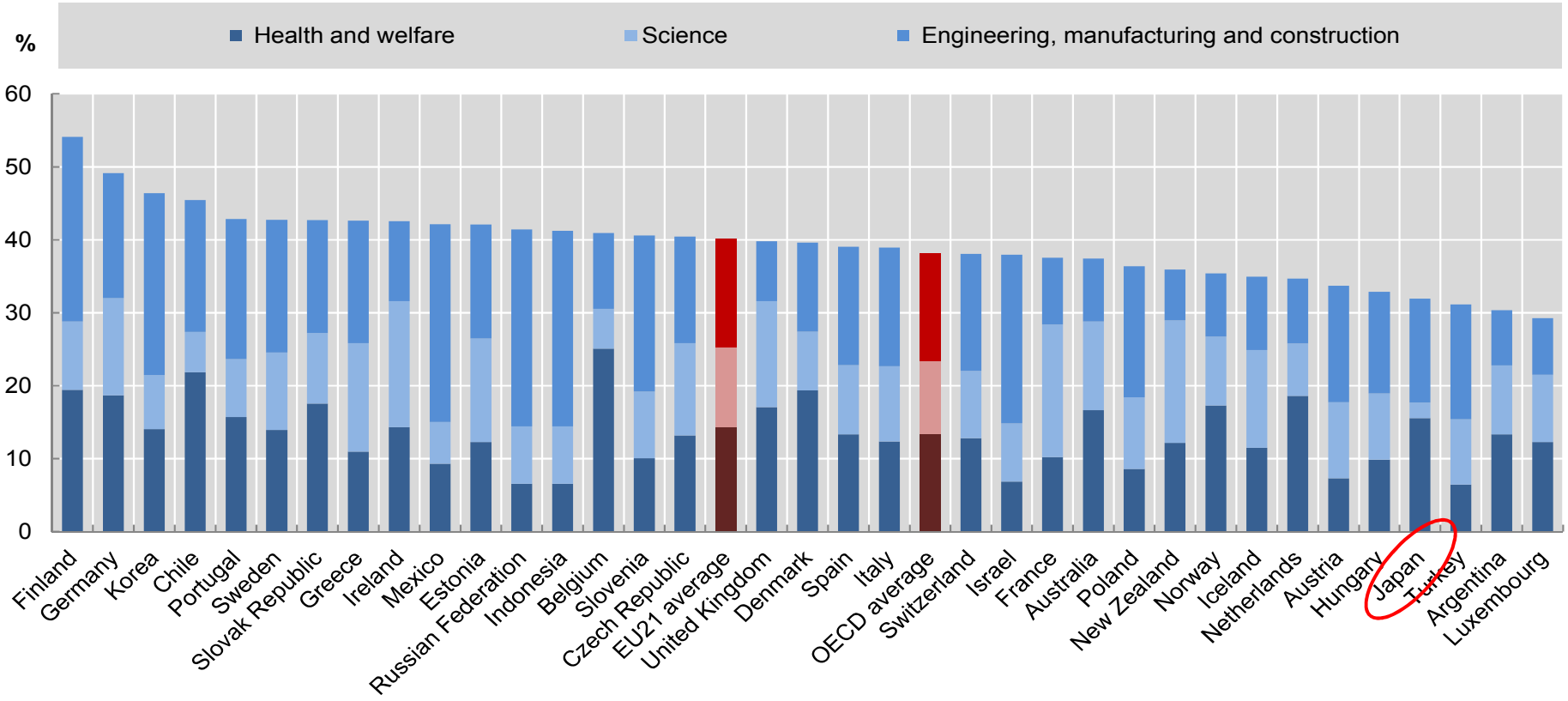
- Animates a discussion among stakeholders regarding priorities => might help building consensus
- Improves the co-ordination of other policies that impact on innovation
- The process can reveal problems and barriers and challenge the status quo!

Some key issues for future innovation

1. **Skills and human resources** – key for science and innovation, and the ability of economy and society to adjust to rapid change
2. **A knowledge-based economy – other framework conditions matter**
3. **Towards the science system of the future?**
4. **Innovation policy mix and the scaling of radical innovation**
5. **Focusing innovation on social and global challenges, such as:**
   - The transition to a low-carbon economy
   - Ageing and health
   - Growing income inequality
6. **Governance of policy**: complex area with many actors
7. **Implementation**: No simple recipe – policies depend on structural and institutional characteristics – diagnosis important

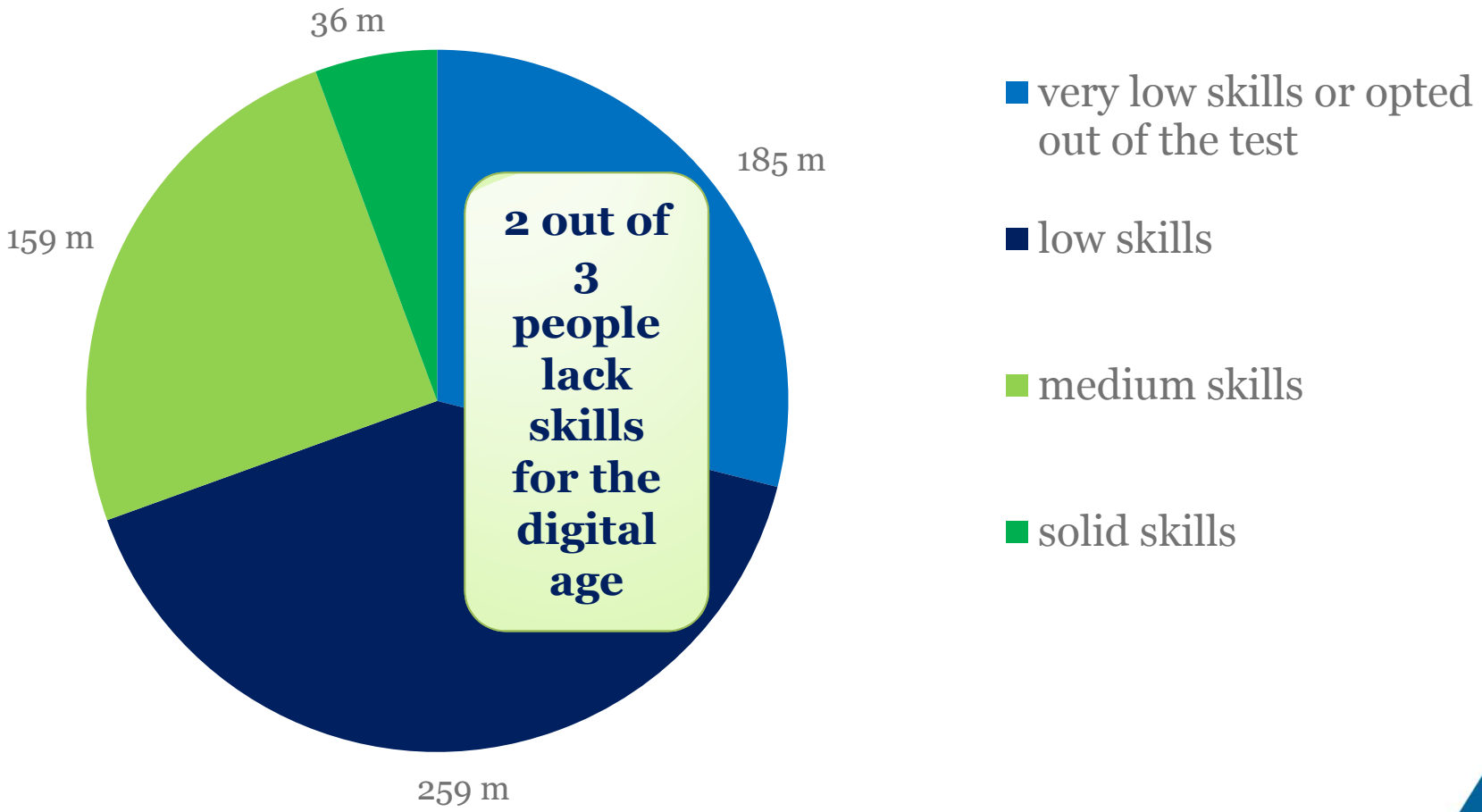
1. Human resources for science and technology – attractiveness is a challenge

Percentage of entrants to tertiary education in engineering, science and health fields, 2012



Source: *OECD Science, Technology and Industry Outlook 2014*, http://dx.doi.org/10.1787/888933151941

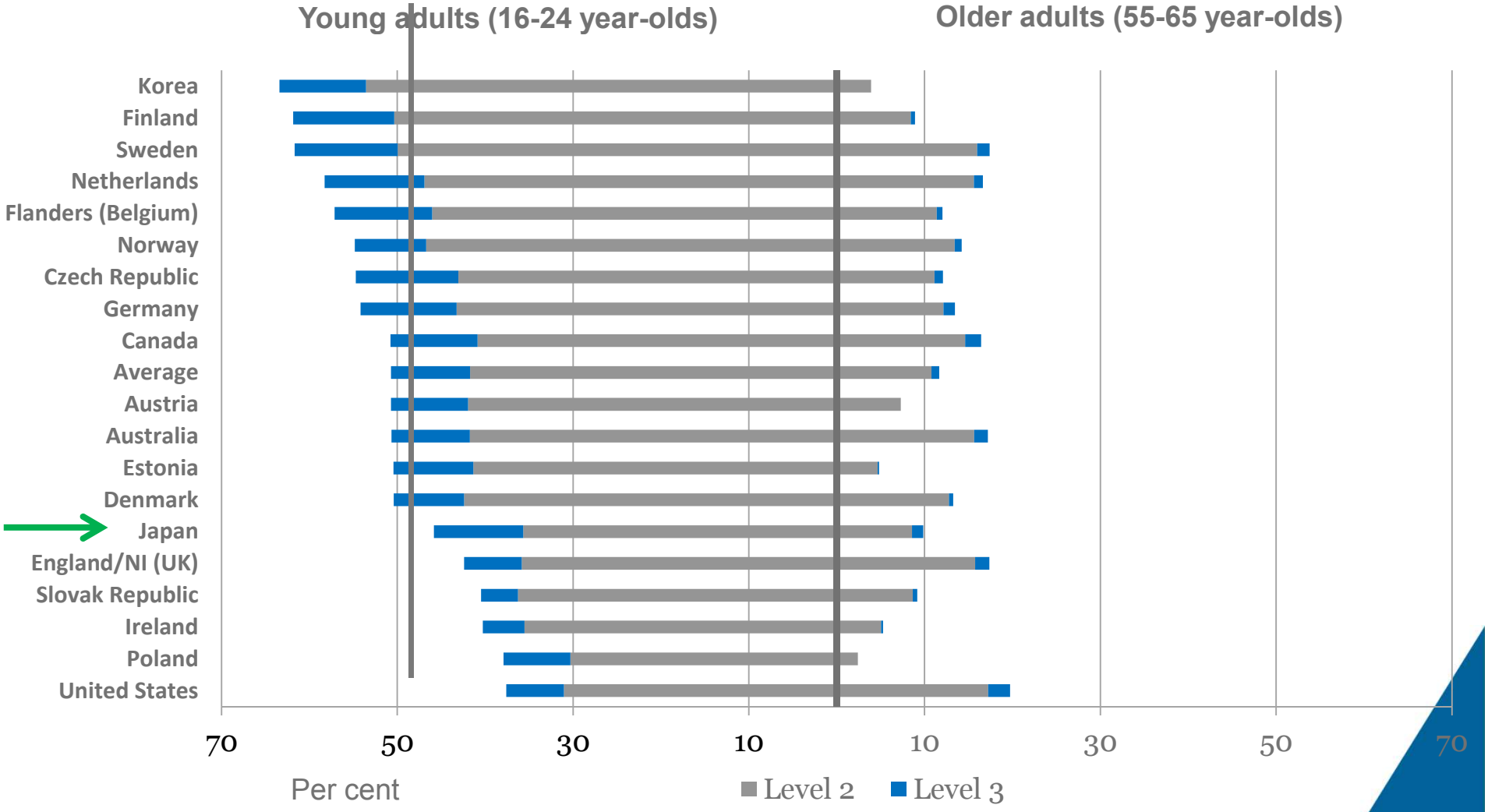
Skills are also a major challenge: 2 out of 3 people lack the skills to succeed in a technology-rich environment



Source: *OECD Survey of Adult Skills, October 2013.*

Though young people do better!

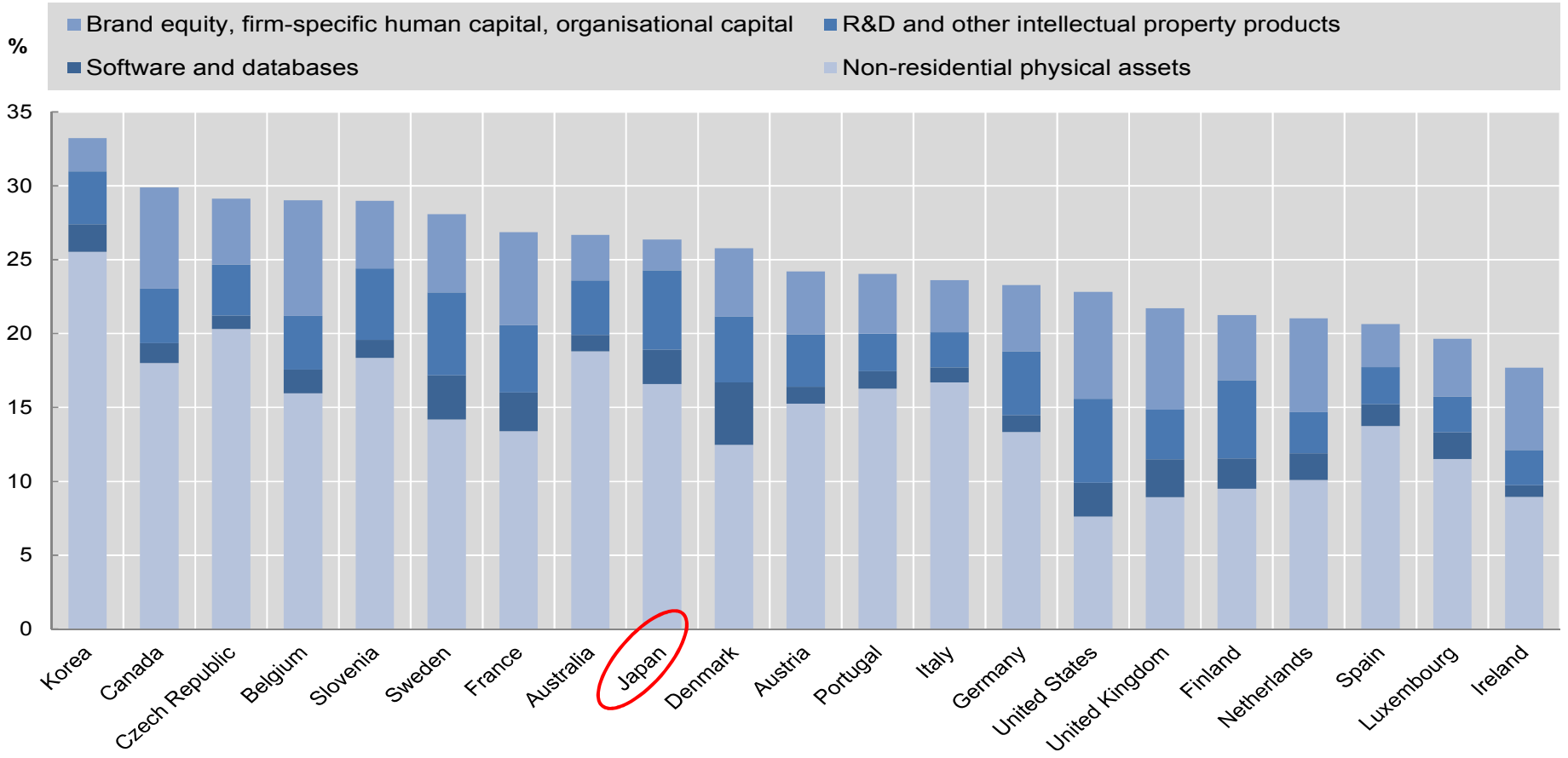
Share of young and old adults at the two highest proficiency levels in "problem solving in technology-rich environments"



Source: *OECD Survey of Adult Skills, October 2013.*

2. Framework conditions – the growing role of Knowledge-Based Capital

(Business investment in KBC and tangible assets as % of business sector value added, 2010)



Source: OECD calculations based on INTAN-Invest, Eurostat and multiple national sources. See OECD STI Scoreboard 2013

3. Science and research systems

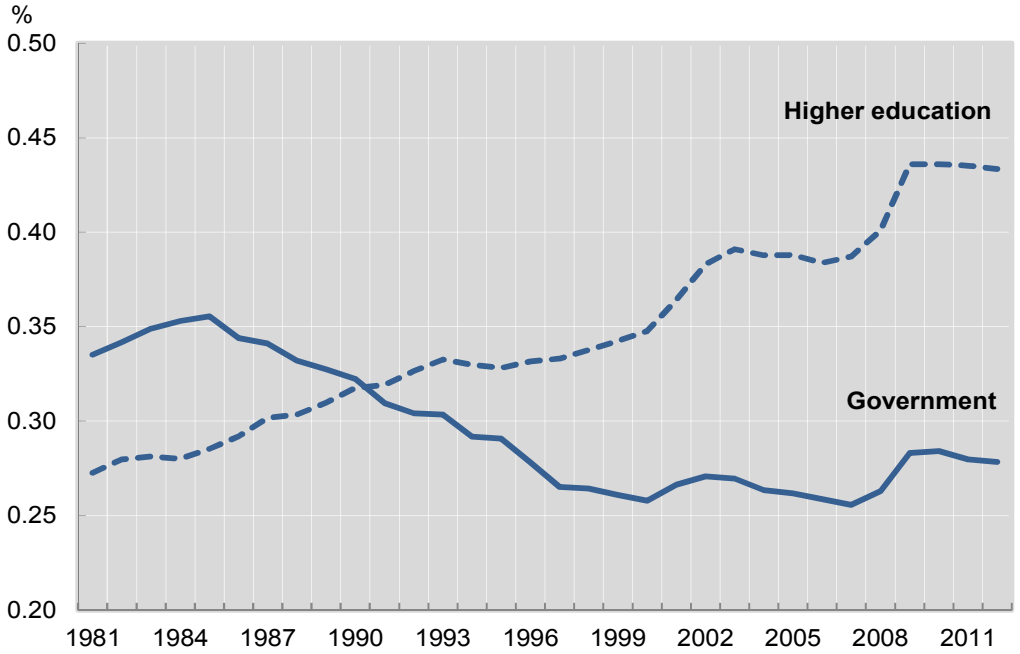
Challenges:

- Science and Business
- Globalisation and openness
- Technology convergence
- Ageing workforce

Policy actions:

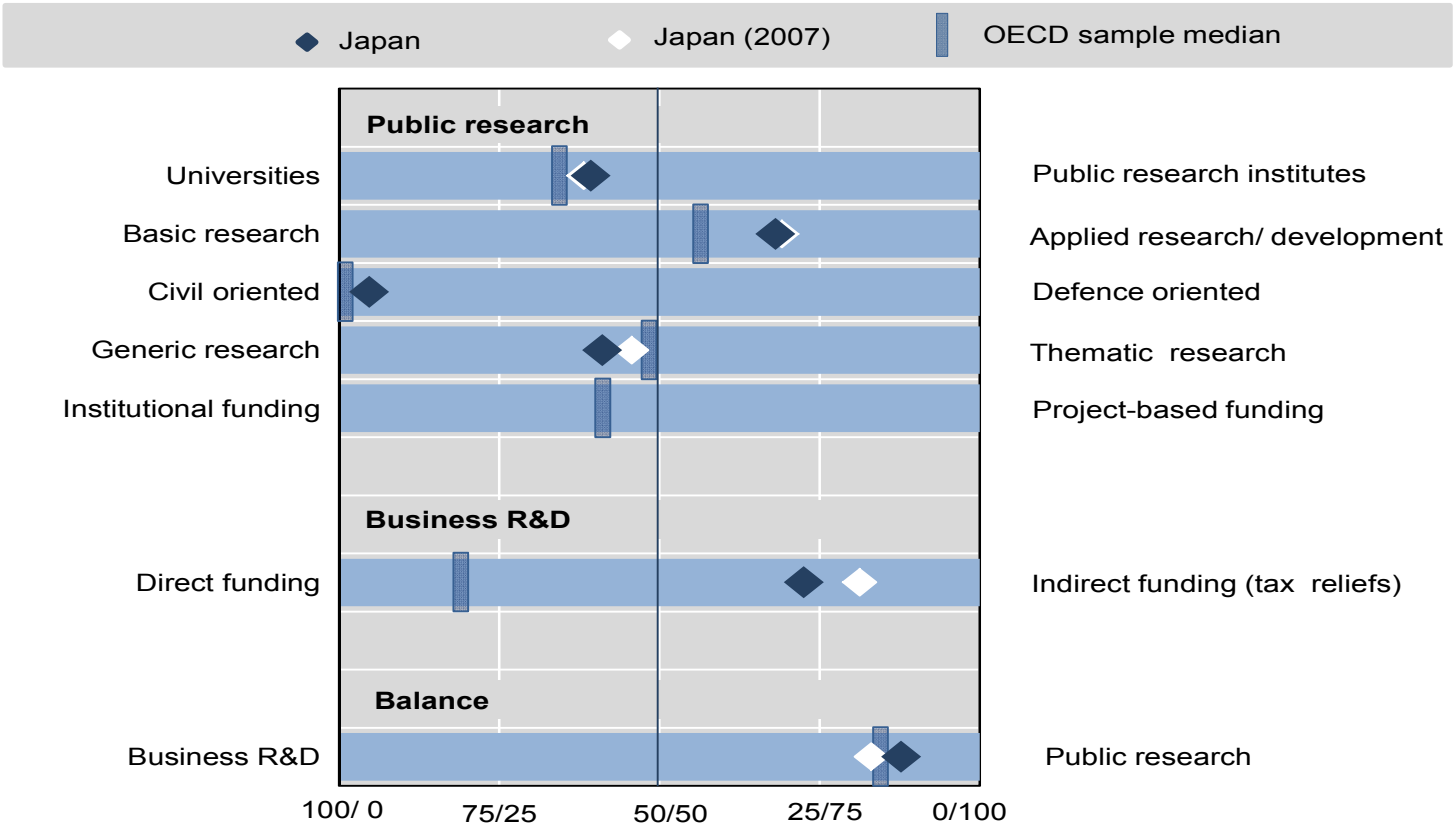
- Reforms to funding, incl. research excellence
- University reforms
- Commercialisation
- Multidisciplinarity
- "Open" science

R&D expenditure by sector, 1981-2012
(as a percentage of GDP)



Public funding systems differ …

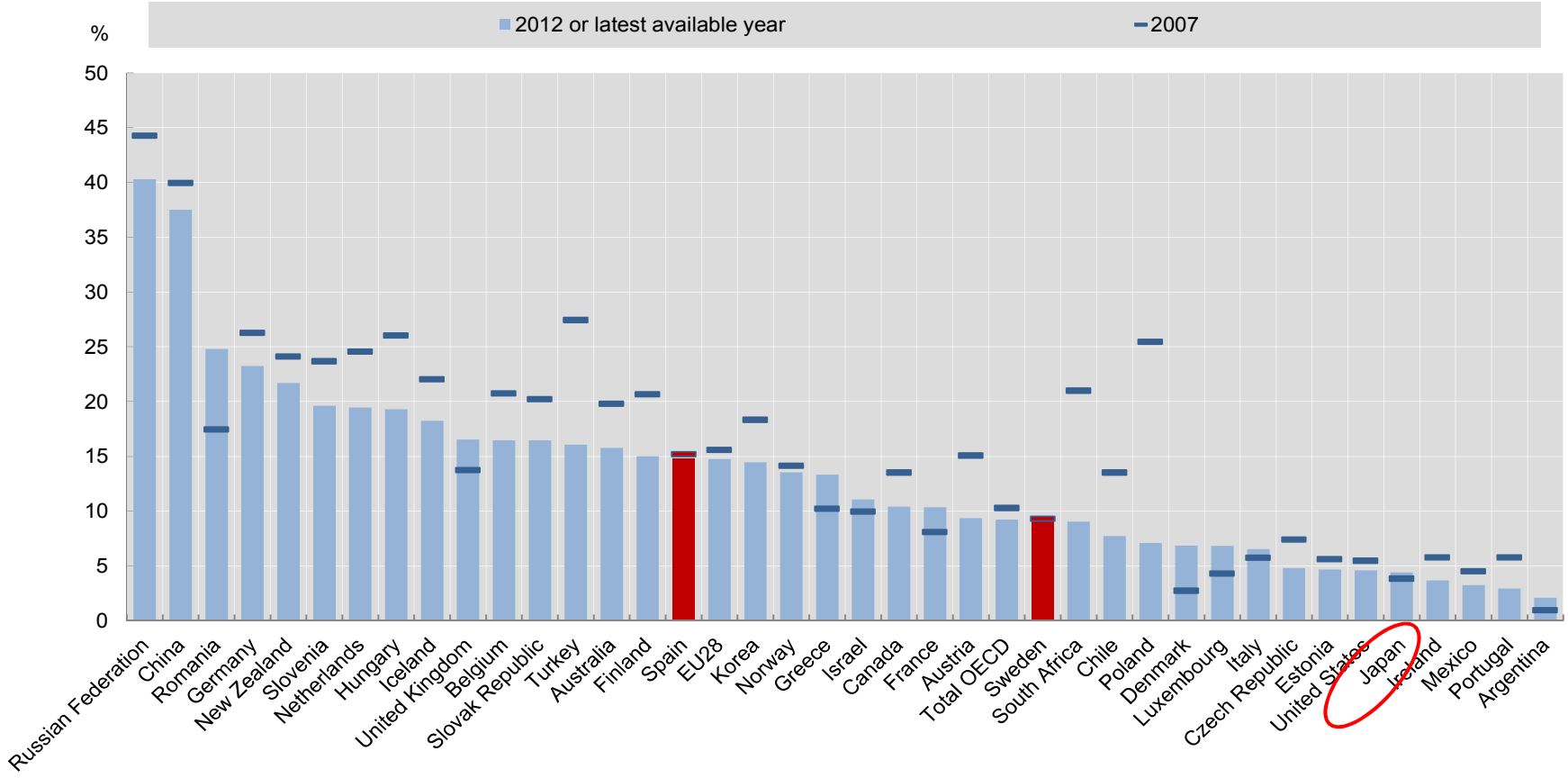
Allocation of public funds of R&D, by sector, type and mode of funding



Source: *OECD Science, Technology and Industry Outlook 2014*.
http://dx.doi.org/10.1787/888933152256

… including in the degree of private funding

Public research funded by industry, 2007 and 2012, as % of total higher education and government expenditure on R&D

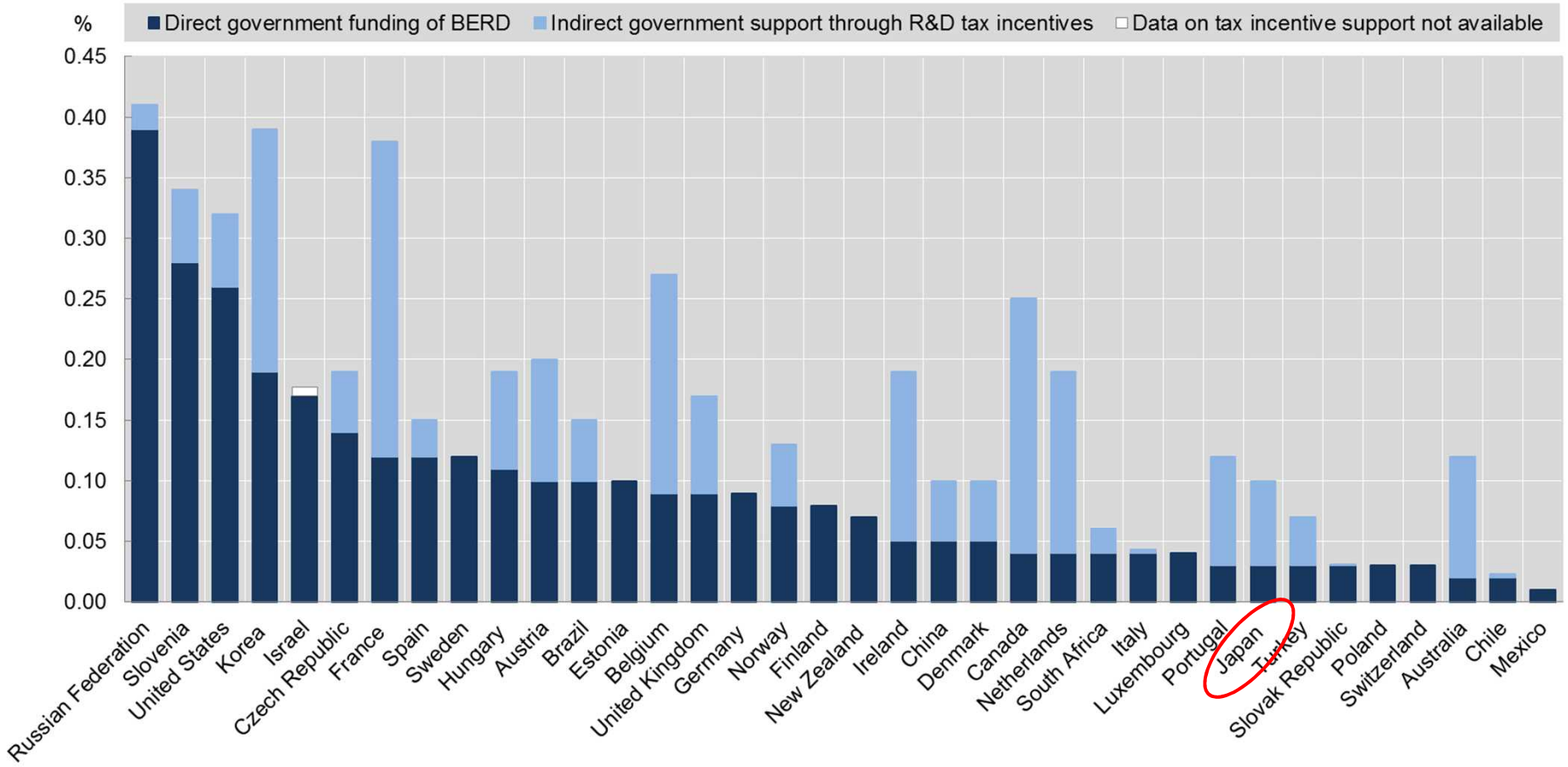


Source: *OECD Science, Technology and Industry Outlook 2014*.
http://dx.doi.org/10.1787/888933151821

4. The Innovation Policy Mix needs to be considered …

Direct funding of business R&D and R&D tax incentives, 2011

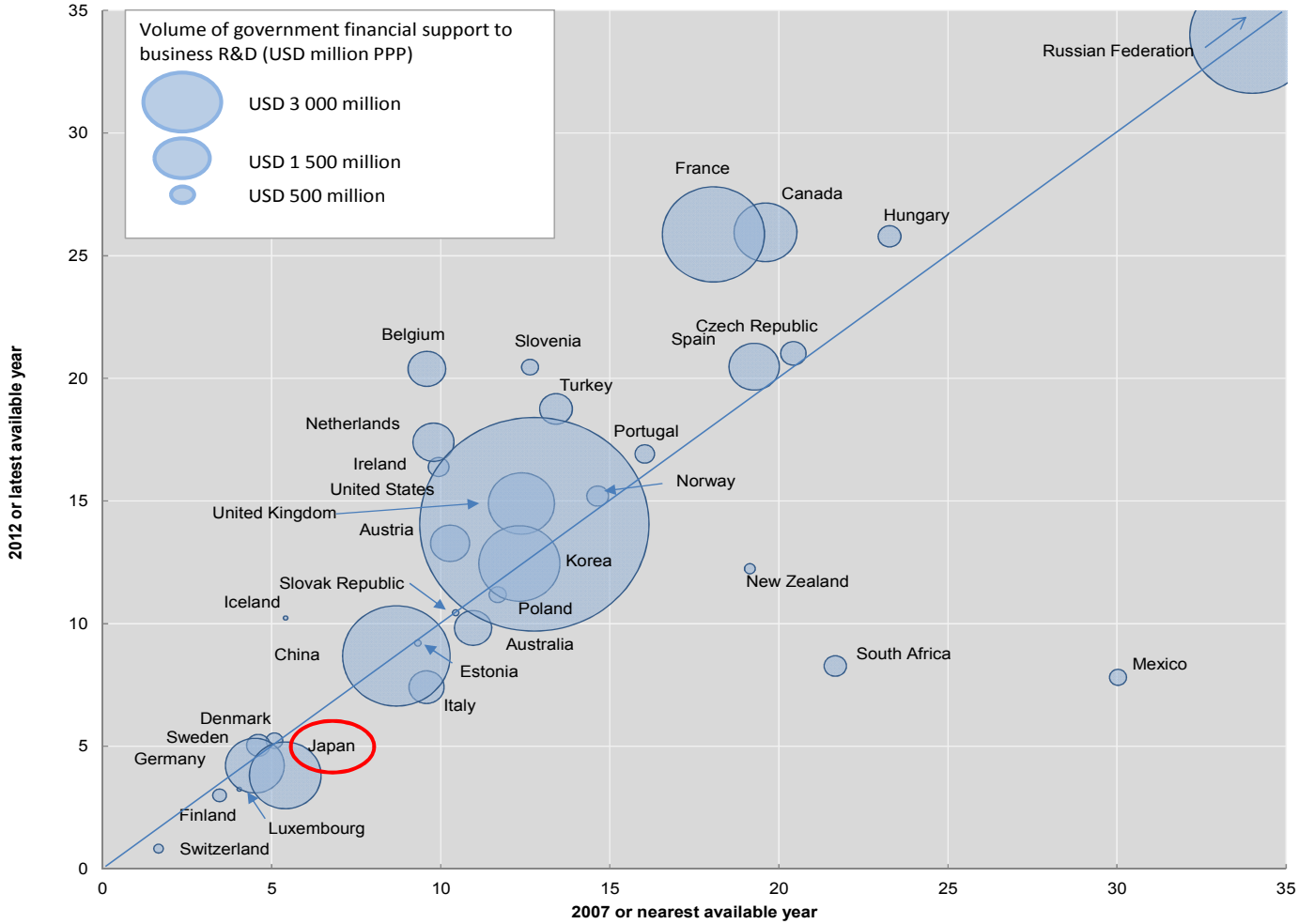
As a percentage of GDP, 2011



Source: *OECD Science, Technology and Industry Scoreboard 2013*.
http://dx.doi.org/10.1787/888932891112

.. as public support for business R&D has increased …

Sum of government-funded BERD and tax incentives for BERD, as a percentage of total BERD, 2007 and 2012



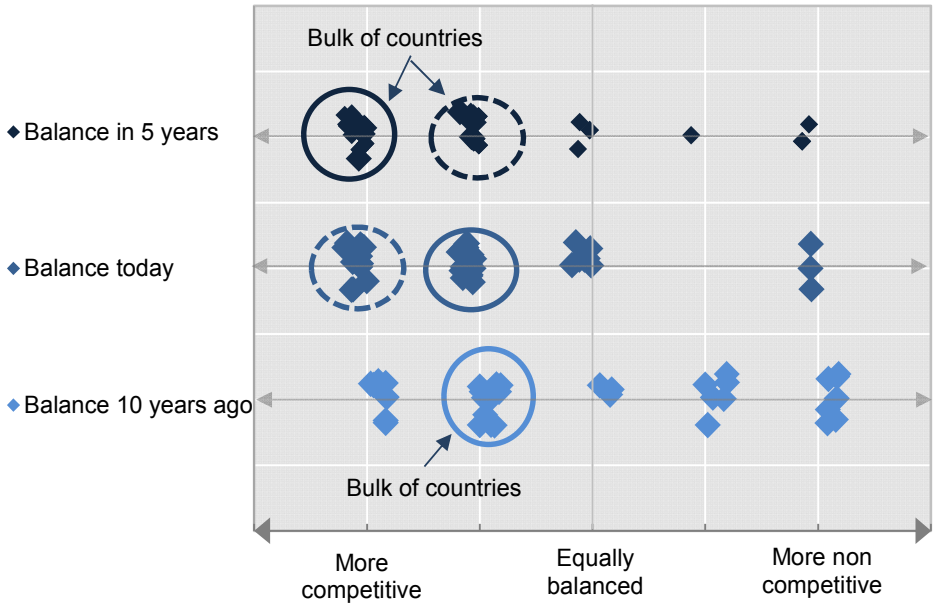
Source: *OECD Science, Technology and Industry Outlook 2014*.
http://dx.doi.org/10.1787/888933151560

.. and the balance in the policy mix shifts …

(based on own country ranking)

Population-targeted versus generic instruments

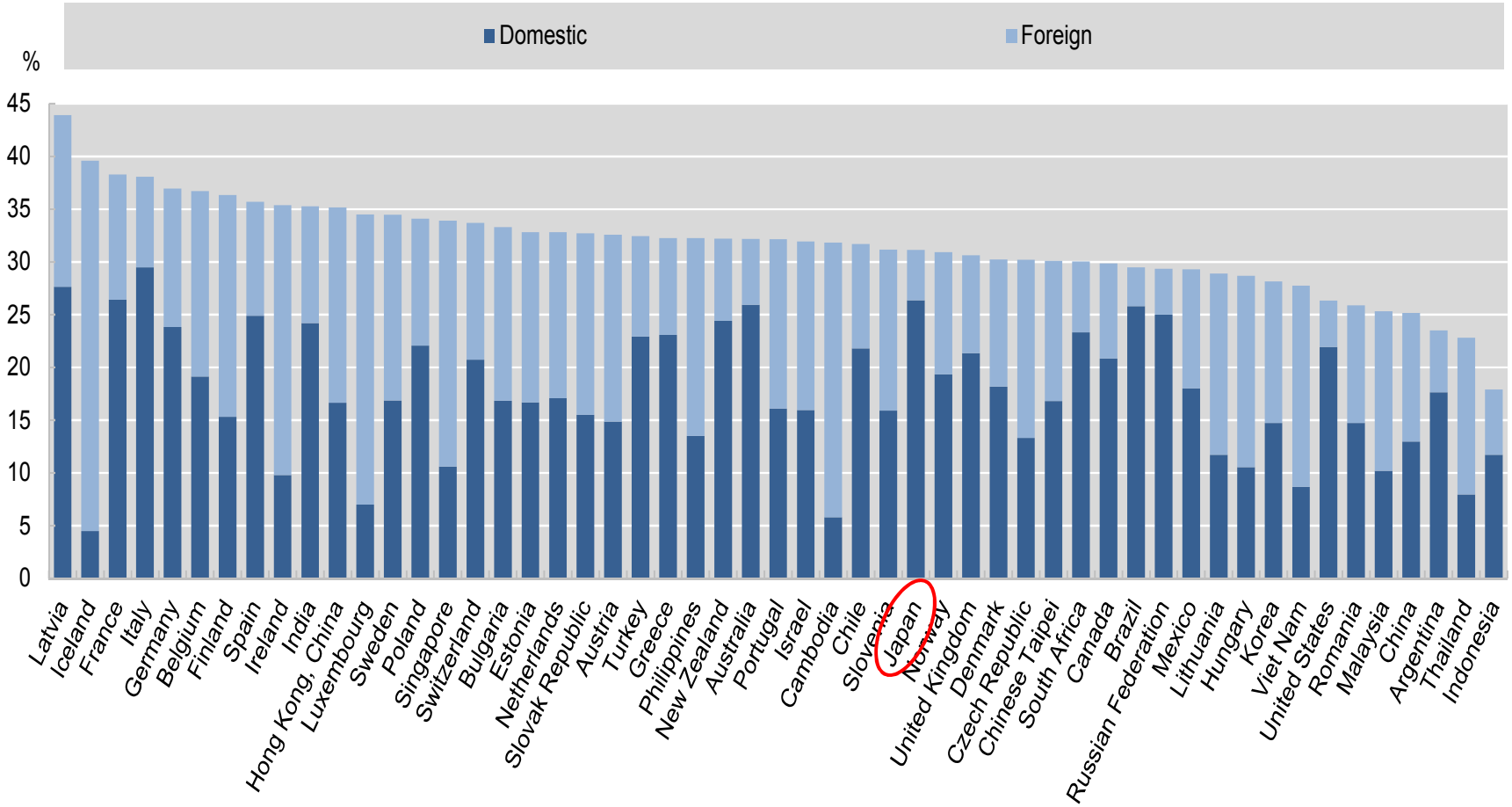
Competitive versus non-competitive instruments



Source: *OECD Science, Technology and Industry Outlook 2014*.
http://dx.doi.org/10.1787/888933151708

‚services innovation is a key driver of competitiveness

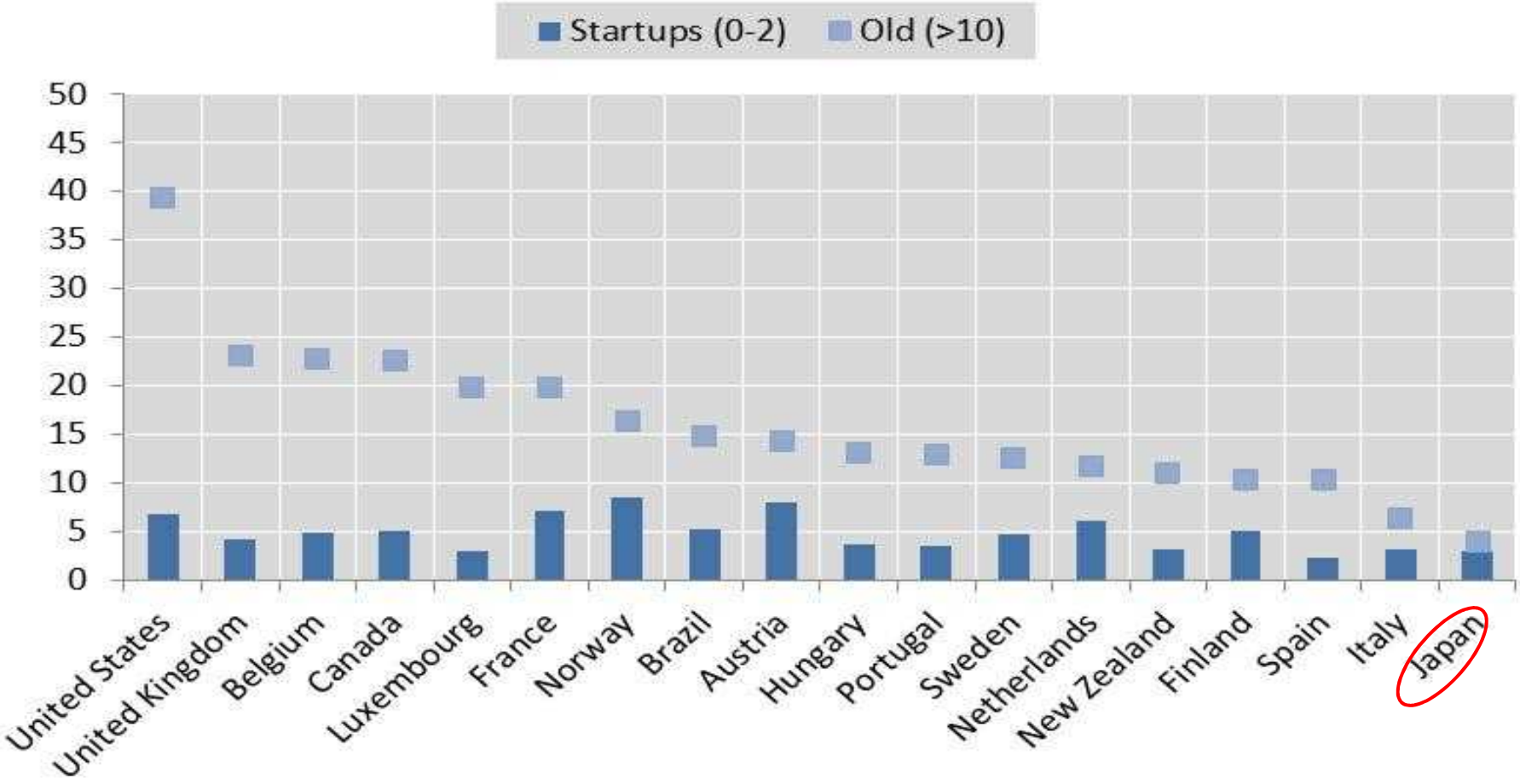
Services value added content of gross manufacturing exports, % 2009



Source: *OECD*

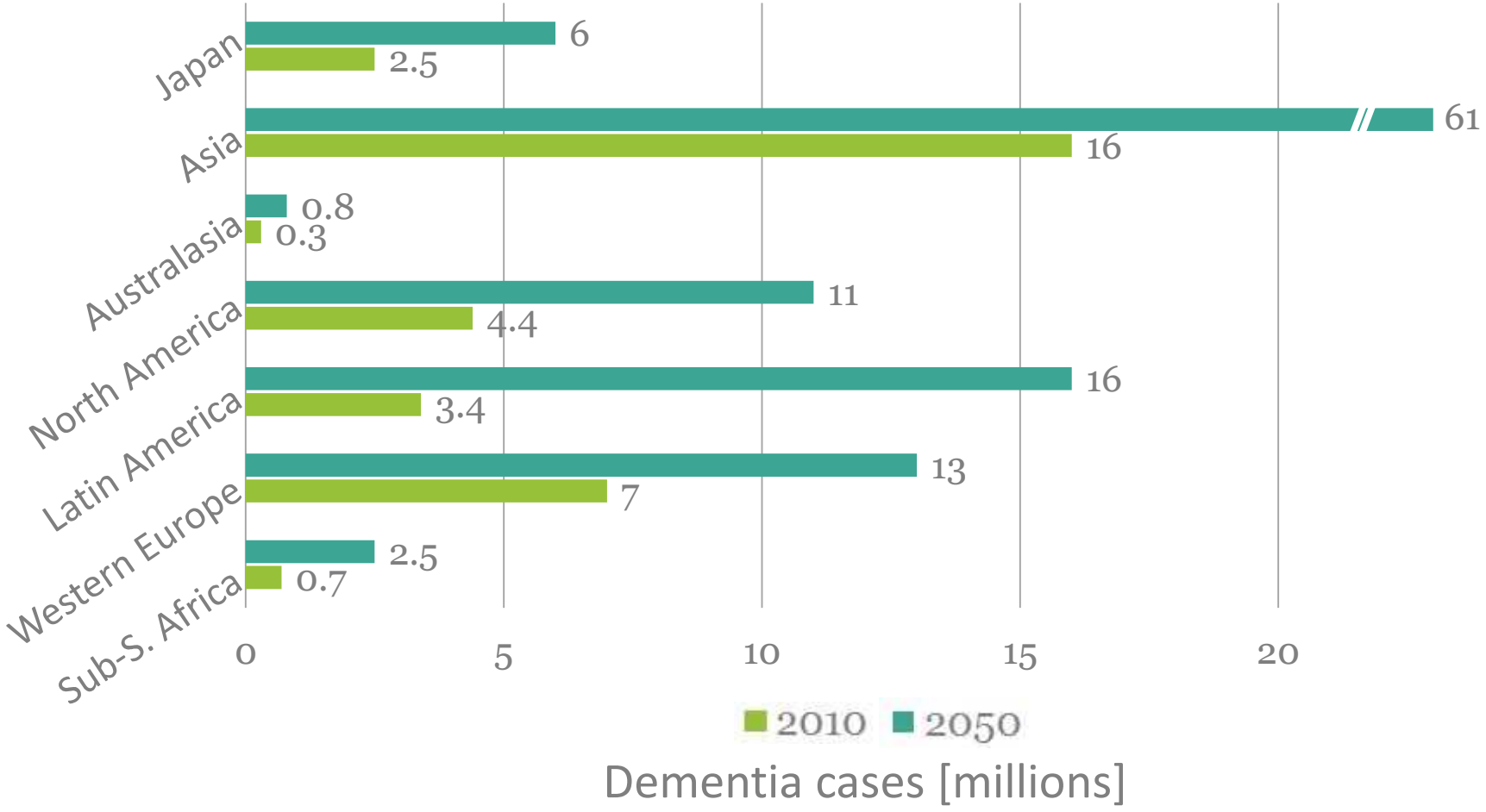
… and growth of young innovative firms remains a challenge in many OECD countries

Average size of start-ups and old firms, in persons employed, services sector



Source: Criscuolo, Gal and Menon (2014), www.oecd.org/sti/dynemp.htm

5. Focusing on Global Challenges: e.g. the growing social and economic burden of Alzheimer's disease and other dementia



Source:
WHO, Dementia: a public health priority (2012); http://www.tmghig.jp, Tokyo Metropolitan Institute of Gerontology (2014)

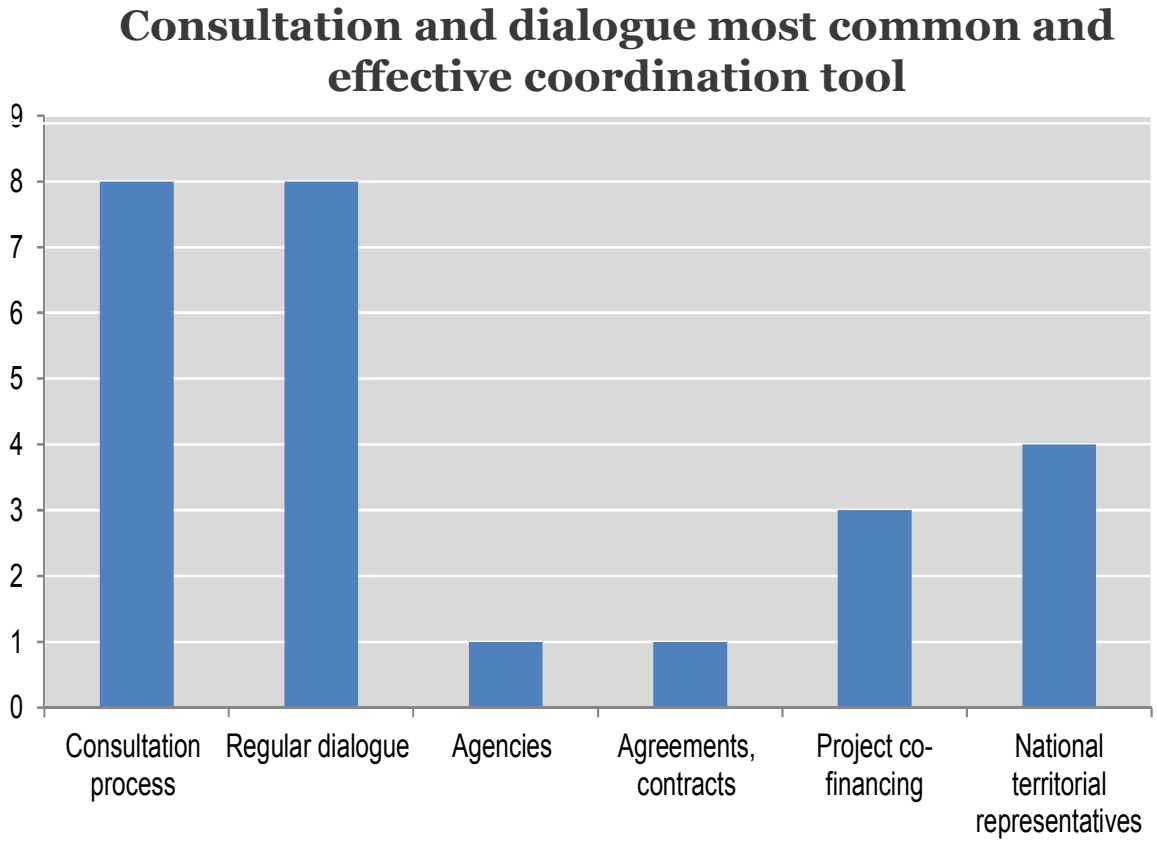
6. Governance is a challenge – across ministries and levels of government

Challenges:

- Innovation increasingly cross government
- Much activity at local and regional level
- Policy coherence and coordination
- Trade-offs and synergies

Policy actions:

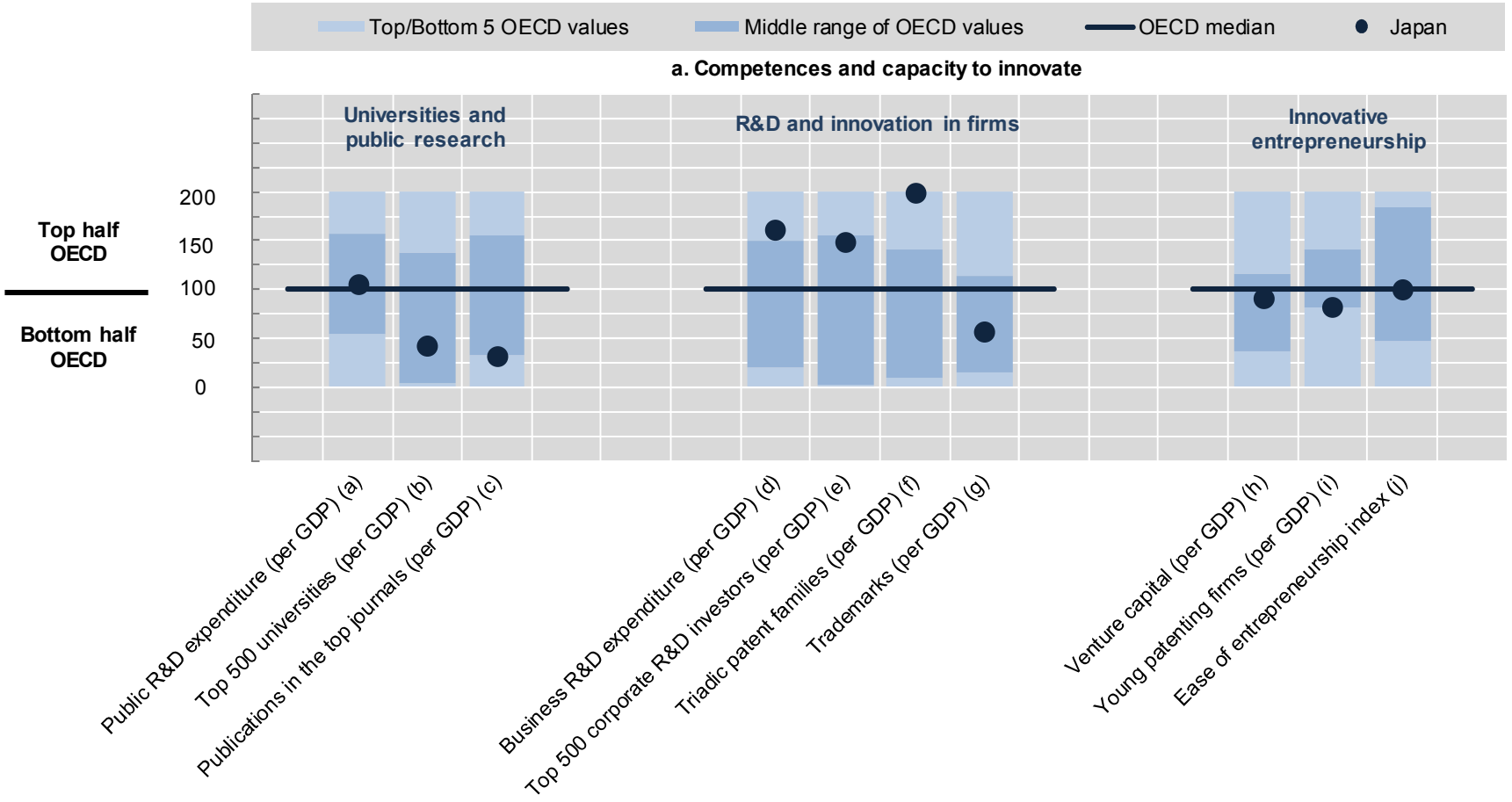
- Cross-ministerial action
- Coordination bodies and agencies, e.g. under prime minister
- Targets, incentives and evaluations



Source: OECD (2011) *Regions and Innovation Policy*.

Implementation - Benchmarking Japan's performance (1)

Normalised index of performance relative to the median values in the OECD area (Index median = 100)



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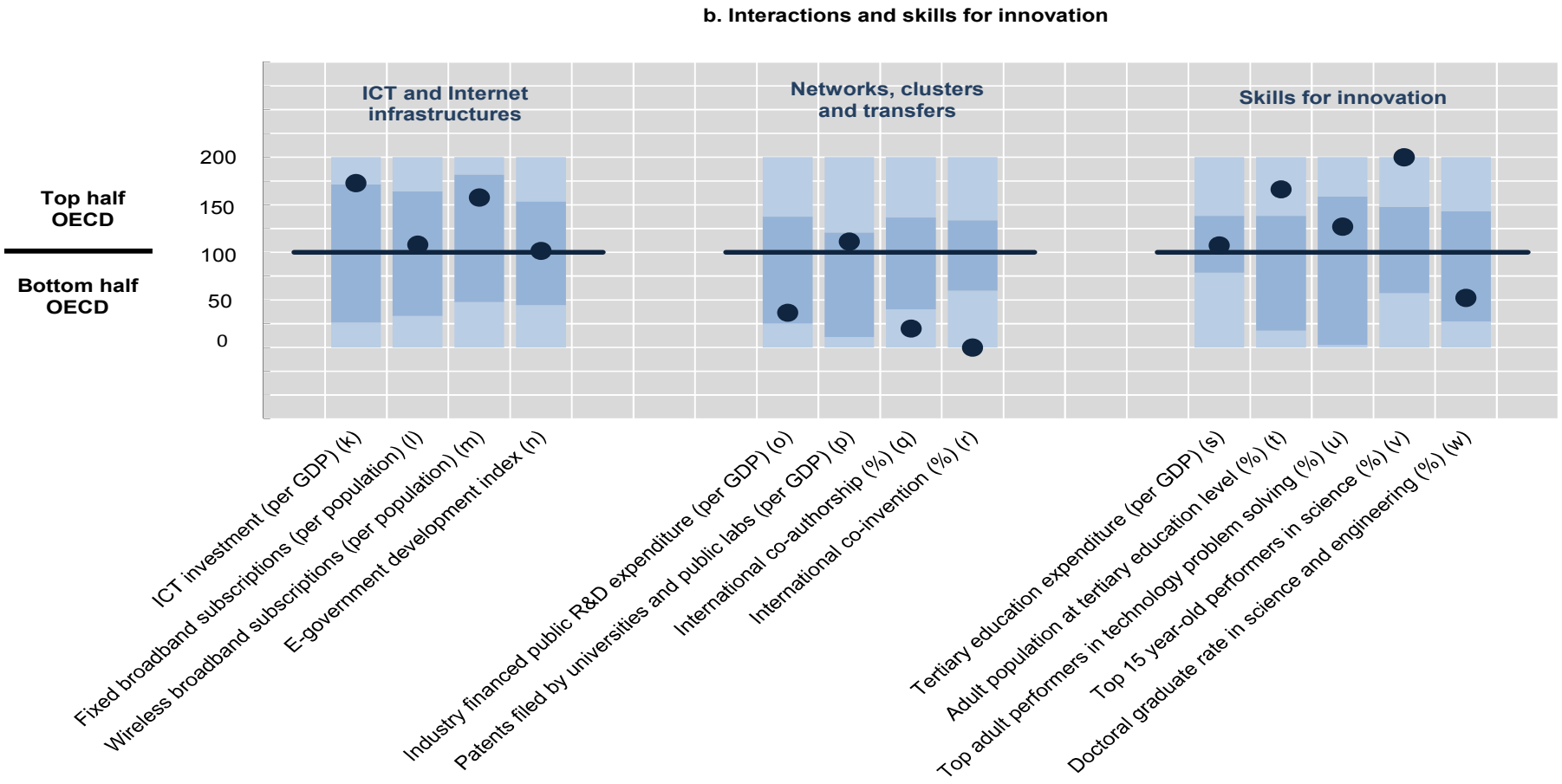
Implementation: Benchmarking Japan's performance (2)

Normalised index of performance relative to the median values in the OECD area (Index median = 100)



Source: *OECD Science, Technology and Industry Outlook 2014*.
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