



Council for Science, Technology and Innovation
Cabinet Office
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OECD Science, Technology and Industry Outlook 2014

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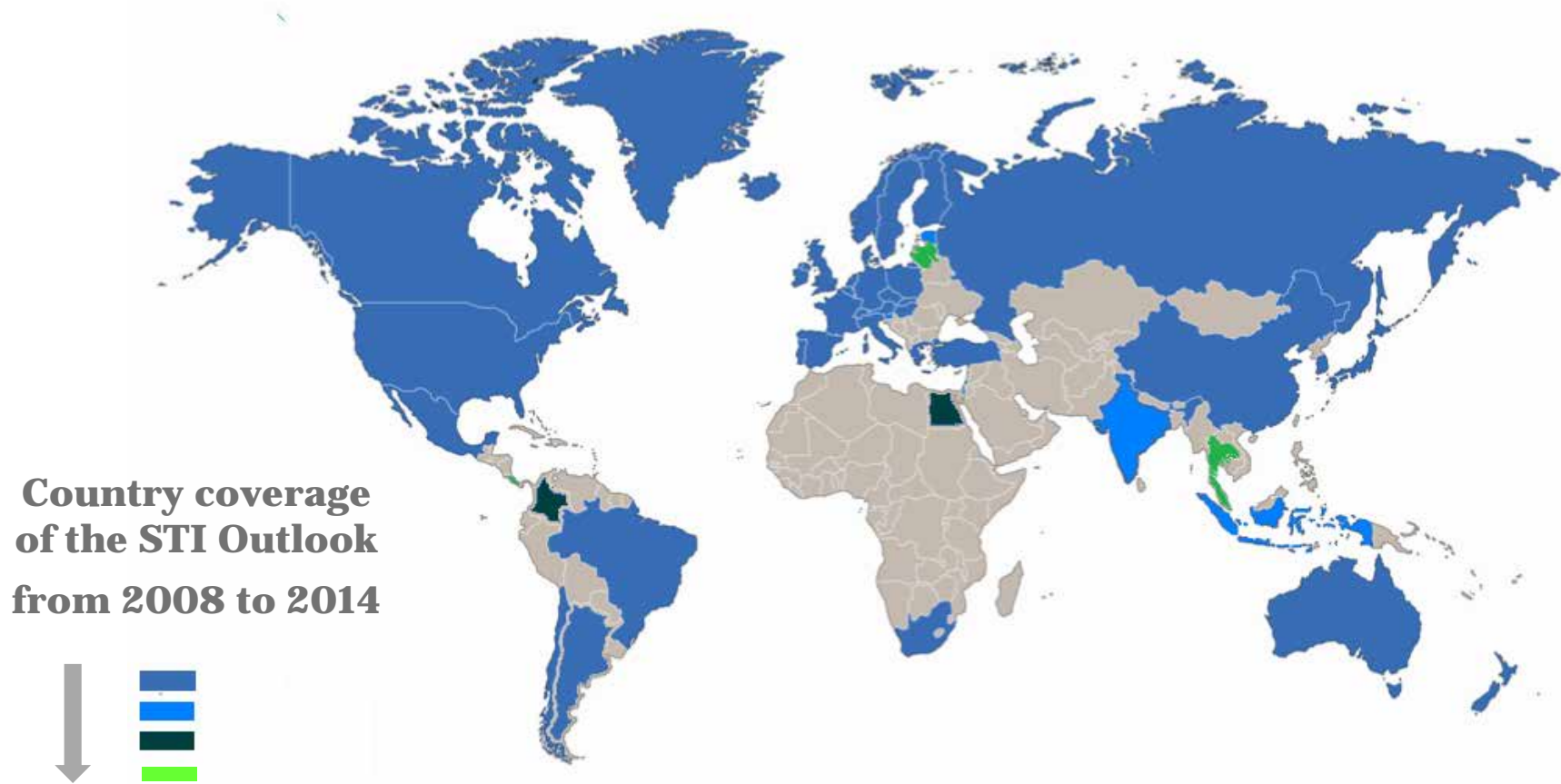
OECD STI Outlook: 20-year tradition

- **“What’s new in the field of science, technology and innovation policy?”**
- International review of key recent trends in STI for the STI policy community and analysts
- Based on latest STI policy information and indicators
- OECD Flagship publication





Drawing on a unique policy questionnaire





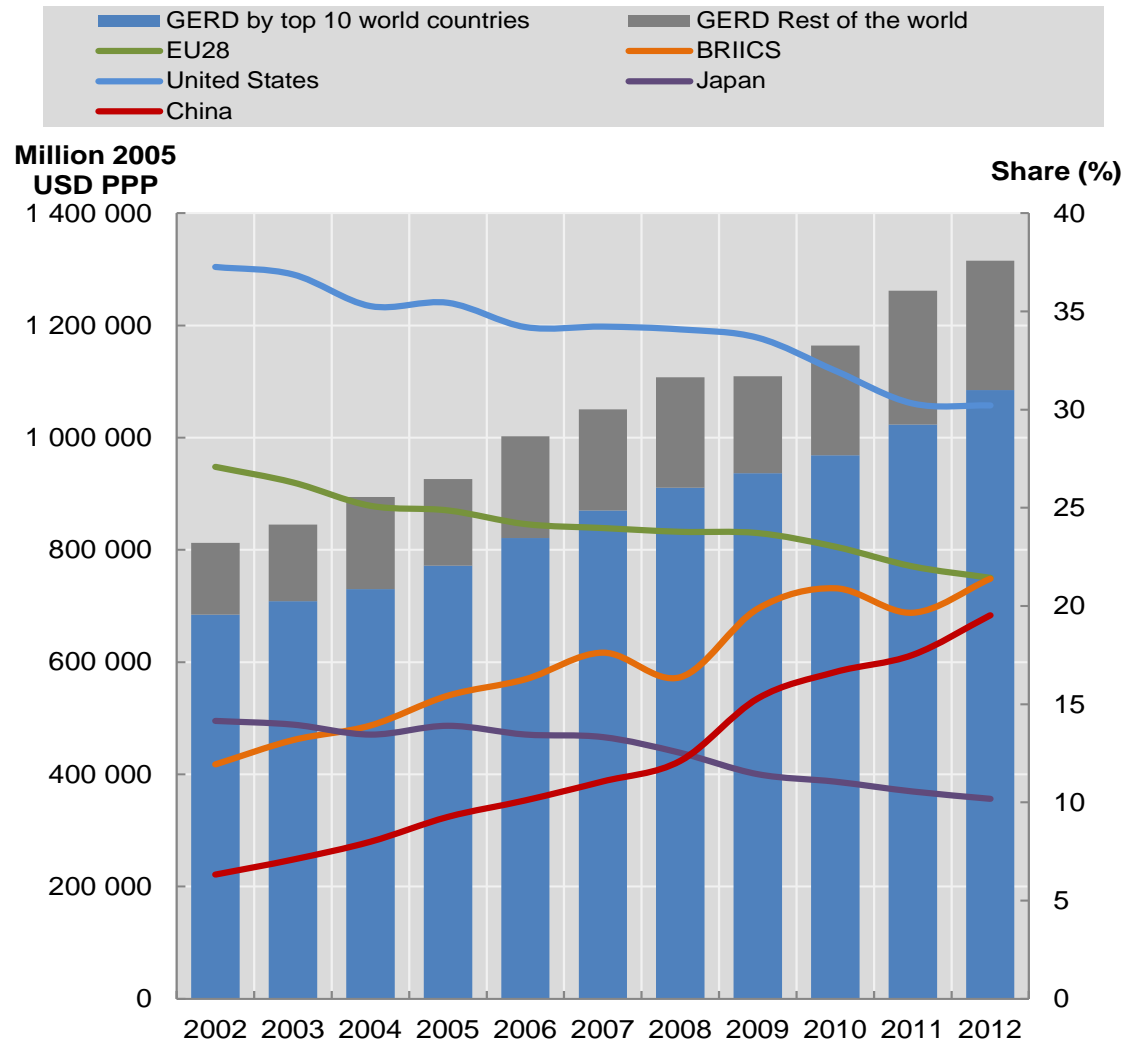
The three components of the STI Outlook 2014





Asia on the rise

Total world R&D expenditure, in million USD 2005 PPPs and Share of major performers in the total world estimate (%)



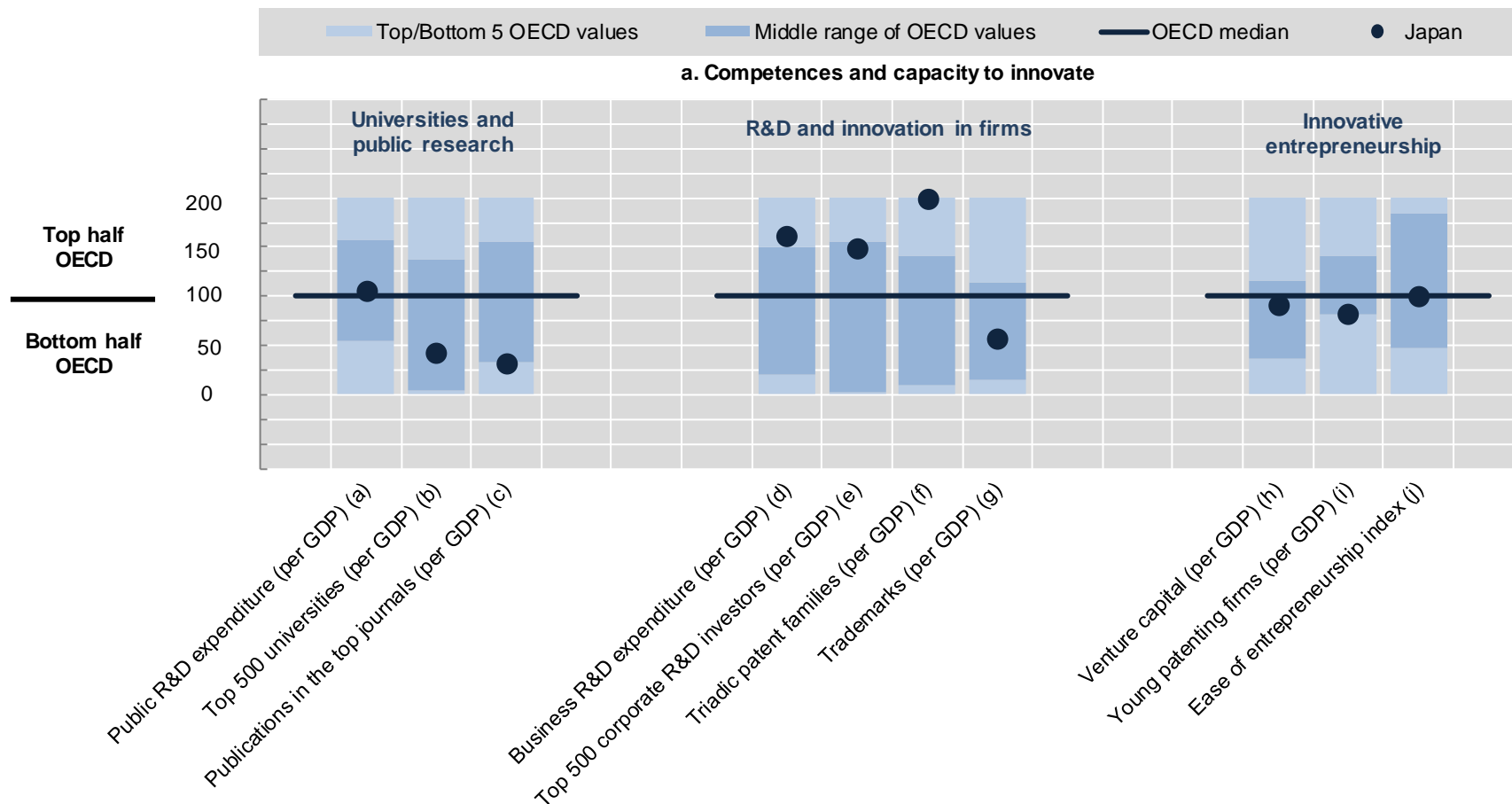
Source: OECD, based on OECD MSTI Database, January 2014 and UNESCO (UIS) 2014.



Benchmarking Japan's performance (1)



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



Source: OECD Science, Technology and Industry Outlook 2014.

<http://dx.doi.org/10.1787/888933152256>

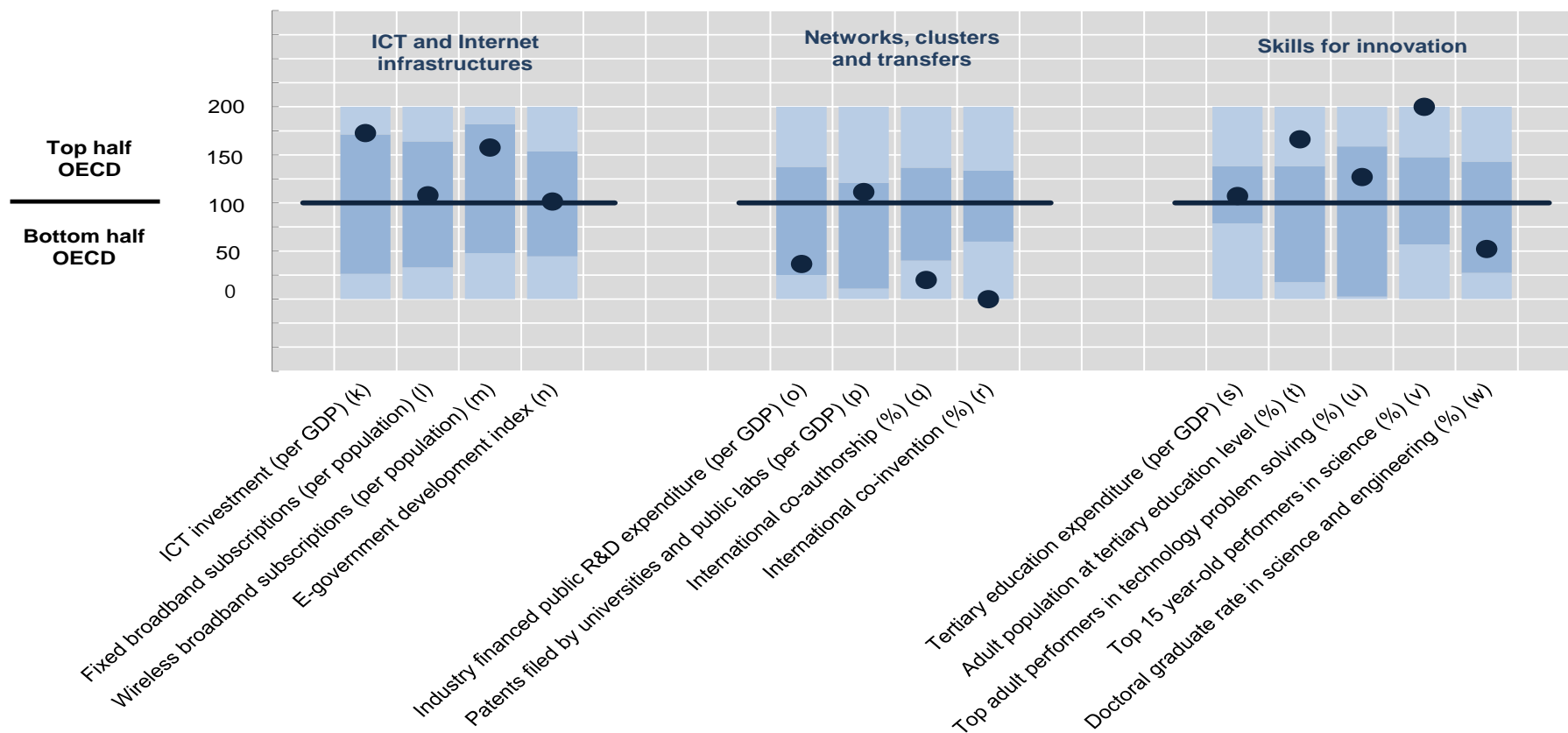


Benchmarking Japan's performance (2)



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

b. Interactions and skills for innovation



Source: OECD Science, Technology and Industry Outlook 2014.

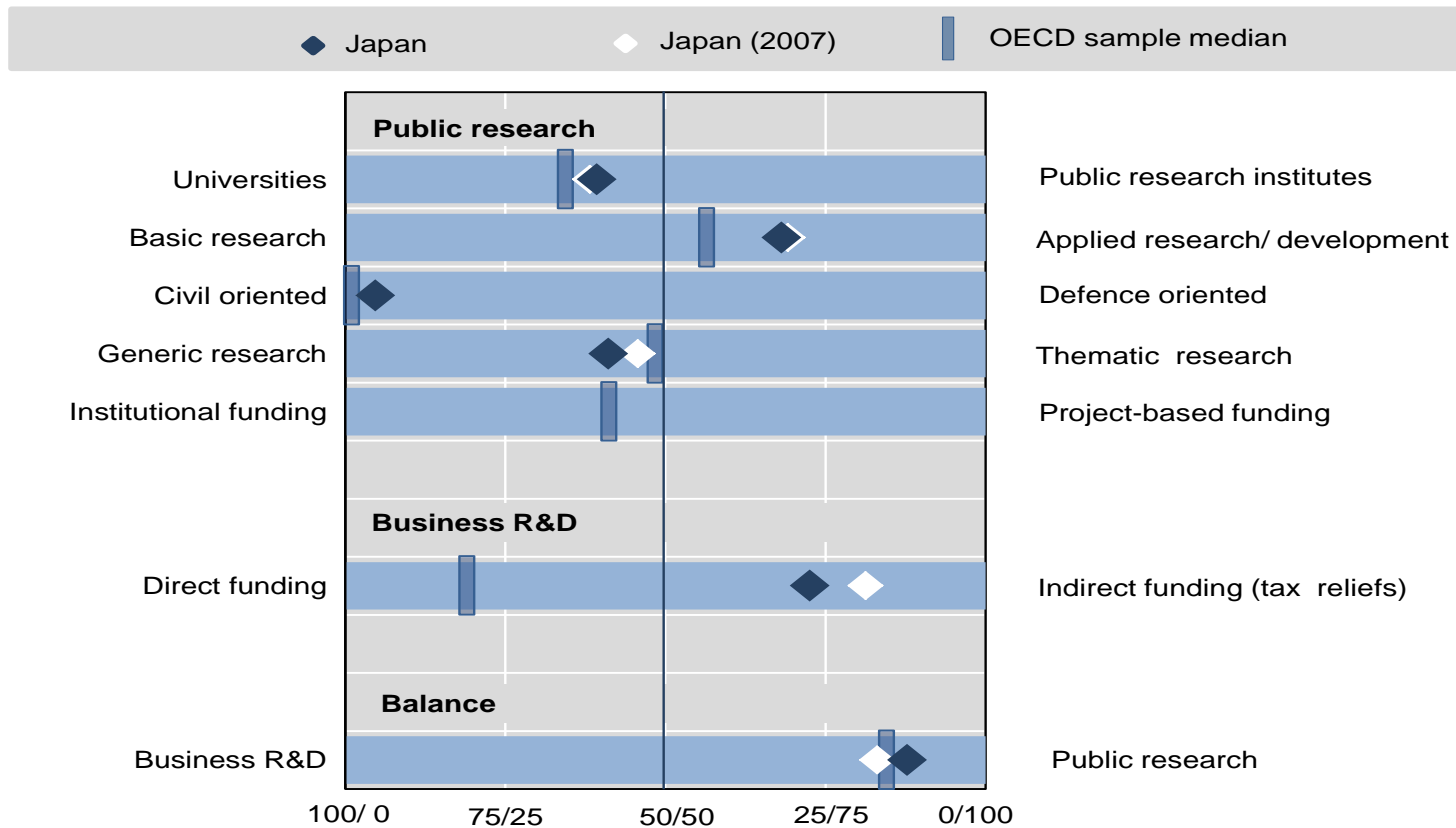
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Public funding systems differ



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

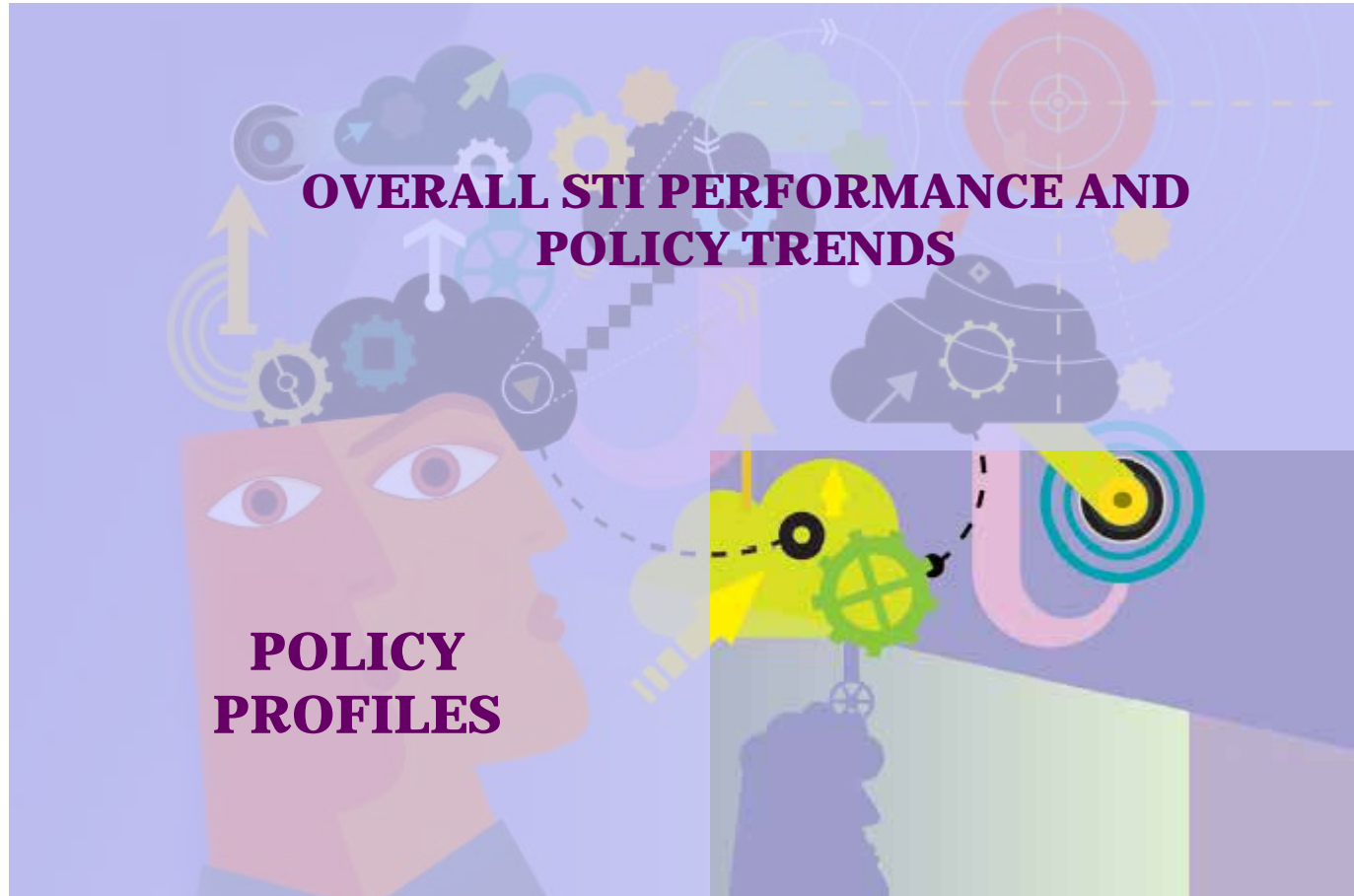


Source: OECD Science, Technology and Industry Outlook 2014.

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Selected key messages and implications for Japan



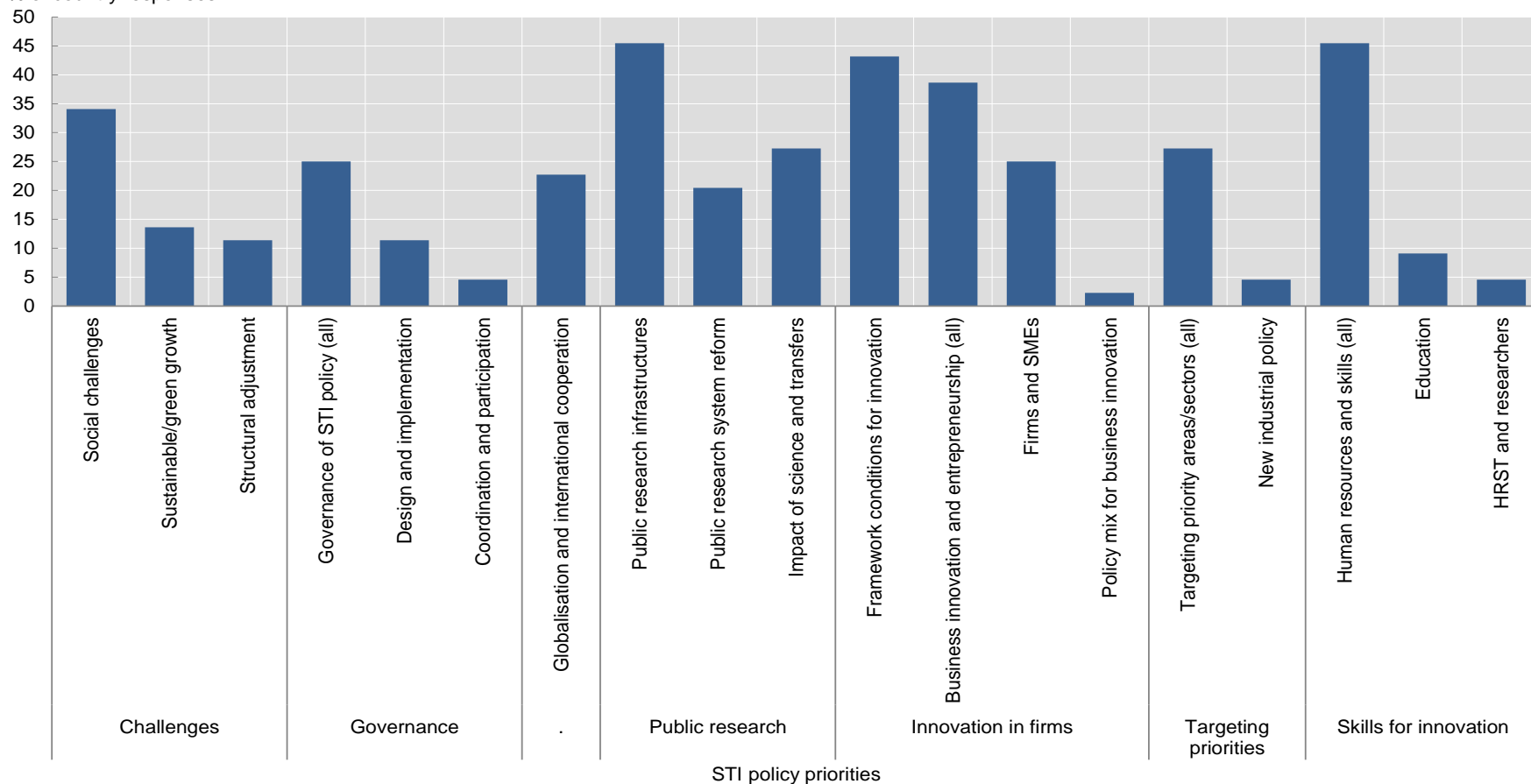


Policy priorities differ across countries ...

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



% of country responses



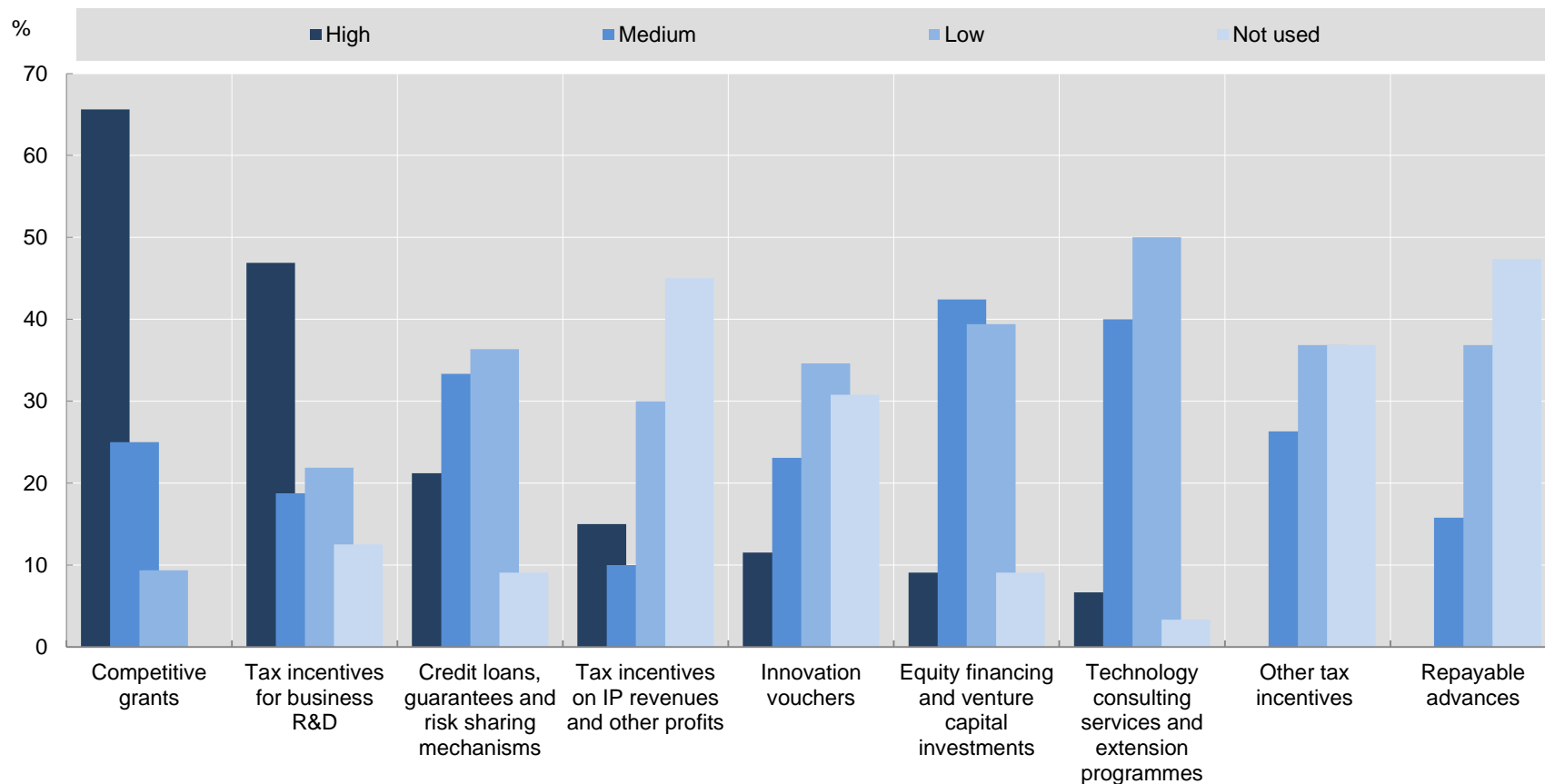
Source: OECD Science, Technology and Industry Outlook 2014.

<http://dx.doi.org/10.1787/888933151619>



.. as does the policy mix ...

(Relative relevance of funding instruments for business R&D and innovation, based on country responses)



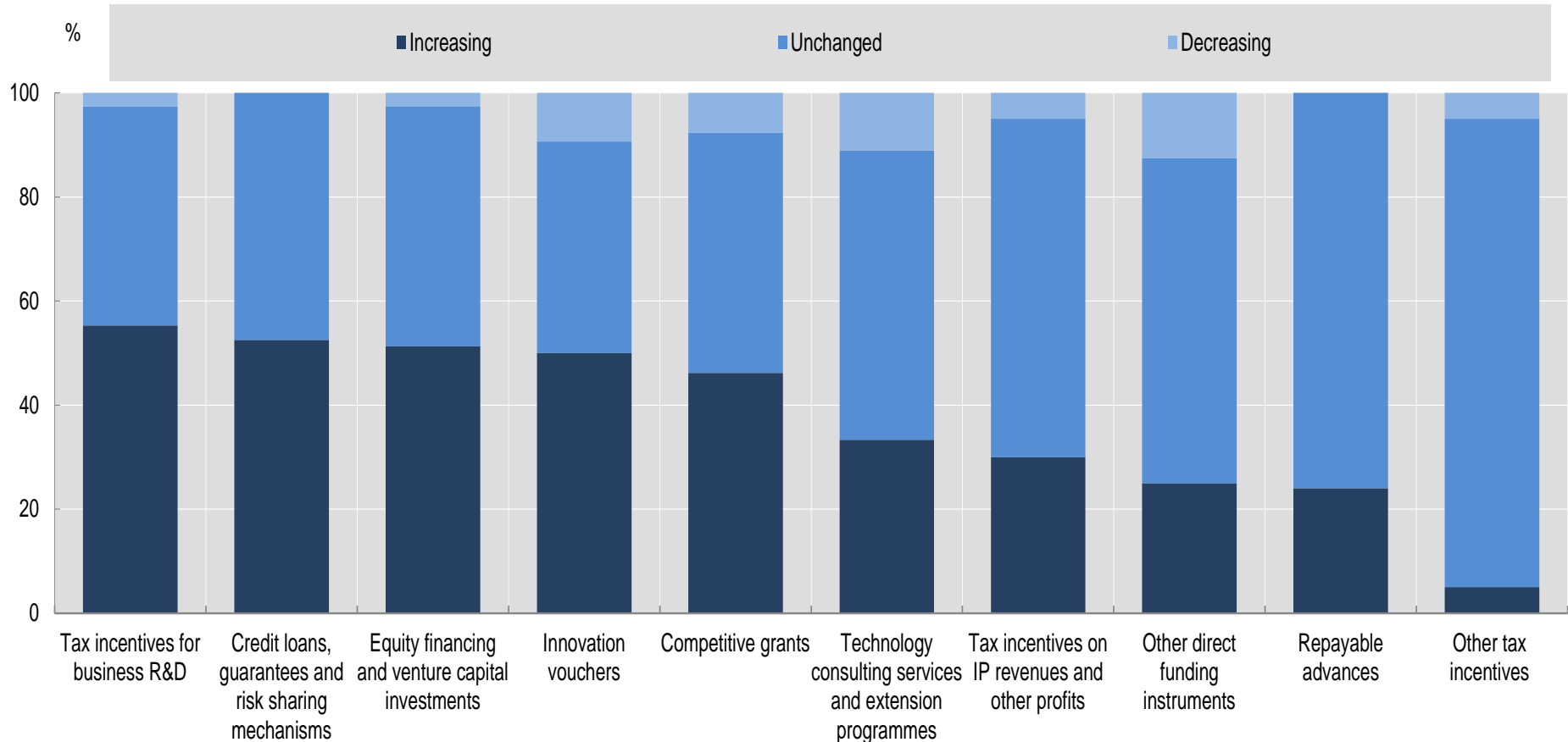
Source: OECD Science, Technology and Industry Outlook 2014.

<http://dx.doi.org/10.1787/888933151731>



.. which continues to change

(Change in the relative relevance of funding instruments for business R&D and innovation, country responses)



Source: OECD Science, Technology and Industry Outlook 2014.

<http://dx.doi.org/10.1787/888933151731>



Some key challenges for the future

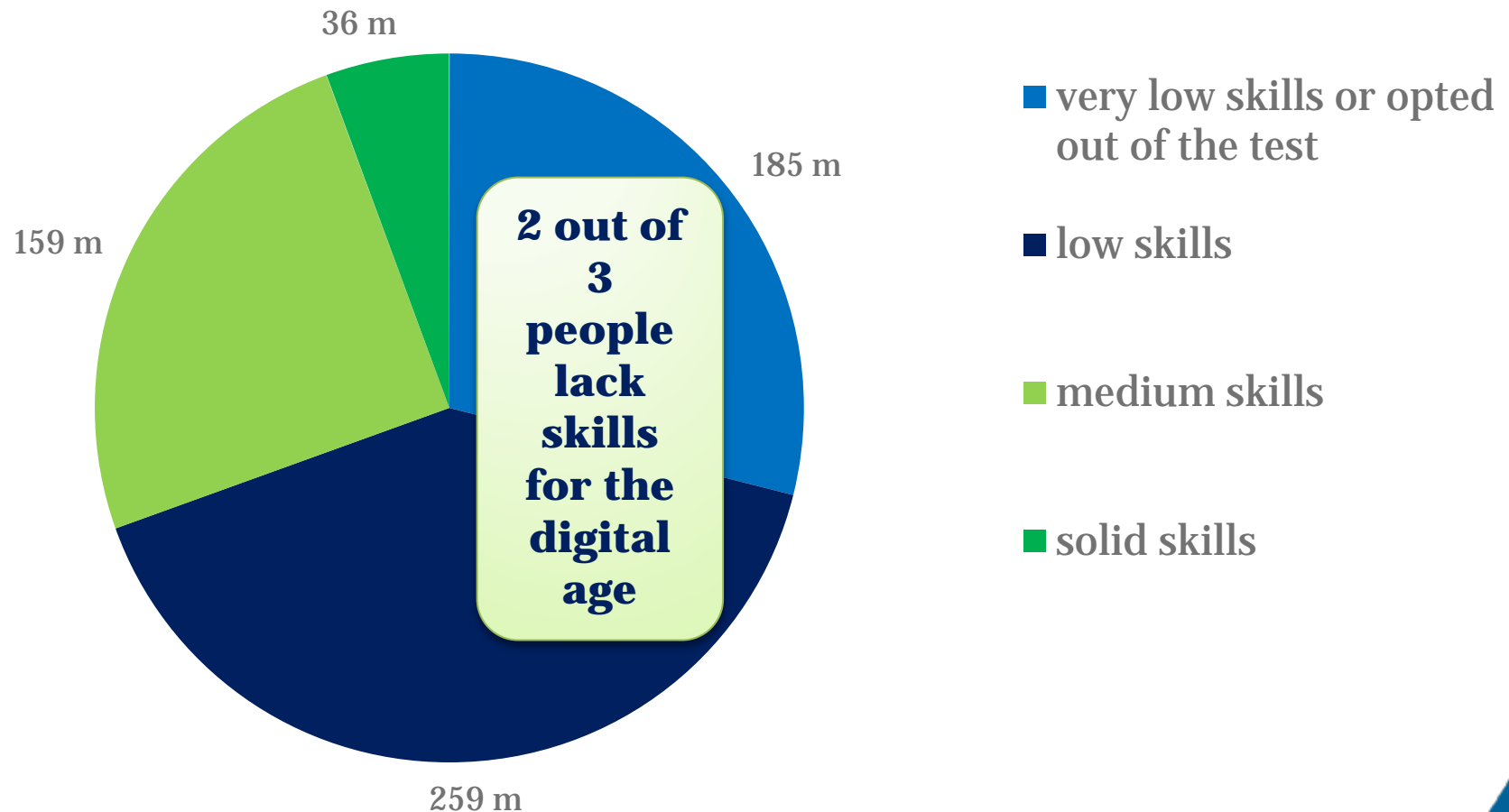


1. **Skills and job creation** and the ability of economy and society to adjust to rapid change
2. **The science system of the future?**
3. **Innovation policy mix and the scaling of firms**
4. **Focusing innovation on social and global challenges, such as:**
 - The transition to a low-carbon economy
 - Ageing and health
 - Growing income inequality
5. **The role of government – “new” industrial policy**

Towards a “new deal” for innovation?



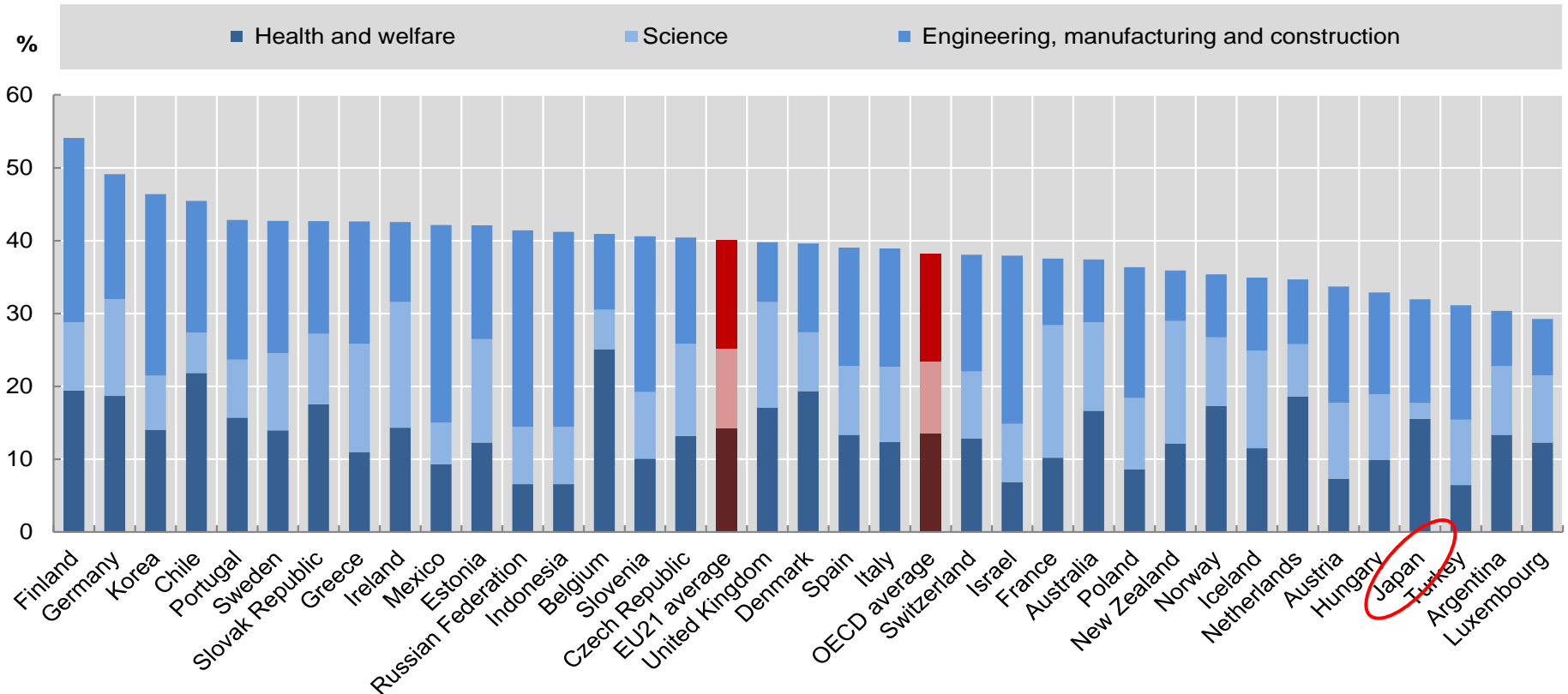
1. Skills are a major challenge: 2 out of 3 people lack the skills to succeed in a technology-rich environment ...





... and human resources for science and technology are a challenge

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





2. Reforms to research systems

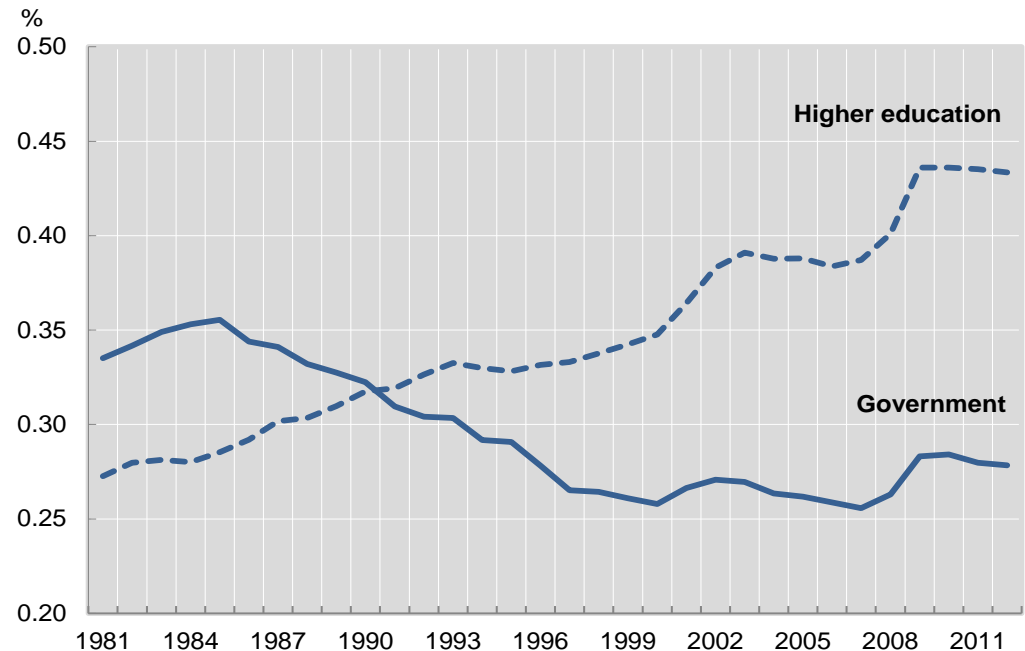
Challenges:

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

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)

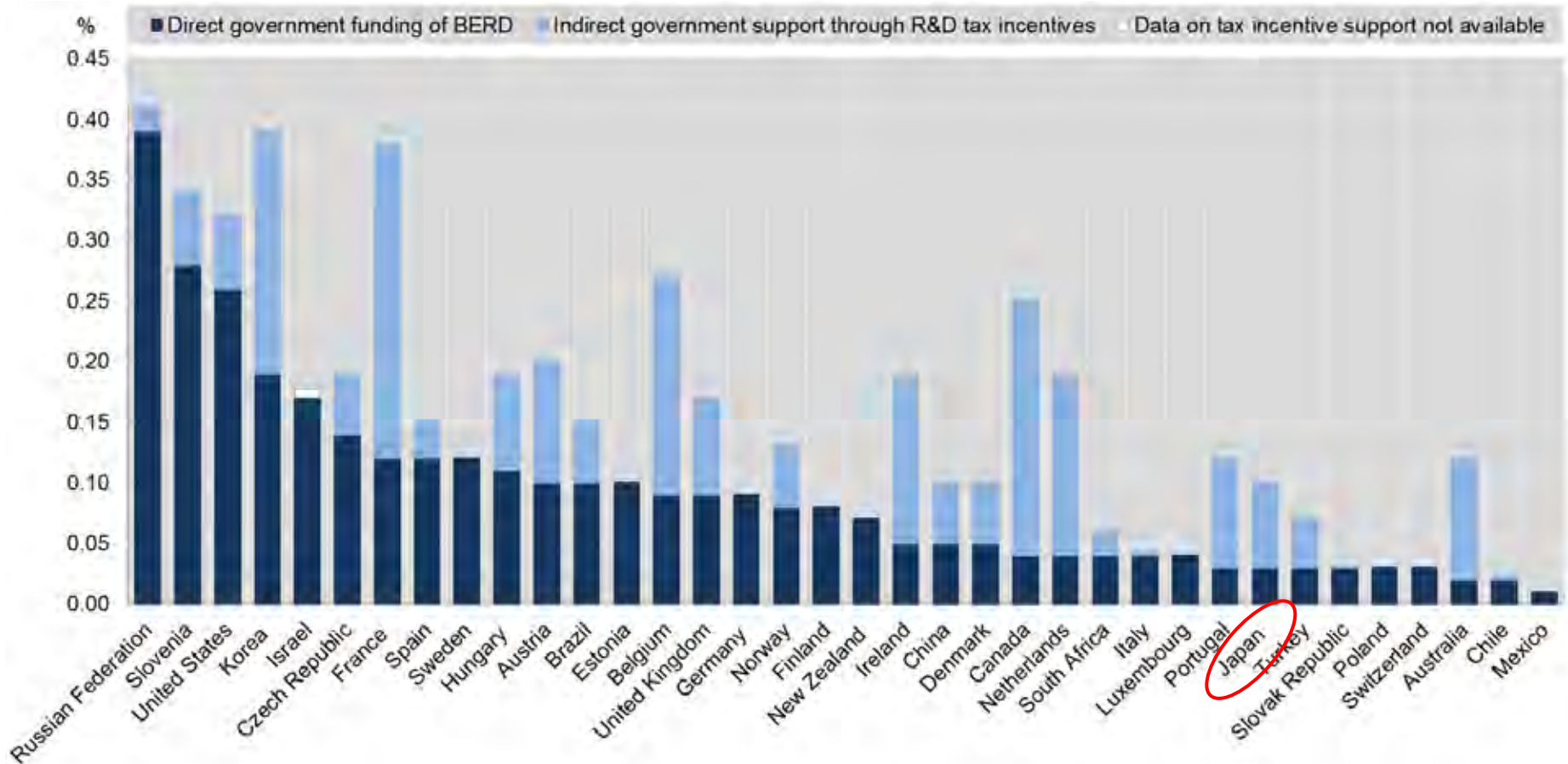




3. The Innovation Policy Mix needs to be considered ...

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.

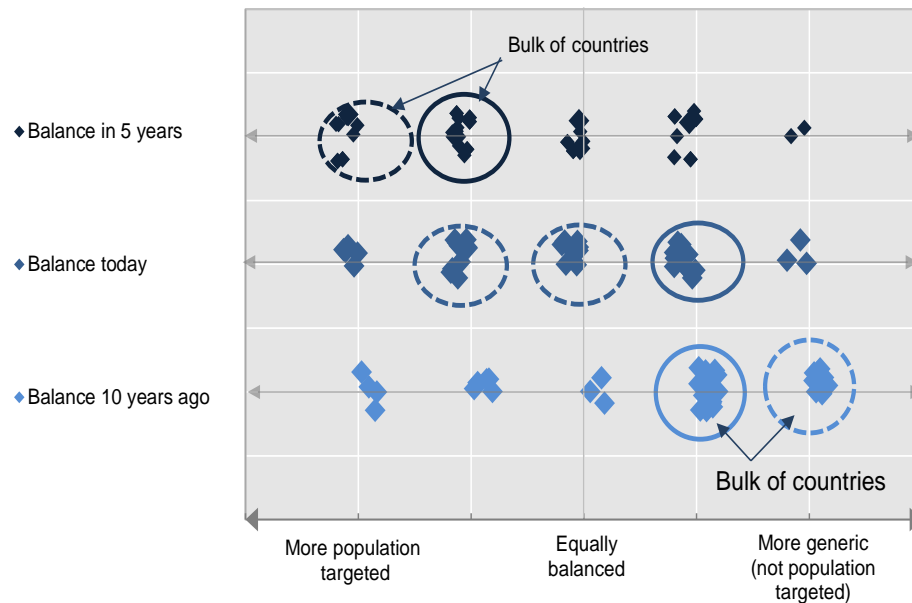
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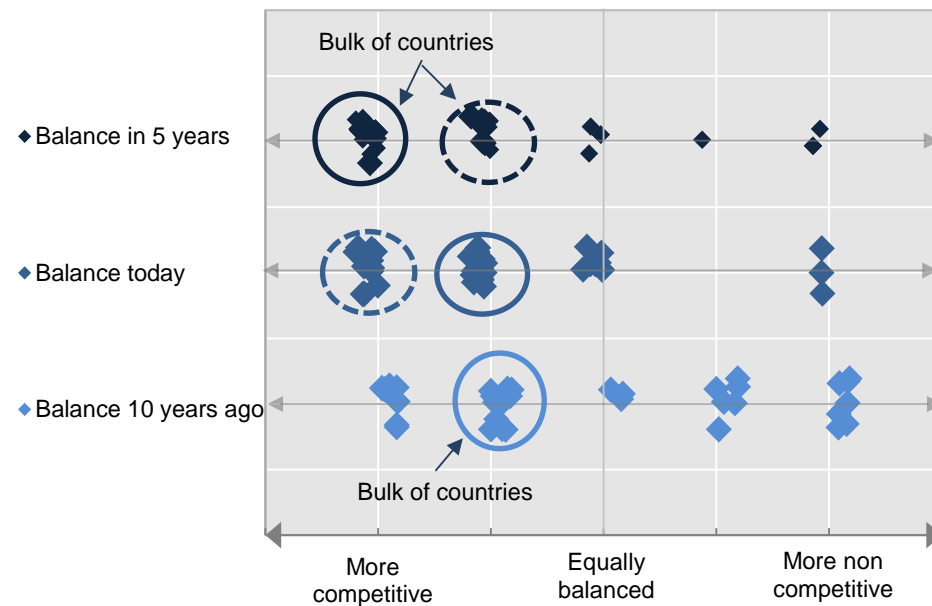
.. as the balance in the policy mix shifts ...

(based on own country ranking)

Population-targeted versus generic instruments



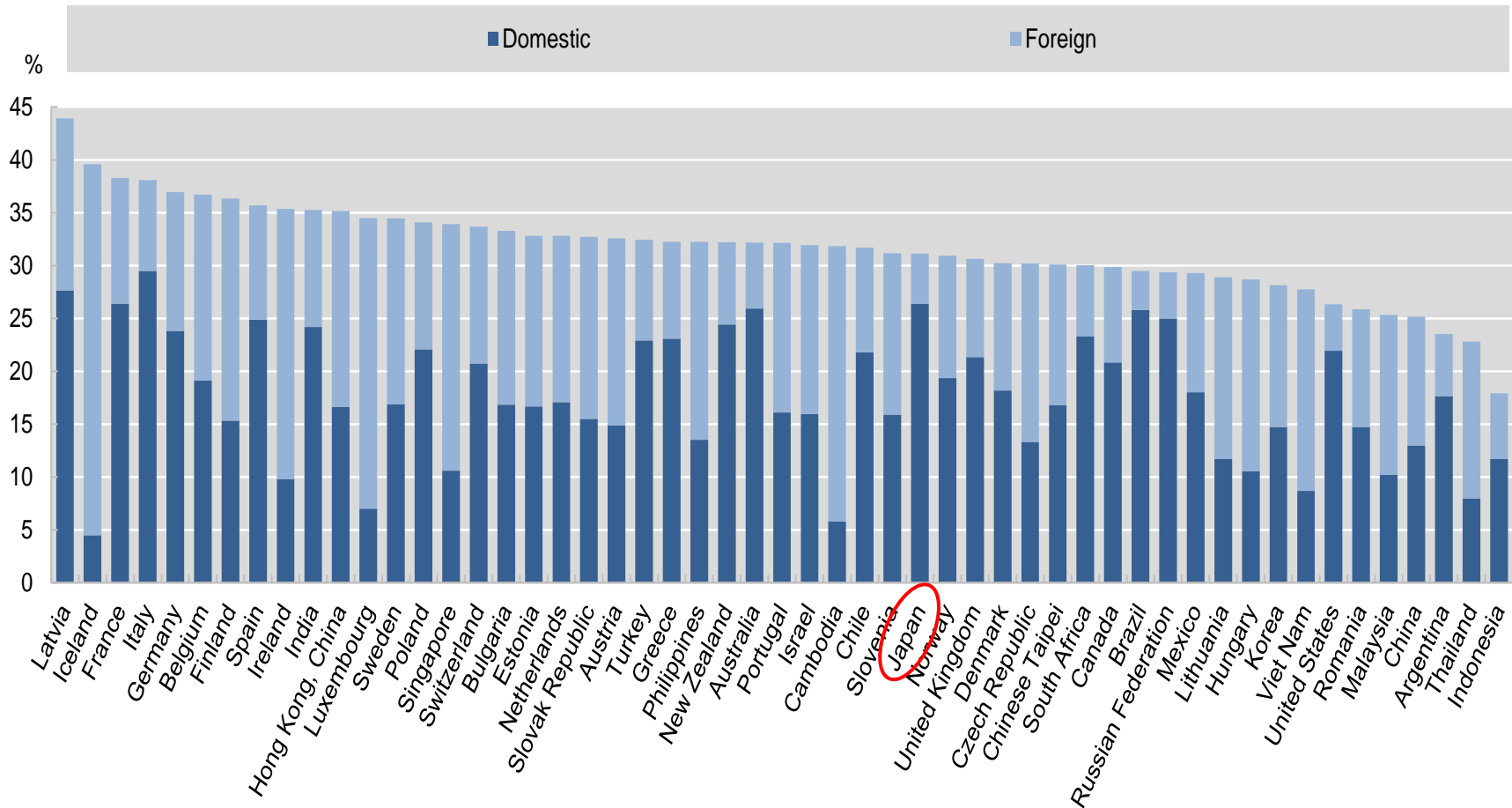
Competitive versus non-competitive instruments





.. and services innovation becomes a key driver of competitiveness in global value chains

Services value added content of gross manufacturing exports, % 2009

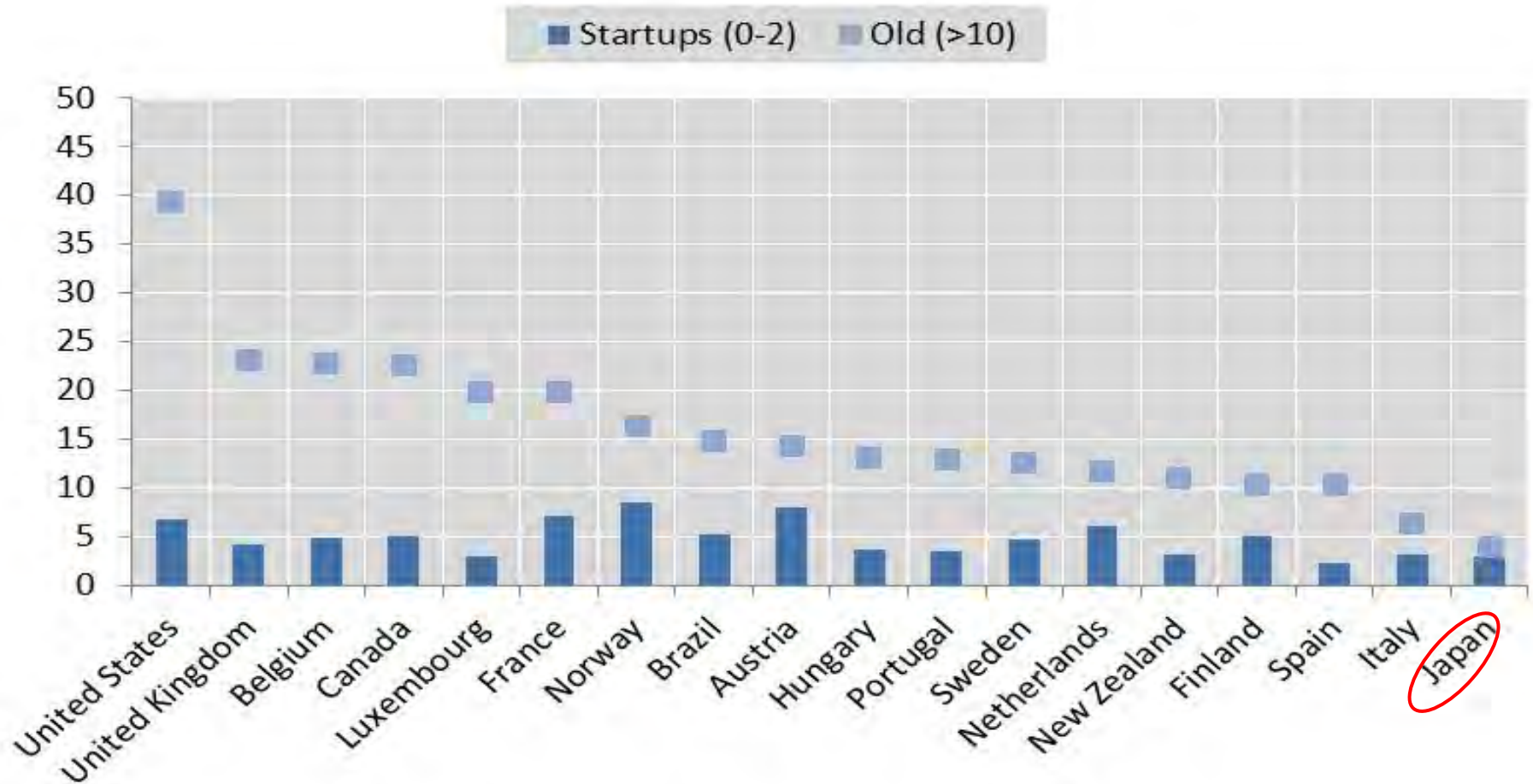


Source: OECD



Growth of young innovative firms is also 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

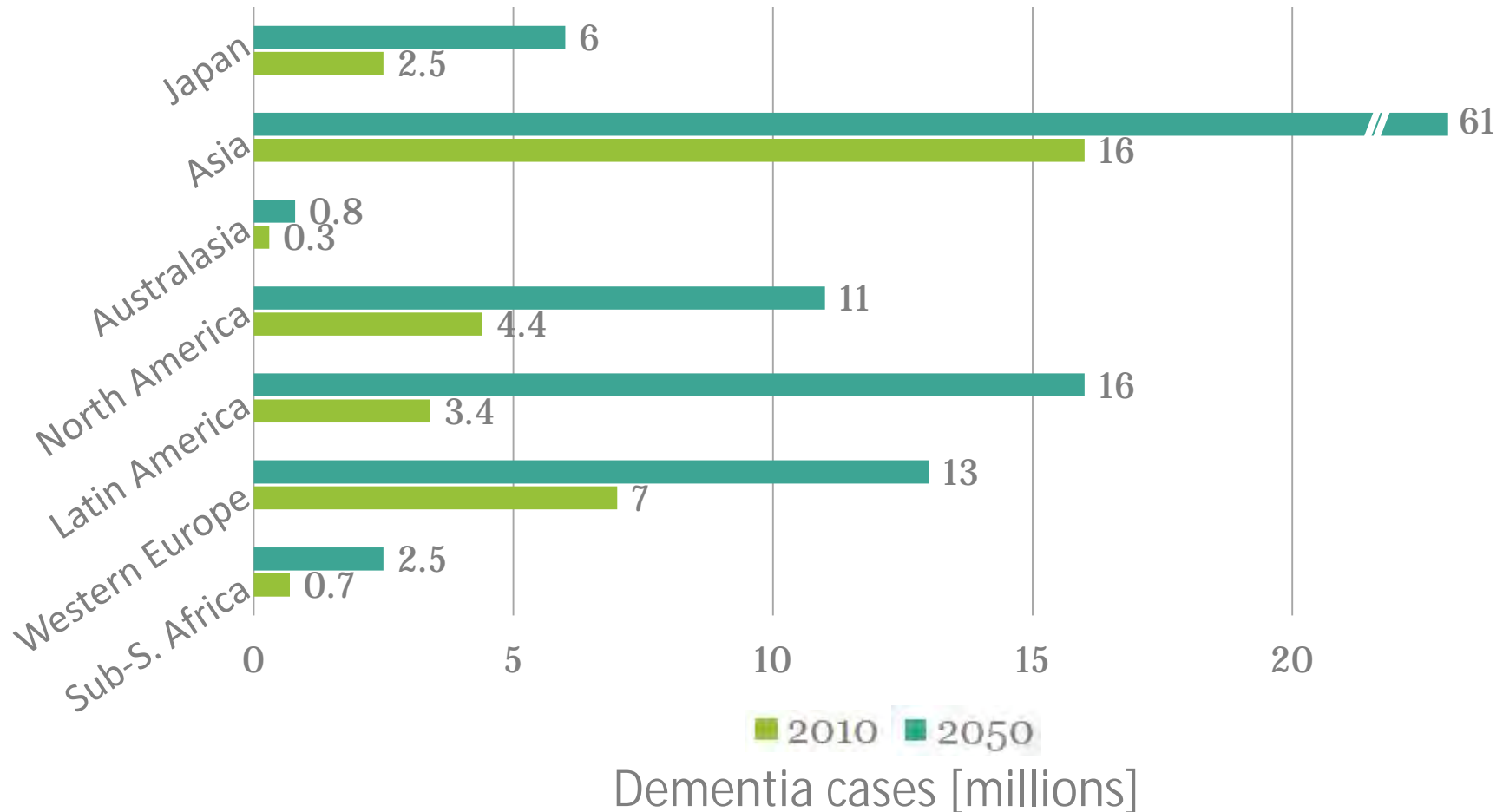


Policies to unlock growth and innovation by young firms

- **Enable experimentation**: Reduce barriers to the entry (e.g. red tape), growth (e.g. size-specific regulations), and exit/failure of firms (e.g. penalising bankruptcy legislation, overly strict employment protection legislation).
- **Level the playing field for new and innovative firms**: Some policies favour incumbents and MNEs (e.g. R&D tax credits).
- **Strengthen the innovation system for young and innovative firms**, e.g. through enhanced access to (risk) capital, network development, mentoring of entrepreneurs, skills development, etc.
- **Improve access to foreign markets**, so firms can scale more easily across borders.
- **Celebrate entrepreneurship**.



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.tmgig.jp>, Tokyo Metropolitan Institute of Gerontology (2014)



6. Industrial policy is being discussed in many countries, but lessons need to be learned

Embeddedness

**Carrots &
sticks**

Accountability

(Rodrik, 2008)

“The emerging consensus is that **the risks** associated with selective-strategic industrial policy **can be minimised** through a ‘soft’ form of industrial policy, based on a more facilitative, coordinating role for government, consistent with the systems approach.....

“The goal of ‘soft’ industrial policy is to **develop ways for government and industry to work together** to set strategic priorities, deal with coordination problems, allow for experimentation, avoid capture by vested interests and improve productivity.”



Some emerging lessons

- **Remove barriers** before providing support - i.e. “don’t push on a string”
- **Clarity in objective(s)** – such that success and failure can be assessed in an non-discretionary manner
- **Competition - keep the outsiders and the unborn (e.g. young firms) in mind** – resist political economy pressures from insiders and incumbents
- **Evaluate** (preferably *ex ante* and *ex post*) – and incorporate evaluation in policy cycle
- Ensure public bears **risk which is “proportionate”** (enough to matter, not too much to lead to moral hazard)
- **Plan for exit** – and make plan known
- **Incentives/subsidies:** Only for “new” activities



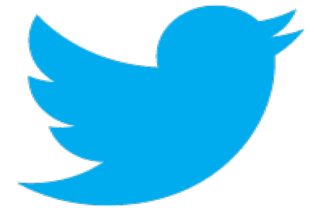
Thank you

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