# Highlights from the OECD Science, Technology and Industry Scoreboard 2017 - The Digital Transformation: Korea

## Science, innovation and the digital revolution

- During the period 2012-15, five key economies accounted for between 69% and 98% of patents relating to the 20 top emerging ICT technologies; **Korea** is a major contributor to the accelerating development of all ICT technologies - accounting for between 10% and 46% of patenting activities in these fields between 2012 and 2015 [Scoreboard fig. 1.5].
- **Korea** accounted for over 17.5% of AI-related patent applications during 2010-15, up from 10.5% in 2000-05 [fig. 1.7].
- The development of AI technologies is geographically concentrated: R&D-performing corporations based in Japan, **Korea**, Chinese Taipei, and China account for about 70% of all AI-related inventions belonging to the world's 2 000 top corporate R&D investors and their affiliates, and US-based companies for 18%. Firms headquartered in **Korea** accounted for 20% of all AI-related inventions [fig. 1.25 - see below].
- Out of the top 50 firms with IP5 patent families, 30 are headquartered in Asia, of which 6 are located in **Korea** [fig. 1.22].

## Growth, jobs and the digital transformation

- Data for 2015 on the deployment of industrial robot technologies show that **Korea** leads (ahead of Japan) in terms of robot intensity i.e. the industrial stock of robots divided by manufacturing value added; robot intensity in **Korea** is about three times the OECD average [fig. 1.28 - see below].
- Almost 39% of jobs in the business sector in **Korea** are sustained by foreign demand, up from 34.5% in 2004 [fig. 1.38].
- Women in **Korea** earn, on average, 20% less than men on average, even after individual and job-related characteristics are taken into consideration; as in other countries, skills differences partially explain the gender wage gap in **Korea** [fig. 1.41].
- **Korea** was the third-most important hub for IT manufacturing in 2011, after China and the United States, up from 9th place in 1995 [fig. 1.56].
- 90% of persons aged 16-74 in **Korea** used the Internet in 2016, up from 78% in 2006 [fig. 1.57]; Nearly all 16-24 year olds used the Internet in 2016, compared to 64% in the 55-74 year age group [fig. 1.58].
- In **Korea** about 26% of all tertiary graduates in natural sciences, engineering and ICT fields in 2015 were women; this was mainly driven by graduates in science and engineering (24%) rather than ICT (2%) [fig. 1.59].

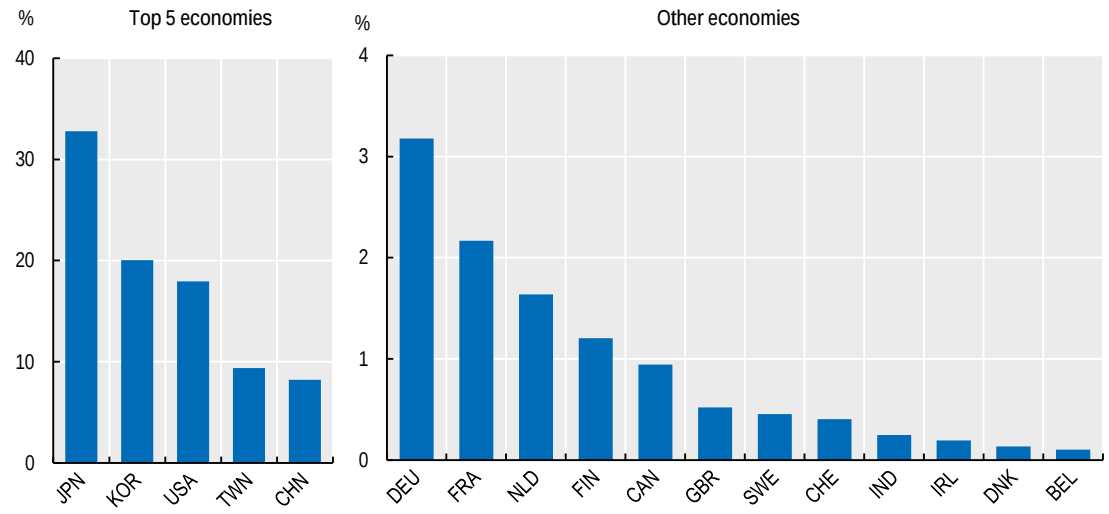
## Innovation today - Taking action

- Together with Israel, **Korea** had the highest ratio of R&D expenditures to GDP in the OECD in 2015: 4.2% [fig. 1.14 - see below]; this partly reflects strong growth in the government's budget for R&D, which grew by 50% between 2008 and 2015 [fig. 1.62].

- **Korea** has one of the lowest levels of international collaboration in science and innovation among OECD countries, with 3.4% of patents involving co-invention, and 26.4% of scientific publications involving international co-authorship [fig. 1.68].
- **Korea** provided the third-highest level of government support (direct funding plus tax incentives) for business R&D in 2015, at 0.35% of GDP, behind the Russian Federation, Belgium, and France [fig. 1.71 - see below].
- Over the 2006-15 period, countries with the greatest increases in government support for business R&D exhibited higher growth in R&D intensity; in **Korea,** R&D intensity grew by more than would be predicted based on the increase in measured government support [fig. 1.72].

**Figure 1.25 Artificial intelligence patents by top R&D companies, by headquarters' location, 2012-14**

Share of economies in total AI-related IP5 patent families owned by top 2 000 R&D companies

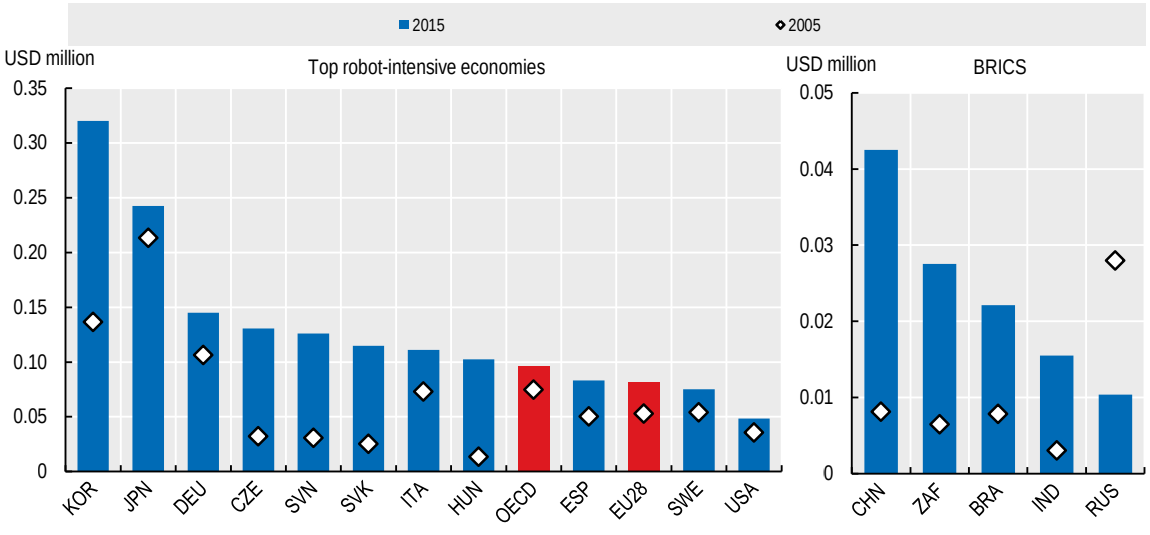



StatLink http://dx.doi.org/10.1787/888933617320

*Source: OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_scoreboard-2017-en.

**Figure 1.28 Top robot-intensive economies and BRICS, 2005 and 2015**

Industrial robot stock over manufacturing value added, millions USD, current values

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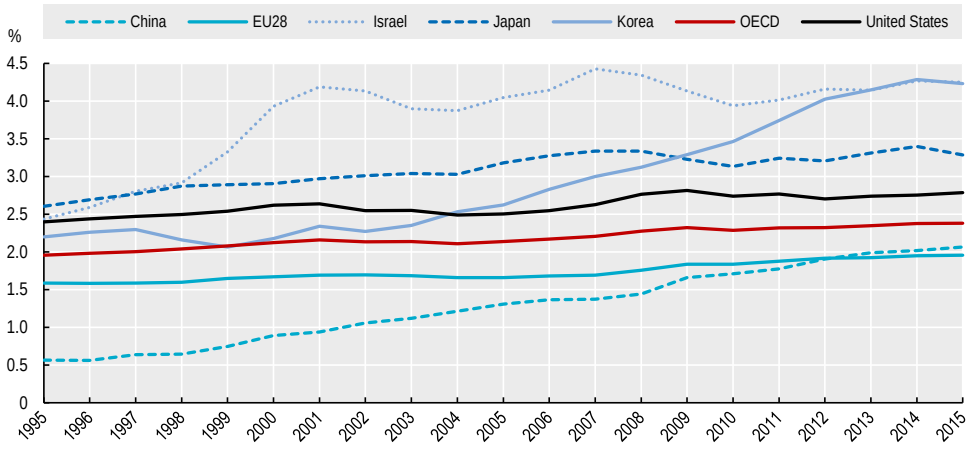
*Source: OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation*, OECD Publishing, http://dx.doi.org/10.1787/sti_scoreboard-2017-en.

**Figure 1.14 Trends in total R&D performance, OECD and selected economies, 1995-2015**

As a percentage of GDP

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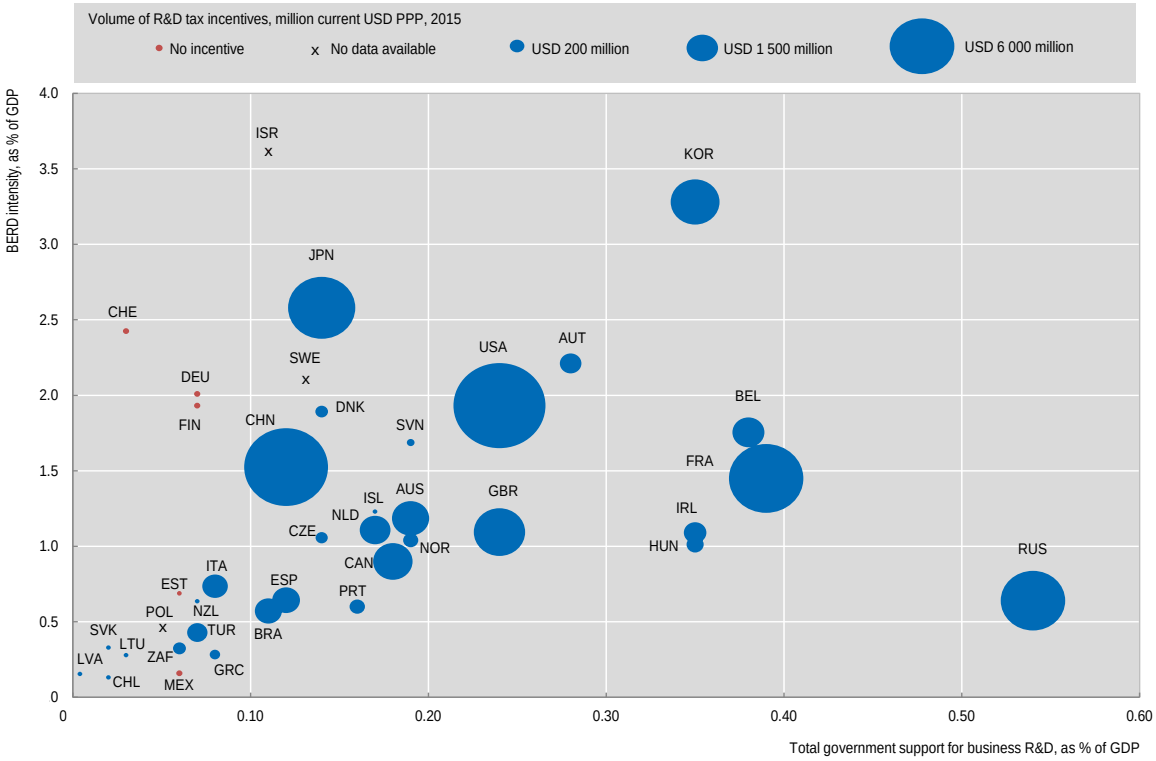
*Source: OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_scoreboard-2017-en.

**Figure 1.71 Business R&D intensity and government support to business R&D, 2015**

As a percentage of GDP

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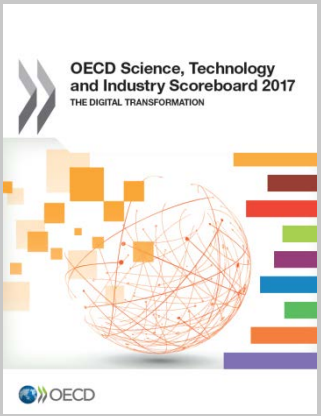
*Source: OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_scoreboard-2017-en.

## The OECD Science, Technology and Industry Scoreboard 2017: The Digital Transformation




The 2017 edition of the Scoreboard contains over 200 indicators showing how the digital transformation affects science, innovation, the economy, and the way people work and live.

The aim of the STI Scoreboard is not to "rank" countries or develop composite indicators. Instead, its objective is to provide policy makers and analysts with the means to compare economies with others of a similar size or with a similar structure, and monitor progress towards desired national or supranational policy goals.

It draws on OECD efforts to build data infrastructure to link actors, outcomes and impacts, and highlights the potential and limits of certain metrics, as well as indicating directions for further work.

The charts and underlying data in the STI Scoreboard 2017 are available for download and selected indicators contain additional data expanding the time and country coverage of the print edition. For more resources, including online tools to visualise indicators, see the OECD STI Scoreboard webpage (http://www.oecd.org/sti/scoreboard.htm).

## The OECD Directorate for Science, Technology and Innovation

It is part of the DNA of the Directorate for Science, Technology and Innovation (DSTI) to constantly look for ways of better understanding where our economies and societies are today, and where they are going tomorrow. We pride ourselves on tackling topics at the boundaries of our scientific and technological understanding, such as using biotechnology and nanotechnology to alter modes of production, and how digital shifts like "big data," earth observation and digital platforms are changing our world.

Discover DSTI at www.oecd.org/sti and the OECD's Going Digital project at www.oecd.org/going-digital.


## Further reading

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

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris. http://dx.doi.org/10.1787/sti_in_outlook-2016-en