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

Science, innovation and the digital revolution

- For decades, research in the field of artificial intelligence (AI) has aimed to produce machines with human-like cognitive functions. In 2016, **Turkey** was among the top 20 economies in terms of top-cited scientific publications related to machine learning [Scoreboard fig. 1.27 - see below] illustrating its commitment to play an active role in the development of frontier technologies.
- Over the past decade, business R&D increased significantly in **Turkey**, reaching 50% of gross domestic expenditure on R&D [fig. 4.1.1]. Government funding of business R&D increased slightly between 2006 and 2015 but remained rather low at 0.07% of GDP [fig. 4.6.1].
- Business funding of R&D performed by higher education institutions provides one indication of R&D collaboration between these two sectors. In 2015, business funded about 15% of higher education R&D in **Turkey**, the highest share among OECD countries [fig. 2.2.3].
- International co-inventions are particularly high for ICT-related patents, with about 25% of **Turkey's** IP5 patents featuring inventors located in at least two economies [fig. 3.6.1].

Growth, jobs and the digital transformation

- From 2010 to 2016, **Turkey** experienced net employment gains of over 4.6 million jobs [fig. 1.34]. Net gains were the highest in public administration, education, health services, followed by wholesale, retail, hotels, food services and transport. Net losses were recorded in the agriculture sector.
- Between 1995 and 2014, **Turkey** was among the countries with notable increases in the foreign value added content of exports, as participation in global value chains became well established [fig. 5.6.1].
- The ICT sector exhibits higher entry and exit rates than other sectors in most of the countries covered in the OECD's DynEmp project, in **Turkey** in particular [fig. 5.4.1]. This is mainly driven by entry and exit in ICT services sectors (IT and other information services and telecommunications). High entry and exit rates may be associated with higher productivity-enhancing reallocation within those sectors.
- In **Turkey**, the gender wage gap is the lowest in OECD countries but men still earned 4.7% more than women in 2012 after controlling for various types of skills [fig. 1.41 – see below].
- In 2015, **Turkey** was also the only OECD country in which a notable share of low skilled workers (40%) received firm-based training [fig. 1.40].
- Women in **Turkey** represented 34% of all tertiary graduates in natural sciences, engineering and ICT fields in 2015. This share was mainly driven by graduates in science and engineering (31%) rather than ICT (3%) [fig. 1.59].

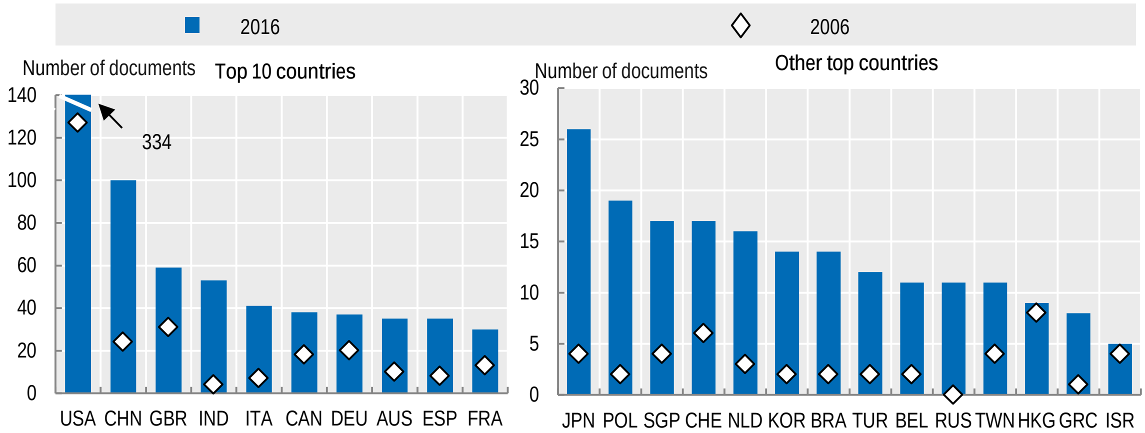
Innovation today - Taking action

- In **Turkey,** the government budget for R&D has increased by almost 80% since 2008 [fig. 1.62 - see below]. In 2016, nearly 30% of the budget was devoted to research in defence and space [fig. 1.63].

- During the period 2012-15, over 11% of IP5 patent applications with inventors from **Turkey**, involved women inventors from Turkey, higher than comparative shares for the United States (10%) and the EU (7%) [fig. 1.61].
- Analysis of flows of scientific authors over time can reflect a science system's response to events and policies adopted by countries linked to the funding of scientific research, support for scientific international mobility and policies designed to attract the highly qualified. Experimental indicators of international mobility of scientific authors (based on bibliometric data) reveal that during the period 2002 to 2016, **Turkey** experienced a net inflow of over 400 scientific authors [fig. 1.69 - see below].
- In 2016, 59% of persons aged 16-74 in **Turkey** used the Internet, a significant catch-up from 27% in 2006 [fig. 1.57]. About 49% use the internet on a daily basis [fig. 6.3.1]. However, use by the older generation lags (aged 55-74) considerably behind use by the younger generation (aged 16-24) [fig. 1.58].

Figure 1.27 Top-cited scientific publications related to machine learning, 2006 and 2016

Economies with the largest number of ML documents among the 10% most cited, fractional counts

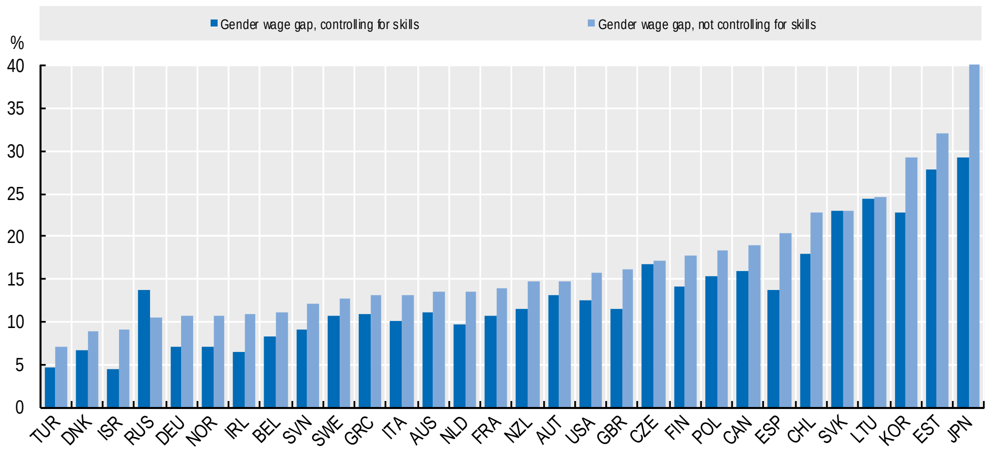


StatLink : http://dx.doi.org/10.1787/888933617358

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 1.41 Gender wage gap by country, 2012 or 2015

Differences in hourly wages, in percentages (controlling vs. not controlling for various types of skills)

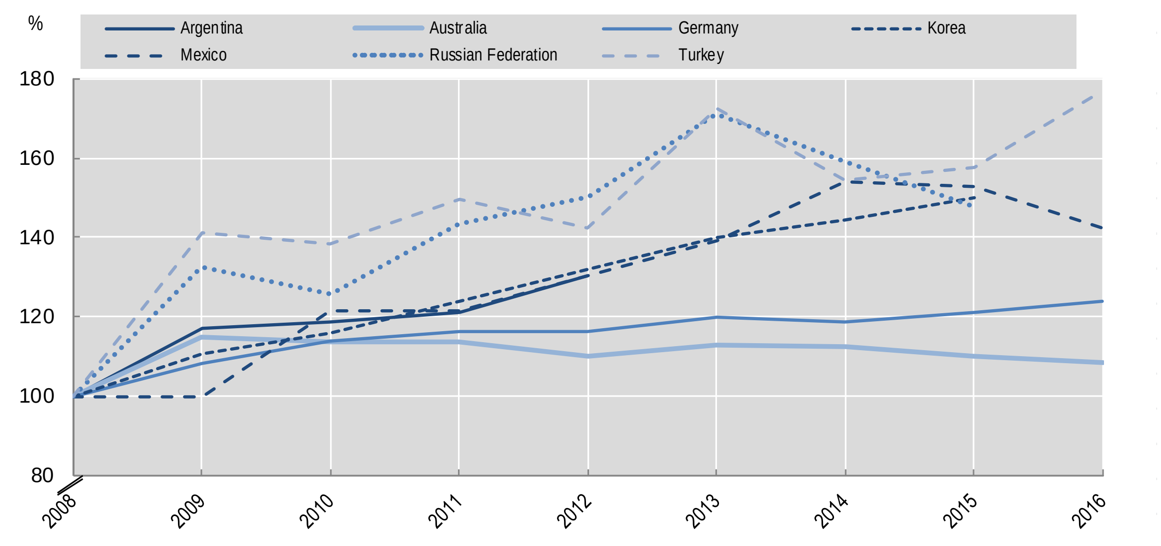


StatLink : http://dx.doi.org/10.1787/888933617624

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 1.62 Government R&D budgets, selected economies, 2008-16

Constant price index (USD PPP 2008 = 100)

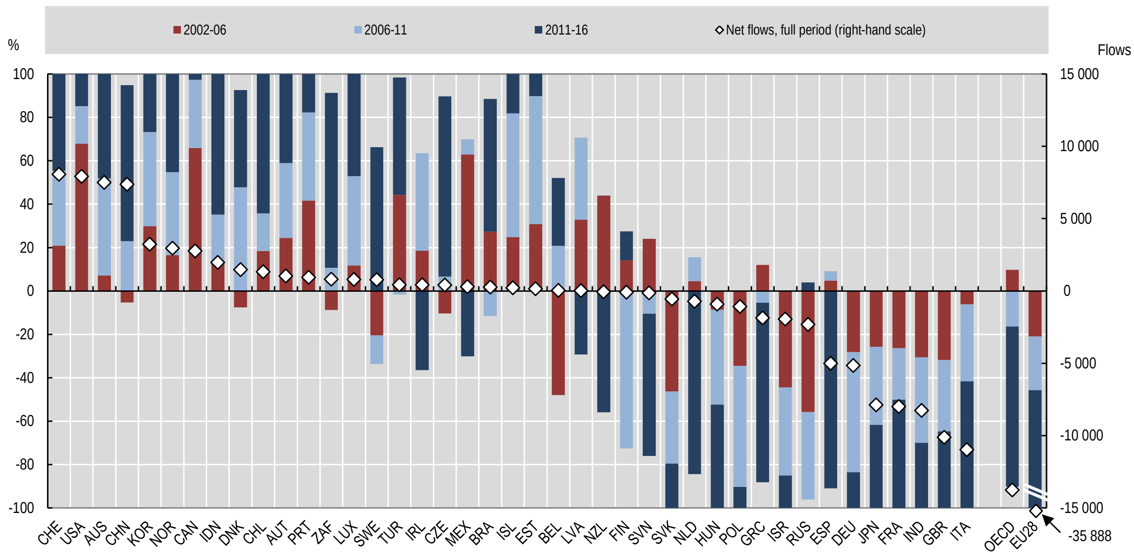


StatLink : http://dx.doi.org/10.1787/888933618023

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 1.69 International net flows of scientific authors, selected economies, 2002-16

Difference between annual fractional inflows and outflows, as a percentage of total flows



StatLink : http://dx.doi.org/10.1787/888933618156

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