November 2017

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

Science, innovation and the digital revolution

- Machine-to-machine (M2M) communication is part of the underlying infrastructure for "the Internet of Things". Among G20 economies, **the United States** had the highest M2M penetration (the number of M2M SIM cards per inhabitant) in June 2017 [Scoreboard fig. 1.3 - see below].
- The **United States** accounted for over a quarter of the world's top 10% of most-cited scientific publications in 2016, ahead of China (14%) and the United Kingdom (6%) [fig. 1.11].
- The **United States** produces the most scientific documents on machine learning - ahead of China, India and the United Kingdom [fig. 1.27].
- The **United States** accounted for over 17% of AI-related patent applications during 2010-15, down from 23% in 2000-05 [fig. 1.7].
- From 2012 to 2014, corporations based in Japan, Korea, Chinese Taipei and China accounted for about 70% of all AI-related inventions belonging to the world's 2 000 top corporate R&D investors and their affiliates. Firms headquartered in the **United States** accounted for 18% of such inventions [fig. 1.25].

Growth, jobs and the digital transformation

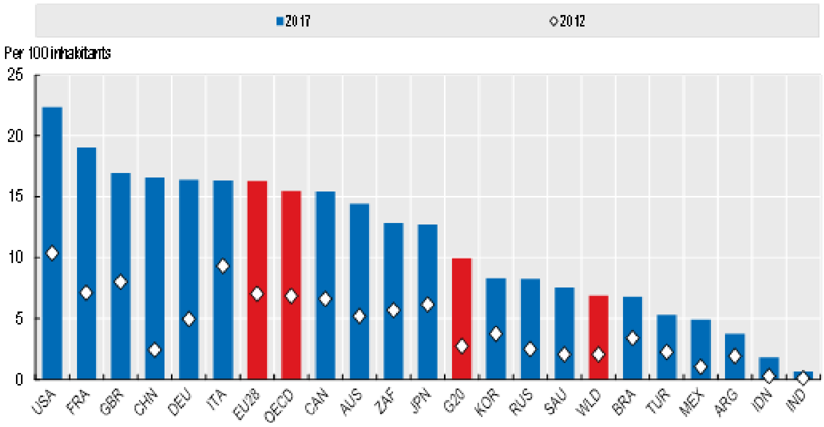
- From 2010 to 2016, the **United States** had the largest net employment gains in the OECD, of over 12 million jobs, ahead of Turkey, Germany and the United Kingdom. Large net gains were recorded in wholesale and retail trade, business services and public services, and also in manufacturing and construction [fig. 1.34].
- In 2014, around 15% of jobs in the **United States** business sector were sustained by foreign demand, up from 10% in 2004; this is the lowest share in the OECD, below Japan and Australia [fig. 1.38].
- Data for 2015 on the deployment of industrial robot technologies show that the **United States** lags in terms of robot intensity (i.e. the industrial stock of robots compared to manufacturing value added); robot intensity in the **United States** is one-sixth of that in Korea and one-fifth of Japan [fig. 1.28].
- Women in the **United States** earn about 16% less than men, even after individual and job-related characteristics are taken into consideration, and 12.5% less when skill differences are also taken into account [fig. 1.41].
- The **United States** was the most important hub for IT manufacturing in 1995, but fell to second place in 2011 - below China, but remaining above Korea, Germany and Japan; it was also the most important hub in ICT services in 1995 and retained that position in 2011 [fig. 1.56].
- Almost 79% of persons in the **United States** aged 16-74 used the Internet in 2015, up from 68% in 2007 [fig. 1.57]; 85% of 16-24 year olds used the Internet in 2015, as did 71% aged 55-74 [fig. 1.58].

Innovation today - Taking action

- 13.9% of scientific documents with authors affiliated to **United States'** institutions are in the world's top-10% most cited, ahead of the United Kingdom (13.6%) and the European Union as a whole (11.9%) [fig. 1.12 - see below].
- Scientific research on dementia and neurodegenerative diseases has grown significantly since 1996, with the **United States** accounting for the greatest number of publications in 2016, ahead of China and the United Kingdom [fig. 1.64 - see below].
- In 2012-15, in the **United States**, 10% of patents listed women inventors, compared to 7% in the European Union [fig. 1.61].
- Experimental indicators on the international mobility of scientific authors, based on bibliometric data for 2002 to 2016 show that the **United States** has attracted more authors than it has lost; over the 15 years to 2016, almost 8 000 more scientific authors entered the **United States** than left, indicating the attractiveness of the country for scientists [fig. 1.69 - see below].

Figure 1.3 M2M SIM card penetration, OECD, World and G20 countries, June 2017

Per 100 inhabitants

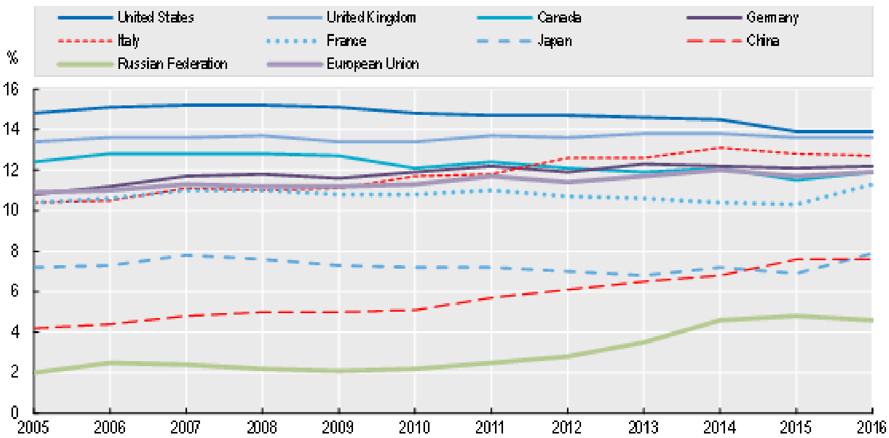


StatLink : http://dx.doi.org/10.1787/888933616902

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 1.12 Recent trends in scientific excellence, selected countries, 2005-16

As a percentage of domestic documents in the world's top 10% most cited

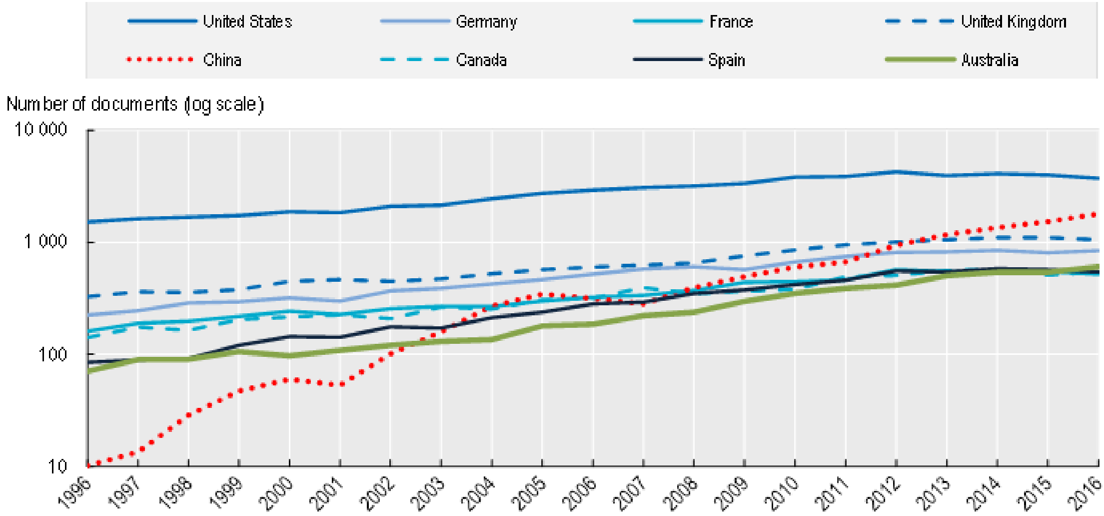


StatLink : http://dx.doi.org/10.1787/888933617073

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 1.64 Scientific research on dementia and neurodegenerative diseases, selected countries, 1996-2016

Total number of dementia-related documents in the Scopus database, fractional counts

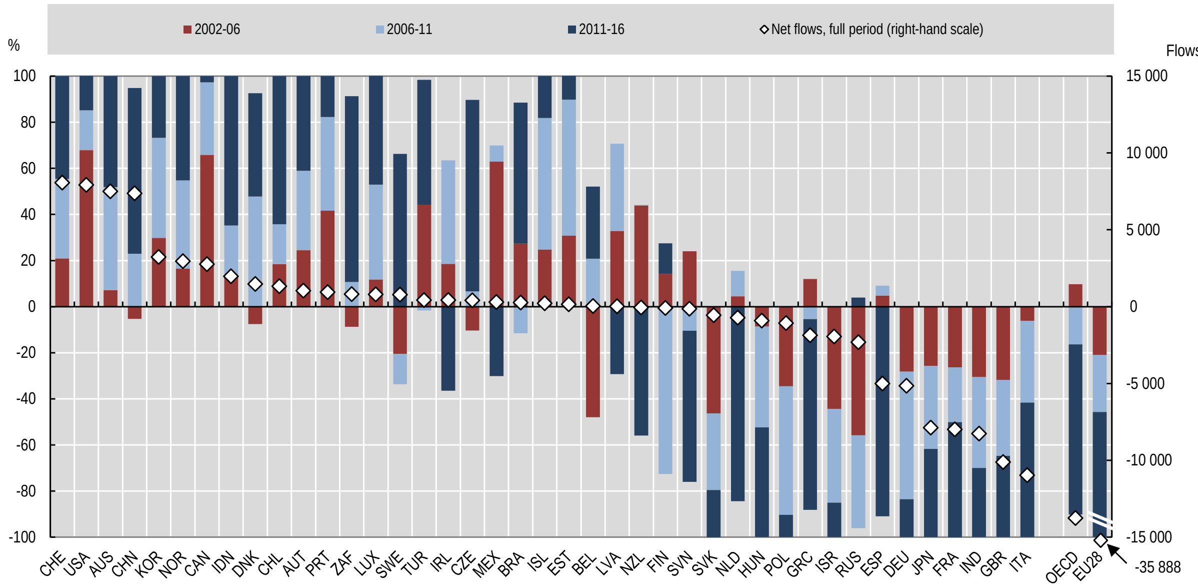


StatLink : http://dx.doi.org/10.1787/888933618061

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, 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