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

Science, innovation and the digital revolution

- **Canada** accounted for just over 3% of the world's top 10% of most-cited scientific publications in 2016, just behind Japan and France [Scoreboard fig. 1.11].
- **Canada** accounted for 2% of AI-related patent applications during 2010-15 [fig. 1.7 - see below], down from 2.4% in 2000-05, and is the sixth largest producer of most-cited scientific documents on machine learning after the United States, China, India, the United Kingdom and Italy [fig. 1.27].
- The development of AI technologies is fairly concentrated. R&D 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 **Canada** accounted for 0.9% of all AI-related inventions from 2012 to 2014 [fig. 1.25].

Growth, jobs and the digital transformation

- From 2010 to 2016, **Canada** experienced large net employment gains, of almost 1.2 million jobs [fig. 1.34]. Large net gains were recorded in construction, wholesale and retail trade, business services and public services, and small net losses in manufacturing and agriculture.
- In 2014, 26.8% of jobs in **Canada**'s business sector were sustained by foreign demand, down from 33% in 2004 [fig. 1.38].
- Women in **Canada** earn about 19% less than men, even after individual and job-related characteristics are taken into consideration, and about 16% less when skills differences are also taken into account [fig. 1.41].
- In **Canada** women represented about 32% of all tertiary graduates in natural sciences, engineering and ICT fields in 2015. This share was mainly driven by graduates in science and engineering (27.7%) rather than ICT (4%). [fig. 1.59].
- In **Canada**, the share of the working-age population educated at tertiary level is higher among the foreign-born population, at 60%, than among the native-born, at 45% [fig 3.3.3].
- **Canada** had the highest share of individuals aged 16-24 who attended an online course in 2016, at over 77%, far ahead of Brazil (at almost 43%) and Korea (at 40%) [fig 6.4.3 - see below].
- **Canada** experienced a significant increase in the share of domestic value added embodied in its partners' exports (the so-called forward linkages in GVCs) between 1995 and 2014, reflecting growing demand for mineral products in global value chains [fig 5.6.2].

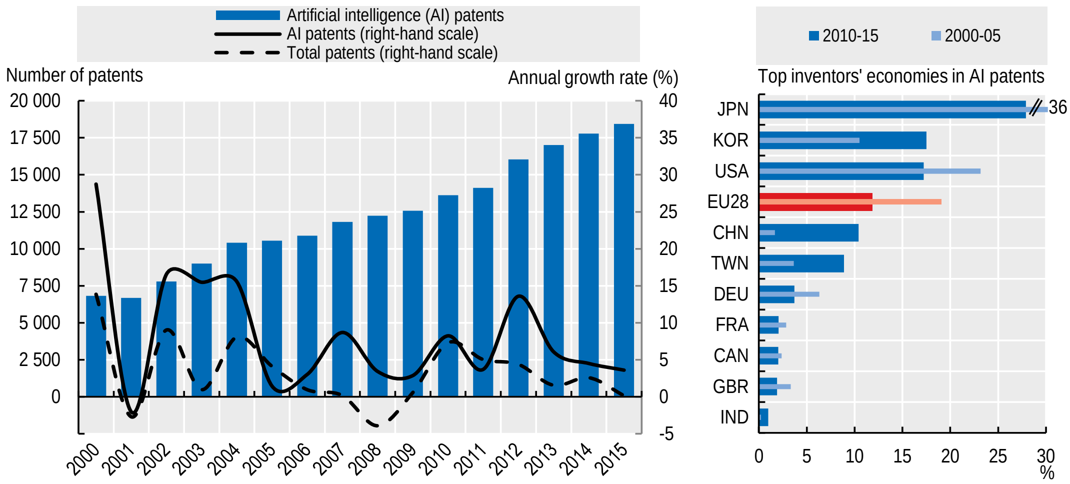
Innovation today - Taking action

- **Canada** is among the OECD countries where government budgets for R&D have declined since 2008, falling 9% from 2008 to 2015 [fig. 1.62].

- 11.9% of domestic scientific documents in **Canada** were in the world's top-10% most cited, the same as the European Union at 11.9%, but behind the United States at 13.9% [fig. 1.12].
- In 2012-15, in **Canada**, 10.6% of patents were invented by women, compared to 10% in the United States and 7% in the EU [fig. 1.61].
- Data on the international mobility of scientific authors for 2002 to 2016 shows that **Canada** has attracted more authors than it has lost. Over the past 15 years, almost 3 000 more scientific authors entered **Canada** than left, although the outflow has increased recently [fig. 1.69 - see below].
- **Canada** is among a limited number of countries, together with Hungary and Portugal, that started from a high share of tax support for business R&D, as 87% in 2006, and that have since rebalanced their support mix by increasing their reliance on direct funding. In 2015, R&D tax incentives accounted for 75% of overall support for business R&D [fig. 4.6.2 - see below].
- Relative to the size of the economy, venture capital investments in **Canada** are the third-highest in the OECD, at 0.16% of GDP, only behind the United States and Israel [fig 4.7.1]

Figure 1.7 Patents in artificial intelligence technologies, 2000-15

Number of IP5 patent families, annual growth rates and top inventors' economies

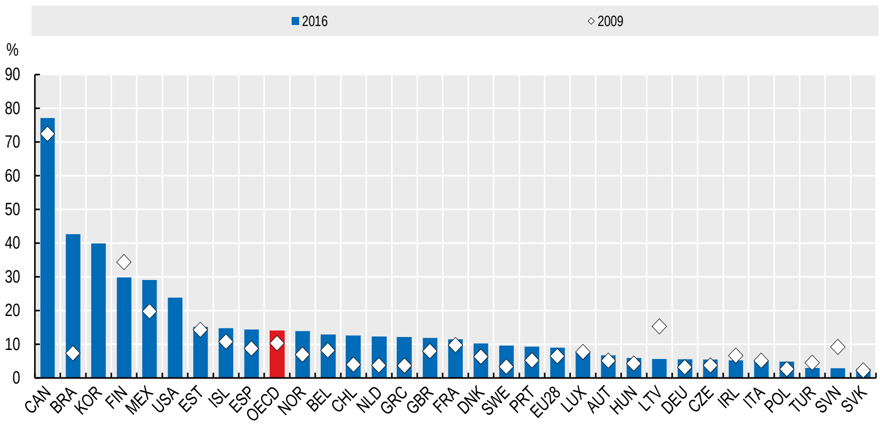


StatLink http://dx.doi.org/10.1787/888933616978

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 6.4.3 Individuals aged 16-24 who attended an online course, 2009 and 2016

As a percentage of individuals aged 16-24

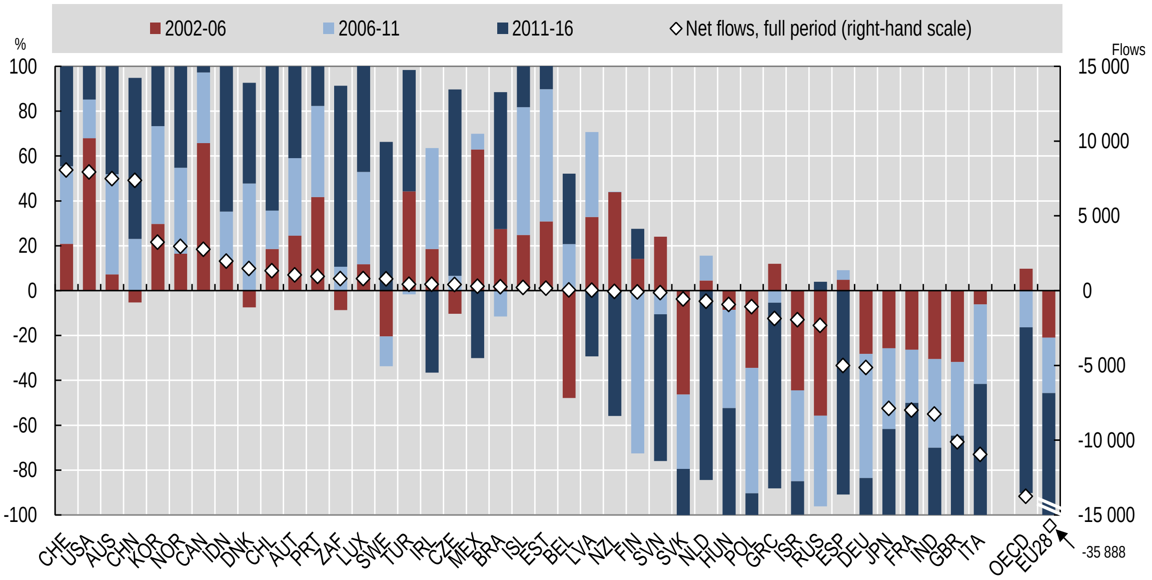


StatLink http://dx.doi.org/10.1787/888933620132

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

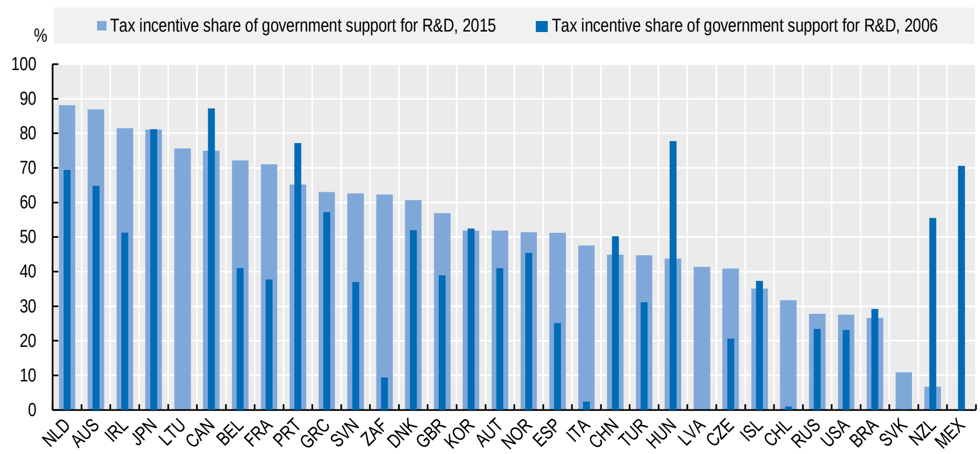


StatLink http://dx.doi.org/10.1787/888933618156

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

Figure 4.6.2 Change in government support for business R&D through direct funding and tax incentives

As a percentage of total support, 2006 and 2015



StatLink http://dx.doi.org/10.1787/888933619429

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