

14. RESEARCH AND DEVELOPMENT EXPENDITURE IN REGIONS

Expenditures and personnel employed in research and development (R&D) are common proxies for innovation activities in regions. According to the *Frascati Manual*, R&D is defined as a “creative work undertaken on a systematic basis in order to increase the stock of knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.”

Expenditure in R&D is highly concentrated in a group of major global players, due also to different R&D efforts in different economic sectors. In 2007, around one-third of total R&D expenditure in OECD countries was performed by just 10% of regions. Large regional concentration of R&D is found both in countries with high R&D intensity, such as the United States, Korea and France and in countries with low R&D expenditure, such as Poland, Spain and Hungary (Figure 14.1). Therefore, within country dispersion in regions R&D effort is not a positive or negative feature per se; it needs to be evaluated along with aggregate national performance and the specificity of the country in question.

The share of a country's R&D expenditure carried out by just a single region ranges between 80% in Ireland to 21% in Italy (Figure 14.2). In the past seven years the share of R&D expenditure carried out by the top performing region has increased mostly in Eastern England (United Kingdom), Bratislava (Slovak Republic) and Prague (Czech Republic) (Figure 14.2).

In 2007, R&D intensity, i.e. R&D expenditures as a percentage of gross domestic product (GDP), was on average about 2.3% in OECD. Within country differences in R&D intensity are larger than among countries (Figure 14.3). The United States, Finland, Denmark and Sweden show the largest regional disparities in R&D intensity across TL2 regions. In the United States, the states of New Mexico and Massachusetts devote more than 7% of their GDP to R&D, while the state of Wyoming devotes only 0.4%. Regional R&D hot spots have emerged in countries that are not the most R&D-intensive, such as South Netherlands and Trøndelag in Norway. These two regions have more than double their respective country average R&D intensity (Figure 14.3).

Similarly, regional differences in the share of employment in R&D, i.e. all persons employed directly in R&D activities, such as researchers, technicians and support staff, are the largest in the Czech Republic and Austria, where, respectively, in the regions of Prague and Wien there are more than 40 persons per thousand employed in R&D, two times higher than the country average. In most countries, the capital region has the highest rate of employed in R&D (Figure 14.4).

Definition

Gross domestic expenditure on R&D is the total intramural expenditure on R&D performed in the region or country during a given period (see the *Frascati Manual*, Section 6.7.1 and Section 6.6). Intramural expenditures are all expenditures for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds (see the *Frascati Manual*, Section 6.2).

R&D personnel includes all persons employed directly in R&D activities such as researchers as well as those providing direct services such as R&D managers, administrators, and clerical staff. Data are expressed in headcounts.

R&D intensity is defined as the ratio between R&D expenditure and GDP.

Source

OECD Regional Database: <http://dotstat/wbos/>.

See Annex B for data, source and country-related metadata.

Reference years and territorial level

1995-2007; TL2

Data for Chile, Iceland, Japan, Mexico, New Zealand, Switzerland and Turkey are not available at the regional level. In addition, R&D personnel data are not available for Australia and the United States.

Further information

OECD (2011), *Regions and Innovation Policy*, OECD Publishing.

OECD (2009), *OECD Science, Technology and Industry Scoreboard 2009*, OECD Publishing, DOI: 10.1787/sti_scoreboard-2009-en.

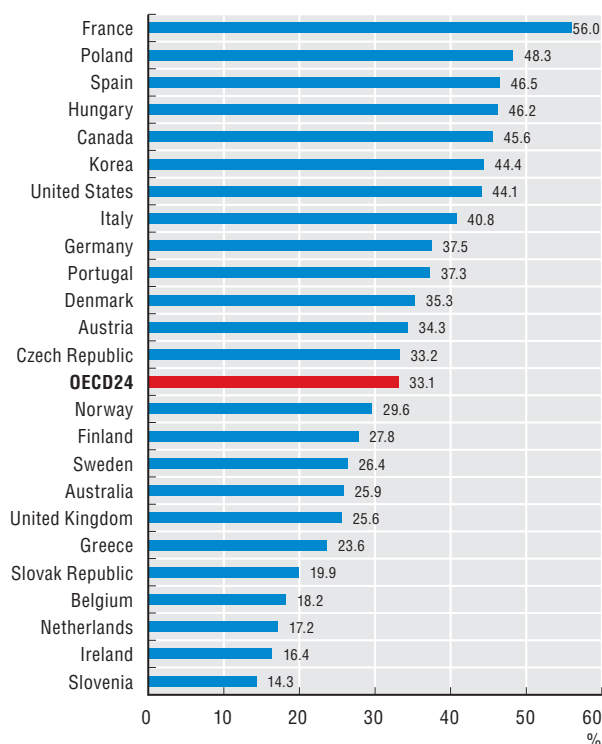
OECD (2002), *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development, The Measurement of Scientific and Technological Activities*, OECD, DOI: 10.1787/9789264199040-en.

Figure notes

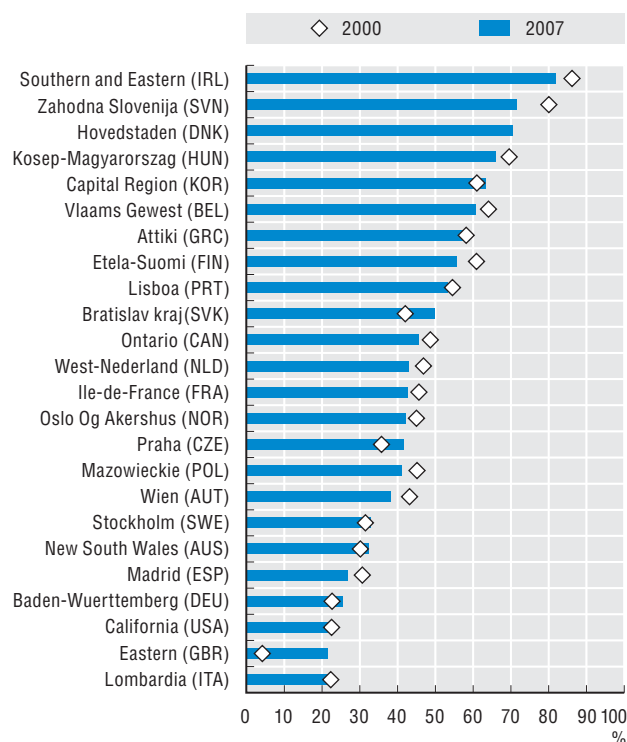
14.1-14.3: Latest available year: France 2004, Greece 2005, Canada 2006.

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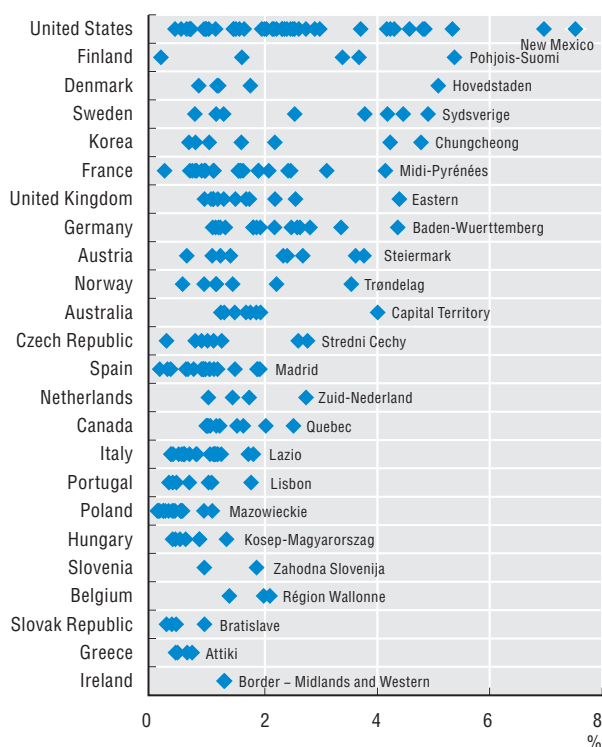
14.1. Percent of national R&D expenditure in the 10% TL2 regions with the largest R&D expenditure, 2007



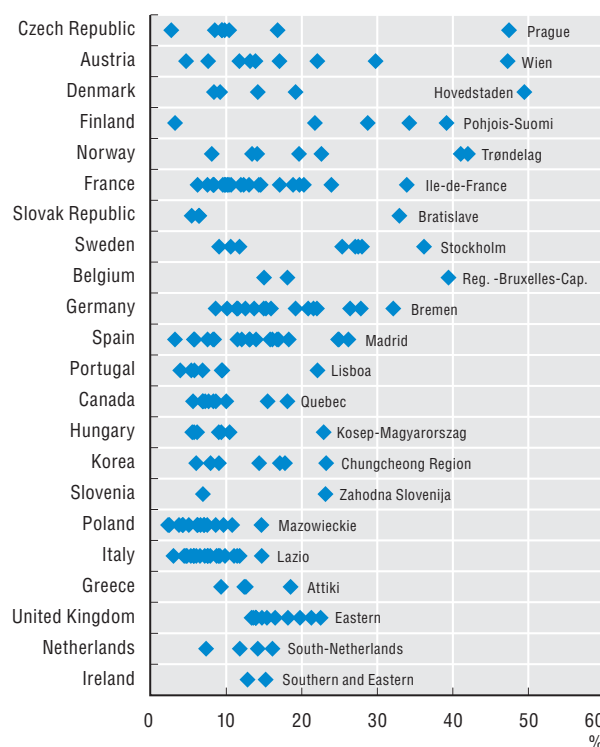
14.2. Percent of R&D expenditure in the TL2 regions with the largest R&D expenditure over country value, 2000 and 2007



14.3. Range of TL2 regional R&D intensity, 2007



14.4. Range of TL2 regional R&D personnel per 1 000 employees, 2007



StatLink <http://dx.doi.org/10.1787/888932439653>



From:
OECD Regions at a Glance 2011

Access the complete publication at:
https://doi.org/10.1787/reg_glance-2011-en

Please cite this chapter as:

OECD (2011), "Research and development expenditure in regions", in *OECD Regions at a Glance 2011*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/reg_glance-2011-19-en

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