

2. PERSONNEL EMPLOYED IN RESEARCH AND DEVELOPMENT ACTIVITIES

Research and development (R&D) personnel include all persons employed directly in R&D activities, such as technicians and support staff in addition to researchers. The number of R&D personnel in OECD regions is directly linked to their R&D expenditure effort.

The percentage of R&D personnel as a percentage of total employment varies significantly among OECD countries (Figure 2.1). In 2005 Finland and Sweden were the countries with the highest number of people employed in R&D occupations, respectively 32 and 28 people per thousand employed. On the other hand Mexico had only 2 people employed in R&D per thousand employed while Turkey, had 4. Portugal and Poland also showed levels below 10.

Regional differences within countries 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, more than twice the country average (Figure 2.2). In the same countries respectively, the regions of Severozapad and Vorarlberg have 7 and 11 employed in R&D per thousand employed.

At the bottom of the regional disparity scale, Ireland, Greece, the Netherlands and Canada display less regional disparities in terms of R&D personnel. For 13 out of 17 countries taken into consideration, the capital region has the highest rate of employed in R&D, in most cases with values much higher than the country average. Concentration in the capital region of R&D personnel is visible also in countries showing less regional dispersion.

To measure geographic concentration, the geographic distribution of R&D personnel is compared to the area in each region. According to the index, Greece is the country where R&D personnel is the most geographically concentrated (69), followed by Hungary, Spain and Korea; the OECD average being 42 (Figure 2.3). The countries displaying the lowest values of the index are Ireland, Czech Republic and Belgium, reaching a maximum threshold of 30.

The comparison between the concentration index of R&D personnel and R&D expenditures reflects the high correlation between the two variables (Figure 2.3). The difference would be due to different intensity of equipment, or possibly a tendency to obtain human capital on contracts, rather than as full-time employees. The concentration indexes display similar values for almost all countries. Only in the Czech Republic, Hungary (11 points difference), and the Slovak Republic (9 points difference) is the concentration of R&D expenditures significantly higher than for R&D personnel.

Definition

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 (*Frascati Manual*, Section 5.2.1).

The geographic concentration index offers a picture of the spatial distribution of R&D personnel within each country, as it compares the R&D personnel weight and the land area weight over all TL2 regions (see Annex C for the formula). The index ranges between 0 and 100: the higher its value, the larger the regional concentration. International comparisons of the index can be affected by the different size of regions in each country.

Source

OECD Regional Database, <http://stats.oecd.org/WBOS>, theme: Regional Statistics.

National data: OECD, Main Science and Technology Indicators Database.

See Annex B for more information on data sources and country related metadata.

Reference years and territorial level

2005; TL2

Data for Australia, Denmark, Iceland, Japan, Mexico, New Zealand, Sweden, Switzerland, Turkey, United Kingdom and the United States are not available at the regional level.

Further information

OECD, Main Science and Technology Indicators Database.

OECD (2007), *Science Technology and Industry Scoreboard*, OECD, Paris.

Figure notes

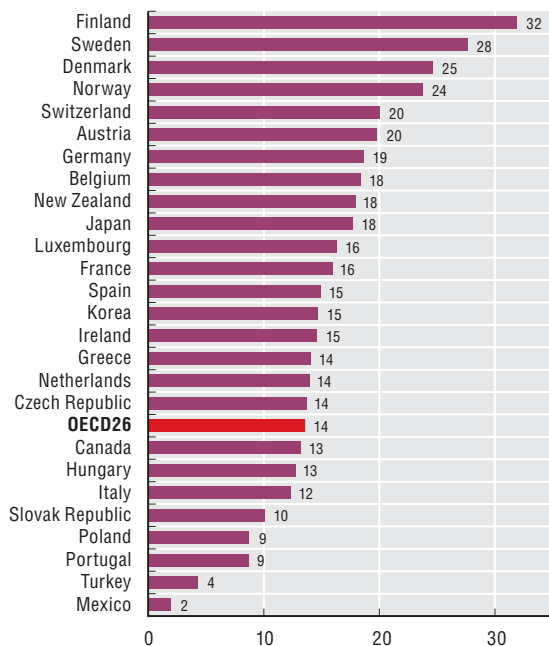
Figure 2.1: Headcounts. Source: Main Science and Technology Indicators Database. Austria and Switzerland year 2004, Mexico 2003, France 2001.

Figures 2.2 and 2.3: Headcounts. For Canada data on R&D personnel are expressed in full-time equivalents (FTE), and data for employment in headcounts. Austria year 2004, France 2001.

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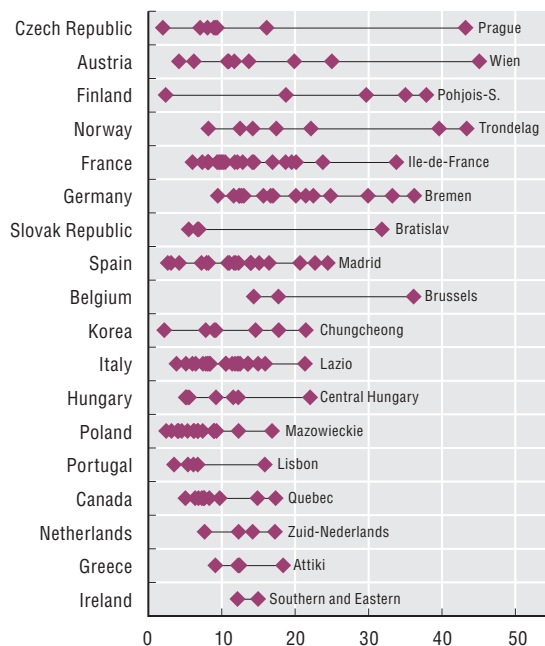
2.1 R&D personnel per 1 000 employed, 2005

Finland and Sweden have the highest number of employed in R&D occupations.



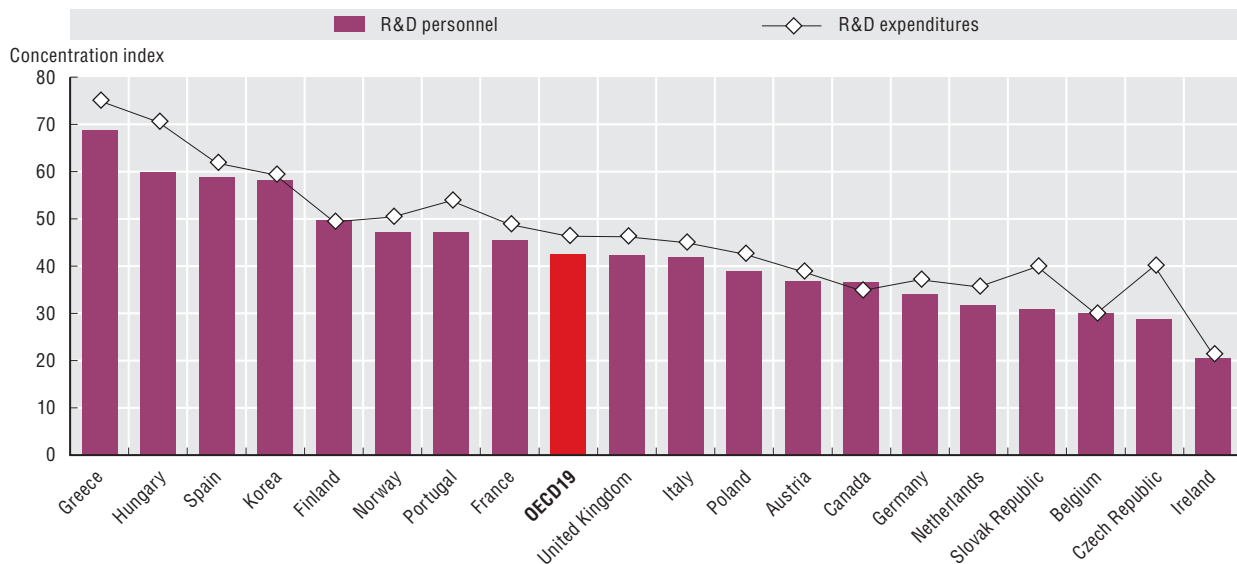
2.2 Range in TL2 regional R&D personnel per 1 000 employees, 2005

In many countries, the capital region has the highest rate of employed in R&D.

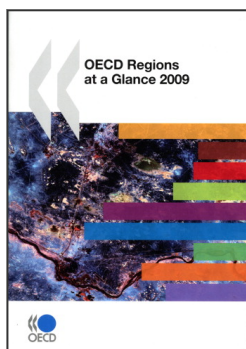


2.3 Comparison between the concentration index of personnel employed in R&D and R&D expenditures, 2005 (TL2)

R&D expenditures and personnel have similar concentration patterns.



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