



# Main Science and Technology Indicators



# **Main Science and Technology Indicators, Volume 2018 Issue 2**

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## *Foreword*

**T**his publication contains key data series selected from the OECD Main Science and Technology Indicators Database (MSTI) accessible at <https://oe.cd/msti>. This publication consists of 68 standard tables of data series regarding the resources devoted to research and experimental development (R&D) as well as some indicators of R&D output and the impact of scientific and technological activities. Also presented are the underlying economic series used to calculate these indicators. It is complemented by a description of the general methodology used as well as national specifications available at [http://www.oecd.org/sti/inno/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf).



# Table of contents

|                                                                                                              |    |
|--------------------------------------------------------------------------------------------------------------|----|
| <b>Foreword</b> .....                                                                                        | 3  |
| <b>Conventional signs and abbreviations</b> .....                                                            | 7  |
| <b>International Comparisons</b>                                                                             |    |
| 1. Gross domestic expenditure on R&D (GERD) at current prices and PPP.....                                   | 10 |
| 2. Gross domestic expenditure on R&D (GERD) as a percentage of GDP.....                                      | 11 |
| 3. Gross domestic expenditure on R&D (GERD) at 2010 prices and PPP.....                                      | 12 |
| 4. Gross domestic expenditure on R&D (GERD) per capita at current prices and PPP.....                        | 13 |
| 5. Estimated civil GERD (Gross domestic expenditure on R&D) as a percentage of GDP.....                      | 14 |
| 6. Basic research expenditure as a percentage of GDP.....                                                    | 15 |
| 7. Total researchers in full-time equivalent.....                                                            | 16 |
| 8. Total researchers in full-time equivalent per thousand total employment.....                              | 17 |
| 9. Total R&D personnel in full-time equivalent.....                                                          | 18 |
| 10. Total R&D personnel in full-time equivalent per thousand total employment.....                           | 19 |
| 11. Business-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP.....                   | 20 |
| 12. Government-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP.....                 | 21 |
| 13. Percentage of Gross domestic expenditure on R&D (GERD) financed by the business enterprise sector.....   | 22 |
| 14. Percentage of Gross domestic expenditure on R&D (GERD) financed by government.....                       | 23 |
| 15. Percentage of Gross domestic expenditure on R&D (GERD) financed by other national sources.....           | 24 |
| 16. Percentage of Gross domestic expenditure on R&D (GERD) financed by the rest of the world.....            | 25 |
| 17. Percentage of Gross domestic expenditure on R&D (GERD) performed by the business enterprise sector.....  | 26 |
| 18. Percentage of Gross domestic expenditure on R&D (GERD) performed by the higher education sector.....     | 27 |
| 19. Percentage of Gross domestic expenditure on R&D (GERD) performed by the government sector.....           | 28 |
| 20. Percentage of Gross domestic expenditure on R&D (GERD) performed by the private non-profit sector.....   | 29 |
| 21. Total researchers in headcount.....                                                                      | 30 |
| 22. Women researchers as a percentage of total researchers.....                                              | 31 |
| 23. Business enterprise expenditure on R&D (BERD) at current prices and PPP.....                             | 32 |
| 24. Business enterprise expenditure on R&D (BERD) as a percentage of GDP.....                                | 33 |
| 25. Business enterprise expenditure on R&D (BERD) at 2010 prices and PPP.....                                | 34 |
| 26. Business enterprise expenditure on R&D (BERD) as a percentage of value added in industry.....            | 35 |
| 27. Business enterprise researchers in full-time equivalent.....                                             | 36 |
| 28. Business enterprise researchers as a percentage of national total.....                                   | 37 |
| 29. Business enterprise researchers in full-time equivalent per thousand employment in industry.....         | 38 |
| 30. Total business enterprise R&D personnel in full-time equivalent.....                                     | 39 |
| 31. Total business enterprise R&D personnel as a percentage of national total.....                           | 40 |
| 32. Total business enterprise R&D personnel in full-time equivalent per thousand employment in industry..... | 41 |
| 33. Business-financed BERD (Business enterprise expenditure on R&D) at 2010 prices and PPP.....              | 42 |

|                                                                                                                                              |    |
|----------------------------------------------------------------------------------------------------------------------------------------------|----|
| 34. Business-financed BERD (Business enterprise expenditure on R&D) as a percentage of value added in industry. ....                         | 43 |
| 35. Percentage of Business enterprise expenditure on R&D (BERD) financed by the business enterprise sector. ....                             | 44 |
| 36. Percentage of Business enterprise expenditure on R&D (BERD) financed by government. ....                                                 | 45 |
| 37. Percentage of Business enterprise expenditure on R&D (BERD) financed by other national sources. ....                                     | 46 |
| 38. Percentage of Business enterprise expenditure on R&D (BERD) financed by the rest of the world. ...                                       | 47 |
| 39. Business enterprise expenditure on R&D (BERD) performed in the pharmaceutical industry at current prices and PPP. ....                   | 48 |
| 40. Business enterprise expenditure on R&D (BERD) performed in the computer, electronic and optical industry at current prices and PPP. .... | 49 |
| 41. Business enterprise expenditure on R&D (BERD) performed in the aerospace industry at current prices and PPP. ....                        | 50 |
| 42. Business enterprise expenditure on R&D (BERD) performed in service industries at current prices and PPP. ....                            | 51 |
| 43. Higher education expenditure on R&D (HERD) at current prices and PPP. ....                                                               | 52 |
| 44. Higher education expenditure on R&D (HERD) as a percentage of GDP. ....                                                                  | 53 |
| 45. Higher education expenditure on R&D (HERD) at 2010 prices and PPP. ....                                                                  | 54 |
| 46. Percentage of Higher education expenditure on R&D (HERD) financed by the business sector. ....                                           | 55 |
| 47. Higher education researchers in full-time equivalent. ....                                                                               | 56 |
| 48. Higher education researchers as a percentage of national total. ....                                                                     | 57 |
| 49. Higher education Total R&D personnel in full-time equivalent. ....                                                                       | 58 |
| 50. Government intramural expenditure on R&D (GOVERD) at current prices and PPP. ....                                                        | 59 |
| 51. Government intramural expenditure on R&D (GOVERD) as a percentage of GDP. ....                                                           | 60 |
| 52. Government intramural expenditure on R&D (GOVERD) at 2010 prices and PPP. ....                                                           | 61 |
| 53. Percentage of Government intramural expenditure on R&D (GOVERD) financed by the business sector. ....                                    | 62 |
| 54. Government researchers in full-time equivalent. ....                                                                                     | 63 |
| 55. Government researchers as a percentage of national total. ....                                                                           | 64 |
| 56. Government Total R&D personnel in full-time equivalent. ....                                                                             | 65 |
| 57. Total GBARD (Government budget allocations for R&D) at current prices and PPP. ....                                                      | 66 |
| 58. Defence Budget R&D. ....                                                                                                                 | 67 |
| 59. Civil Budget R&D. ....                                                                                                                   | 68 |
| 60. R&D expenditure of foreign affiliates at current prices and PPP. ....                                                                    | 69 |
| 61. R&D expenditure of foreign affiliates as a percentage of R&D expenditures of enterprises. ....                                           | 70 |
| 62. Triadic patent families. ....                                                                                                            | 71 |
| 63. Share of countries in triadic patent families. ....                                                                                      | 72 |
| 64. Patents in the ICT sector - applications filed under the PCT. ....                                                                       | 73 |
| 65. Patents in the biotechnology sector - applications filed under the PCT. ....                                                             | 74 |
| 66. Trade balance and export market share: Pharmaceutical industry. ....                                                                     | 75 |
| 67. Trade balance and export market share: Computer, electronic and optical industry. ....                                                   | 76 |
| 68. Trade balance and export market share: Aerospace industry. ....                                                                          | 77 |
| <b>Annex. Background Economic Indicators</b>                                                                                                 |    |
| A. Gross domestic product at current prices and PPP. ....                                                                                    | 80 |
| B. Implicit GDP price indices. ....                                                                                                          | 81 |
| C. Purchasing power parities. ....                                                                                                           | 82 |
| D. Value added in industry at current prices and PPP. ....                                                                                   | 83 |
| E. Total population. ....                                                                                                                    | 84 |
| F. Total employment. ....                                                                                                                    | 85 |
| G. Industrial employment. ....                                                                                                               | 86 |



# Conventional signs and abbreviations

## Signs and abbreviations

### R&D terminology

|        |                                                     |
|--------|-----------------------------------------------------|
| BERD   | Business enterprise Expenditure on R&D (intramural) |
| FTE    | Full Time Equivalent (on R&D)                       |
| GBARD  | Government Budget Allocations for R&D               |
| GERD   | Gross Domestic Expenditure on R&D (intramural)      |
| GOVERD | Government Expenditure on R&D (intramural)          |
| GUF    | General University Funds                            |
| HERD   | Higher Education Expenditure on R&D (intramural)    |
| NSE    | Natural Sciences and Engineering                    |
| PNP    | Private Non Profit Institutions                     |
| R&D    | Research and Experimental Development               |
| SSH    | Social Sciences and Humanities                      |

For further explanations of the above terms, please see the OECD Frascati Manual 2015, <http://oe.cd/frascati>, which includes in particular a glossary of key terms ([www.oecd.org/sti/inno/Frascati-2015-Glossary.pdf](http://www.oecd.org/sti/inno/Frascati-2015-Glossary.pdf))

### Other

|      |                                                  |
|------|--------------------------------------------------|
| GDP  | Gross Domestic Product                           |
| ISIC | International Standard Industrial Classification |
| PCT  | Patent Co-operation Treaty                       |
| PPP  | Purchasing Power Parity                          |

## Sources and methods

Detailed methodological information: [http://www.oecd.org/sti/inno/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf).

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## Standard footnotes

|   |                                                      |
|---|------------------------------------------------------|
| b | Time series break.                                   |
| c | Confidential statistical information.                |
| d | Definition differs.                                  |
| e | Estimated value.                                     |
| k | Data included in another category.                   |
| l | Overestimated or based on overestimated data.        |
| m | Underestimated or based on underestimated data.      |
| p | Provisional value.                                   |
| s | Unrevised breakdown not adding to the revised total. |
| v | The sum of the breakdown does not add to the total.  |
| w | Includes data from another category.                 |

The latest data for European countries, as well as Iceland, Norway, the Russian Federation, Switzerland and Turkey, were collected by Eurostat. From 2017, Eurostat follows slightly different, but generally compatible, conventions with regard to footnotes:

- Countries only use flags 'b', 'c', 'd', 'e' and 'p'.
- Only one flag may be submitted per data item (cell).
- The flags follow a hierarchy:  $p > b > d > e$ . As an example, an estimated (e) and provisional (p) data will be annotated with a 'p'.
- Estimated (e), overestimated (l) and underestimated (m) data are all annotated with an 'e' flag.
- 'd', 'k', 's', 'v' and 'w' flags are grouped as 'd' (definition differs).

In this publication, flags for these countries are published as they were received by the OECD from Eurostat, except in the following cases:

- The single-flag rule is not applied when this would lead to suppress 'b' flags indicating breaks in series.
- 's' flags are not replaced with 'd'.

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# International Comparisons

**Table 1. Gross domestic expenditure on R&D (GERD) at current prices and PPP**

Million USD

|                       | 2005               | 2012                 | 2013                 | 2014                 | 2015                 | 2016                 | 2017                 |
|-----------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Australia             | ..                 | ..                   | 23 129.7 e           | ..                   | 21 151.5 e           | ..                   | ..                   |
| Austria               | 6 837.0 e          | 11 415.1 e           | 12 007.9             | 12 863.3 e           | 13 147.0             | 14 104.1 e           | 14 966.4 p           |
| Belgium               | 6 225.2            | 10 715.0             | 11 358.6             | 11 935.9             | 12 651.2             | 13 619.5 e           | 14 582.7 p           |
| Canada                | 23 090.0           | 26 019.5 b           | 26 504.1             | 27 793.5 b           | 27 005.5             | 27 586.7             | 27 162.8 p           |
| Chile                 | ..                 | 1 355.5              | 1 532.6              | 1 517.6 b            | 1 552.2              | 1 507.8 b p          | ..                   |
| Czech Republic        | 2 619.5            | 5 441.6              | 6 089.3              | 6 699.4              | 6 854.8              | 6 254.5              | 7 213.2 p            |
| Denmark               | 4 429.5            | 7 468.8              | 7 793.6              | 7 877.6              | 8 518.0              | 9 055.9              | 9 575.9 p            |
| Estonia               | 206.7              | 730.6                | 624.1                | 544.2                | 563.5                | 506.9                | 567.8                |
| Finland               | 5 588.7            | 7 520.0              | 7 382.8              | 7 178.2              | 6 689.7              | 6 590.8              | 7 038.4 p            |
| France                | 39 530.1           | 55 097.7             | 58 353.3             | 60 585.6 b           | 61 645.7             | 63 041.5 p           | 64 672.1 e           |
| Germany               | 63 868.1           | 100 490.1            | 102 905.5            | 109 562.7            | 114 128.2            | 119 921.3            | 131 339.5 e          |
| Greece                | 1 627.0            | 1 953.7              | 2 321.7              | 2 436.0              | 2 798.2              | 2 921.2              | 3 467.3 p            |
| Hungary               | 1 586.8            | 2 895.0              | 3 361.4              | 3 408.4              | 3 534.5              | 3 173.4              | 3 801.4              |
| Iceland               | 296.8              | ..                   | 243.3 b              | 291.6                | 341.8                | 358.8                | 404.1 p              |
| Ireland               | 2 006.5            | 3 321.6 e            | 3 467.8 e            | 3 566.9 e            | 3 870.4 e            | 3 920.0 e            | 3 881.0 p            |
| Israel <sup>1</sup>   | 6 966.3 d          | 10 433.4 d           | 11 224.5 d           | 11 754.6 d           | 12 665.4 d           | 14 083.9 d e         | 15 391.5 d e         |
| Italy                 | 18 241.2           | 27 419.6             | 28 459.4             | 29 448.3 e           | 30 002.9             | 32 460.2 b           | 33 542.9 p           |
| Japan                 | 128 694.6          | 152 325.6            | 164 655.8 b          | 169 554.1            | 168 546.1            | 164 758.2            | 170 900.7            |
| Korea                 | 30 618.3 d         | 64 862.5             | 68 234.1             | 73 099.8             | 76 932.4             | 80 465.6             | 90 979.6             |
| Latvia                | 164.2              | 287.2                | 279.4                | 327.2                | 306.0                | 223.3                | 281.0 p              |
| Lithuania             | 361                | 659                  | 750                  | 851                  | 874                  | 733                  | 829                  |
| Luxembourg            | 498.8              | 619.1 b              | 676.6                | 712.3                | 751.7                | 792.2                | 806.3 p              |
| Mexico                | 5 346.2            | 9 799.0              | 10 292.5             | 11 519.2 e p         | 11 670.4 e p         | 11 259.9 e p         | ..                   |
| Netherlands           | 10 892.4           | 15 177.7 b           | 15 969.2             | 16 404.4             | 16 913.4             | 17 458.7             | 18 563.6 p           |
| New Zealand           | 1 189.3            | ..                   | 1 856.9              | ..                   | 2 123.4              | ..                   | ..                   |
| Norway                | 3 275.8            | 5 316.3              | 5 620.4              | 5 805.6              | 6 063.5              | 6 180.1              | 6 922.6 p            |
| Poland                | 2 984.9            | 7 990.8              | 8 185.8              | 9 149.3              | 10 234.8             | 10 153.1             | 11 757.8 p           |
| Portugal              | 1 808.2            | 3 832.4              | 3 869.8              | 3 856.2              | 3 820.8              | 4 105.3              | 4 415.5 p            |
| Slovak Republic       | 441.0              | 1 159.9              | 1 243.8              | 1 379.5              | 1 886.9              | 1 323.8              | 1 554.2              |
| Slovenia              | 676.5              | 1 529.9              | 1 583.7              | 1 505.7              | 1 433.4              | 1 378.7              | 1 391.9 p            |
| Spain                 | 13 251.1           | 19 269.2             | 19 282.4             | 19 356.2             | 19 820.6             | 20 228.6             | 21 914.1 p           |
| Sweden                | 10 388.2 b         | 13 970.4 e           | 14 496.4 e           | 14 191.1 e           | 15 493.2             | 15 923.3 p           | 17 201.4 p           |
| Switzerland           | ..                 | 14 740.0             | ..                   | ..                   | 17 854.9             | ..                   | ..                   |
| Turkey                | 4 595.6            | 12 807.9             | 13 834.8             | 15 933.0             | 17 739.0             | 19 718.2             | 21 729.5             |
| United Kingdom        | 30 639.7           | 38 490.2 e           | 41 532.1             | 43 811.1 e           | 45 678.2             | 47 420.7 e           | 49 345.3 p           |
| United States         | 328 128.0 d        | 434 349.0 d          | 454 821.0 d          | 476 452.0 d          | 495 098.0 d          | 516 254.0 d p        | 543 249.0 d e        |
| EU28 (OECD estimates) | 226 753.2 e        | 340 908.3 e          | 355 277.5 e          | 371 193.1 e          | 386 022.5 e          | 399 788.3 e          | 427 655.1 e          |
| <b>OECD-Total</b>     | <b>778 502.3 e</b> | <b>1 092 840.1 e</b> | <b>1 149 660.9 e</b> | <b>1 202 201.6 e</b> | <b>1 240 361.1 e</b> | <b>1 280 791.6 e</b> | <b>1 357 745.8 e</b> |
| Argentina             | 2 277.9            | 5 265.7 p            | 5 337.6 p            | 5 042.8 p            | 5 467.0              | 4 681.8              | ..                   |
| China                 | 86 836.1           | 292 196.3            | 334 116.6            | 370 605.5            | 407 466.7            | 451 411.9            | 495 980.9            |
| Romania               | 844.7              | 1 837.3              | 1 534.5              | 1 569.5              | 2 091.5              | 2 258.8              | 2 625.0 p            |
| Russian Federation    | 18 120.5           | 37 911.5             | 38 607.0             | 40 330.2             | 38 776.4             | 38 742.6             | 41 868.0             |
| Singapore             | 5 091.3            | 8 242.0              | 8 777.1              | 10 102.5             | ..                   | ..                   | ..                   |
| South Africa          | 4 045.9            | 4 836.9              | 4 977.1              | 5 489.4              | 5 816.7              | ..                   | ..                   |
| Chinese Taipei        | 15 308.9           | 29 176.4             | 30 910.7             | 32 731.4             | 33 847.7             | 35 942.4             | 39 344.3             |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 2. Gross domestic expenditure on R&D (GERD) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | ..            | 2.09 e        | ..            | 1.88 e        | ..            | ..            |
| Austria               | 2.37 e        | 2.91 e        | 2.95          | 3.08 e        | 3.05          | 3.13 e        | 3.16 p        |
| Belgium               | 1.78          | 2.27          | 2.33          | 2.39          | 2.46          | 2.55 e        | 2.60 p        |
| Canada                | 1.98          | 1.78 b        | 1.71          | 1.72 b        | 1.70          | 1.70          | 1.59 p        |
| Chile                 | ..            | 0.36          | 0.39          | 0.37 b        | 0.38          | 0.36 b p      | ..            |
| Czech Republic        | 1.17          | 1.78          | 1.90          | 1.97          | 1.93          | 1.68          | 1.79 p        |
| Denmark               | 2.39          | 2.98          | 2.97          | 2.91          | 3.05          | 3.12          | 3.06 p        |
| Estonia               | 0.92          | 2.12          | 1.72          | 1.43          | 1.47          | 1.25          | 1.29          |
| Finland               | 3.33          | 3.42          | 3.29          | 3.17          | 2.89          | 2.74          | 2.76 p        |
| France                | 2.05          | 2.23          | 2.24          | 2.28 b        | 2.27          | 2.25 p        | 2.19 e        |
| Germany               | 2.42          | 2.87          | 2.82          | 2.87          | 2.91          | 2.92          | 3.02 e        |
| Greece                | 0.58          | 0.70          | 0.81          | 0.83          | 0.96          | 0.99          | 1.13 p        |
| Hungary               | 0.92          | 1.26          | 1.39          | 1.35          | 1.36          | 1.20          | 1.35          |
| Iceland               | 2.69          | ..            | 1.70 b        | 1.95          | 2.12          | 2.03          | 2.13 p        |
| Ireland               | 1.19          | 1.56 e        | 1.56 e        | 1.50 e        | 1.19 e        | 1.16 e        | 1.05 p        |
| Israel <sup>1</sup>   | 4.05 d        | 4.16 d        | 4.07 d        | 4.18 d        | 4.26 d        | 4.39 d e      | 4.54 d e      |
| Italy                 | 1.05          | 1.27          | 1.31          | 1.34 e        | 1.34          | 1.37 b        | 1.35 p        |
| Japan                 | 3.18          | 3.21          | 3.31 b        | 3.40          | 3.28          | 3.14          | 3.20          |
| Korea                 | 2.63 d        | 4.03          | 4.15          | 4.29          | 4.22          | 4.23          | 4.55          |
| Latvia                | 0.53          | 0.66          | 0.61          | 0.69          | 0.63          | 0.44          | 0.51 p        |
| Lithuania             | 1             | 1             | 1             | 1             | 1             | 1             | 1             |
| Luxembourg            | 1.57          | 1.27 b        | 1.30          | 1.26          | 1.28          | 1.30          | 1.26 p        |
| Mexico                | 0.40          | 0.49          | 0.50          | 0.53 e p      | 0.52 e p      | 0.49 e p      | ..            |
| Netherlands           | 1.77          | 1.92 b        | 1.93          | 1.98          | 1.98          | 2.00          | 1.99 p        |
| New Zealand           | 1.12          | ..            | 1.15          | ..            | 1.23          | ..            | ..            |
| Norway                | 1.48          | 1.62          | 1.65          | 1.71          | 1.93          | 2.03          | 2.11 p        |
| Poland                | 0.56          | 0.88          | 0.87          | 0.94          | 1.00          | 0.96          | 1.03 p        |
| Portugal              | 0.76          | 1.38          | 1.33          | 1.29          | 1.24          | 1.28          | 1.32 p        |
| Slovak Republic       | 0.49          | 0.80          | 0.82          | 0.88          | 1.17          | 0.79          | 0.88          |
| Slovenia              | 1.41          | 2.57          | 2.58          | 2.37          | 2.20          | 2.01          | 1.85 p        |
| Spain                 | 1.10          | 1.29          | 1.27          | 1.24          | 1.22          | 1.19          | 1.20 p        |
| Sweden                | 3.38 b        | 3.28 e        | 3.30 e        | 3.14 e        | 3.26          | 3.27 p        | 3.33 p        |
| Switzerland           | ..            | 3.19          | ..            | ..            | 3.37          | ..            | ..            |
| Turkey                | 0.57          | 0.83          | 0.82          | 0.86          | 0.88          | 0.94          | 0.96          |
| United Kingdom        | 1.56          | 1.59 e        | 1.64          | 1.66 e        | 1.67          | 1.68 e        | 1.66 p        |
| United States         | 2.52 d        | 2.68 d        | 2.71 d        | 2.72 d        | 2.72 d        | 2.76 d p      | 2.79 d e      |
| EU28 (OECD estimates) | 1.66 e        | 1.91 e        | 1.92 e        | 1.94 e        | 1.96 e        | 1.94 e        | 1.96 e        |
| <b>OECD-Total</b>     | <b>2.14 e</b> | <b>2.31 e</b> | <b>2.33 e</b> | <b>2.35 e</b> | <b>2.34 e</b> | <b>2.34 e</b> | <b>2.37 e</b> |
| Argentina             | 0.42          | 0.64 p        | 0.62 p        | 0.59 p        | 0.62          | 0.53          | ..            |
| China                 | 1.31          | 1.91          | 1.99          | 2.02          | 2.06          | 2.11          | 2.13          |
| Romania               | 0.41          | 0.48          | 0.39          | 0.38          | 0.49          | 0.48          | 0.50 p        |
| Russian Federation    | 0.99          | 1.03          | 1.03          | 1.07          | 1.10          | 1.10          | 1.11 e        |
| Singapore             | 2.16          | 1.99          | 1.99          | 2.16          | ..            | ..            | ..            |
| South Africa          | 0.86          | 0.73          | 0.72          | 0.77          | 0.80          | ..            | ..            |
| Chinese Taipei        | 2.32          | 2.96          | 3.02          | 3.01          | 3.06          | 3.17          | 3.31          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 3. Gross domestic expenditure on R&D (GERD) at 2010 prices and PPP**

Million 2010 USD

|                       | 2005               | 2012                 | 2013                 | 2014                 | 2015                 | 2016                 | 2017                 |
|-----------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Australia             | ..                 | ..                   | 21 598.3 e           | ..                   | 20 362.3 e           | ..                   | ..                   |
| Austria               | 7 813.7 e          | 10 610.8 e           | 10 759.9             | 11 305.2 e           | 11 306.5             | 11 822.5 e           | 12 249.1 p           |
| Belgium               | 7 246.6            | 10 122.7             | 10 413.4             | 10 785.1             | 11 312.6             | 11 870.7 e           | 12 308.1 p           |
| Canada                | 25 424.3           | 25 367.2 b           | 25 015.3             | 25 859.0 b           | 25 797.7             | 26 164.2             | 25 273.1 p           |
| Chile                 | ..                 | 1 254.4              | 1 400.6              | 1 375.0 b            | 1 427.8              | 1 376.9 b p          | ..                   |
| Czech Republic        | 3 001.4            | 5 214.9              | 5 531.6              | 5 900.5              | 6 076.4              | 5 421.5              | 6 030.1 p            |
| Denmark               | 5 649.6            | 7 223.1              | 7 264.2              | 7 241.6              | 7 769.6              | 8 122.0              | 8 138.4 p            |
| Estonia               | 270.8              | 684.6                | 566.2                | 483.5                | 505.4                | 444.7                | 482.0                |
| Finland               | 6 642.4            | 7 183.1              | 6 852.9              | 6 565.4              | 6 020.0              | 5 868.2              | 6 055.9 p            |
| France                | 45 975.0           | 53 297.0             | 53 843.9             | 55 303.8 b           | 55 700.9             | 55 881.4 p           | 55 581.5 e           |
| Germany               | 73 013.9           | 95 745.5             | 94 634.9             | 98 268.2             | 101 548.3            | 104 008.8            | 110 084.9 e          |
| Greece                | 1 842.5            | 1 844.7              | 2 070.0              | 2 141.8              | 2 459.8              | 2 538.7              | 2 924.7 p            |
| Hungary               | 2 005.7            | 2 721.2              | 3 053.5              | 3 102.0              | 3 232.4              | 2 922.2              | 3 407.9              |
| Iceland               | 319.9              | ..                   | 230.2 b              | 269.0                | 305.8                | 315.0                | 342.7 p              |
| Ireland               | 2 300.4            | 3 200.8 e            | 3 250.3 e            | 3 383.4 e            | 3 377.9 e            | 3 453.1 e            | 3 348.2 p            |
| Israel <sup>1</sup>   | 7 196.4 d          | 9 820.5 d            | 10 037.8 d           | 10 688.7 d           | 11 174.6 d           | 11 998.0 d e         | 12 841.1 d e         |
| Italy                 | 22 073.3           | 25 777.3             | 26 065.6             | 26 800.1 e           | 27 010.4             | 27 934.0 b           | 28 014.2 p           |
| Japan                 | 141 838.5          | 145 773.5            | 153 595.0 b          | 158 135.7            | 154 493.9            | 149 437.6            | 155 104.2            |
| Korea                 | 32 303.2 d         | 64 243.2             | 68 123.3             | 72 779.0             | 73 558.6             | 75 900.5             | 84 253.8             |
| Latvia                | 199.9              | 270.8                | 255.6                | 293.1                | 274.1                | 197.1                | 238.6 p              |
| Lithuania             | 439                | 613                  | 674                  | 757                  | 780                  | 646                  | 703                  |
| Luxembourg            | 604.5              | 564.4 b              | 598.8                | 606.0                | 639.7                | 660.9                | 650.8 p              |
| Mexico                | 6 445.0            | 9 107.1              | 9 452.4              | 10 337.6 e p         | 10 544.6 e p         | 10 072.1 e p         | ..                   |
| Netherlands           | 12 396.0           | 14 413.1 b           | 14 496.4             | 15 051.8             | 15 418.1             | 15 851.1             | 16 259.0 p           |
| New Zealand           | 1 413.0            | ..                   | 1 685.2              | ..                   | 1 942.2              | ..                   | ..                   |
| Norway                | 3 885.7            | 4 970.2              | 5 114.1              | 5 286.4              | 5 789.2              | 5 955.1              | 6 450.2 p            |
| Poland                | 3 570.7            | 7 526.3              | 7 541.6              | 8 411.7              | 9 324.5              | 9 235.1              | 10 388.3 p           |
| Portugal              | 2 120.0            | 3 748.1              | 3 567.6              | 3 499.9              | 3 433.5              | 3 607.2              | 3 812.3 p            |
| Slovak Republic       | 527.2              | 1 132.3              | 1 175.8              | 1 291.0              | 1 790.6              | 1 243.3              | 1 435.4              |
| Slovenia              | 736.6              | 1 432.5              | 1 420.0              | 1 341.4              | 1 273.1              | 1 201.0              | 1 162.0 p            |
| Spain                 | 15 455.6           | 18 403.0             | 17 818.0             | 17 590.7             | 17 980.4             | 18 047.5             | 18 891.8 p           |
| Sweden                | 12 209.4 b         | 13 101.1 e           | 13 363.6 e           | 13 047.5 e           | 14 156.2             | 14 558.6 p           | 15 128.0 p           |
| Switzerland           | ..                 | 13 590.2             | ..                   | ..                   | 15 206.0             | ..                   | ..                   |
| Turkey                | 6 117.7            | 12 212.1             | 13 027.0             | 14 412.5             | 15 658.0             | 17 313.7             | 18 925.3             |
| United Kingdom        | 34 576.3           | 37 149.0 e           | 38 992.7             | 40 626.2 e           | 41 806.8             | 42 910.3 e           | 43 217.2 p           |
| United States         | 360 744.4 d        | 417 455.3 d          | 429 592.1 d          | 441 667.4 d          | 454 096.3 d          | 468 378.3 d p        | 483 676.3 d e        |
| EU28 (OECD estimates) | 263 373.4 e        | 325 283.7 e          | 327 303.9 e          | 337 095.7 e          | 347 254.9 e          | 352 477.6 e          | 364 845.0 e          |
| <b>OECD-Total</b>     | <b>872 658.8 e</b> | <b>1 049 268.7 e</b> | <b>1 077 063.5 e</b> | <b>1 111 773.0 e</b> | <b>1 133 572.7 e</b> | <b>1 153 815.9 e</b> | <b>1 197 855.6 e</b> |
| Argentina             | 2 504.3            | 5 065.9 p            | 5 053.4 p            | 4 690.2 p            | 5 030.1              | 4 253.4              | ..                   |
| China                 | 95 556.3           | 281 115.7            | 316 339.6            | 344 691.9            | 374 910.0            | 410 188.1            | 442 721.0 e          |
| Romania               | 1 224.5            | 1 730.6              | 1 436.1              | 1 463.6              | 1 940.6              | 2 002.0              | 2 247.1 p            |
| Russian Federation    | 26 265.9           | 34 984.3             | 35 556.6             | 37 387.1             | 37 308.0             | 37 155.4             | 38 134.7 e           |
| Singapore             | 5 594.5            | 7 916.2              | 8 285.7              | 9 361.5              | ..                   | ..                   | ..                   |
| South Africa          | 4 452.1            | 4 653.3              | 4 712.1              | 5 105.5              | 5 351.9              | ..                   | ..                   |
| Chinese Taipei        | 16 830.8           | 28 040.8             | 29 197.3             | 30 342.2             | 31 044.7             | 32 610.1             | 35 030.6             |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 4. Gross domestic expenditure on R&D (GERD) per capita at current prices and PPP**

USD

|                       | 2005           | 2012           | 2013           | 2014           | 2015           | 2016           | 2017             |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|
| Australia             | ..             | ..             | 1 000.1 e      | ..             | 888.1 e        | ..             | ..               |
| Austria               | 831.2 e        | 1 354.7 e      | 1 416.5        | 1 505.5 e      | 1 523.5        | 1 613.8 e      | 1 701.7 p        |
| Belgium               | 594.1          | 968.1          | 1 021.0        | 1 067.6        | 1 125.7        | 1 205.8 e      | 1 284.9 p        |
| Canada                | 716.1          | 748.7 b        | 754.0          | 782.1 b        | 753.7          | 760.7          | 740.0 p          |
| Chile                 | ..             | 77.7           | 86.9           | 85.1 b         | 86.0           | 82.5 b p       | ..               |
| Czech Republic        | 256.0          | 517.8          | 579.3          | 636.5          | 650.2          | 592.0          | 681.2 p          |
| Denmark               | 817.4          | 1 335.9        | 1 388.5        | 1 396.0        | 1 499.1        | 1 580.7        | 1 660.5 p        |
| Estonia               | 152.1          | 551.3          | 472.7          | 413.6          | 429.0          | 385.2          | 431.6            |
| Finland               | 1 065.3        | 1 389.0        | 1 357.4        | 1 314.1        | 1 220.6        | 1 199.4        | 1 277.8 p        |
| France                | 625.8          | 839.3          | 884.3          | 913.6 b        | 926.3          | 944.9 p        | 967.2 e          |
| Germany               | 785.2          | 1 249.5        | 1 276.0        | 1 352.9        | 1 397.1        | 1 456.3        | 1 589.0 e        |
| Greece                | 148.1          | 176.9          | 211.7          | 223.6          | 258.6          | 271.1          | 322.4 p          |
| Hungary               | 157.3          | 291.8          | 339.8          | 345.4          | 359.1          | 323.4          | 388.4            |
| Iceland               | 1 003.0        | ..             | 751.5 b        | 890.5          | 1 033.1        | 1 069.7        | 1 176.8 p        |
| Ireland               | 482.3          | 722.5 e        | 750.6 e        | 766.7 e        | 824.2 e        | 825.4 e        | 808.2 p          |
| Israel <sup>1</sup>   | 1 000.7 d      | 1 319.5 d      | 1 393.3 d      | 1 431.4 d      | 1 511.9 d      | 1 648.5 d e    | 1 767.3 d e      |
| Italy                 | 313.5          | 454.4          | 469.3          | 484.4 e        | 494.0          | 535.4 b        | 554.1 p          |
| Japan                 | 1 007.4        | 1 194.2        | 1 293.1 b      | 1 332.3        | 1 326.0        | 1 297.7        | 1 348.6          |
| Korea                 | 635.4 d        | 1 292.1        | 1 353.1        | 1 440.5        | 1 508.0        | 1 570.2        | 1 768.4          |
| Latvia                | 73.3           | 141.2          | 138.8          | 164.1          | 154.7          | 113.9          | 144.8 p          |
| Lithuania             | 109            | 221            | 254            | 290            | 301            | 256            | 293              |
| Luxembourg            | 1 071.0        | 1 164.8 b      | 1 240.7        | 1 275.8        | 1 320.2        | 1 356.1        | 1 350.6 p        |
| Mexico                | 49.9           | 83.7           | 86.9           | 96.2 e p       | 96.4 e p       | 92.1 e p       | ..               |
| Netherlands           | 667.5          | 906.0 b        | 950.5          | 972.8          | 999.0          | 1 025.4        | 1 083.9 p        |
| New Zealand           | 286.7          | ..             | 416.3          | ..             | 459.3          | ..             | ..               |
| Norway                | 708.6          | 1 059.2        | 1 106.4        | 1 130.2        | 1 168.1        | 1 180.3        | 1 311.8 p        |
| Poland                | 78.2           | 207.4          | 212.6          | 237.7          | 266.1          | 264.2          | 306.0 p          |
| Portugal              | 172.2          | 364.5          | 370.1          | 370.8          | 368.9          | 397.6          | 428.7 p          |
| Slovak Republic       | 81.9           | 214.6          | 229.8          | 254.6          | 348.0          | 243.8          | 285.8            |
| Slovenia              | 338.1          | 743.8          | 768.9          | 730.3          | 694.7          | 667.8          | 673.8 p          |
| Spain                 | 303.5          | 412.0          | 413.8          | 416.7          | 427.1          | 435.5          | 470.9 p          |
| Sweden                | 1 150.5 b      | 1 467.6 e      | 1 510.0 e      | 1 463.6 e      | 1 581.1        | 1 604.7 p      | 1 710.3 p        |
| Switzerland           | ..             | 1 843.2        | ..             | ..             | 2 155.8        | ..             | ..               |
| Turkey                | 67.0           | 171.0          | 182.6          | 208.0          | 229.1          | 252.0          | 274.9            |
| United Kingdom        | 507.2          | 604.2 e        | 647.9          | 678.2 e        | 701.6          | 722.3 e        | 747.2 p          |
| United States         | 1 108.6 d      | 1 381.6 d      | 1 436.6 d      | 1 493.8 d      | 1 540.8 d      | 1 595.0 d p    | 1 666.5 d e      |
| EU28 (OECD estimates) | 458.2 e        | 673.7 e        | 700.6 e        | 730.3 e        | 757.3 e        | 782.1 e        | 834.8 e          |
| <b>OECD-Total</b>     | <b>657.5 e</b> | <b>868.9 e</b> | <b>909.0 e</b> | <b>945.0 e</b> | <b>969.3 e</b> | <b>995.0 e</b> | <b>1 049.1 e</b> |
| Argentina             | 59.0           | 126.2 p        | 126.5 p        | 118.2 p        | 126.8          | 107.4          | ..               |
| China                 | 66.4           | 215.8          | 245.5          | 270.9          | 296.4          | 326.5          | 356.8            |
| Romania               | 39.6           | 91.6           | 76.8           | 78.8           | 105.5          | 114.6          | 133.6 p          |
| Russian Federation    | 126.3          | 264.7          | 269.0          | 276.1          | 264.9          | 264.1          | 285.1            |
| Singapore             | 1 193.5        | 1 551.6        | 1 625.7        | 1 846.9        | ..             | ..             | ..               |
| South Africa          | 85.0           | 92.4           | 93.7           | 101.8          | 106.2          | ..             | ..               |
| Chinese Taipei        | 672.3          | 1 251.3        | 1 322.4        | 1 396.7        | 1 440.8        | 1 526.9        | 1 669.2          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 5. Estimated civil GERD (Gross domestic expenditure on R&D) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017   |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|--------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Austria               | ..            | ..            | 2.95          | ..            | ..            | ..            | ..     |
| Belgium               | 1.78          | ..            | ..            | ..            | ..            | ..            | ..     |
| Canada                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Chile                 | ..            | 0.36          | 0.39          | 0.37 b        | 0.38          | 0.36 b p      | ..     |
| Czech Republic        | 1.16          | 1.78          | 1.89          | 1.97          | ..            | ..            | ..     |
| Denmark               | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Estonia               | 0.92 e        | 2.12 e        | 1.72 e        | 1.42          | ..            | ..            | ..     |
| Finland               | 3.31          | 3.40          | 3.27          | 3.15          | ..            | ..            | ..     |
| France                | 1.88          | 2.16          | 2.16          | 2.21 b        | ..            | ..            | ..     |
| Germany               | 2.39 e        | 2.84          | 2.80          | 2.84          | ..            | ..            | ..     |
| Greece                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Hungary               | 0.91          | 1.26          | 1.38          | 1.35          | 1.36          | ..            | ..     |
| Iceland               | 2.69          | ..            | 1.70 b        | 1.95          | 2.12          | 2.03          | 2.13 p |
| Ireland               | 1.19          | 1.56 e        | 1.56 e        | 1.50 e        | 1.19 e        | 1.16 e        | 1.05 p |
| Israel <sup>1</sup>   | 4.05          | 4.16          | 4.07          | 4.18          | 4.26          | 4.39 e        | 4.54 e |
| Italy                 | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Japan                 | 3.15 e        | 3.19 e        | 3.28 b e      | 3.37 e        | 3.25 e        | ..            | ..     |
| Korea                 | 2.56 d        | 3.87          | 3.97          | 4.13          | 4.07          | 4.09          | 4.36   |
| Latvia                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Lithuania             | 1             | 1             | 1             | 1             | ..            | ..            | ..     |
| Luxembourg            | 1.57          | 1.27 b        | 1.30          | 1.26          | 1.28          | 1.30          | 1.26 p |
| Mexico                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Netherlands           | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| New Zealand           | ..            | ..            | 1.14          | ..            | 1.22          | ..            | ..     |
| Norway                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Poland                | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Portugal              | 0.75          | 1.37          | 1.32          | 1.28          | ..            | ..            | ..     |
| Slovak Republic       | 0.49          | 0.79          | 0.82          | 0.88          | 1.17          | ..            | ..     |
| Slovenia              | 1.41          | 2.57          | 2.58          | 2.37          | 2.20          | ..            | ..     |
| Spain                 | ..            | 1.25          | 1.23          | 1.20          | 1.19          | 1.15          | ..     |
| Sweden                | 3.26 b        | ..            | 3.18 e        | ..            | ..            | ..            | ..     |
| Switzerland           | ..            | 3.15          | ..            | ..            | ..            | ..            | ..     |
| Turkey                | ..            | 0.82          | 0.80          | 0.84          | 0.86          | 0.93          | ..     |
| United Kingdom        | 1.37          | 1.49 e        | 1.53          | 1.56 e        | ..            | ..            | ..     |
| United States         | 2.09 d        | ..            | ..            | ..            | ..            | ..            | ..     |
| EU28 (OECD estimates) | 1.59 e        | 1.87 e        | 1.88 e        | 1.91 e        | 1.92 e        | 1.91 e        | ..     |
| <b>OECD-Total</b>     | <b>1.96 e</b> | <b>2.17 e</b> | <b>2.21 e</b> | <b>2.24 e</b> | <b>2.23 e</b> | <b>2.22 e</b> | ..     |
| Argentina             | 0.42          | 0.63 p        | 0.62 p        | 0.59 p        | ..            | ..            | ..     |
| China                 | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Romania               | 0.40          | 0.48          | 0.38          | 0.38          | ..            | ..            | ..     |
| Russian Federation    | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| Singapore             | ..            | ..            | ..            | ..            | ..            | ..            | ..     |
| South Africa          | 0.81          | 0.69          | 0.69          | 0.72          | 0.75          | ..            | ..     |
| Chinese Taipei        | 2.25          | 2.93          | 2.99          | 2.99          | 3.04          | 3.13          | 3.27   |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 6. Basic research expenditure as a percentage of GDP**

Percentage

|                       | 2005     | 2012     | 2013     | 2014     | 2015     | 2016     | 2017     |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|
| Australia             | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| Austria               | ..       | ..       | 0.56 d   | ..       | 0.54 d   | ..       | ..       |
| Belgium               | ..       | ..       | 0.46     | ..       | 0.38     | ..       | ..       |
| Canada                | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| Chile                 | ..       | 0.09 m   | 0.11 m   | 0.11 b m | 0.13 m   | 0.10 m p | ..       |
| Czech Republic        | 0.36     | 0.53     | 0.62     | 0.61     | 0.61     | 0.48     | 0.49 p   |
| Denmark               | 0.45 e   | 0.55 e   | 0.57     | 0.59     | 0.58     | ..       | ..       |
| Estonia               | 0.27     | 0.45     | 0.47     | 0.43     | 0.39     | 0.34     | ..       |
| Finland               | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| France                | 0.49     | 0.54     | 0.54     | 0.54     | 0.54     | ..       | ..       |
| Germany               | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| Greece                | ..       | ..       | 0.28     | ..       | 0.34     | ..       | ..       |
| Hungary               | 0.25     | 0.25 e   | 0.27 e   | 0.25 e   | 0.25 e   | 0.22 e   | ..       |
| Iceland               | 0.51     | ..       | 0.45 b   | 0.45     | 0.44     | 0.45     | 0.45 p   |
| Ireland               | 0.28     | ..       | 0.30 e   | ..       | 0.20 e   | ..       | ..       |
| Israel <sup>1</sup>   | 0.65 d e | 0.51 d e | 0.52 d e | 0.51 d e | 0.50 d e | 0.51 d e | 0.52 d e |
| Italy                 | 0.29     | 0.32     | 0.33     | 0.32 e   | 0.33     | 0.32 b   | ..       |
| Japan                 | 0.38     | 0.40     | 0.42 b   | 0.42     | 0.39     | 0.39     | 0.42     |
| Korea                 | 0.40 d   | 0.74     | 0.75     | 0.76     | 0.73     | 0.68     | 0.66     |
| Latvia                | 0.11     | 0.21     | 0.15     | 0.20     | 0.22     | 0.13     | ..       |
| Lithuania             | 0        | 0        | 0        | 0        | 0        | 0        | ..       |
| Luxembourg            | ..       | ..       | ..       | ..       | 0.49     | ..       | ..       |
| Mexico                | ..       | 0.14     | 0.14     | 0.15     | 0.15     | 0.14 e p | ..       |
| Netherlands           | ..       | 0.53 b   | 0.55     | 0.54     | 0.54     | 0.53     | ..       |
| New Zealand           | 0.34     | ..       | 0.29     | ..       | 0.28     | ..       | ..       |
| Norway                | 0.29     | ..       | 0.29 m   | ..       | 0.33 d   | ..       | ..       |
| Poland                | 0.17     | 0.23     | 0.30 b   | 0.32     | 0.32     | 0.29     | ..       |
| Portugal              | 0.19     | 0.29     | 0.30     | 0.30     | 0.29     | 0.29     | ..       |
| Slovak Republic       | 0.23     | 0.38     | 0.36     | 0.40     | 0.50     | 0.32     | ..       |
| Slovenia              | 0.20     | 0.34     | 0.35     | 0.43 b   | 0.39     | 0.35     | ..       |
| Spain                 | 0.19 m   | 0.27 m   | 0.29 e   | 0.28 e   | 0.27 e   | 0.26 e   | ..       |
| Sweden                | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| Switzerland           | ..       | 0.94     | ..       | ..       | 1.29     | ..       | ..       |
| Turkey                | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| United Kingdom        | ..       | 0.27 e   | 0.28 e   | 0.28 e   | 0.28 e   | 0.30 e   | ..       |
| United States         | 0.47 d   | 0.45 d   | 0.47 d   | 0.47 d   | 0.46 d   | 0.47 d p | 0.47 d e |
| EU28 (OECD estimates) | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| <b>OECD-Total</b>     | ..       | ..       | ..       | ..       | ..       | ..       | ..       |
| Argentina             | 0.11     | ..       | ..       | ..       | 0.21 b   | 0.15     | ..       |
| China                 | 0.07     | 0.09     | 0.09     | 0.10     | 0.10     | 0.11     | 0.12     |
| Romania               | 0.09 m   | 0.20     | 0.15     | 0.13     | 0.15     | 0.12     | ..       |
| Russian Federation    | 0.13 m   | 0.16 m   | 0.16 m   | 0.16 m   | 0.16 m   | 0.15 d   | ..       |
| Singapore             | 0.45     | 0.39     | 0.41     | 0.42     | ..       | ..       | ..       |
| South Africa          | 0.16     | 0.19     | 0.17     | 0.19     | 0.20     | ..       | ..       |
| Chinese Taipei        | 0.24     | 0.28     | 0.28     | 0.27     | 0.27     | 0.26     | 0.26     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 7. Total researchers in full-time equivalent**

FTE

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017        |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| Australia             | ..                 | ..                 | ..                 | ..                 | ..                 | ..                 | ..          |
| Austria               | 28 470 d e         | 39 701 d e         | 40 426 d           | 42 627 d e         | 43 562 d           | 44 933 d p         | ..          |
| Belgium               | 33 146             | 45 597             | 46 355             | 50 820             | 53 178 b           | 54 280 e           | 56 484 p    |
| Canada                | 136 700            | 161 600            | 163 180            | 161 982 b          | 162 952            | 155 128            | ..          |
| Chile                 | ..                 | 6 798 d            | 5 893 d            | 7 585 d            | 8 175 d            | 8 993 d p          | ..          |
| Czech Republic        | 24 169 b           | 33 217             | 34 271             | 36 040             | 38 081             | 37 338             | 39 181 p    |
| Denmark               | 28 179             | 40 080             | 39 868             | 41 409             | 42 826             | 44 815             | 45 277 p    |
| Estonia               | 3 331              | 4 582              | 4 407              | 4 324              | 4 187              | 4 338              | 4 674       |
| Finland               | 39 582             | 40 468             | 39 196             | 38 281             | 37 516             | 35 908             | 37 047 p    |
| France                | 202 507            | 258 913 e          | 265 466 e          | 271 772 b          | 277 631            | ..                 | 288 579 e   |
| Germany               | 272 148            | 352 419            | 354 463            | 351 923            | 387 982            | 399 605            | 413 542 e   |
| Greece                | 19 593 d           | 24 800 d           | 29 228 d           | 29 877 d           | 34 708 d           | 29 403 d           | 35 185 d p  |
| Hungary               | 15 878             | 23 837             | 25 038             | 26 213             | 25 316             | 25 804             | 28 426 p    |
| Iceland               | 2 155              | ..                 | 1 848 b            | ..                 | 1 944 b            | 2 206              | ..          |
| Ireland               | 11 587             | 22 368             | 23 707             | 24 543             | 22 259             | 19 791             | 19 559 p    |
| Israel <sup>1</sup>   | ..                 | 63 521 d e         | ..                 | ..                 | ..                 | ..                 | ..          |
| Italy                 | 82 489             | 110 695            | 116 163            | 118 183            | 125 875            | 133 706 b          | 136 204 p   |
| Japan                 | 680 631 d          | 646 347 d          | 660 489 b d        | 682 935 d          | 662 071 d          | 665 566 d          | 676 292 d   |
| Korea                 | 179 812 d          | 315 589            | 321 842            | 345 463            | 356 447            | 361 292            | 383 100     |
| Latvia                | 3 282 d            | 3 904 d            | 3 625 d            | 3 748 d            | 3 613 d            | 3 152 d            | 3 482 d p   |
| Lithuania             | 7 637              | 8 023              | 8 557              | 9 075              | 8 167              | 8 525              | 8 691       |
| Luxembourg            | 2 227              | 2 310 b            | 2 503              | 2 629              | 2 539              | 2 505 p            | 2 732 p     |
| Mexico                | 43 922             | 29 094             | 29 921             | ..                 | ..                 | ..                 | ..          |
| Netherlands           | 47 854             | 73 235 b           | 76 670             | 76 229             | 79 155             | 81 117             | 85 300 p    |
| New Zealand           | 12 986             | ..                 | 17 900             | ..                 | 18 700             | ..                 | ..          |
| Norway                | 21 200             | 27 841             | 28 312             | 29 237             | 30 632             | 31 913             | 34 367 p    |
| Poland                | 62 162             | 67 001             | 71 472             | 78 622             | 82 594             | 88 165             | 96 497 p    |
| Portugal              | 21 126             | 42 498             | 37 813 b           | 38 155             | 38 672             | 41 349             | 44 322 p    |
| Slovak Republic       | 10 921             | 15 271             | 14 727             | 14 742             | 14 406             | 14 149             | 15 226      |
| Slovenia              | 5 253              | 8 884              | 8 707              | 8 574              | 7 900              | 8 119              | 9 293 p     |
| Spain                 | 109 720            | 126 778 d          | 123 225 d          | 122 235 d          | 122 437 d          | 126 633 d          | 133 195 d p |
| Sweden                | 55 001 b e         | 49 280 e           | 64 194 b e         | 66 643 e           | 66 734 e           | 70 372 p           | 75 247 p    |
| Switzerland           | ..                 | 35 785             | ..                 | ..                 | 43 740             | ..                 | ..          |
| Turkey                | 39 139             | 82 122             | 89 075             | 89 657             | 95 161             | 100 158            | 111 893     |
| United Kingdom        | 248 599 b e        | 256 156 e          | 267 699            | 276 584 e          | 284 483            | 288 922 e          | 289 674 p   |
| United States         | 1 104 019 e        | 1 253 231 e        | 1 294 353 e        | 1 339 931 e        | 1 369 267 e        | 1 371 290 e        | ..          |
| EU28 (OECD estimates) | 1 374 762 e        | 1 687 741 e        | 1 736 854 e        | 1 772 538 e        | 1 843 564 e        | 1 890 547 e        | 1 957 773 e |
| <b>OECD-Total</b>     | <b>3 707 553 e</b> | <b>4 404 660 e</b> | <b>4 529 768 e</b> | <b>4 665 659 e</b> | <b>4 769 439 e</b> | <b>4 829 817 e</b> | ..          |
| Argentina             | 31 868             | 50 490             | 50 785             | 51 665             | 52 970             | 54 046             | ..          |
| China                 | 1 118 698 d        | 1 404 017          | 1 484 040          | 1 524 280          | 1 619 028          | 1 692 176          | 1 740 442   |
| Romania               | 22 958             | 18 016             | 18 576             | 18 109             | 17 459             | 18 046             | 17 518 p    |
| Russian Federation    | 464 577            | 443 269            | 440 581            | 444 865            | 449 180            | 428 884            | 410 617     |
| Singapore             | 23 789             | 34 141             | 36 025             | 36 666             | ..                 | ..                 | ..          |
| South Africa          | 17 303             | 21 382             | 23 346             | 23 572             | 26 159             | ..                 | ..          |
| Chinese Taipei        | 88 859             | 140 102            | 141 159            | 142 983            | 145 381            | 147 710            | 150 384     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 8. Total researchers in full-time equivalent per thousand total employment***Per thousand*

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017      |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|
| Australia             | ..           | ..           | ..           | ..           | ..           | ..           | ..        |
| Austria               | 7.4 d e      | 9.4 d e      | 9.6 d        | 10.0 d e     | 10.2 d       | 10.4 d p     | ..        |
| Belgium               | 7.8          | 10.0         | 10.2         | 11.1         | 11.6 b       | 11.7 e       | 12.0 e p  |
| Canada                | 8.3          | 9.1          | 9.1          | 9.0 b        | 8.9          | 8.4          | ..        |
| Chile                 | ..           | 0.9 d        | 0.8 d        | 1.0 d        | 1.0 d        | 1.1 d p      | ..        |
| Czech Republic        | 4.9 b        | 6.6          | 6.7          | 7.1          | 7.3          | 7.1          | 7.4 e p   |
| Denmark               | 10.1         | 14.5         | 14.4         | 14.8         | 15.1         | 15.6         | 15.5 e p  |
| Estonia               | 5.4          | 7.7          | 7.3          | 7.1          | 6.7          | 6.9          | 7.4 e     |
| Finland               | 16.4         | 15.9         | 15.6         | 15.3         | 15.0         | 14.3         | 14.5 e p  |
| France                | 7.7          | 9.5 e        | 9.7 e        | 9.9 b        | 10.1         | ..           | 10.3 e    |
| Germany               | 6.9          | 8.4          | 8.4          | 8.2          | 9.0          | 9.2          | 9.3 e     |
| Greece                | 4.2 d        | 6.0 d        | 7.3 d        | 7.4 d        | 8.5 d        | 7.2 d        | 8.4 d p   |
| Hungary               | 3.8          | 6.0          | 6.2          | 6.2          | 5.9          | 5.8          | 6.3 e p   |
| Iceland               | 13.3         | ..           | 10.6 b       | ..           | 10.6 b       | 11.6         | ..        |
| Ireland               | 5.9          | 12.0         | 12.4         | 12.6         | 11.2         | 9.7          | 9.3 e p   |
| Israel <sup>1</sup>   | ..           | 17.4 d e     | ..           | ..           | ..           | ..           | ..        |
| Italy                 | 3.4          | 4.5          | 4.8          | 4.9          | 5.1          | 5.4 b        | 5.4 e p   |
| Japan                 | 10.4 d       | 9.9 d        | 10.1 b d     | 10.4 d       | 10.0 d       | 10.0 d       | 10.0 d e  |
| Korea                 | 7.9 d        | 12.8         | 12.8         | 13.5         | 13.7         | 13.8         | 14.4 e    |
| Latvia                | 3.4 d        | 4.5 d        | 4.1 d        | 4.3 d        | 4.1 d        | 3.6 d        | 3.9 d e p |
| Lithuania             | 5            | 6            | 7            | 7            | 6            | 6            | 6 e       |
| Luxembourg            | 7.2          | 6.1 b        | 6.5          | 6.6          | 6.3          | 6.0 p        | 6.3 e p   |
| Mexico                | 1.3          | 0.8          | 0.8          | ..           | ..           | ..           | ..        |
| Netherlands           | 5.7          | 8.3 b        | 8.8          | 8.7          | 9.0          | 9.1          | 9.4 e p   |
| New Zealand           | 6.3          | ..           | 8.0          | ..           | 7.9          | ..           | ..        |
| Norway                | 9.0          | 10.4         | 10.4         | 10.6         | 11.1         | 11.5         | 12.3 p    |
| Poland                | 4.4          | 4.3          | 4.6          | 5.0          | 5.2          | 5.5          | 5.9 p     |
| Portugal              | 4.2          | 9.3          | 8.5 b        | 8.5          | 8.5          | 8.9          | 9.2 p     |
| Slovak Republic       | 5.2          | 6.9          | 6.7          | 6.6          | 6.4          | 6.1          | 6.4 e     |
| Slovenia              | 5.7          | 9.5          | 9.4          | 9.2          | 8.4          | 8.5          | 9.2 e p   |
| Spain                 | 5.5          | 6.9 d        | 6.9 d        | 6.8 d        | 6.6 d        | 6.7 d        | 6.8 d p   |
| Sweden                | 12.6 b e     | 10.7 e       | 13.7 b e     | 14.1 e       | 13.9 e       | 14.4 p       | 15.0 e p  |
| Switzerland           | ..           | 7.7          | ..           | ..           | 8.9          | ..           | ..        |
| Turkey                | 2.0          | 3.4          | 3.6          | 3.5          | 3.6          | 3.7          | 4.0 e     |
| United Kingdom        | 8.6 b e      | 8.6 e        | 8.9          | 9.0 e        | 9.1          | 9.1 e        | 9.0 p     |
| United States         | 7.7 e        | 8.7 e        | 8.9 e        | 9.0 e        | 9.1 e        | 8.9 e        | ..        |
| EU28 (OECD estimates) | 6.2 e        | 7.5 e        | 7.7 e        | 7.8 e        | 8.0 e        | 8.1 e        | 8.3 e     |
| <b>OECD-Total</b>     | <b>7.0 e</b> | <b>7.9 e</b> | <b>8.1 e</b> | <b>8.2 e</b> | <b>8.3 e</b> | <b>8.3 e</b> | ..        |
| Argentina             | 2.0          | 2.9          | 2.9          | 2.9          | 2.9          | 3.0          | ..        |
| China                 | 1.5 d        | 1.8          | 1.9          | 2.0          | 2.1          | 2.2          | 2.2       |
| Romania               | 2.5          | 2.1          | 2.2          | 2.1          | 2.0          | 2.1          | 2.0 p     |
| Russian Federation    | 6.8          | 6.2          | 6.2          | 6.2          | 6.2          | 5.9          | 5.7 e     |
| Singapore             | 10.3         | 10.2         | 10.3         | 10.1         | ..           | ..           | ..        |
| South Africa          | 1.4          | 1.5          | 1.6          | 1.6          | 1.7          | ..           | ..        |
| Chinese Taipei        | 8.9          | 12.9         | 12.9         | 12.9         | 13.0         | 13.1         | 13.2      |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 9. Total R&D personnel in full-time equivalent**

FTE

|                       | 2005        | 2012        | 2013        | 2014        | 2015        | 2016        | 2017        |
|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Australia             | ..          | ..          | ..          | ..          | ..          | ..          | ..          |
| Austria               | 47 625 d e  | 65 088 d e  | 66 186 d    | 70 138 d e  | 71 396 d    | 74 897 d e  | 77 880 d p  |
| Belgium               | 53 517      | 67 005      | 67 899      | 72 794      | 77 520 b    | 79 109 e    | 84 046 p    |
| Canada                | 218 590     | 231 230     | 232 910     | 236 470 b   | 244 879     | 223 146     | ..          |
| Chile                 | ..          | 14 631 d    | 13 228 d    | 15 887 d    | 15 261 d    | 16 633 d p  | ..          |
| Czech Republic        | 43 370 b    | 60 329      | 61 976      | 64 444      | 66 433      | 65 783      | 69 736 p    |
| Denmark               | 43 499      | 57 734      | 57 744      | 58 361      | 60 243      | 62 869      | 62 911 p    |
| Estonia               | 4 362       | 5 855       | 5 858       | 5 790       | 5 636       | 5 772       | 6 048       |
| Finland               | 57 471      | 54 047      | 52 972      | 52 130      | 50 367      | 47 429      | 48 999 p    |
| France                | 349 681     | 411 780 m   | 416 687 m   | 423 903 b   | 428 643     | ..          | 434 670 e   |
| Germany               | 475 278     | 591 261     | 588 615     | 605 252     | 640 516     | 657 894     | 681 552 e   |
| Greece                | 33 603 d    | 37 361 d    | 42 188 d    | 43 316 d    | 49 658 d    | 41 790 d    | 48 226 d p  |
| Hungary               | 23 239      | 35 732      | 38 163      | 37 329      | 36 847      | 35 757      | 40 432 p    |
| Iceland               | 3 226       | ..          | 2 736 b     | ..          | 2 941       | 3 247       | ..          |
| Ireland               | 16 690      | 29 284      | 31 870      | 33 494      | 32 085      | 29 849      | 29 405 p    |
| Israel <sup>1</sup>   | ..          | 77 143 d e  | ..          | ..          | ..          | ..          | ..          |
| Italy                 | 175 248     | 240 179     | 246 764     | 249 467     | 259 167     | 290 040 b   | 291 516 p   |
| Japan                 | 896 855 d   | 851 132 d   | 865 523 b d | 895 285 d   | 875 005 d   | 872 340 d   | 890 749 d   |
| Korea                 | 215 345 d   | 395 990     | 401 444     | 430 868     | 442 027     | 447 408     | 471 201     |
| Latvia                | 5 483 d     | 5 593 d     | 5 396 d     | 5 739 d     | 5 570 d     | 5 120 d     | 5 378 d p   |
| Lithuania             | 11 002      | 10 416      | 11 080      | 11 791      | 10 607      | 10 924      | 11 491      |
| Luxembourg            | 4 392       | 4 743 b     | 4 975       | 5 243       | 5 227       | 5 312       | 5 322 p     |
| Mexico                | 83 685      | 58 849      | 59 073      | ..          | ..          | ..          | ..          |
| Netherlands           | 93 599      | 122 215 b   | 123 214     | 124 066     | 129 060     | 132 867     | 138 292 p   |
| New Zealand           | 18 929      | ..          | 24 900      | ..          | 26 400      | ..          | ..          |
| Norway                | 29 966      | 37 707      | 38 536      | 40 297      | 42 409      | 43 918      | 46 989 p    |
| Poland                | 76 761      | 90 716      | 93 751      | 104 359     | 109 249     | 111 789     | 121 428 p   |
| Portugal              | 25 728      | 47 554      | 46 711      | 46 878      | 47 999      | 50 406      | 54 091 p    |
| Slovak Republic       | 14 404      | 18 127      | 17 166      | 17 594      | 17 591      | 17 768      | 19 011      |
| Slovenia              | 8 994       | 14 974      | 15 229      | 14 866      | 14 225      | 14 403      | 14 713 p    |
| Spain                 | 174 773     | 208 831 d   | 203 302 d   | 200 233 d   | 200 866 d   | 205 873 d   | 215 713 d p |
| Sweden                | 77 557 b e  | 81 272 e    | 80 957 e    | 83 473 e    | 83 551 e    | 90 690 p    | 89 268 p    |
| Switzerland           | ..          | 75 476      | ..          | ..          | 81 451      | ..          | ..          |
| Turkey                | 49 251 e    | 105 122 e   | 112 969 e   | 115 444 e   | 122 288 e   | 136 953     | 153 552     |
| United Kingdom        | 324 917 b e | 356 484 e   | 377 343 e   | 396 281 e   | 413 860     | 417 390 e   | 424 510 p   |
| United States         | ..          | ..          | ..          | ..          | ..          | ..          | ..          |
| EU28 (OECD estimates) | 2 201 520 e | 2 677 518 e | 2 719 151 e | 2 790 416 e | 2 883 457 e | 2 957 034 e | 3 045 348 e |
| <b>OECD-Total</b>     | ..          | ..          | ..          | ..          | ..          | ..          | ..          |
| Argentina             | 45 361      | 72 323      | 74 866      | 76 904      | 78 713      | 79 333      | ..          |
| China                 | 1 364 799 d | 3 246 840   | 3 532 817   | 3 710 580   | 3 758 848   | 3 878 057   | 4 033 597   |
| Romania               | 33 222      | 31 135      | 32 507      | 31 391      | 31 331      | 32 232      | 32 586 p    |
| Russian Federation    | 919 716     | 828 401     | 826 733     | 829 190     | 833 654     | 802 317     | 778 155     |
| Singapore             | 28 586      | 39 459      | 41 582      | 42 543      | ..          | ..          | ..          |
| South Africa          | 28 798      | 35 050      | 37 956      | 38 465      | 41 055      | ..          | ..          |
| Chinese Taipei        | 149 154     | 229 167     | 234 248     | 240 528     | 245 941     | 251 042     | 255 943     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 10. Total R&D personnel in full-time equivalent per thousand total employment**

Per thousand

|                       | 2005     | 2012     | 2013     | 2014     | 2015   | 2016     | 2017       |
|-----------------------|----------|----------|----------|----------|--------|----------|------------|
| Australia             | ..       | ..       | ..       | ..       | ..     | ..       | ..         |
| Austria               | 12.3 d e | 15.5 d e | 15.7 d   | 16.5 d e | 16.7 d | 17.3 d e | 17.7 d e p |
| Belgium               | 12.6     | 14.7     | 15.0     | 16.0     | 16.9 b | 17.0 e   | 17.8 e p   |
| Canada                | 13.3     | 13.0     | 12.9     | 13.1 b   | 13.4   | 12.1     | ..         |
| Chile                 | ..       | 1.9 d    | 1.7 d    | 2.0 d    | 1.9 d  | 2.0 d p  | ..         |
| Czech Republic        | 8.8 b    | 11.9     | 12.2     | 12.6     | 12.8   | 12.5     | 13.1 e p   |
| Denmark               | 15.6     | 20.9     | 20.9     | 20.9     | 21.3   | 21.9     | 21.5 e p   |
| Estonia               | 7.1      | 9.9      | 9.7      | 9.6      | 9.0    | 9.2      | 9.6 e      |
| Finland               | 23.8     | 21.3     | 21.0     | 20.8     | 20.1   | 18.8     | 19.2 e p   |
| France                | 13.3     | 15.1 m   | 15.3 m   | 15.5 b   | 15.6   | ..       | 15.6 e     |
| Germany               | 12.1     | 14.1     | 13.9     | 14.2     | 14.9   | 15.1     | 15.4 e     |
| Greece                | 7.2 d    | 9.1 d    | 10.6 d   | 10.7 d   | 12.2 d | 10.2 d   | 11.6 d p   |
| Hungary               | 5.6      | 9.0      | 9.5      | 8.9      | 8.6    | 8.1      | 9.0 e p    |
| Iceland               | 20.0     | ..       | 15.6 b   | ..       | 16.0   | 17.0     | ..         |
| Ireland               | 8.5      | 15.7     | 16.7     | 17.3     | 16.1   | 14.6     | 14.0 e p   |
| Israel <sup>1</sup>   | ..       | 21.2 d e | ..       | ..       | ..     | ..       | ..         |
| Italy                 | 7.2      | 9.7      | 10.1     | 10.2     | 10.6   | 11.7 b   | 11.6 e p   |
| Japan                 | 13.7 d   | 13.1 d   | 13.2 b d | 13.6 d   | 13.2 d | 13.0 d   | 13.2 d e   |
| Korea                 | 9.4 d    | 16.0     | 16.0     | 16.8     | 17.0   | 17.1     | 17.7 e     |
| Latvia                | 5.7 d    | 6.4 d    | 6.1 d    | 6.5 d    | 6.3 d  | 5.8 d    | 6.1 d e p  |
| Lithuania             | 8        | 8        | 9        | 9        | 8      | 8        | 8 e        |
| Luxembourg            | 14.3     | 12.5 b   | 12.9     | 13.2     | 12.9   | 12.7     | 12.3 e p   |
| Mexico                | 2.6      | 1.6      | 1.6      | ..       | ..     | ..       | ..         |
| Netherlands           | 11.2     | 13.8 b   | 14.1     | 14.2     | 14.7   | 14.9     | 15.2 e p   |
| New Zealand           | 9.2      | ..       | 11.1     | ..       | 11.2   | ..       | ..         |
| Norway                | 12.7     | 14.0     | 14.2     | 14.7     | 15.4   | 15.9     | 16.8 p     |
| Poland                | 5.5      | 5.9      | 6.1      | 6.6      | 6.8    | 7.0      | 7.5 p      |
| Portugal              | 5.1      | 10.4     | 10.5     | 10.4     | 10.5   | 10.8     | 11.3 p     |
| Slovak Republic       | 6.9      | 8.2      | 7.8      | 7.9      | 7.8    | 7.7      | 8.0 e      |
| Slovenia              | 9.7      | 16.0     | 16.4     | 16.0     | 15.1   | 15.0     | 14.6 e p   |
| Spain                 | 8.8      | 11.4 d   | 11.4 d   | 11.1 d   | 10.8 d | 10.8 d   | 11.1 d p   |
| Sweden                | 17.8 b e | 17.6 e   | 17.3 e   | 17.6 e   | 17.4 e | 18.5 p   | 17.8 e p   |
| Switzerland           | ..       | 16.1     | ..       | ..       | 16.6   | ..       | ..         |
| Turkey                | 2.5 e    | 4.4 e    | 4.6 e    | 4.5 e    | 4.6 e  | 5.1      | 5.5 e      |
| United Kingdom        | 11.3 b e | 12.0 e   | 12.6 e   | 12.9 e   | 13.2   | 13.2 e   | 13.2 p     |
| United States         | ..       | ..       | ..       | ..       | ..     | ..       | ..         |
| EU28 (OECD estimates) | 10.0 e   | 11.9 e   | 12.1 e   | 12.3 e   | 12.6 e | 12.7 e   | 12.9 e     |
| <b>OECD-Total</b>     | ..       | ..       | ..       | ..       | ..     | ..       | ..         |
| Argentina             | 2.9      | 4.1      | 4.2      | 4.3      | 4.4    | 4.4      | ..         |
| China                 | 1.8 d    | 4.2      | 4.6      | 4.8      | 4.9    | 5.0      | 5.2        |
| Romania               | 3.6      | 3.6      | 3.8      | 3.6      | 3.7    | 3.8      | 3.8 p      |
| Russian Federation    | 13.5     | 11.6     | 11.6     | 11.6     | 11.5   | 11.1     | 10.8 e     |
| Singapore             | 12.3     | 11.8     | 11.9     | 11.7     | ..     | ..       | ..         |
| South Africa          | 2.3      | 2.4      | 2.6      | 2.5      | 2.6    | ..       | ..         |
| Chinese Taipei        | 15.0     | 21.1     | 21.4     | 21.7     | 22.0   | 22.3     | 22.5       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 11. Business-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP***As a percentage of GDP*

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017     |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..       |
| Austria               | 1.08 e        | 1.33 e        | 1.44          | 1.47 e        | 1.52          | 1.66 b e      | 1.70 p   |
| Belgium               | 1.06          | 1.38          | 1.41          | ..            | 1.44          | ..            | ..       |
| Canada                | 0.98          | 0.84 b        | 0.80          | 0.79 b        | 0.75          | 0.72          | 0.65 p   |
| Chile                 | ..            | 0.13          | 0.13          | 0.12 b        | 0.12          | 0.13 b p      | ..       |
| Czech Republic        | 0.56          | 0.65          | 0.71          | 0.71          | 0.67          | 0.66          | 0.70 p   |
| Denmark               | 1.42          | 1.79 e        | 1.75          | ..            | 1.81          | ..            | 1.78 p   |
| Estonia               | 0.36          | 1.09          | 0.72          | 0.53          | 0.60          | 0.60          | ..       |
| Finland               | 2.23          | 2.16          | 2.00          | 1.70          | 1.58          | 1.56          | ..       |
| France                | 1.07          | 1.23          | 1.23          | 1.24          | 1.23          | ..            | ..       |
| Germany               | 1.64          | 1.90          | 1.85          | 1.89          | 1.91          | 1.90          | ..       |
| Greece                | 0.18          | 0.22          | 0.25          | 0.25          | 0.30          | 0.40          | 0.51 p   |
| Hungary               | 0.36 d        | 0.59          | 0.65          | 0.65          | 0.68          | 0.68          | ..       |
| Iceland               | 1.29          | ..            | 0.63 b        | 0.70          | 0.70          | 0.71          | 0.86 p   |
| Ireland               | 0.69          | 0.78 e        | 0.82 e        | 0.79 e        | 0.58 e        | 0.57 e        | ..       |
| Israel <sup>1</sup>   | 2.28 d        | 1.64 d        | 1.44 d        | 1.46 d        | 1.32 d        | 1.53 d e      | ..       |
| Italy                 | 0.42          | 0.56          | 0.59          | 0.63 e        | 0.67          | 0.71 b        | ..       |
| Japan                 | 2.42          | 2.44          | 2.50 b        | 2.63          | 2.56          | 2.45          | 2.51     |
| Korea                 | 1.97 d        | 3.01          | 3.14          | 3.23          | 3.14          | 3.19          | 3.47     |
| Latvia                | 0.18          | 0.16          | 0.13          | 0.19          | 0.13          | 0.10          | ..       |
| Lithuania             | 0             | 0             | 0             | 0             | 0             | 0             | ..       |
| Luxembourg            | 1.25          | 0.23 b        | 0.22          | ..            | 0.60          | ..            | ..       |
| Mexico                | 0.17          | 0.12          | 0.10          | 0.10 e p      | 0.10 e p      | 0.10 e p      | ..       |
| Netherlands           | 0.82          | 0.99 b        | 0.99          | 1.01          | 0.97          | 1.04          | ..       |
| New Zealand           | 0.46          | ..            | 0.46          | ..            | 0.54          | ..            | ..       |
| Norway                | 0.69          | ..            | 0.71          | ..            | 0.85          | 0.88          | ..       |
| Poland                | 0.19          | 0.28          | 0.32          | 0.37          | 0.39          | 0.51          | ..       |
| Portugal              | 0.27          | 0.63          | 0.56          | 0.54          | 0.53          | 0.57          | ..       |
| Slovak Republic       | 0.18          | 0.30          | 0.33          | 0.28          | 0.29          | 0.36          | ..       |
| Slovenia              | 0.77          | 1.60          | 1.65          | 1.62          | 1.52          | 1.39          | ..       |
| Spain                 | 0.51          | 0.59          | 0.59          | 0.57          | 0.56          | 0.55          | ..       |
| Sweden                | 2.16 b        | ..            | 2.01 e        | ..            | 1.87          | ..            | ..       |
| Switzerland           | ..            | 2.03          | ..            | ..            | 2.14          | ..            | ..       |
| Turkey                | 0.25 d        | 0.34          | 0.35          | 0.39          | 0.39          | 0.44          | 0.48     |
| United Kingdom        | 0.66          | 0.73 e        | 0.76          | 0.80 e        | 0.82          | 0.87 e        | ..       |
| United States         | 1.59 d        | 1.60 d        | 1.66 d        | 1.69 d        | 1.70 d        | 1.74 d        | 1.77 d e |
| EU28 (OECD estimates) | 0.89 e        | 1.04 e        | 1.05 e        | 1.06 e        | 1.07 e        | ..            | ..       |
| <b>OECD-Total</b>     | <b>1.33 e</b> | <b>1.39 e</b> | <b>1.41 e</b> | <b>1.44 e</b> | <b>1.44 e</b> | <b>1.45 e</b> | ..       |
| Argentina             | 0.13          | ..            | ..            | ..            | 0.11          | 0.10          | ..       |
| China                 | 0.88          | 1.41          | 1.48          | 1.52          | 1.54          | 1.60          | 1.63     |
| Romania               | 0.15          | 0.17          | 0.12          | 0.13          | 0.18          | 0.24          | ..       |
| Russian Federation    | 0.30          | 0.28          | 0.29          | 0.29          | 0.29          | 0.31          | 0.33 e   |
| Singapore             | 1.27          | 1.06          | 1.05          | 1.17          | ..            | ..            | ..       |
| South Africa          | 0.38          | 0.28          | 0.30          | 0.31          | 0.31          | ..            | ..       |
| Chinese Taipei        | 1.55          | 2.19          | 2.27          | 2.32          | 2.37          | 2.45          | 2.61     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 12. Government-financed GERD (Gross domestic expenditure on R&D) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017     |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..       |
| Austria               | 0.85 e        | 1.10 d e      | 0.99          | 1.10 d e      | 0.99          | 0.95 b d e    | 0.93 p   |
| Belgium               | 0.44          | 0.56          | 0.57          | ..            | 0.55          | ..            | ..       |
| Canada                | 0.63 e        | 0.61 b e      | 0.58 e        | 0.55 b e      | 0.54 e        | 0.53 e        | 0.51 p   |
| Chile                 | ..            | 0.13          | 0.15          | 0.17 b        | 0.16          | 0.17 b p      | ..       |
| Czech Republic        | 0.53          | 0.66          | 0.66          | 0.65          | 0.62          | 0.60          | 0.62 p   |
| Denmark               | 0.66          | 0.87 d e      | 0.89 d        | ..            | 0.92 d        | ..            | 0.87 d p |
| Estonia               | 0.40          | 0.81          | 0.81          | 0.71          | 0.68          | 0.47          | ..       |
| Finland               | 0.85          | 0.91          | 0.86          | 0.87          | 0.84          | 0.79          | ..       |
| France                | 0.79          | 0.79          | 0.79          | 0.78          | 0.79          | ..            | ..       |
| Germany               | 0.69          | 0.84 d        | 0.82 d        | 0.82 d        | 0.81 d        | 0.83 d        | ..       |
| Greece                | 0.27          | 0.35          | 0.42          | 0.44          | 0.51          | 0.42          | 0.43 p   |
| Hungary               | 0.46 d        | 0.47          | 0.50          | 0.45          | 0.47          | 0.32          | ..       |
| Iceland               | 1.09          | ..            | 0.63 b        | 0.66          | 0.68          | 0.69          | 0.72 p   |
| Ireland               | 0.38          | 0.43 e        | 0.43 e        | 0.41 e        | 0.31 e        | 0.30 e        | ..       |
| Israel <sup>1</sup>   | 0.59 d        | 0.53 d        | 0.51 d        | 0.57 d        | 0.64 d        | 0.60 d e      | ..       |
| Italy                 | 0.53          | 0.54          | 0.54          | 0.53 e        | 0.51          | 0.48 b        | ..       |
| Japan                 | 0.53 e        | 0.54 e        | 0.57 b e      | 0.54 e        | 0.51 e        | 0.47 e        | 0.48 e   |
| Korea                 | 0.60 d        | 0.96          | 0.95          | 0.98          | 1.00          | 0.96          | 0.98     |
| Latvia                | 0.24          | 0.16          | 0.15          | 0.18          | 0.20          | 0.21          | ..       |
| Lithuania             | 0             | 0             | 0             | 0             | 0             | 0             | ..       |
| Luxembourg            | 0.26          | 0.57 b        | 0.63          | ..            | 0.61          | ..            | ..       |
| Mexico                | 0.20          | 0.33          | 0.35          | 0.38 e p      | 0.37 e p      | 0.33 e p      | ..       |
| Netherlands           | 0.69          | 0.62 b        | 0.64          | 0.66          | 0.66          | 0.63          | ..       |
| New Zealand           | 0.48          | ..            | 0.46          | ..            | 0.46          | ..            | ..       |
| Norway                | 0.65          | ..            | 0.76          | ..            | 0.87          | 0.93          | ..       |
| Poland                | 0.32          | 0.45          | 0.41          | 0.42          | 0.42          | 0.37          | ..       |
| Portugal              | 0.42          | 0.59          | 0.62          | 0.61          | 0.55          | 0.55          | ..       |
| Slovak Republic       | 0.28 e        | 0.33 e        | 0.32 e        | 0.36 e        | 0.37          | 0.32          | ..       |
| Slovenia              | 0.53          | 0.74          | 0.69          | 0.52          | 0.44          | 0.41          | ..       |
| Spain                 | 0.47          | 0.56          | 0.53          | 0.51          | 0.50          | 0.47          | ..       |
| Sweden                | 0.83 b        | ..            | 0.93 e        | ..            | .. c          | ..            | ..       |
| Switzerland           | ..            | 0.75          | ..            | ..            | 0.82          | ..            | ..       |
| Turkey                | 0.29 d        | 0.34          | 0.32          | 0.32          | 0.34          | 0.33          | 0.32     |
| United Kingdom        | 0.51          | 0.46 e        | 0.48          | 0.47 e        | 0.46          | 0.44 e        | ..       |
| United States         | 0.78 d        | 0.79 d        | 0.75 d        | 0.71 d        | 0.69 d        | 0.65 d p      | 0.63 d p |
| EU28 (OECD estimates) | 0.59 e        | 0.64 e        | 0.63 e        | 0.63 e        | 0.62 e        | ..            | ..       |
| <b>OECD-Total</b>     | <b>0.63 e</b> | <b>0.68 e</b> | <b>0.66 e</b> | <b>0.64 e</b> | <b>0.63 e</b> | <b>0.60 e</b> | ..       |
| Argentina             | 0.27          | ..            | ..            | ..            | 0.47          | 0.39          | ..       |
| China                 | 0.34          | 0.41          | 0.42          | 0.41          | 0.44          | 0.42          | 0.42     |
| Romania               | 0.22          | 0.24          | 0.20          | 0.19          | 0.20          | 0.19          | ..       |
| Russian Federation    | 0.61          | 0.70          | 0.69          | 0.74          | 0.76          | 0.75          | 0.73 e   |
| Singapore             | 0.79          | 0.77          | 0.78          | 0.80          | ..            | ..            | ..       |
| South Africa          | 0.33          | 0.33          | 0.31          | 0.34          | 0.36          | ..            | ..       |
| Chinese Taipei        | 0.73          | 0.74          | 0.71          | 0.66          | 0.66          | 0.68          | 0.66     |

 Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

 1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 13. Percentage of Gross domestic expenditure on R&D (GERD) financed by the business enterprise sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017     |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..       |
| Austria               | 45.6 e        | 45.7 e        | 48.7          | 47.7 e        | 49.7          | 53.1 b e      | 54.0 p   |
| Belgium               | 59.7          | 60.6          | 60.6          | ..            | 58.6          | ..            | ..       |
| Canada                | 49.3          | 47.4 b        | 46.7          | 45.8 b        | 44.0          | 42.2          | 40.9 p   |
| Chile                 | ..            | 34.9          | 34.2          | 31.9 b        | 32.8          | 35.8 b p      | ..       |
| Czech Republic        | 48.2          | 36.4          | 37.6          | 35.9          | 34.5          | 39.5          | 39.3 p   |
| Denmark               | 59.5          | 59.9 e        | 59.0          | ..            | 59.1          | ..            | 58.3 p   |
| Estonia               | 38.5          | 51.3          | 42.1          | 37.1          | 41.0          | 48.2          | ..       |
| Finland               | 66.9          | 63.1          | 60.8          | 53.5          | 54.8          | 57.0          | ..       |
| France                | 51.9          | 55.3          | 55.1          | 54.5 b        | 54.0          | ..            | ..       |
| Germany               | 67.6          | 66.1          | 65.4          | 66.0          | 65.6          | 65.2          | ..       |
| Greece                | 31.1          | 31.0          | 30.3          | 29.8          | 31.4          | 40.2          | 44.8 p   |
| Hungary               | 39.4 d        | 46.9          | 46.8          | 48.3          | 49.7          | 56.4          | ..       |
| Iceland               | 48.0          | ..            | 36.9 b        | 35.7          | 33.3          | 35.0          | 40.3 p   |
| Ireland               | 57.4          | 50.2 e        | 52.6 e        | 52.8 e        | 48.4 e        | 49.0 e        | ..       |
| Israel <sup>1</sup>   | 56.2 d        | 39.4 d        | 35.4 d        | 35.0 d        | 31.1 d        | 34.7 d e      | ..       |
| Italy                 | 39.7          | 44.3          | 45.2          | 47.3 e        | 50.0          | 52.1 b        | ..       |
| Japan                 | 76.1          | 76.1          | 75.5 b        | 77.3          | 78.0          | 78.1          | 78.3     |
| Korea                 | 75.0 d        | 74.7          | 75.7          | 75.3          | 74.5          | 75.4          | 76.2     |
| Latvia                | 34.3          | 23.7          | 21.8          | 27.8          | 20.0          | 21.6          | ..       |
| Lithuania             | 21            | 26            | 27            | 33            | 29            | 39            | ..       |
| Luxembourg            | 79.7          | 18.1 b        | 16.5          | ..            | 47.1          | ..            | ..       |
| Mexico                | 41.5          | 24.5          | 21.0          | 19.5 e p      | 19.7 e p      | 20.7 e p      | ..       |
| Netherlands           | 46.3          | 51.6 b        | 51.1          | 51.1          | 48.6          | 52.0          | ..       |
| New Zealand           | 41.1          | ..            | 39.8          | ..            | 43.8          | ..            | ..       |
| Norway                | 46.8          | ..            | 43.1          | ..            | 44.2          | 43.2          | ..       |
| Poland                | 33.4          | 32.3          | 37.3          | 39.0          | 39.0          | 53.1          | ..       |
| Portugal              | 36.3          | 46.0          | 42.3          | 41.8          | 42.7          | 44.4          | ..       |
| Slovak Republic       | 36.6          | 37.7          | 40.2          | 32.2          | 25.1          | 46.2          | ..       |
| Slovenia              | 54.8          | 62.2          | 63.8          | 68.4          | 69.2          | 69.2          | ..       |
| Spain                 | 46.3          | 45.6          | 46.3          | 46.4          | 45.8          | 46.7          | ..       |
| Sweden                | 63.9 b        | ..            | 61.0 e        | ..            | 57.3          | ..            | ..       |
| Switzerland           | ..            | 63.7          | ..            | ..            | 63.5          | ..            | ..       |
| Turkey                | 43.3 d        | 41.1          | 43.4          | 45.3          | 44.6          | 46.7          | 49.4     |
| United Kingdom        | 42.1          | 45.6 e        | 46.2          | 48.0 e        | 49.0          | 51.8 e        | ..       |
| United States         | 63.3 d        | 59.5 d        | 61.1 d        | 62.0 d        | 62.5 d        | 63.2 d p      | 63.6 d e |
| EU28 (OECD estimates) | 53.7 e        | 54.4 e        | 54.5 e        | 54.6 e        | 54.6 e        | ..            | ..       |
| <b>OECD-Total</b>     | <b>62.2 e</b> | <b>60.1 e</b> | <b>60.7 e</b> | <b>61.3 e</b> | <b>61.3 e</b> | <b>62.1 e</b> | ..       |
| Argentina             | 31.0          | ..            | ..            | ..            | 17.2          | 18.2          | ..       |
| China                 | 67.0          | 74.0          | 74.6          | 75.4          | 74.7          | 76.1          | 76.5     |
| Romania               | 37.2          | 34.4          | 31.0          | 32.9          | 37.3          | 49.4          | ..       |
| Russian Federation    | 30.0          | 27.2          | 28.2          | 27.1          | 26.5          | 28.1          | 30.2     |
| Singapore             | 58.8          | 53.4          | 52.7          | 54.1          | ..            | ..            | ..       |
| South Africa          | 43.9          | 38.3          | 41.4          | 40.8          | 38.9          | ..            | ..       |
| Chinese Taipei        | 66.9          | 73.9          | 75.2          | 76.9          | 77.5          | 77.4          | 79.0     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 14. Percentage of Gross domestic expenditure on R&D (GERD) financed by government**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017       |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| Austria               | 35.9 e        | 37.8 d e      | 33.6          | 35.6 d e      | 32.6          | 30.4 b d e    | 29.5 p     |
| Belgium               | 24.7          | 24.5          | 24.3          | ..            | 22.5          | ..            | ..         |
| Canada                | 31.8 e        | 34.1 b e      | 33.8 e        | 32.1 b e      | 31.6 e        | 31.3 e        | 31.9 p     |
| Chile                 | ..            | 36.0          | 38.4          | 44.2 b        | 42.6          | 46.4 b p      | ..         |
| Czech Republic        | 45.2          | 36.8          | 34.7          | 32.9          | 32.2          | 35.6          | 34.6 p     |
| Denmark               | 27.6          | 29.2 d e      | 29.9 d        | ..            | 30.2 d        | ..            | 28.6 d p   |
| Estonia               | 43.5          | 38.3          | 47.2          | 49.5          | 46.4          | 37.6          | ..         |
| Finland               | 25.7          | 26.7          | 26.0          | 27.5          | 28.9          | 28.9          | ..         |
| France                | 38.6          | 35.4          | 35.3          | 34.3 b        | 34.8          | ..            | ..         |
| Germany               | 28.4          | 29.2 d        | 29.1 d        | 28.7 d        | 27.9 d        | 28.5 d        | ..         |
| Greece                | 46.8          | 50.4          | 52.3          | 53.3          | 53.1          | 42.6          | 38.0 p     |
| Hungary               | 49.4 d        | 36.9          | 35.9          | 33.5          | 34.6          | 26.2          | ..         |
| Iceland               | 40.5          | ..            | 37.2 b        | 34.1          | 32.0          | 34.2          | 34.0 p     |
| Ireland               | 32.0          | 27.5 e        | 27.5 e        | 27.3 e        | 25.9 e        | 25.8 e        | ..         |
| Israel <sup>1</sup>   | 14.5 d        | 12.7 d        | 12.4 d        | 13.5 d        | 15.0 d        | 13.5 d e      | ..         |
| Italy                 | 50.7          | 42.5          | 41.4          | 39.7 e        | 38.0          | 35.2 b        | ..         |
| Japan                 | 16.8 e        | 16.8 e        | 17.3 b e      | 16.0 e        | 15.4 e        | 15.0 e        | 15.0 e     |
| Korea                 | 23.0 d        | 23.8          | 22.8          | 23.0          | 23.7          | 22.7          | 21.6       |
| Latvia                | 46.0          | 23.9          | 23.9          | 25.6          | 32.7          | 47.7          | ..         |
| Lithuania             | 63            | 40            | 35            | 33            | 35            | 39            | ..         |
| Luxembourg            | 16.6          | 45.1 b        | 48.4          | ..            | 47.7          | ..            | ..         |
| Mexico                | 49.2          | 67.8          | 70.7          | 71.8 e p      | 70.3 e p      | 67.4 e p      | ..         |
| Netherlands           | 38.8          | 32.4 b        | 33.4          | 33.2          | 33.1          | 31.3          | ..         |
| New Zealand           | 43.2          | ..            | 39.8          | ..            | 37.1          | ..            | ..         |
| Norway                | 43.6          | ..            | 45.8          | ..            | 44.9          | 45.7          | ..         |
| Poland                | 57.7          | 51.3          | 47.2          | 45.2          | 41.8          | 38.9          | ..         |
| Portugal              | 55.2          | 43.1          | 46.4          | 47.1          | 44.3          | 42.6          | ..         |
| Slovak Republic       | 57.0 e        | 41.6 e        | 38.9 e        | 41.4 e        | 31.9          | 41.0          | ..         |
| Slovenia              | 37.2          | 28.7          | 26.9          | 21.8          | 19.9          | 20.2          | ..         |
| Spain                 | 43.0          | 43.1          | 41.6          | 41.4          | 40.9          | 40.0          | ..         |
| Sweden                | 24.4 b        | ..            | 28.3 e        | ..            | .. c          | ..            | ..         |
| Switzerland           | ..            | 23.6          | ..            | ..            | 24.4          | ..            | ..         |
| Turkey                | 50.1 d        | 40.7          | 39.3          | 37.4          | 38.5          | 35.1          | 33.6       |
| United Kingdom        | 32.7          | 28.7 e        | 29.1          | 28.4 e        | 27.7          | 26.3 e        | ..         |
| United States         | 30.8 d        | 29.6 d        | 27.5 d        | 25.9 d        | 25.3 d        | 23.6 d p      | 22.8 d e p |
| EU28 (OECD estimates) | 35.2 e        | 33.4 e        | 33.0 e        | 32.5 e        | 31.8 e        | ..            | ..         |
| <b>OECD-Total</b>     | <b>29.6 e</b> | <b>29.3 e</b> | <b>28.3 e</b> | <b>27.3 e</b> | <b>26.9 e</b> | <b>25.8 e</b> | ..         |
| Argentina             | 65.3          | ..            | ..            | ..            | 76.4          | 73.1          | ..         |
| China                 | 26.3          | 21.6          | 21.1          | 20.3          | 21.3          | 20.0          | 19.8       |
| Romania               | 53.5          | 49.9          | 52.3          | 48.5          | 41.7          | 39.6          | ..         |
| Russian Federation    | 61.9          | 67.8          | 67.6          | 69.2          | 69.5          | 68.2          | 66.2       |
| Singapore             | 36.4          | 38.5          | 39.3          | 37.1          | ..            | ..            | ..         |
| South Africa          | 38.2          | 45.4          | 42.9          | 43.9          | 44.6          | ..            | ..         |
| Chinese Taipei        | 31.5          | 24.8          | 23.6          | 22.0          | 21.4          | 21.6          | 20.0       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 15. Percentage of Gross domestic expenditure on R&D (GERD) financed by other national sources**

Percentage

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017         |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Australia             | ..           | ..           | ..           | ..           | ..           | ..           | ..           |
| Austria               | 0.4 e        | 0.5 d e      | 1.1          | 0.5 d e      | 1.1          | 0.5 d e      | 0.6 d p      |
| Belgium               | 3.3          | 1.4          | 1.5          | ..           | 2.4          | ..           | ..           |
| Canada                | 10.1 e       | 12.8 b e     | 13.7 e       | 13.6 b e m   | 14.0 e m     | 15.9 e m     | 16.3 p       |
| Chile                 | ..           | 11.6         | 12.5         | 10.2 b       | 11.8         | 15.9 b p     | ..           |
| Czech Republic        | 1.2          | 0.9          | 0.5          | 0.7          | 0.8          | 0.9          | 1.1 p        |
| Denmark               | 2.8 d        | 3.8 d e      | 4.4 d        | ..           | 4.4 d        | ..           | 4.8 d p      |
| Estonia               | 1.0          | 0.4          | 0.4          | 1.0          | 0.5          | 0.6          | ..           |
| Finland               | 1.2          | 1.4          | 1.6          | 1.7          | 1.8          | 2.0          | ..           |
| France                | 1.9          | 1.7          | 1.7          | 3.5 b        | 3.5          | ..           | ..           |
| Germany               | 0.3          | 0.4 d        | 0.3 d        | 0.3 d        | 0.4 d        | 0.3 d        | ..           |
| Greece                | 3.1          | 2.9          | 3.5          | 3.7          | 2.9          | 2.7          | 2.6 p        |
| Hungary               | 0.3 d        | 0.9          | 0.8          | 0.7          | 0.7          | 0.7          | ..           |
| Iceland               | 0.3          | ..           | 5.9 b        | 6.9          | 8.4          | 8.4          | 1.3 p        |
| Ireland               | 1.9          | 1.3 e        | 1.3 e        | 1.3 e        | 1.9 e        | 1.5 e        | ..           |
| Israel <sup>1</sup>   | 4.6 d        | 2.2 d        | 1.7 d        | 1.2 d        | 1.3 d        | 1.9 d e      | ..           |
| Italy                 | 1.7          | 3.7          | 3.7          | 3.6 e        | 3.7          | 2.9 b        | ..           |
| Japan                 | 6.8 e        | 6.6 e        | 6.7 b e      | 6.3 e        | 6.1 e        | 6.2 e        | 6.1 e        |
| Korea                 | 1.3 d        | 1.1          | 1.2          | 1.0          | 1.0          | 1.0          | 0.9          |
| Latvia                | 1.2          | 2.0          | 2.7          | 2.3          | 2.2          | 2.9          | ..           |
| Lithuania             | 6            | 1            | 1            | 0            | 2            | 3            | ..           |
| Luxembourg            | 0.1          | 2.3 b        | 2.8          | ..           | 1.9          | ..           | ..           |
| Mexico                | 8.2          | 7.3          | 8.0          | 8.4 e p      | 9.6 e p      | 11.4 e p     | ..           |
| Netherlands           | 2.8          | 3.5 b        | 3.4          | 3.1          | 2.7          | 2.7          | ..           |
| New Zealand           | 10.6         | ..           | 13.2         | ..           | 11.4         | ..           | ..           |
| Norway                | 1.6          | ..           | 1.6          | ..           | 1.6          | 1.7          | ..           |
| Poland                | 3.2          | 3.0          | 2.3          | 2.4          | 2.4          | 2.6          | ..           |
| Portugal              | 3.8          | 5.7          | 5.2          | 5.4          | 5.7          | 4.9          | ..           |
| Slovak Republic       | 0.3          | 2.1          | 2.9          | 2.7          | 3.6          | 2.1          | ..           |
| Slovenia              | 0.7          | 0.5          | 0.4          | 0.6          | 0.3          | 0.4          | ..           |
| Spain                 | 5.0          | 4.6          | 4.7          | 4.8          | 5.2          | 5.2          | ..           |
| Sweden                | 3.6 b        | ..           | 4.1 e        | ..           | 4.3          | ..           | ..           |
| Switzerland           | ..           | 1.6          | ..           | ..           | 1.9          | ..           | ..           |
| Turkey                | 5.8 d        | 16.7         | 15.6         | 15.3         | 15.0         | 14.5         | 13.5         |
| United Kingdom        | 5.9          | 5.9 e        | 6.0          | 6.1 e        | 6.3          | 6.4 e        | ..           |
| United States         | 5.9 d        | 6.8 d        | 6.9 d        | 7.0 d        | 7.2 d        | 7.4 d p      | 7.5 d e p    |
| EU28 (OECD estimates) | 2.3 e        | 2.4 e        | 2.4 e        | 2.7 e        | 2.7 e        | ..           | ..           |
| <b>OECD-Total</b>     | <b>4.9 e</b> | <b>5.1 e</b> | <b>5.2 e</b> | <b>5.3 e</b> | <b>5.3 e</b> | <b>5.5 e</b> | <b>5.4 e</b> |
| Argentina             | 2.9          | ..           | ..           | ..           | 3.1          | 2.4          | ..           |
| China                 | ..           | ..           | ..           | ..           | ..           | ..           | ..           |
| Romania               | 4.0          | 1.2          | 1.2          | 1.5          | 1.8          | 1.2          | ..           |
| Russian Federation    | 0.5          | 1.0          | 1.2          | 1.2          | 1.4          | 1.0          | 1.0          |
| Singapore             | 0.5          | 2.2          | 2.2          | 2.0          | ..           | ..           | ..           |
| South Africa          | 4.4          | 3.2          | 2.8          | 3.1          | 3.5          | ..           | ..           |
| Chinese Taipei        | 1.5          | 1.1          | 1.1          | 1.0          | 1.0          | 0.9          | 0.9          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 16. Percentage of Gross domestic expenditure on R&D (GERD) financed by the rest of the world**

Percentage

|                       | 2005      | 2012         | 2013         | 2014         | 2015         | 2016         | 2017      |
|-----------------------|-----------|--------------|--------------|--------------|--------------|--------------|-----------|
| Australia             | ..        | ..           | ..           | ..           | ..           | ..           | ..        |
| Austria               | 18.0 e    | 16.1 e       | 16.6         | 16.2 e       | 16.6         | 16.0 e       | 16.0 p    |
| Belgium               | 12.4      | 13.4         | 13.7         | ..           | 16.5         | ..           | ..        |
| Canada                | 8.8       | 5.7 b        | 5.8          | 8.1 b        | 9.8          | 10.6         | 10.9 p    |
| Chile                 | ..        | 17.5         | 15.0         | 13.8 b       | 12.9         | 1.9 b p      | ..        |
| Czech Republic        | 5.4       | 25.9         | 27.2         | 30.5         | 32.5         | 24.0         | 25.0 p    |
| Denmark               | 10.1      | 7.2 e        | 6.7          | ..           | 6.3          | ..           | 8.3 p     |
| Estonia               | 17.1      | 10.0         | 10.3         | 12.5         | 12.2         | 13.6         | ..        |
| Finland               | 6.3 b     | 8.8          | 11.5         | 17.3         | 14.5         | 12.1         | ..        |
| France                | 7.5       | 7.6          | 7.9          | 7.6 b        | 7.6          | ..           | ..        |
| Germany               | 3.7       | 4.3          | 5.2          | 5.0          | 6.2          | 5.9          | ..        |
| Greece                | 19.0      | 15.8         | 14.0         | 13.2         | 12.7         | 14.6         | 14.6 p    |
| Hungary               | 10.7 d    | 15.4         | 16.6         | 17.5         | 15.0         | 16.6         | ..        |
| Iceland               | 11.2      | ..           | 20.0 b       | 23.3         | 26.4         | 22.4         | 24.3 p    |
| Ireland               | 8.6       | 21.0 e       | 18.6 e       | 18.6 e       | 23.8 e       | 23.6 e       | ..        |
| Israel <sup>1</sup>   | 24.7 d    | 45.6 d       | 50.5 d       | 50.2 d       | 52.7 d       | 49.8 d e     | ..        |
| Italy                 | 8.0       | 9.5          | 9.7          | 9.4 e        | 8.3          | 9.8 b        | ..        |
| Japan                 | 0.3       | 0.4          | 0.5 b        | 0.4          | 0.5          | 0.7          | 0.6       |
| Korea                 | 0.7 d     | 0.3          | 0.3          | 0.7          | 0.8          | 0.9          | 1.3       |
| Latvia                | 18.5      | 50.4         | 51.6         | 44.2         | 45.0         | 27.8         | ..        |
| Lithuania             | 10.5      | 33.2         | 37.1         | 33.8         | 34.3         | 19.2         | ..        |
| Luxembourg            | 3.6       | 34.4 b       | 32.3         | ..           | 3.4          | ..           | ..        |
| Mexico                | 1.1       | 0.4          | 0.4          | 0.4 e p      | 0.5 e p      | 0.6 e p      | ..        |
| Netherlands           | 12.0      | 12.5 b       | 12.2         | 12.7         | 15.5         | 13.9         | ..        |
| New Zealand           | 5.2       | ..           | 7.2          | ..           | 7.8          | ..           | ..        |
| Norway                | 8.1       | ..           | 9.5          | ..           | 9.2          | 9.5          | ..        |
| Poland                | 5.7       | 13.3         | 13.1         | 13.4         | 16.7         | 5.5          | ..        |
| Portugal              | 4.7       | 5.2          | 6.1          | 5.6          | 7.4          | 8.0          | ..        |
| Slovak Republic       | 6.0       | 18.7         | 18.0         | 23.7         | 39.4         | 10.7         | ..        |
| Slovenia              | 7.3       | 8.6          | 8.9          | 9.3          | 10.6         | 10.2         | ..        |
| Spain                 | 5.7       | 6.6          | 7.4          | 7.4          | 8.0          | 8.1          | ..        |
| Sweden                | 8.1 b     | ..           | 6.7 e        | ..           | .. c         | ..           | ..        |
| Switzerland           | ..        | 11.2         | ..           | ..           | 10.2         | ..           | ..        |
| Turkey                | 0.8       | 1.5          | 1.7          | 2.0          | 1.9          | 3.7          | 3.5       |
| United Kingdom        | 19.3      | 19.8 e       | 18.7         | 17.5 e       | 17.1         | 15.6 e       | ..        |
| United States         | .. k      | 4.1 d        | 4.5 d        | 5.0 d        | 5.0 d        | 5.8 d p      | 6.2 d e   |
| EU28 (OECD estimates) | 8.7 e     | 9.8 e        | 10.1 e       | 10.2 e       | 10.9 e       | 9.9 e        | ..        |
| <b>OECD-Total</b>     | <b>..</b> | <b>5.6 e</b> | <b>5.9 e</b> | <b>6.2 e</b> | <b>6.5 e</b> | <b>6.6 e</b> | <b>..</b> |
| Argentina             | 0.8       | ..           | ..           | ..           | 3.3          | 6.3          | ..        |
| China                 | 0.9       | 1.0          | 0.9          | 0.8          | 0.7          | 0.7          | 0.6       |
| Romania               | 5.3       | 14.4         | 15.5         | 17.0         | 19.2         | 9.9          | ..        |
| Russian Federation    | 7.6       | 4.0          | 3.0          | 2.5          | 2.6          | 2.7          | 2.6       |
| Singapore             | 4.4       | 5.9          | 5.8          | 6.8          | ..           | ..           | ..        |
| South Africa          | 13.6      | 13.1         | 12.9         | 12.2         | 13.0         | ..           | ..        |
| Chinese Taipei        | 0.1       | 0.1          | 0.1          | 0.1          | 0.1          | 0.1          | 0.1       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 17. Percentage of Gross domestic expenditure on R&D (GERD) performed by the business enterprise sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | ..            | 56.3 e        | ..            | 53.4 e        | ..            | ..            |
| Austria               | 69.8 e        | 70.4 e        | 70.8          | 71.3 e        | 71.4          | 70.2 b e      | 70.2 p        |
| Belgium               | 68.0          | 69.8          | 69.4          | 69.9          | 69.9          | 70.1 e        | 67.7 p        |
| Canada                | 55.8 d        | 51.6 b d      | 51.2 d        | 53.2 b        | 53.3          | 52.6          | 51.8 p        |
| Chile                 | ..            | 34.4          | 35.0          | 33.4 b        | 34.3          | 38.5 b p      | ..            |
| Czech Republic        | 58.2 b        | 52.8          | 53.3          | 55.2          | 54.3          | 61.1          | 62.9 p        |
| Denmark               | 68.3          | 65.6          | 63.3          | 63.8          | 63.5          | 64.8          | 64.4 p        |
| Estonia               | 45.1          | 57.5          | 47.7          | 43.5          | 46.1          | 51.5          | 47.2          |
| Finland               | 70.8          | 68.7          | 68.9          | 67.7          | 66.7          | 65.8          | 65.3 p        |
| France                | 62.1          | 64.6          | 64.6          | 63.6 b        | 63.7          | 63.6 p        | 65.0 e        |
| Germany               | 69.3          | 68.0          | 67.2          | 67.7          | 68.7          | 68.2          | 69.3 e        |
| Greece                | 31.0          | 34.3          | 33.3          | 33.9          | 33.0          | 42.2          | 48.7 p        |
| Hungary               | 43.2 d        | 65.6 d        | 69.4 d        | 71.5 d        | 73.4 d        | 74.1 d        | 73.1 d        |
| Iceland               | 51.5          | ..            | 55.8 b d      | 61.1 d        | 64.7 d        | 63.0 d        | 64.7 p        |
| Ireland               | 65.5          | 71.8 e        | 71.9 e        | 72.1 e        | 71.3 e        | 72.2 e        | 70.7 p        |
| Israel <sup>1</sup>   | 81.5 d        | 84.2 d        | 84.1 d        | 84.7 d        | 85.2 d        | 85.6 d e      | 86.1 d e      |
| Italy                 | 50.4          | 54.2          | 54.7          | 56.7 e        | 58.2          | 60.8 b        | 61.4 p        |
| Japan                 | 76.4          | 76.6          | 76.1 b        | 77.8          | 78.5          | 78.8          | 78.8          |
| Korea                 | 76.9 d        | 77.9          | 78.5          | 78.2          | 77.5          | 77.7          | 79.4          |
| Latvia                | 40.7          | 22.6          | 28.2          | 35.5          | 24.7          | 24.5          | 27.2 p        |
| Lithuania             | 20.4          | 26.9          | 25.5          | 30.9          | 27.4          | 35.0          | 35.6          |
| Luxembourg            | 86.4          | 55.3 b        | 52.5          | 53.7          | 51.6          | 54.1          | 54.0 p        |
| Mexico                | 46.9          | 29.7          | 31.2          | 29.9 e p      | 30.0 e p      | 30.6 e p      | ..            |
| Netherlands           | 52.9          | 56.6 b        | 55.7          | 56.0          | 56.0          | 58.3          | 58.8 p        |
| New Zealand           | 41.6          | ..            | 46.4          | ..            | 51.1          | ..            | ..            |
| Norway                | 53.5          | 52.3          | 52.5          | 53.7          | 53.9          | 53.3          | 53.1 p        |
| Poland                | 31.8          | 37.2          | 43.6          | 46.6          | 46.6          | 65.7 b        | 64.5 p        |
| Portugal              | 38.5          | 49.7          | 47.5          | 46.4          | 46.4          | 48.4          | 50.5 p        |
| Slovak Republic       | 49.8          | 41.3          | 46.3          | 36.8          | 28.0          | 50.4          | 54.1          |
| Slovenia              | 58.8          | 75.7          | 76.5          | 77.3          | 76.3          | 75.7          | 74.7 p        |
| Spain                 | 53.8          | 53.0          | 53.1          | 52.9          | 52.5          | 53.7          | 54.9 p        |
| Sweden                | 72.8 b        | 67.8 e        | 68.9 e        | 67.0 e        | 69.7          | 69.6 p        | 70.6 p        |
| Switzerland           | ..            | 71.5          | ..            | ..            | 71.0          | ..            | ..            |
| Turkey                | 33.8          | 45.1          | 47.5          | 49.8          | 50.0          | 54.2          | 56.9          |
| United Kingdom        | 61.4          | 63.3 e        | 63.9          | 65.1 e        | 66.0          | 67.1 e        | 67.6 p        |
| United States         | 68.9 d        | 69.6 d        | 70.9 d        | 71.5 d        | 71.9 d        | 72.6 d p      | 73.1 d e      |
| EU28 (OECD estimates) | 62.2 e        | 62.7 e        | 62.7 e        | 63.1 e        | 63.6 e        | 64.9 e        | 65.7 e        |
| <b>OECD-Total</b>     | <b>67.7 e</b> | <b>67.7 e</b> | <b>68.2 e</b> | <b>68.8 e</b> | <b>69.1 e</b> | <b>69.9 e</b> | <b>70.5 e</b> |
| Argentina             | 32.2          | 25.3 p        | 24.2 p        | 20.1 p        | 21.2 b        | 23.9          | ..            |
| China                 | 68.3          | 76.2          | 76.6          | 77.3          | 76.8          | 77.5          | 77.6          |
| Romania               | 49.7          | 39.0          | 30.7          | 41.5          | 44.0          | 55.2          | 56.7 p        |
| Russian Federation    | 68.0          | 58.3          | 60.6          | 59.6          | 59.2          | 58.7          | 60.1          |
| Singapore             | 66.2          | 60.9          | 59.4          | 61.2          | ..            | ..            | ..            |
| South Africa          | 58.3          | 44.3          | 45.9          | 45.3          | 42.7          | ..            | ..            |
| Chinese Taipei        | 67.0          | 74.1          | 75.3          | 76.8          | 77.4          | 77.3          | 78.7          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 18. Percentage of Gross domestic expenditure on R&D (GERD) performed by the higher education sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | ..            | 29.6 e        | ..            | 30.6 e        | ..            | ..            |
| Austria               | 24.7 e        | 24.6 e        | 24.3          | 23.7 e        | 23.5          | 22.2 b e      | 22.2 p        |
| Belgium               | 22.3          | 21.3          | 21.7          | 20.6          | 20.3          | 20.5 e        | 20.8 p        |
| Canada                | 34.0          | 39.4 b        | 39.5          | 37.7 b        | 39.3          | 40.2          | 41.1 p        |
| Chile                 | ..            | 34.3          | 39.3          | 39.0 b        | 38.5          | 41.8 b p      | ..            |
| Czech Republic        | 18.6          | 27.5          | 27.2          | 25.4          | 24.9          | 20.4          | 19.6 p        |
| Denmark               | 24.6          | 31.6          | 33.9          | 33.5          | 33.9          | 32.7          | 33.0 p        |
| Estonia               | 41.4          | 32.1          | 42.3          | 44.3          | 41.4          | 35.5          | 39.6          |
| Finland               | 19.0          | 21.6          | 21.5          | 22.9          | 24.4          | 25.1          | 25.4 p        |
| France                | 18.8          | 20.8          | 20.9          | 22.1 b        | 22.0          | 22.0 p        | 20.7 e        |
| Germany               | 16.5          | 17.7          | 17.9          | 17.7          | 17.3          | 18.0 b        | 17.3 e        |
| Greece                | 47.5          | 39.9          | 37.4          | 37.2          | 37.8          | 31.9          | 28.4 p        |
| Hungary               | 25.1 d        | 18.4 d        | 14.4 d        | 13.5 d        | 12.1 d        | 11.1 d        | 13.3 d        |
| Iceland               | 22.0          | ..            | 37.4 b        | 32.8          | 30.5          | 32.1          | 31.2 p        |
| Ireland               | 27.1          | 23.4 e        | 23.5 e        | 23.4 e        | 24.4 e        | 23.6 e        | 24.7 p        |
| Israel <sup>1</sup>   | 14.9 d        | 12.8 d        | 12.9 d        | 12.5 d        | 12.2 d        | 11.8 d e      | 11.4 d e      |
| Italy                 | 30.2 b        | 28.0          | 28.3          | 26.7 e        | 25.5 e        | 24.2 b e      | 24.2 p        |
| Japan                 | 13.4          | 13.4          | 13.5 b        | 12.6          | 12.3          | 12.3          | 12.0          |
| Korea                 | 9.9 d         | 9.5           | 9.2           | 9.0           | 9.1           | 9.1           | 8.5           |
| Latvia                | 40.6          | 50.3          | 42.9          | 40.5          | 49.7          | 43.8          | 46.7 p        |
| Lithuania             | 54.6          | 53.5          | 54.7          | 52.1          | 55.5          | 38.9          | 36.0          |
| Luxembourg            | 1.5           | 16.9 b        | 18.6          | 16.4          | 18.6          | 19.7 e        | 19.7 e p      |
| Mexico                | 28.7          | 27.5          | 26.1          | 26.6 e p      | 26.8 e p      | 26.8 e p      | ..            |
| Netherlands           | 34.7          | 31.6 b        | 32.1          | 32.1          | 32.1          | 30.4          | 29.8 p        |
| New Zealand           | 32.5          | ..            | 30.4          | ..            | 28.0          | ..            | ..            |
| Norway                | 30.8          | 31.3          | 31.5          | 31.0          | 31.1          | 32.6          | 33.3 p        |
| Poland                | 31.6          | 34.4          | 29.3          | 29.2          | 28.9          | 31.4          | 32.9 p        |
| Portugal              | 35.4          | 36.5          | 44.6 b        | 45.6          | 45.5          | 44.7          | 42.6 p        |
| Slovak Republic       | 20.4          | 34.0          | 33.1          | 34.4          | 43.8          | 27.7          | 24.7          |
| Slovenia              | 16.7          | 11.1          | 10.4          | 10.5          | 10.2          | 10.8          | 11.2 p        |
| Spain                 | 29.0          | 27.7          | 28.0          | 28.1          | 28.1          | 27.5          | 27.1 p        |
| Sweden                | 22.0 b        | 27.1 e        | 27.1 e        | 29.0 e        | 26.7          | 26.8 p        | 25.7 p        |
| Switzerland           | ..            | 26.1          | ..            | ..            | 26.7          | ..            | ..            |
| Turkey                | 54.6          | 43.9          | 42.1          | 40.5          | 39.7          | 36.3          | 33.5          |
| United Kingdom        | 25.7          | 26.7 e        | 26.4          | 25.8 e        | 25.3          | 24.3 e        | 23.7 p        |
| United States         | 14.3 d        | 14.0 d        | 13.5 d        | 13.1 d        | 13.1 d        | 13.1 d p      | 13.0 d e p    |
| EU28 (OECD estimates) | 22.6 e        | 23.5 e        | 23.6 e        | 23.5 e        | 23.2 e        | 22.8 e        | 22.2 e        |
| <b>OECD-Total</b>     | <b>17.7 e</b> | <b>18.3 e</b> | <b>18.1 e</b> | <b>17.7 e</b> | <b>17.5 e</b> | <b>17.5 e</b> | <b>17.2 e</b> |
| Argentina             | 25.8          | 29.6 p        | 29.1 p        | 30.5 p        | 26.0          | 25.8          | ..            |
| China                 | 9.9           | 7.6           | 7.2           | 6.9           | 7.0           | 6.8           | 7.2           |
| Romania               | 13.7          | 19.7          | 19.7          | 15.2          | 17.4          | 11.3          | 10.6 p        |
| Russian Federation    | 5.8           | 9.3           | 9.0           | 9.8           | 9.6           | 9.1           | 9.0           |
| Singapore             | 24.2          | 29.0          | 29.2          | 27.4          | ..            | ..            | ..            |
| South Africa          | 19.3          | 30.7          | 28.4          | 28.5          | 30.5          | ..            | ..            |
| Chinese Taipei        | 11.4          | 11.6          | 11.1          | 10.4          | 9.9           | 9.4           | 8.9           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 19. Percentage of Gross domestic expenditure on R&D (GERD) performed by the government sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | ..            | 11.2 e        | ..            | 12.7 e        | ..            | ..            |
| Austria               | 5.2 e         | 4.6 e         | 4.4           | 4.6 e         | 4.6           | 7.1 b e       | 7.1 p         |
| Belgium               | 8.4           | 8.5 b         | 8.5           | 9.0           | 9.2           | 8.9 e         | 11.0 p        |
| Canada                | 9.7           | 8.6 b         | 8.9           | 8.6 b         | 7.0           | 6.8           | 6.8 p         |
| Chile                 | ..            | 4.1           | 8.4 b         | 8.1 b         | 7.8           | 13.2 b p      | ..            |
| Czech Republic        | 22.8 b        | 19.2          | 19.1          | 19.0          | 20.4          | 18.2          | 17.2 p        |
| Denmark               | 6.5           | 2.4           | 2.4           | 2.3           | 2.2           | 2.2           | 2.2 p         |
| Estonia               | 11.3          | 9.3           | 8.9           | 11.0          | 10.8          | 11.4          | 11.8          |
| Finland               | 9.6           | 9.0           | 8.9           | 8.6           | 8.2           | 8.2           | 8.5 p         |
| France                | 17.8          | 13.2          | 13.1          | 12.7 b        | 12.8          | 12.9 p        | 12.7 e        |
| Germany               | 14.1 d        | 14.3 d        | 14.9 d        | 14.6 d        | 14.1 d        | 13.8 d        | 13.4 d e      |
| Greece                | 20.3          | 24.8          | 28.0          | 27.7          | 28.1          | 25.0          | 22.0 p        |
| Hungary               | 28.0 d        | 14.4 d        | 14.9 d        | 13.7 d        | 13.3 d        | 13.4 d        | 12.6 d        |
| Iceland               | 23.5          | ..            | 6.8 b         | 6.1           | 4.8           | 4.9           | 4.1 p         |
| Ireland               | 7.4           | 4.8 e         | 4.6 e         | 4.5 e         | 4.3 e         | 4.2 e         | 4.6 p         |
| Israel <sup>1</sup>   | 2.7 d         | 1.9 d         | 1.9 d         | 1.8 d         | 1.6 d         | 1.6 d e       | 1.6 d e       |
| Italy                 | 17.3          | 14.8          | 14.0          | 13.6 e        | 13.1          | 12.6 b        | 12.7 p        |
| Japan                 | 8.3           | 8.6           | 9.2 b         | 8.3           | 7.9           | 7.5           | 7.8           |
| Korea                 | 11.9 d        | 11.3          | 10.9          | 11.2          | 11.7          | 11.5          | 10.7          |
| Latvia                | 18.7          | 27.1          | 28.9          | 24.0          | 25.6          | 31.8          | 26.1 p        |
| Lithuania             | 25.0          | 19.6          | 19.8          | 17.0          | 17.1          | 26.1          | 28.5          |
| Luxembourg            | 12.1 d        | 27.8 b d      | 29.0 d        | 29.9 d        | 29.8 d        | 26.3 d e      | 26.3 e p      |
| Mexico                | 23.2          | 38.0          | 38.0          | 38.5 e p      | 37.9 e p      | 36.5 e p      | ..            |
| Netherlands           | 12.4 d        | 11.8 b d      | 12.2 d        | 11.9 d        | 11.9 d        | 11.3 d        | 11.4 d p      |
| New Zealand           | 25.9          | ..            | 23.2          | ..            | 20.9          | ..            | ..            |
| Norway                | 15.7          | 16.4          | 16.0          | 15.2          | 15.0          | 14.2          | 13.6 p        |
| Poland                | 36.4          | 28.0          | 26.8          | 24.0          | 24.4          | 2.5 b         | 2.3 p         |
| Portugal              | 14.6          | 5.4           | 6.5           | 6.3           | 6.5           | 5.3           | 5.3 p         |
| Slovak Republic       | 29.7 d        | 24.5 d        | 20.5 d        | 28.3 d        | 27.9          | 21.4          | 20.8          |
| Slovenia              | 24.2          | 13.1          | 13.0          | 12.2          | 13.5          | 13.4          | 13.8 p        |
| Spain                 | 17.0          | 19.1          | 18.7          | 18.8          | 19.1          | 18.5          | 17.8 p        |
| Sweden                | 4.9 b         | 4.8 e         | 3.7 e         | 3.7 e         | 3.4           | 3.4 p         | 3.7 p         |
| Switzerland           | ..            | 0.7 d         | ..            | ..            | 0.9 d         | ..            | ..            |
| Turkey                | 11.6          | 11.0          | 10.4          | 9.7           | 10.3          | 9.5 d         | 9.6 d         |
| United Kingdom        | 10.6          | 8.0 e         | 7.9           | 7.3 e         | 6.6           | 6.6 e         | 6.5 p         |
| United States         | 12.3 d        | 12.3 d        | 11.5 d        | 11.4 d        | 11.0 d        | 10.2 d p      | 9.7 d e       |
| EU28 (OECD estimates) | 14.1 e        | 12.7 e        | 12.7 e        | 12.4 e        | 12.2 e        | 11.4 e        | 11.3 e        |
| <b>OECD-Total</b>     | <b>12.0 e</b> | <b>11.7 e</b> | <b>11.4 e</b> | <b>11.1 e</b> | <b>10.9 e</b> | <b>10.2 e</b> | <b>10.0 e</b> |
| Argentina             | 39.7          | 43.4 p        | 45.0 p        | 47.7 p        | 51.2          | 49.5          | ..            |
| China                 | 21.8          | 16.3          | 16.2          | 15.8          | 16.2          | 15.7          | 15.2          |
| Romania               | 34.2          | 40.9          | 49.2          | 43.0          | 38.3          | 33.3          | 32.4 p        |
| Russian Federation    | 26.1          | 32.2          | 30.3          | 30.5          | 31.1          | 32.0          | 30.4          |
| Singapore             | 9.7           | 10.0          | 11.3          | 11.4          | ..            | ..            | ..            |
| South Africa          | 20.8          | 22.9          | 23.4          | 23.5          | 24.0          | ..            | ..            |
| Chinese Taipei        | 21.0          | 14.1          | 13.3          | 12.5          | 12.4          | 13.1          | 12.1          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 20. Percentage of Gross domestic expenditure on R&D (GERD) performed by the private non-profit sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | ..            | 2.84 e        | ..            | 3.24 e        | ..            | ..            |
| Austria               | 0.30 e        | 0.44 e        | 0.42          | 0.47 e        | 0.49          | 0.49 e        | 0.49 p        |
| Belgium               | 1.31          | 0.40 b        | 0.37          | 0.46          | 0.55          | 0.56 e        | 0.51 p        |
| Canada                | 0.53          | 0.47 b        | 0.49          | 0.45 b        | 0.47          | 0.45          | 0.40 p        |
| Chile                 | ..            | 27.23         | 17.28 b       | 19.52 b       | 19.35         | 6.49 b p      | ..            |
| Czech Republic        | 0.51          | 0.51          | 0.34          | 0.41          | 0.39          | 0.25          | 0.28 p        |
| Denmark               | 0.67          | 0.41          | 0.42          | 0.41          | 0.35          | 0.35          | 0.35 p        |
| Estonia               | 2.20          | 1.05          | 1.06          | 1.19          | 1.80          | 1.54          | 1.41          |
| Finland               | 0.58          | 0.68          | 0.71          | 0.77          | 0.77          | 0.86          | 0.82 p        |
| France                | 1.29          | 1.44          | 1.47          | 1.51 b        | 1.54          | 1.56 p        | 1.65 e        |
| Germany               | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Greece                | 1.26          | 0.96          | 1.25          | 1.24          | 1.12          | 0.89          | 0.81 p        |
| Hungary               | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Iceland               | 2.99          | ..            | ..            | ..            | ..            | ..            | ..            |
| Ireland               | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Israel <sup>1</sup>   | 0.97 d        | 1.06 d        | 1.14 d        | 0.99 d        | 1.02 d        | 0.99 d e      | 0.95 d e      |
| Italy                 | 2.12          | 2.96          | 2.99          | 3.04 e        | 3.19          | 2.48 b        | 1.69 p        |
| Japan                 | 1.86          | 1.40          | 1.28 b        | 1.34          | 1.33          | 1.38          | 1.38          |
| Korea                 | 1.36 d        | 1.28          | 1.33          | 1.52          | 1.64          | 1.59          | 1.41          |
| Latvia                | 0.00          | ..            | ..            | ..            | ..            | ..            | ..            |
| Lithuania             | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Luxembourg            | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Mexico                | 1.13          | 4.80          | 4.68          | 4.87 e p      | 5.41 e p      | 6.23 e p      | ..            |
| Netherlands           | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| New Zealand           | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Norway                | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Poland                | 0.31          | 0.40          | 0.29          | 0.30          | 0.16          | 0.44          | 0.35 p        |
| Portugal              | 11.52         | 8.47          | 1.33 b        | 1.72          | 1.58          | 1.60          | 1.57 p        |
| Slovak Republic       | 0.08          | 0.10          | 0.15          | 0.41          | 0.40          | 0.49          | 0.41          |
| Slovenia              | 0.22          | 0.05          | 0.04          | 0.04          | 0.04          | 0.02          | 0.27 p        |
| Spain                 | 0.14          | 0.19          | 0.17          | 0.17          | 0.20          | 0.24          | 0.21 p        |
| Sweden                | 0.31 b        | 0.29 e        | 0.22 e        | 0.24 e        | 0.19          | 0.19 p        | ..            |
| Switzerland           | ..            | 1.70          | ..            | ..            | 1.45          | ..            | ..            |
| Turkey                | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| United Kingdom        | 2.32          | 1.91 e        | 1.79          | 1.81 e        | 2.01          | 2.11 e        | 2.19 p        |
| United States         | 4.44 d e      | 4.11 d e      | 4.04 d e      | 4.04 d e      | 4.03 d e      | 4.12 d e p    | 4.14 d e      |
| EU28 (OECD estimates) | 1.08 e        | 1.04 e        | 0.96 e        | 0.98 e        | 1.00 e        | 0.98 e        | 0.92 e        |
| <b>OECD-Total</b>     | <b>2.65 e</b> | <b>2.41 e</b> | <b>2.32 e</b> | <b>2.36 e</b> | <b>2.38 e</b> | <b>2.40 e</b> | <b>2.37 e</b> |
| Argentina             | 2.23          | 1.68 p        | 1.67 p        | 1.75 p        | 1.61          | 0.77 b        | ..            |
| China                 | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| Romania               | 2.44          | 0.40          | 0.40          | 0.37          | 0.30          | 0.23          | 0.29 p        |
| Russian Federation    | 0.18          | 0.18          | 0.13          | 0.13          | 0.14          | 0.21          | 0.41          |
| Singapore             | ..            | ..            | ..            | ..            | ..            | ..            | ..            |
| South Africa          | 1.60          | 2.11          | 2.27          | 2.65          | 2.76          | ..            | ..            |
| Chinese Taipei        | 0.48          | 0.30          | 0.32          | 0.33          | 0.31          | 0.30          | 0.24          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 21. Total researchers in headcount**
*Headcount*

|                       | 2005      | 2012      | 2013        | 2014      | 2015      | 2016       | 2017      |
|-----------------------|-----------|-----------|-------------|-----------|-----------|------------|-----------|
| Australia             | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| Austria               | ..        | ..        | 71 448 d    | ..        | 78 051 d  | ..         | ..        |
| Belgium               | 48 757    | ..        | 66 724      | ..        | 73 709 b  | ..         | ..        |
| Canada                | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| Chile                 | ..        | 10 447 d  | 9 795 d     | 12 303 d  | 13 015 d  | 14 200 d p | ..        |
| Czech Republic        | 37 542    | 47 651    | 51 455      | 54 493    | 56 605    | 56 178     | 59 789 p  |
| Denmark               | 43 460    | 57 520    | 57 876      | 58 735    | 60 492    | 60 782 p   | ..        |
| Estonia               | 5 734     | 7 634     | 7 515       | 7 721     | 7 181     | 6 845      | ..        |
| Finland               | 50 773    | 56 704    | 56 720      | 55 515    | 55 728    | 53 752     | ..        |
| France                | 251 599   | 356 445   | 365 737     | 379 048 b | 383 843   | ..         | ..        |
| Germany               | 406 253   | ..        | 549 283     | ..        | 586 030   | ..         | ..        |
| Greece                | 33 396 d  | ..        | 53 744 d    | ..        | 60 736 d  | ..         | ..        |
| Hungary               | 31 407    | 37 019    | 37 803      | 39 190    | 38 418    | 38 915     | ..        |
| Iceland               | 3 821     | ..        | 3 356 b     | ..        | 3 722 b   | 3 935      | ..        |
| Ireland               | 17 653    | 17 895    | 32 084      | ..        | 30 612    | ..         | ..        |
| Israel <sup>1</sup>   | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| Italy                 | 125 534   | 157 960   | 163 925     | 168 074   | 174 327   | 185 916 b  | ..        |
| Japan                 | 861 901 d | 887 067 d | 892 406 d   | 926 671 d | 907 455 d | 917 725 d  | 930 720 d |
| Korea                 | 234 702 d | 401 724   | 410 333     | 437 447   | 453 262   | 460 769    | 482 796   |
| Latvia                | 5 748 d   | 7 995 d   | 7 448 d     | 7 939 d   | 7 827 d   | 7 400 d    | ..        |
| Lithuania             | 11 918.00 | 17 677.00 | 18 083.00   | 19 371.00 | 17 293.00 | 17 746.00  | ..        |
| Luxembourg            | 2 443     | ..        | 2 713       | ..        | 3 134     | ..         | ..        |
| Mexico                | ..        | 41 419    | 42 222      | ..        | ..        | ..         | ..        |
| Netherlands           | 57 782    | 107 184 b | 110 536     | 111 795   | 112 946   | 114 589    | ..        |
| New Zealand           | 22 186    | ..        | 29 300      | ..        | 31 000    | ..         | ..        |
| Norway                | 36 555    | 46 747    | 47 795      | 50 025    | 52 181    | 54 601     | ..        |
| Poland                | 97 875    | 103 627   | 109 611     | 115 375   | 118 494   | 132 547    | ..        |
| Portugal              | 37 769    | 81 750    | 78 290 b    | 78 736    | 81 005    | 85 780     | ..        |
| Slovak Republic       | 17 526    | 25 069    | 24 441      | 25 080    | 24 396    | 26 720     | ..        |
| Slovenia              | 7 644     | 12 362    | 12 111      | 12 155    | 11 308    | 11 282     | ..        |
| Spain                 | 181 023   | 215 544 d | 208 767 d   | 210 104 d | 214 227 d | 218 680 d  | ..        |
| Sweden                | 82 459 d  | ..        | 101 820 b e | ..        | 108 761 e | ..         | ..        |
| Switzerland           | ..        | 60 279    | ..          | ..        | 70 834    | ..         | ..        |
| Turkey                | 83 856    | 155 133   | 166 097     | 181 544   | 190 784   | 191 769    | 210 769   |
| United Kingdom        | 364 807 e | 442 385 e | 466 689     | 489 181 e | 496 953 e | 510 980 e  | ..        |
| United States         | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| EU28 (OECD estimates) | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| <b>OECD-Total</b>     | ..        | ..        | ..          | ..        | ..        | ..         | ..        |
| Argentina             | 49 050    | 80 245 p  | 81 964 p    | 83 837 p  | 82 407    | 83 947     | ..        |
| China                 | ..        | 2 069 650 | ..          | ..        | ..        | ..         | ..        |
| Romania               | 29 608    | 27 838    | 27 600      | 27 535    | 27 253    | 27 801     | ..        |
| Russian Federation    | 391 121 e | 372 620 e | 369 015 e   | 373 905 e | 379 411 e | 370 379 e  | 359 793   |
| Singapore             | 27 969    | 38 432    | 40 385      | 40 730    | ..        | ..         | ..        |
| South Africa          | 39 266    | 42 828    | 45 935      | 48 479    | 51 877    | ..         | ..        |
| Chinese Taipei        | 115 954   | 179 830   | 180 353     | 182 119   | 183 571   | 185 472    | 188 474   |

 Note: Detailed metadata:<http://metalinks.oecd.org/msti/20190326/b818>

 1. Information on data for Israel:<http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 22. Women researchers as a percentage of total researchers**  
Based on headcount

Percentage

|                       | 2005   | 2012   | 2013     | 2014     | 2015   | 2016     | 2017   |
|-----------------------|--------|--------|----------|----------|--------|----------|--------|
| Australia             | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Austria               | ..     | ..     | 29.6 d   | ..       | 29.5 d | ..       | ..     |
| Belgium               | 29.6   | ..     | 33.4     | ..       | 34.1 b | ..       | ..     |
| Canada                | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Chile                 | ..     | 31.0 d | 34.3 d   | 31.5 d   | 33.0 d | 33.1 d p | ..     |
| Czech Republic        | 28.8   | 27.5   | 28.3     | 27.2     | 26.9   | 26.7     | 26.8 p |
| Denmark               | 29.7   | 35.4 e | 35.2     | ..       | 33.8   | ..       | ..     |
| Estonia               | 40.8   | 44.0   | 44.4     | 44.0     | 43.9   | 43.6     | ..     |
| Finland               | 30.2   | 32.2   | 31.5     | 32.1     | 32.3   | 32.5     | ..     |
| France                | 28.0   | 25.5 e | 25.5 e   | 26.7 b e | 27.0 e | ..       | ..     |
| Germany               | 21.3   | ..     | 27.9     | ..       | 28.0   | ..       | ..     |
| Greece                | 36.4 d | ..     | 39.4 d   | ..       | 38.0 d | ..       | ..     |
| Hungary               | 34.2   | 30.9   | 30.3     | 30.4     | 30.8   | 30.8     | ..     |
| Iceland               | 39.3   | ..     | 43.8 b   | ..       | 45.6 b | 47.2     | ..     |
| Ireland               | 30.3   | ..     | 35.3     | ..       | 35.3   | ..       | ..     |
| Israel <sup>1</sup>   | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Italy                 | 32.3   | 35.5   | 35.7     | 36.0     | 36.0   | 35.2 b   | ..     |
| Japan                 | 11.9 d | 14.4 d | 14.6 d   | 14.7 d   | 15.3 d | 15.7 d   | 16.2 d |
| Korea                 | 12.9 d | 17.7   | 18.2     | 18.5     | 18.9   | 19.7     | 20.1   |
| Latvia                | 51.5 d | 52.8 d | 52.0 d   | 52.1 d   | 51.0 d | 52.2 d   | ..     |
| Lithuania             | 48.65  | 52.36  | 51.22    | 50.25    | 50.74  | 51.57    | ..     |
| Luxembourg            | 18.2   | ..     | 27.3     | ..       | 28.9   | ..       | ..     |
| Mexico                | ..     | 32.8   | 33.0     | ..       | ..     | ..       | ..     |
| Netherlands           | 21.0   | 24.0 b | 23.6     | 23.4     | 25.4   | 25.8     | ..     |
| New Zealand           | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Norway                | 31.6   | 36.2   | 36.9     | 37.4     | 37.4   | 37.6     | ..     |
| Poland                | 39.3   | 38.3   | 37.8     | 37.2     | 37.0   | 36.4     | ..     |
| Portugal              | 44.4   | 45.0   | 45.4 b   | 44.3     | 44.1   | 43.5     | ..     |
| Slovak Republic       | 41.5   | 42.3   | 42.7     | 42.5     | 42.2   | 41.4     | ..     |
| Slovenia              | 34.8   | 35.8   | 36.0     | 36.1     | 36.5   | 34.5     | ..     |
| Spain                 | 36.7   | 38.8 d | 39.3 d   | 39.6 d   | 40.0 d | 40.2 d   | ..     |
| Sweden                | 35.7 d | ..     | 33.3 b e | ..       | 33.7 e | ..       | ..     |
| Switzerland           | ..     | 32.4   | ..       | ..       | 33.5   | ..       | ..     |
| Turkey                | 36.1   | 36.2   | 36.2     | 36.9     | 37.3   | 36.7     | 37.0   |
| United Kingdom        | 35.7 e | 37.8 e | 38.1     | 37.4 e   | 38.6 e | 38.7 e   | ..     |
| United States         | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| EU28 (OECD estimates) | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| <b>OECD-Total</b>     | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Argentina             | 50.5   | 52.6 p | 52.4 p   | 52.9 p   | 52.6   | 53.0     | ..     |
| China                 | ..     | ..     | ..       | ..       | ..     | ..       | ..     |
| Romania               | 45.3   | 45.1   | 45.7     | 46.0     | 46.2   | 45.8     | ..     |
| Russian Federation    | 42.4 e | 41.2 e | 40.9 e   | 40.5 e   | 40.3 e | 40.0 e   | 39.5   |
| Singapore             | 26.3   | 29.6   | 29.6     | 30.1     | ..     | ..       | ..     |
| South Africa          | 39.7   | 43.7   | 44.0     | 44.3     | 45.0   | ..       | ..     |
| Chinese Taipei        | 19.6   | 21.8   | 22.0     | 22.1     | 22.2   | 22.4     | 22.6   |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 23. Business enterprise expenditure on R&D (BERD) at current prices and PPP**

Million USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | 7 515.5            | ..                 | 13 025.4           | ..                 | 11 301.5           | ..                 | ..                 |
| Austria               | 4 770.9 e          | 8 038.4 e          | 8 504.0            | 9 169.6 e          | 9 389.6            | 9 901.9 b e        | 10 507.4 p         |
| Belgium               | 4 233.8            | 7 479.2            | 7 885.3            | 8 342.7            | 8 847.8            | 9 540.7 e          | 9 868.6 p          |
| Canada                | 12 886.0 d         | 13 417.9 d         | 13 560.5 d         | 14 798.1 b         | 14 386.2           | 14 502.5           | 14 059.8 p         |
| Chile                 | ..                 | 466.7              | 536.4              | 506.5              | 532.4              | 580.6 p            | ..                 |
| Czech Republic        | 1 523.5 b          | 2 874.8            | 3 246.9            | 3 698.3            | 3 722.4            | 3 824.1            | 4 533.7 p          |
| Denmark               | 3 023.3            | 4 897.4            | 4 936.6            | 5 023.4            | 5 406.7            | 5 864.7            | 6 171.0 p          |
| Estonia               | 93.2               | 420.3              | 297.8              | 236.9              | 259.5              | 261.0              | 268.0              |
| Finland               | 3 958.3            | 5 167.9            | 5 083.5            | 4 860.5            | 4 459.8            | 4 339.3            | 4 592.9 p          |
| France                | 24 554.5           | 35 581.4           | 37 688.6           | 38 551.3           | 39 279.2           | 40 097.7 p         | 42 006.3 e         |
| Germany               | 44 288.0           | 68 327.0           | 69 136.9           | 74 123.8           | 78 353.2           | 81 739.0           | 91 019.4 e         |
| Greece                | 504.0              | 669.8              | 774.1              | 825.3              | 922.3              | 1 233.0            | 1 689.9 p          |
| Hungary               | 685.1 d            | 1 899.9 d          | 2 333.8 d          | 2 437.9 d          | 2 595.8 d          | 2 352.7 d          | 2 779.3 d          |
| Iceland               | 152.9              | ..                 | 135.9 b d          | 178.1 d            | 221.0 d            | 226.2 d            | 261.5 p            |
| Ireland               | 1 314.6            | 2 383.4 e          | 2 492.4            | 2 572.3 e          | 2 758.6            | 2 830.2 e          | 2 742.6 p          |
| Israel <sup>1</sup>   | 5 677.4 d          | 8 788.5 d          | 9 442.8 d          | 9 953.2 d          | 10 792.7 d         | 12 061.8 d         | 13 250.7 d e       |
| Italy                 | 9 186.6            | 14 854.5           | 15 570.9           | 16 688.8           | 17 449.5           | 19 735.6 b         | 20 605.3 p         |
| Japan                 | 98 384.0           | 116 716.3          | 125 287.5          | 131 839.8          | 132 293.7          | 129 751.5          | 134 662.3          |
| Korea                 | 23 531.2 d         | 50 559.8           | 53 573.7           | 57 180.5           | 59 643.5           | 62 550.0           | 72 243.4           |
| Latvia                | 66.9               | 64.9               | 78.9               | 116.2              | 75.6               | 54.6               | 76.4 p             |
| Lithuania             | 73.54              | 177.49             | 190.88             | 262.83             | 239.47             | 256.27             | 294.91             |
| Luxembourg            | 431.1              | 342.3 b            | 355.1              | 382.7              | 388.0              | 428.3              | 435.2 p            |
| Mexico                | 2 510.0            | 2 909.8            | 3 214.3            | 3 449.3 e p        | 3 497.1 e p        | 3 440.4 e p        | ..                 |
| Netherlands           | 5 761.6            | 8 585.1 b          | 8 888.9            | 9 190.7            | 9 470.7            | 10 176.0           | 10 911.5 p         |
| New Zealand           | 495.1              | ..                 | 861.7              | ..                 | 1 085.8            | ..                 | ..                 |
| Norway                | 1 752.6            | 2 779.1            | 2 949.9            | 3 118.9            | 3 267.4            | 3 292.1            | 3 673.5 p          |
| Poland                | 947.8              | 2 973.6            | 3 570.4            | 4 262.3            | 4 766.6            | 6 667.1 b          | 7 583.1 p          |
| Portugal              | 695.5              | 1 905.1            | 1 838.4            | 1 789.6            | 1 772.5            | 1 987.7            | 2 231.7 p          |
| Slovak Republic       | 219.8              | 479.6              | 575.4              | 508.2              | 527.4              | 666.6              | 841.1              |
| Slovenia              | 398.0              | 1 158.7            | 1 211.9            | 1 164.5            | 1 093.2            | 1 043.7            | 1 039.7 p          |
| Spain                 | 7 128.0            | 10 208.0           | 10 234.7           | 10 242.7           | 10 412.9           | 10 871.0           | 12 034.7 p         |
| Sweden                | 7 564.0 b          | 9 470.3 e          | 9 995.0            | 9 514.1 e          | 10 797.1           | 11 079.7 p         | 12 141.2 p         |
| Switzerland           | ..                 | 10 542.8           | ..                 | ..                 | 12 675.6           | ..                 | ..                 |
| Turkey                | 1 554.8            | 5 776.5            | 6 569.7            | 7 931.2            | 8 870.5            | 10 690.0           | 12 359.0           |
| United Kingdom        | 18 809.0           | 24 381.2           | 26 534.1           | 28 541.9           | 30 165.0           | 31 811.5           | 33 345.9 p         |
| United States         | 226 159.0 d        | 302 251.0 d        | 322 528.0 d        | 340 728.0 d        | 355 821.0 d        | 374 685.0 d        | 397 064.0 d e      |
| EU28 (OECD estimates) | 141 009.5 e        | 213 891.5 e        | 222 834.6 e        | 234 273.3 e        | 245 527.7 e        | 259 339.8 e        | 280 830.8 e        |
| <b>OECD-Total</b>     | <b>526 863.4 e</b> | <b>739 582.9 e</b> | <b>784 335.9 e</b> | <b>827 220.0 e</b> | <b>857 569.5 e</b> | <b>895 051.3 e</b> | <b>957 417.7 e</b> |
| Argentina             | 734.3              | 1 333.8 p          | 1 292.9 p          | 1 011.4 p          | 1 161.5 b          | 1 118.8            | ..                 |
| China                 | 59 326.1           | 222 507.6          | 255 971.4          | 286 465.3          | 312 902.2          | 349 685.3          | 384 821.3          |
| Romania               | 420.0              | 715.9              | 470.5              | 650.6              | 920.3              | 1 246.6            | 1 488.9 p          |
| Russian Federation    | 12 317.7           | 22 116.5           | 23 397.5           | 24 040.8           | 22 957.7           | 22 744.9           | 25 181.2           |
| Singapore             | 3 368.2            | 5 023.0            | 5 215.9            | 6 179.7            | ..                 | ..                 | ..                 |
| South Africa          | 2 357.3            | 2 141.9            | 2 285.4            | 2 486.2            | 2 485.0            | ..                 | ..                 |
| Chinese Taipei        | 10 264.3           | 21 606.6           | 23 286.9           | 25 139.5           | 26 199.8           | 27 771.6           | 30 980.8           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 24. Business enterprise expenditure on R&D (BERD) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 1.05          | ..            | 1.18          | ..            | 1.00          | ..            | ..            |
| Austria               | 1.66 e        | 2.05 e        | 2.09          | 2.20 e        | 2.18          | 2.19 b e      | 2.22 p        |
| Belgium               | 1.21          | 1.59          | 1.62          | 1.67          | 1.72          | 1.78 e        | 1.76 p        |
| Canada                | 1.10 d        | 0.92 d        | 0.87 d        | 0.91 b        | 0.90          | 0.89          | 0.82 p        |
| Chile                 | ..            | 0.12          | 0.14          | 0.13          | 0.13          | 0.14 p        | ..            |
| Czech Republic        | 0.68 b        | 0.94          | 1.01          | 1.09          | 1.05          | 1.03          | 1.13 p        |
| Denmark               | 1.63          | 1.95          | 1.88          | 1.86          | 1.94          | 2.02          | 1.97 p        |
| Estonia               | 0.42          | 1.22          | 0.82          | 0.62          | 0.68          | 0.64          | 0.61          |
| Finland               | 2.36          | 2.35          | 2.26          | 2.15          | 1.93          | 1.81          | 1.80 p        |
| France                | 1.27          | 1.44          | 1.44          | 1.45          | 1.44          | 1.43 p        | 1.42 e        |
| Germany               | 1.68          | 1.95          | 1.90          | 1.94          | 2.00          | 1.99          | 2.09 e        |
| Greece                | 0.18          | 0.24          | 0.27          | 0.28          | 0.32          | 0.42          | 0.55 p        |
| Hungary               | 0.40 d        | 0.83 d        | 0.96 d        | 0.97 d        | 1.00 d        | 0.89 d        | 0.99 d        |
| Iceland               | 1.38          | ..            | 0.95 b d      | 1.19 d        | 1.37 d        | 1.28 d        | 1.38 p        |
| Ireland               | 0.78          | 1.12 e        | 1.12          | 1.08 e        | 0.85          | 0.84 e        | 0.74 p        |
| Israel <sup>1</sup>   | 3.30 d        | 3.50 d        | 3.43 d        | 3.54 d        | 3.63 d        | 3.76 d        | 3.91 d e      |
| Italy                 | 0.53          | 0.69          | 0.72          | 0.76          | 0.78          | 0.83 b        | 0.83 p        |
| Japan                 | 2.43          | 2.46          | 2.52          | 2.64          | 2.57          | 2.47          | 2.52          |
| Korea                 | 2.02 d        | 3.14          | 3.26          | 3.35          | 3.27          | 3.29          | 3.62          |
| Latvia                | 0.22          | 0.15          | 0.17          | 0.24          | 0.15          | 0.11          | 0.14 p        |
| Lithuania             | 0.2           | 0.2           | 0.2           | 0.3           | 0.3           | 0.3           | 0.3           |
| Luxembourg            | 1.36          | 0.70 b        | 0.68          | 0.68          | 0.66          | 0.70          | 0.68 p        |
| Mexico                | 0.19          | 0.14          | 0.16          | 0.16 e p      | 0.16 e p      | 0.15 e p      | ..            |
| Netherlands           | 0.94          | 1.08 b        | 1.07          | 1.11          | 1.11          | 1.16          | 1.17 p        |
| New Zealand           | 0.47          | ..            | 0.54          | ..            | 0.63          | ..            | ..            |
| Norway                | 0.79          | 0.85          | 0.87          | 0.92          | 1.04          | 1.08          | 1.12 p        |
| Poland                | 0.18          | 0.33          | 0.38          | 0.44          | 0.47          | 0.63 b        | 0.67 p        |
| Portugal              | 0.29          | 0.68          | 0.63          | 0.60          | 0.58          | 0.62          | 0.67 p        |
| Slovak Republic       | 0.25          | 0.33          | 0.38          | 0.32          | 0.33          | 0.40          | 0.48          |
| Slovenia              | 0.83          | 1.95          | 1.97          | 1.83          | 1.68          | 1.52          | 1.38 p        |
| Spain                 | 0.59          | 0.68          | 0.67          | 0.65          | 0.64          | 0.64          | 0.66 p        |
| Sweden                | 2.46 b        | 2.22 e        | 2.28          | 2.11 e        | 2.27          | 2.27 p        | 2.35 p        |
| Switzerland           | ..            | 2.28          | ..            | ..            | 2.39          | ..            | ..            |
| Turkey                | 0.19          | 0.38          | 0.39          | 0.43          | 0.44          | 0.51          | 0.55          |
| United Kingdom        | 0.96          | 1.01          | 1.05          | 1.08          | 1.10          | 1.13          | 1.12 p        |
| United States         | 1.73 d        | 1.87 d        | 1.92 d        | 1.94 d        | 1.95 d        | 2.00 d        | 2.04 d e      |
| EU28 (OECD estimates) | 1.03 e        | 1.20 e        | 1.20 e        | 1.23 e        | 1.24 e        | 1.26 e        | 1.29 e        |
| <b>OECD-Total</b>     | <b>1.45 e</b> | <b>1.56 e</b> | <b>1.59 e</b> | <b>1.62 e</b> | <b>1.62 e</b> | <b>1.64 e</b> | <b>1.67 e</b> |
| Argentina             | 0.14          | 0.16 p        | 0.15 p        | 0.12 p        | 0.13 b        | 0.13          | ..            |
| China                 | 0.89          | 1.45          | 1.52          | 1.56          | 1.58          | 1.63          | 1.65          |
| Romania               | 0.20          | 0.19          | 0.12          | 0.16          | 0.21          | 0.27          | 0.29 p        |
| Russian Federation    | 0.67          | 0.60          | 0.62          | 0.64          | 0.65          | 0.64          | 0.67 e        |
| Singapore             | 1.43          | 1.22          | 1.18          | 1.32          | ..            | ..            | ..            |
| South Africa          | 0.50          | 0.32          | 0.33          | 0.35          | 0.34          | ..            | ..            |
| Chinese Taipei        | 1.56          | 2.19          | 2.27          | 2.32          | 2.37          | 2.45          | 2.61          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 25. Business enterprise expenditure on R&D (BERD) at 2010 prices and PPP**

Million 2010 USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | 8 607.1            | ..                 | 12 163.0           | ..                 | 10 879.8           | ..                 | ..                 |
| Austria               | 5 452.5 e          | 7 472.1 e          | 7 620.2            | 8 059.0 e          | 8 075.1            | 8 300.2 b e        | 8 599.6 p          |
| Belgium               | 4 928.4            | 7 065.8            | 7 229.1            | 7 538.4            | 7 911.7            | 8 315.7 e          | 8 329.3 p          |
| Canada                | 14 188.7 d         | 13 081.5 d         | 12 798.8 d         | 13 768.1 b         | 13 742.8           | 13 754.7           | 13 081.7 p         |
| Chile                 | ..                 | 431.9              | 490.2              | 458.9              | 489.8              | 530.2 p            | ..                 |
| Czech Republic        | 1 745.6 b          | 2 755.0            | 2 949.5            | 3 257.3            | 3 299.7            | 3 314.8            | 3 790.1 p          |
| Denmark               | 3 856.0            | 4 736.3            | 4 601.2            | 4 617.9            | 4 931.7            | 5 259.9            | 5 244.6 p          |
| Estonia               | 122.1              | 393.8              | 270.2              | 210.5              | 232.7              | 229.0              | 227.5              |
| Finland               | 4 704.7            | 4 936.4            | 4 718.6            | 4 445.6            | 4 013.4            | 3 863.6            | 3 951.8 p          |
| France                | 28 557.8           | 34 418.5           | 34 776.1           | 35 190.4           | 35 491.4           | 35 543.5 p         | 36 101.7 e         |
| Germany               | 50 629.9           | 65 100.9           | 63 580.4           | 66 482.6           | 69 716.7           | 70 893.0           | 76 289.8 e         |
| Greece                | 570.8              | 632.5              | 690.2              | 725.6              | 810.8              | 1 071.5            | 1 425.4 p          |
| Hungary               | 866.0 d            | 1 785.8 d          | 2 120.0 d          | 2 218.8 d          | 2 373.8 d          | 2 166.4 d          | 2 491.5 d          |
| Iceland               | 164.8              | ..                 | 128.6 b d          | 164.3 d            | 197.7 d            | 198.6 d            | 221.7 p            |
| Ireland               | 1 507.1            | 2 296.7 e          | 2 336.1            | 2 440.0 e          | 2 407.6            | 2 493.1 e          | 2 366.1 p          |
| Israel <sup>1</sup>   | 5 865.0 d          | 8 272.3 d          | 8 444.5 d          | 9 050.6 d          | 9 522.3 d          | 10 275.4 d         | 11 055.1 d e       |
| Italy                 | 11 116.5           | 13 964.8           | 14 261.2           | 15 188.0           | 15 709.1           | 16 983.7 b         | 17 209.1 p         |
| Japan                 | 108 432.3          | 111 695.9          | 116 871.3          | 122 961.2          | 121 264.0          | 117 686.1          | 122 215.3          |
| Korea                 | 24 826.1 d         | 50 077.0           | 53 486.8           | 56 929.6           | 57 027.9           | 59 001.4           | 66 902.7           |
| Latvia                | 81.4               | 61.2               | 72.2               | 104.1              | 67.7               | 48.2               | 64.9 p             |
| Lithuania             | 89.4               | 165.1              | 171.7              | 233.6              | 213.6              | 226.1              | 250.3              |
| Luxembourg            | 522.6              | 312.1 b            | 314.3              | 325.6              | 330.1              | 357.3              | 351.2 p            |
| Mexico                | 3 025.9            | 2 704.3            | 2 951.9            | 3 095.5 e p        | 3 159.8 e p        | 3 077.5 e p        | ..                 |
| Netherlands           | 6 557.0            | 8 152.6 b          | 8 069.1            | 8 432.9            | 8 633.4            | 9 239.0            | 9 556.9 p          |
| New Zealand           | 588.2              | ..                 | 782.0              | ..                 | 993.1              | ..                 | ..                 |
| Norway                | 2 078.9            | 2 598.2            | 2 684.2            | 2 840.0            | 3 119.7            | 3 172.3            | 3 422.8 p          |
| Poland                | 1 133.8            | 2 800.8            | 3 289.4            | 3 918.7            | 4 342.7            | 6 064.4 b          | 6 699.8 p          |
| Portugal              | 815.5              | 1 863.2            | 1 694.8            | 1 624.3            | 1 592.8            | 1 746.6            | 1 926.8 p          |
| Slovak Republic       | 262.8              | 468.2              | 544.0              | 475.6              | 500.5              | 626.1              | 776.8              |
| Slovenia              | 433.4              | 1 084.9            | 1 086.7            | 1 037.5            | 970.9              | 909.2              | 868.0 p            |
| Spain                 | 8 313.7            | 9 749.1            | 9 457.4            | 9 308.4            | 9 446.1            | 9 698.8            | 10 374.9 p         |
| Sweden                | 8 890.1 b          | 8 880.9 e          | 9 214.0            | 8 747.4 e          | 9 865.3            | 10 130.1 p         | 10 677.7 p         |
| Switzerland           | ..                 | 9 720.4            | ..                 | ..                 | 10 795.0           | ..                 | ..                 |
| Turkey                | 2 069.7            | 5 507.8            | 6 186.1            | 7 174.3            | 7 829.8            | 9 386.5            | 10 764.1           |
| United Kingdom        | 21 225.6           | 23 531.7           | 24 911.7           | 26 467.0           | 27 608.4           | 28 785.7           | 29 204.7 p         |
| United States         | 248 639.6 d        | 290 495.2 d        | 304 637.4 d        | 315 852.3 d        | 326 353.5 d        | 339 938.0 d        | 353 522.0 d e      |
| EU28 (OECD estimates) | 163 570.4 e        | 204 115.6 e        | 205 315.5 e        | 212 700.2 e        | 220 740.2 e        | 228 531.1 e        | 239 454.3 e        |
| <b>OECD-Total</b>     | <b>588 635.3 e</b> | <b>710 262.5 e</b> | <b>735 524.8 e</b> | <b>765 961.7 e</b> | <b>783 970.9 e</b> | <b>806 758.3 e</b> | <b>845 665.8 e</b> |
| Argentina             | 807.3              | 1 283.2 p          | 1 224.1 p          | 940.7 p            | 1 068.7 b          | 1 016.4            | ..                 |
| China                 | 65 283.7           | 214 069.7          | 242 352.2          | 266 435.0          | 287 901.2          | 317 751.3          | 343 498.0 e        |
| Romania               | 608.8              | 674.4              | 440.3              | 606.7              | 853.9              | 1 104.9            | 1 274.5 p          |
| Russian Federation    | 17 854.7           | 20 408.9           | 21 548.8           | 22 286.4           | 22 088.3           | 21 813.1           | 22 935.8 e         |
| Singapore             | 3 701.0            | 4 824.4            | 4 923.9            | 5 726.4            | ..                 | ..                 | ..                 |
| South Africa          | 2 593.9            | 2 060.6            | 2 163.7            | 2 312.4            | 2 286.5            | ..                 | ..                 |
| Chinese Taipei        | 11 284.6           | 20 765.7           | 21 996.1           | 23 304.5           | 24 030.2           | 25 196.8           | 27 584.0           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 26. Business enterprise expenditure on R&D (BERD) as a percentage of value added in industry**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 1.55          | ..            | 1.78          | ..            | 1.56          | ..            | ..            |
| Austria               | 2.52 e        | 3.15 e        | 3.22          | 3.38 e        | 3.35          | 3.43 b e      | 3.46 e p      |
| Belgium               | 1.92          | 2.57          | 2.64          | 2.72          | 2.79          | 2.91 e        | 2.86 e p      |
| Canada                | 1.67 d        | 1.43 d        | 1.36 d        | 1.42 b        | 1.44 e        | 1.42 e        | 1.31 e p      |
| Chile                 | ..            | 0.18          | 0.19          | 0.18          | 0.19 e        | 0.21 e p      | ..            |
| Czech Republic        | 0.98 b        | 1.38          | 1.49          | 1.58          | 1.52          | 1.49          | 1.64 e p      |
| Denmark               | 2.83          | 3.41          | 3.26          | 3.20          | 3.34          | 3.52          | 3.41 e p      |
| Estonia               | 0.61          | 1.84          | 1.24          | 0.97          | 1.08          | 1.05          | 1.00 e        |
| Finland               | 3.85          | 4.12          | 4.00          | 3.80          | 3.42          | 3.20          | 3.13 e p      |
| France                | 2.15          | 2.50          | 2.52          | 2.53          | 2.52          | 2.49 p        | 2.49 e        |
| Germany               | 2.61          | 3.07          | 3.00          | 3.06          | 3.14          | 3.14          | 3.30 e        |
| Greece                | 0.29          | 0.46          | 0.51          | 0.53          | 0.59          | 0.80          | 1.04 e p      |
| Hungary               | 0.63 d        | 1.33 d        | 1.54 d        | 1.54 d        | 1.60 d        | 1.43 d        | 1.57 d e      |
| Iceland               | 2.38          | ..            | 1.58 b d      | 2.02 d        | 2.30 d        | 2.11 d e      | 2.27 e p      |
| Ireland               | 1.14          | 1.63 e        | 1.61          | 1.54 e        | 1.12          | 1.09 e        | 0.96 e p      |
| Israel <sup>1</sup>   | 5.46 d e      | 5.91 d        | 5.76 d        | 6.07 d e      | 6.20 d e      | 6.44 d e      | 6.70 d e      |
| Italy                 | 0.83          | 1.13          | 1.18          | 1.25          | 1.28          | 1.37 b        | 1.37 e p      |
| Japan                 | 3.21          | 3.43          | 3.51          | 3.68          | 3.56          | 3.42 e        | 3.49 e        |
| Korea                 | 2.95 d        | 4.56          | 4.73          | 4.89          | 4.77          | 4.83 e        | 5.31 e        |
| Latvia                | 0.32          | 0.23          | 0.27          | 0.39          | 0.25          | 0.17          | 0.22 e p      |
| Lithuania             | 0.2           | 0.3           | 0.3           | 0.4           | 0.4           | 0.4           | 0.4 e         |
| Luxembourg            | 2.04          | 1.05 b        | 1.02          | 1.00          | 0.94          | 1.01          | 0.99 e p      |
| Mexico                | 0.25          | 0.19          | 0.21          | 0.22 e p      | 0.22 e p      | 0.20 e p      | ..            |
| Netherlands           | 1.45          | 1.66 b        | 1.66          | 1.73          | 1.72          | 1.80          | 1.81 e p      |
| New Zealand           | 0.69          | ..            | 0.83          | ..            | 0.97          | ..            | ..            |
| Norway                | 1.19          | 1.29          | 1.33          | 1.43          | 1.68          | 1.79 e        | 1.85 e p      |
| Poland                | 0.26          | 0.46          | 0.54          | 0.62          | 0.66          | 0.89 b        | 0.94 p        |
| Portugal              | 0.49          | 1.16          | 1.08          | 1.03          | 0.98          | 1.06          | 1.15 e p      |
| Slovak Republic       | 0.35          | 0.46          | 0.54          | 0.45          | 0.45          | 0.56          | 0.67 e        |
| Slovenia              | 1.25          | 3.02          | 3.07          | 2.80          | 2.56          | 2.33          | 2.12 e p      |
| Spain                 | 0.88          | 1.08          | 1.09          | 1.05          | 1.02          | 1.01          | 1.05 e p      |
| Sweden                | 3.98 b        | 3.59 e        | 3.70          | 3.42 e        | 3.65          | 3.67 p        | 3.79 e p      |
| Switzerland           | ..            | 3.19          | ..            | ..            | 3.38          | ..            | ..            |
| Turkey                | 0.28          | 0.55          | 0.57          | 0.62          | 0.63          | 0.74          | 0.78 e        |
| United Kingdom        | 1.57          | 1.70          | 1.74          | 1.79          | 1.84          | 1.87          | 1.87 e p      |
| United States         | 2.67 d        | 2.97 d        | 3.05 d        | 3.07 d        | 3.08 d        | 3.17 d        | 3.23 d e      |
| EU28 (OECD estimates) | 1.63 e        | 1.93 e        | 1.94 e        | 1.98 e        | 1.99 e        | 2.02 e        | 2.06 e        |
| <b>OECD-Total</b>     | <b>2.19 e</b> | <b>2.42 e</b> | <b>2.46 e</b> | <b>2.50 e</b> | <b>2.50 e</b> | <b>2.54 e</b> | <b>2.58 e</b> |
| Argentina             | 0.20          | 0.26 p        | 0.24 e p      | 0.19 e p      | 0.21 b e      | 0.21 e        | ..            |
| China                 | 1.12 e        | 1.85 e        | 1.96 e        | 2.03 e        | 2.08 e        | 2.19 e        | 2.22 e        |
| Romania               | 0.29          | 0.27          | 0.17          | 0.23          | 0.31 e        | 0.38 e        | 0.41 e p      |
| Russian Federation    | 0.95 e        | 0.88 e        | 0.93 e        | 0.93 e        | 0.91 e        | 0.91 e        | 0.94 e        |
| Singapore             | 1.70 e        | 1.50 e        | 1.46 e        | 1.63 e        | ..            | ..            | ..            |
| South Africa          | 0.71 e        | 0.47 e        | 0.48 e        | 0.51 e        | 0.50 e        | ..            | ..            |
| Chinese Taipei        | 2.09 e        | 3.02          | 3.08          | 3.09          | 3.15          | 3.25          | 3.45          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 27. Business enterprise researchers in full-time equivalent**

FTE

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017        |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| Australia             | 23 794             | ..                 | 39 065             | ..                 | 33 016             | ..                 | ..          |
| Austria               | 18 155 d e         | 25 180 d e         | 25 752 d           | 27 361 d e         | 27 872 d           | 28 426 d e         | 29 558 d p  |
| Belgium               | 16 769             | 23 464             | 23 759             | 27 384             | 28 474 b           | 29 532 e           | 30 326 p    |
| Canada                | 84 410             | 94 010             | 93 150             | 93 647 b           | 95 577             | 87 883             | ..          |
| Chile                 | ..                 | 2 027 d            | 1 430 d            | 2 248 d            | 2 237 d            | 2 655 d p          | ..          |
| Czech Republic        | 9 716 b            | 15 057             | 16 367             | 17 892             | 19 161             | 19 185             | 20 206 p    |
| Denmark               | 17 624             | 24 369             | 23 364             | 23 975             | 25 011             | 26 976             | 27 495 p    |
| Estonia               | 883                | 1 421              | 1 383              | 1 268              | 1 152              | 1 318              | 1 585       |
| Finland               | 21 967             | 23 269             | 22 253             | 21 369             | 21 296             | 20 257             | 20 544 p    |
| France                | 106 837            | 156 392            | 161 460            | 161 744            | 165 845            | ..                 | 173 879 e   |
| Germany               | 166 874            | 199 623            | 198 585            | 198 076            | 230 823            | 235 758            | 246 842 e   |
| Greece                | 6 033 d            | 4 351 d            | 4 197 d            | 4 938 d            | 5 035 d            | 5 608 d            | 10 664 d p  |
| Hungary               | 5 008              | 13 231             | 14 317             | 15 577             | 15 026             | 15 247             | 17 527 p    |
| Iceland               | 1 012              | ..                 | 656 b              | ..                 | 813 b              | 813                | ..          |
| Ireland               | 6 768              | 9 756 e            | 10 793             | 11 246 e           | 11 296             | 11 185             | 10 877 p    |
| Israel <sup>1</sup>   | ..                 | 53 157 d           | 52 067 d           | 56 499 d           | 59 746 d           | 64 559 d           | ..          |
| Italy                 | 27 939             | 41 067             | 43 116             | 44 322             | 50 500             | 56 197 b           | 57 996 p    |
| Japan                 | 481 496 d          | 481 425 d          | 485 318 d          | 506 134 d          | 486 198 d          | 488 828 d          | 498 732 d   |
| Korea                 | 137 706 d          | 247 041            | 253 447            | 274 638            | 284 136            | 287 869            | 311 566     |
| Latvia                | 468 d              | 594 d              | 570 d              | 776 d              | 604 d              | 582                | 647 d p     |
| Lithuania             | 716.0              | 1 317.0            | 1 763.0            | 2 434.0            | 1 888.0            | 1 956.0            | 2 504.0     |
| Luxembourg            | 1 696              | 927 b              | 1 001              | 1 015              | 977                | 1 131              | 1 146 p     |
| Mexico                | 19 888             | 7 194              | 7 323              | ..                 | ..                 | ..                 | ..          |
| Netherlands           | 22 898             | 43 665 b           | 46 838             | 45 684             | 47 860             | 50 160             | 53 515 p    |
| New Zealand           | 3 700              | ..                 | 6 000              | ..                 | 6 900              | ..                 | ..          |
| Norway                | 10 239 d           | 13 332 d           | 13 553 d           | 14 314 d           | 14 921 d           | 15 330             | 16 582 p    |
| Poland                | 9 412              | 15 088             | 20 606             | 24 960             | 28 746             | 40 838 b           | 50 170 p    |
| Portugal              | 4 014              | 11 931             | 10 025 b           | 11 203             | 11 785             | 13 426             | 14 948 p    |
| Slovak Republic       | 1 947              | 2 482              | 2 436              | 2 645              | 2 789              | 2 846              | 3 333       |
| Slovenia              | 1 936              | 4 618              | 4 664              | 4 637              | 4 191              | 4 489              | 5 743 p     |
| Spain                 | 35 034             | 44 920 d           | 44 714 d           | 44 689 d           | 45 151 d           | 47 222 d           | 49 552 d p  |
| Sweden                | 36 697 b d         | 30 497 e           | 43 141 b           | 44 433 e           | 45 067             | 47 127 p           | 50 361 p    |
| Switzerland           | ..                 | 16 595             | ..                 | ..                 | 21 893             | ..                 | ..          |
| Turkey                | 9 456              | 35 034             | 40 207             | 41 847             | 45 313             | 52 463             | 62 305      |
| United Kingdom        | 93 717             | 90 422             | 98 469             | 102 221            | 105 774            | 110 149            | 109 856 p   |
| United States         | ..                 | 869 000            | 914 000            | 960 000            | 981 000            | 973 000            | ..          |
| EU28 (OECD estimates) | 625 655 e          | 792 590 e          | 829 400 e          | 850 197 e          | 907 777 e          | 952 948 e          | 1 002 724 e |
| <b>OECD-Total</b>     | <b>2 197 144 e</b> | <b>2 644 420 e</b> | <b>2 743 991 e</b> | <b>2 859 442 e</b> | <b>2 935 686 e</b> | <b>2 982 893 e</b> | <b>..</b>   |
| Argentina             | 3 763              | 3 336              | 3 569              | 3 204              | 4 554 b            | 4 362              | ..          |
| China                 | 696 413 d          | 872 384            | 922 682            | 946 077            | 1 014 614          | 1 048 147          | 1 055 746   |
| Romania               | 10 319             | 4 956              | 5 333              | 5 244              | 4 234              | 4 857              | 4 467 p     |
| Russian Federation    | 237 959            | 204 731            | 205 455            | 207 593            | 208 604            | 198 561            | 193 425     |
| Singapore             | 14 238             | 17 289             | 18 329             | 18 521             | ..                 | ..                 | ..          |
| South Africa          | 5 896              | 4 556              | 4 530              | 4 636              | 4 627              | ..                 | ..          |
| Chinese Taipei        | 51 202             | 92 279             | 94 236             | 97 019             | 100 106            | 102 721            | 105 558     |

 Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

 1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 28. Business enterprise researchers as a percentage of national total**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017      |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------|
| Australia             | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| Austria               | 63.8 d e      | 63.4 d e      | 63.7 d        | 64.2 d e      | 64.0 d        | 63.3 d e p    | ..        |
| Belgium               | 50.6          | 51.5          | 51.3          | 53.9          | 53.5 b        | 54.4 e        | 53.7 p    |
| Canada                | 61.7          | 58.2          | 57.1          | 57.8 b        | 58.7          | 56.7          | ..        |
| Chile                 | ..            | 29.8 d        | 24.3 d        | 29.6 d        | 27.4 d        | 29.5 d p      | ..        |
| Czech Republic        | 40.2 b        | 45.3          | 47.8          | 49.6          | 50.3          | 51.4          | 51.6 p    |
| Denmark               | 62.5          | 60.8          | 58.6          | 57.9          | 58.4          | 60.2          | 60.7 p    |
| Estonia               | 26.5          | 31.0          | 31.4          | 29.3          | 27.5          | 30.4          | 33.9      |
| Finland               | 55.5          | 57.5          | 56.8          | 55.8          | 56.8          | 56.4          | 55.5 p    |
| France                | 52.8          | 60.4 e        | 60.8 e        | 59.5 b        | 59.7          | ..            | 60.3 e    |
| Germany               | 61.3          | 56.6          | 56.0          | 56.3          | 59.5          | 59.0          | 59.7 e    |
| Greece                | 30.8 d        | 17.5 d        | 14.4 d        | 16.5 d        | 14.5 d        | 19.1 d        | 30.3 d p  |
| Hungary               | 31.5          | 55.5          | 57.2          | 59.4          | 59.4          | 59.1          | 61.7 p    |
| Iceland               | 46.9          | ..            | 35.5 b        | ..            | 41.8 b        | 36.9          | ..        |
| Ireland               | 58.4          | 43.6 e        | 45.5          | 45.8 e        | 50.7          | 56.5          | 55.6 p    |
| Israel <sup>1</sup>   | ..            | 83.7 d e      | ..            | ..            | ..            | ..            | ..        |
| Italy                 | 33.9          | 37.1          | 37.1          | 37.5          | 40.1          | 42.0 b        | 42.6 p    |
| Japan                 | 70.7 d        | 74.5 d        | 73.5 b d      | 74.1 d        | 73.4 d        | 73.4 d        | 73.7 d    |
| Korea                 | 76.6 d        | 78.3          | 78.7          | 79.5          | 79.7          | 79.7          | 81.3      |
| Latvia                | 14.3 d        | 15.2 d        | 15.7 d        | 20.7 d        | 16.7 d        | 18.5 d        | 18.6 d p  |
| Lithuania             | 9.4           | 16.4          | 20.6          | 26.8          | 23.1          | 22.9          | 28.8      |
| Luxembourg            | 76.1          | 40.1 b        | 40.0          | 38.6          | 38.5          | 45.1 p        | 41.9 p    |
| Mexico                | 45.3          | 24.7          | 24.5          | ..            | ..            | ..            | ..        |
| Netherlands           | 47.8          | 59.6 b        | 61.1          | 59.9          | 60.5          | 61.8          | 62.7 p    |
| New Zealand           | 28.5          | ..            | 33.5          | ..            | 36.9          | ..            | ..        |
| Norway                | 48.3 d        | 47.9 d        | 47.9 d        | 49.0 d        | 48.7 d        | 48.0          | 48.2 p    |
| Poland                | 15.1          | 22.5          | 28.8          | 31.7          | 34.8          | 46.3 b        | 52.0 p    |
| Portugal              | 19.0          | 28.1          | 26.5 b        | 29.4          | 30.5          | 32.5          | 33.7 p    |
| Slovak Republic       | 17.8          | 16.3          | 16.5          | 17.9          | 19.4          | 20.1          | 21.9      |
| Slovenia              | 36.9          | 52.0          | 53.6          | 54.1          | 53.1          | 55.3          | 61.8 p    |
| Spain                 | 31.9          | 35.4 d        | 36.3 d        | 36.6 d        | 36.9 d        | 37.3 d        | 37.2 d p  |
| Sweden                | 66.7 b d e    | 61.9 e        | 67.2 b e      | 66.7 e        | 67.5 e        | 67.0 p        | 66.9 p    |
| Switzerland           | ..            | 46.4          | ..            | ..            | 50.1          | ..            | ..        |
| Turkey                | 24.2          | 42.7          | 45.1          | 46.7          | 47.6          | 52.4          | 55.7      |
| United Kingdom        | 37.7 b e      | 35.3 e        | 36.8          | 37.0 e        | 37.2          | 38.1 e        | 37.9 p    |
| United States         | ..            | 69.3 e        | 70.6 e        | 71.6 e        | 71.6 e        | 71.0 e        | ..        |
| EU28 (OECD estimates) | 45.5 e        | 47.0 e        | 47.8 e        | 48.0 e        | 49.2 e        | 50.4 e        | 51.2 e    |
| <b>OECD-Total</b>     | <b>59.3 e</b> | <b>60.0 e</b> | <b>60.6 e</b> | <b>61.3 e</b> | <b>61.6 e</b> | <b>61.8 e</b> | <b>..</b> |
| Argentina             | 11.8          | 6.6           | 7.0           | 6.2           | 8.6 b         | 8.1           | ..        |
| China                 | 62.3 d        | 62.1          | 62.2          | 62.1          | 62.7          | 61.9          | 60.7      |
| Romania               | 44.9          | 27.5          | 28.7          | 29.0          | 24.3          | 26.9          | 25.5 p    |
| Russian Federation    | 51.2          | 46.2          | 46.6          | 46.7          | 46.4          | 46.3          | 47.1      |
| Singapore             | 59.8          | 50.6          | 50.9          | 50.5          | ..            | ..            | ..        |
| South Africa          | 34.1          | 21.3          | 19.4          | 19.7          | 17.7          | ..            | ..        |
| Chinese Taipei        | 57.6          | 65.9          | 66.8          | 67.9          | 68.9          | 69.5          | 70.2      |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 29. Business enterprise researchers in full-time equivalent per thousand employment in industry***Per thousand*

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017      |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------|
| Australia             | 3.2          | ..           | 4.7          | ..           | 3.9          | ..           | ..        |
| Austria               | 6.2 d e      | 7.9 d e      | 8.1 d        | 8.5 d e      | 8.7 d        | 8.8 d e      | 8.9 d e p |
| Belgium               | 5.7          | 7.5          | 7.7          | 8.8          | 9.1 b        | 9.3 e        | 9.4 e p   |
| Canada                | 6.8          | 7.2          | 7.0          | 7.0 b        | 7.1          | 6.5          | ..        |
| Chile                 | ..           | 0.3 d e      | 0.2 d        | 0.4 d        | 0.4 d        | 0.4 d p      | ..        |
| Czech Republic        | 2.5 b        | 3.7          | 4.0          | 4.4          | 4.6          | 4.5          | 4.7 e p   |
| Denmark               | 9.5          | 13.4         | 12.9         | 13.0         | 13.4         | 14.1         | 14.0 e p  |
| Estonia               | 1.9          | 3.2          | 3.1          | 2.8          | 2.5          | 2.8 e        | 3.3 e     |
| Finland               | 12.9         | 13.0         | 12.6         | 12.2         | 12.2         | 11.5         | 11.5 e p  |
| France                | 5.9          | 8.4          | 8.7          | 8.7          | 8.9          | ..           | 9.2 e     |
| Germany               | 5.8          | 6.5          | 6.4          | 6.4          | 7.4          | 7.5          | 7.7 e     |
| Greece                | 1.7 d        | 1.4 d        | 1.4 d        | 1.6 d        | 1.6 d        | 1.8 d        | 3.3 d e p |
| Hungary               | 1.5          | 4.3          | 4.7          | 4.9          | 4.6          | 4.6 e        | 5.1 e p   |
| Iceland               | 8.7          | ..           | 5.3 b        | ..           | 6.2 b        | 5.9          | ..        |
| Ireland               | 4.4          | 7.2 e        | 7.7          | 7.9 e        | 7.7          | 7.4          | 7.0 e p   |
| Israel <sup>1</sup>   | ..           | 22.8 d       | 21.7 d       | 23.1 d       | 24.0 d       | 25.1 d       | ..        |
| Italy                 | 1.5          | 2.2          | 2.4          | 2.5          | 2.8          | 3.1 b        | 3.1 e p   |
| Japan                 | 8.9 d e      | 9.3 d e      | 9.3 d e      | 9.7 d e      | 9.4 d e      | 9.4 d e      | 9.4 d e   |
| Korea                 | 7.2 d        | 12.4         | 12.6         | 13.4         | 13.7         | 13.8         | 14.8 e    |
| Latvia                | 0.6 d        | 0.9 d        | 0.8 d        | 1.2 d        | 0.9 d        | 0.9          | 1.0 d e p |
| Lithuania             | 0.7          | 1.4          | 1.8          | 2.4          | 1.9          | 1.9          | 2.4 e     |
| Luxembourg            | 6.9          | 3.1 b        | 3.4          | 3.3          | 3.1          | 3.5          | 3.4 e p   |
| Mexico                | 0.8          | 0.3          | 0.3          | ..           | ..           | ..           | ..        |
| Netherlands           | 3.8          | 7.0 b        | 7.6          | 7.3          | 7.6          | 7.8          | 8.1 e p   |
| New Zealand           | 2.4 e        | ..           | 3.6 e        | ..           | 4.0 e        | ..           | ..        |
| Norway                | 6.7 d        | 7.7 d        | 7.8 d        | 8.1 d        | 8.5 d        | 8.8 e        | 9.4 e p   |
| Poland                | 0.8          | 1.2          | 1.7          | 2.0          | 2.3          | 3.2 b        | 3.9 e p   |
| Portugal              | 1.0          | 3.4          | 3.0 b        | 3.3          | 3.4          | 3.8          | 4.1 e p   |
| Slovak Republic       | 1.2          | 1.4          | 1.4          | 1.5          | 1.6          | 1.6          | 1.8 e     |
| Slovenia              | 2.5          | 6.1          | 6.3          | 6.2          | 5.5          | 5.8          | 7.1 e p   |
| Spain                 | 2.3          | 3.3 d        | 3.4 d        | 3.4 d        | 3.3 d        | 3.4 d        | 3.4 d e p |
| Sweden                | 12.9 b d     | 9.9 e        | 13.9 b       | 14.1 e       | 14.2         | 14.7 p       | 15.4 e p  |
| Switzerland           | ..           | 4.7          | ..           | ..           | 6.0          | ..           | ..        |
| Turkey                | 0.6          | 1.7          | 1.9          | 1.9          | 2.1          | 2.4          | 2.7 e     |
| United Kingdom        | 4.4          | 4.2          | 4.5          | 4.6          | 4.6          | 4.7          | 4.7 p     |
| United States         | ..           | 8.7          | 9.0          | 9.3          | 9.4          | 9.1          | ..        |
| EU28 (OECD estimates) | 3.8 e        | 4.8 e        | 5.0 e        | 5.1 e        | 5.4 e        | 5.6 e        | 5.8 e     |
| <b>OECD-Total</b>     | <b>5.5 e</b> | <b>6.4 e</b> | <b>6.6 e</b> | <b>6.8 e</b> | <b>6.9 e</b> | <b>7.0 e</b> | <b>..</b> |
| Argentina             | ..           | ..           | ..           | ..           | ..           | ..           | ..        |
| China                 | ..           | ..           | ..           | ..           | ..           | ..           | ..        |
| Romania               | 1.2          | 0.7          | 0.7          | 0.7          | 0.6          | 0.7          | 0.6 p     |
| Russian Federation    | 4.5          | 3.8          | 3.8          | 3.8          | 3.8          | 3.6          | 3.6 e     |
| Singapore             | 7.0          | 5.9          | 6.0          | 5.9          | ..           | ..           | ..        |
| South Africa          | 0.6 e        | 0.4 e        | 0.4 e        | 0.4 e        | 0.4          | ..           | ..        |
| Chinese Taipei        | 5.9          | 9.8          | 9.9          | 10.1         | 10.3         | 10.5         | 10.7      |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 30. Total business enterprise R&D personnel in full-time equivalent**

FTE

|                       | 2005        | 2012               | 2013               | 2014               | 2015               | 2016               | 2017        |
|-----------------------|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| Australia             | 43 687      | ..                 | 78 839             | ..                 | 70 467             | ..                 | ..          |
| Austria               | 32 780 d e  | 45 468 d e         | 46 412 d           | 49 539 d e         | 50 534 d           | 51 953 d e         | 54 022 d p  |
| Belgium               | 31 613      | 38 108             | 38 497             | 42 391             | 44 508 b           | 47 404 e           | 48 615 p    |
| Canada                | 142 030     | 139 460            | 138 620            | 144 462 b          | 155 357            | 134 687            | ..          |
| Chile                 | ..          | 4 737 d            | 3 905 d            | 5 087 d            | 4 398 d            | 4 950 d p          | ..          |
| Czech Republic        | 21 116 b    | 31 705             | 33 188             | 35 256             | 36 365             | 37 263             | 39 968 p    |
| Denmark               | 28 359      | 35 899             | 34 985             | 35 431             | 36 898             | 38 856             | 38 975 p    |
| Estonia               | 1 398       | 1 988              | 2 069              | 1 798              | 1 694              | 1 855              | 2 086       |
| Finland               | 32 109      | 30 995             | 30 381             | 29 634             | 29 770             | 27 634             | 28 148 p    |
| France                | 194 991     | 246 438            | 249 991            | 248 145            | 251 444            | ..                 | 258 670 e   |
| Germany               | 304 502     | 367 478            | 360 375            | 371 706            | 404 767            | 413 027            | 432 352 e   |
| Greece                | 11 665 d    | 6 532 d            | 6 832 d            | 7 750 d            | 8 131 d            | 9 102 d            | 14 750 d p  |
| Hungary               | 7 393       | 19 997             | 22 244             | 22 177             | 21 030             | 20 825             | 24 719 p    |
| Iceland               | 1 530       | ..                 | 1 260 b d          | ..                 | 1 604 d            | 1 604              | ..          |
| Ireland               | 10 338      | 15 313 e           | 17 103             | 17 821 e           | 18 383             | 18 203             | 17 701 p    |
| Israel <sup>1</sup>   | 43 049 d    | 64 596 d           | 65 099 d           | 69 854 d           | 72 914 d           | 79 731 d           | ..          |
| Italy                 | 70 725      | 120 162            | 124 736            | 129 271            | 136 725            | 164 471 b          | 166 116 p   |
| Japan                 | 609 808 d   | 581 042 d          | 583 855 d          | 611 027 d          | 592 175 d          | 586 593 d          | 603 407 d   |
| Korea                 | 153 400 d   | 281 523            | 288 758            | 314 019            | 323 652            | 328 948            | 355 601     |
| Latvia                | 1 370 d     | 885 d              | 981 d              | 1 382 d            | 1 145 d            | 896 d              | 956 d p     |
| Lithuania             | 1 190.0     | 1 771.0            | 2 401.0            | 3 307.0            | 2 714.0            | 2 630.0            | 3 697.0     |
| Luxembourg            | 3 662       | 2 843 b            | 2 913              | 3 066              | 3 033              | 3 143              | 3 135 p     |
| Mexico                | 42 331      | 20 244             | 19 197             | ..                 | ..                 | ..                 | ..          |
| Netherlands           | 48 588      | 76 767 b           | 77 399             | 76 708             | 81 108             | 85 585             | 90 037 p    |
| New Zealand           | 6 100       | ..                 | 10 100             | ..                 | 11 000             | ..                 | ..          |
| Norway                | 15 399      | 18 624             | 19 041             | 20 597             | 21 637             | 22 171             | 23 887 p    |
| Poland                | 13 966      | 25 750             | 30 250             | 37 253             | 42 054             | 55 758 b           | 67 072 p    |
| Portugal              | 6 133       | 15 668             | 16 220             | 17 348             | 18 283             | 19 367             | 21 202 p    |
| Slovak Republic       | 3 524       | 3 790              | 3 618              | 4 133              | 4 405              | 4 643              | 5 654       |
| Slovenia              | 4 347       | 9 451              | 9 811              | 9 696              | 9 222              | 9 569              | 9 946 p     |
| Spain                 | 75 345      | 89 364 d           | 88 635 d           | 87 642 d           | 87 432 d           | 90 129 d           | 95 636 d p  |
| Sweden                | 56 106 b    | 55 839 e           | 56 413             | 57 307 e           | 57 691             | 64 276 p           | 61 177 p    |
| Switzerland           | ..          | 47 750             | ..                 | ..                 | 50 825             | ..                 | ..          |
| Turkey                | 14 992      | 52 233             | 58 391             | 61 945             | 66 667             | 72 579             | 87 918      |
| United Kingdom        | 145 401     | 160 116            | 177 948            | 192 221            | 206 153            | 209 584            | 215 713 p   |
| United States         | ..          | 1 251 000          | 1 318 000          | 1 366 000          | 1 399 000          | 1 393 000          | ..          |
| EU28 (OECD estimates) | 1 127 705 e | 1 419 949 e        | 1 451 412 e        | 1 500 557 e        | 1 576 984 e        | 1 657 763 e        | 1 727 333 e |
| <b>OECD-Total</b>     | <b>..</b>   | <b>3 945 866 e</b> | <b>4 067 220 e</b> | <b>4 229 194 e</b> | <b>4 343 140 e</b> | <b>4 408 940 e</b> | <b>..</b>   |
| Argentina             | 7 155       | 9 275              | 9 923              | 9 979              | 12 214 b           | 11 860             | ..          |
| China                 | 883 130 d   | 2 486 400          | 2 740 563          | 2 896 352          | 2 910 799          | 3 012 081          | 3 119 809   |
| Romania               | 16 157      | 10 887             | 10 514             | 10 437             | 10 128             | 10 785             | 11 525 p    |
| Russian Federation    | 524 049     | 413 796            | 424 063            | 423 134            | 426 372            | 402 097            | 389 191     |
| Singapore             | 17 076      | 20 204             | 21 349             | 21 641             | ..                 | ..                 | ..          |
| South Africa          | 12 236      | 11 322             | 11 877             | 12 928             | 12 458             | ..                 | ..          |
| Chinese Taipei        | 96 714      | 166 683            | 173 329            | 180 435            | 186 804            | 192 127            | 196 992     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 31. Total business enterprise R&D personnel as a percentage of national total**

Percentage

|                       | 2005     | 2012     | 2013     | 2014     | 2015   | 2016     | 2017     |
|-----------------------|----------|----------|----------|----------|--------|----------|----------|
| Australia             | ..       | ..       | ..       | ..       | ..     | ..       | ..       |
| Austria               | 68.8 d e | 69.9 d e | 70.1 d   | 70.6 d e | 70.8 d | 69.4 d e | 69.4 d p |
| Belgium               | 59.1     | 56.9     | 56.7     | 58.2     | 57.4 b | 59.9 e   | 57.8 p   |
| Canada                | 65.0     | 60.3     | 59.5     | 61.1 b   | 63.4   | 60.4     | ..       |
| Chile                 | ..       | 32.4 d   | 29.5 d   | 32.0 d   | 28.8 d | 29.8 d p | ..       |
| Czech Republic        | 48.7 b   | 52.6     | 53.5     | 54.7     | 54.7   | 56.6     | 57.3 p   |
| Denmark               | 65.2     | 62.2     | 60.6     | 60.7     | 61.2   | 61.8     | 62.0 p   |
| Estonia               | 32.0     | 34.0     | 35.3     | 31.1     | 30.1   | 32.1     | 34.5     |
| Finland               | 55.9     | 57.3     | 57.4     | 56.8     | 59.1   | 58.3     | 57.4 p   |
| France                | 55.8     | 59.8 l   | 60.0 l   | 58.5 b   | 58.7   | ..       | 59.5 e   |
| Germany               | 64.1     | 62.2     | 61.2     | 61.4     | 63.2   | 62.8     | 63.4 e   |
| Greece                | 34.7 d   | 17.5 d   | 16.2 d   | 17.9 d   | 16.4 d | 21.8 d   | 30.6 d p |
| Hungary               | 31.8     | 56.0     | 58.3     | 59.4     | 57.1   | 58.2     | 61.1 p   |
| Iceland               | 47.4     | ..       | 46.0 b d | ..       | 54.5 d | 49.4     | ..       |
| Ireland               | 61.9     | 52.3 e   | 53.7     | 53.2 e   | 57.3   | 61.0     | 60.2 p   |
| Israel <sup>1</sup>   | ..       | 83.7 d e | ..       | ..       | ..     | ..       | ..       |
| Italy                 | 40.4     | 50.0     | 50.5     | 51.8     | 52.8   | 56.7 b   | 57.0 p   |
| Japan                 | 68.0 d   | 68.3 d   | 67.5 b d | 68.2 d   | 67.7 d | 67.2 d   | 67.7 d   |
| Korea                 | 71.2 d   | 71.1     | 71.9     | 72.9     | 73.2   | 73.5     | 75.5     |
| Latvia                | 25.0 d   | 15.8 d   | 18.2 d   | 24.1 d   | 20.6 d | 17.5 d   | 17.8 d p |
| Lithuania             | 10.8     | 17.0     | 21.7     | 28.0     | 25.6   | 24.1     | 32.2     |
| Luxembourg            | 83.4     | 59.9 b   | 58.6     | 58.5     | 58.0   | 59.2     | 58.9 p   |
| Mexico                | 50.6     | 34.4     | 32.5     | ..       | ..     | ..       | ..       |
| Netherlands           | 51.9     | 62.8 b   | 62.8     | 61.8     | 62.8   | 64.4     | 65.1 p   |
| New Zealand           | 32.2     | ..       | 40.6     | ..       | 41.7   | ..       | ..       |
| Norway                | 51.4     | 49.4     | 49.4     | 51.1     | 51.0   | 50.5     | 50.8 p   |
| Poland                | 18.2     | 28.4     | 32.3     | 35.7     | 38.5   | 49.9 b   | 55.2 p   |
| Portugal              | 23.8     | 32.9     | 34.7     | 37.0     | 38.1   | 38.4     | 39.2 p   |
| Slovak Republic       | 24.5     | 20.9     | 21.1     | 23.5     | 25.0   | 26.1     | 29.7     |
| Slovenia              | 48.3     | 63.1     | 64.4     | 65.2     | 64.8   | 66.4     | 67.6 p   |
| Spain                 | 43.1     | 42.8 d   | 43.6 d   | 43.8 d   | 43.5 d | 43.8 d   | 44.3 d p |
| Sweden                | 72.3 b e | 68.7 e   | 69.7 e   | 68.7 e   | 69.0 e | 70.9 p   | 68.5 p   |
| Switzerland           | ..       | 63.3     | ..       | ..       | 62.4   | ..       | ..       |
| Turkey                | 30.4 e   | 49.7 e   | 51.7 e   | 53.7 e   | 54.5 e | 53.0     | 57.3     |
| United Kingdom        | 44.8 b e | 44.9 e   | 47.2 e   | 48.5 e   | 49.8   | 50.2 e   | 50.8 p   |
| United States         | ..       | ..       | ..       | ..       | ..     | ..       | ..       |
| EU28 (OECD estimates) | 51.2 e   | 53.0 e   | 53.4 e   | 53.8 e   | 54.7 e | 56.1 e   | 56.7 e   |
| <b>OECD-Total</b>     | ..       | ..       | ..       | ..       | ..     | ..       | ..       |
| Argentina             | 15.8     | 12.8     | 13.3     | 13.0     | 15.5 b | 14.9     | ..       |
| China                 | 64.7 d   | 76.6     | 77.6     | 78.1     | 77.4   | 77.7     | 77.3     |
| Romania               | 48.6     | 35.0     | 32.3     | 33.2     | 32.3   | 33.5     | 35.4 p   |
| Russian Federation    | 57.0     | 50.0     | 51.3     | 51.0     | 51.1   | 50.1     | 50.0     |
| Singapore             | 59.7     | 51.2     | 51.3     | 50.9     | ..     | ..       | ..       |
| South Africa          | 42.5     | 32.3     | 31.3     | 33.6     | 30.3   | ..       | ..       |
| Chinese Taipei        | 64.8     | 72.7     | 74.0     | 75.0     | 76.0   | 76.5     | 77.0     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 32. Total business enterprise R&D personnel in full-time equivalent per thousand employment in industry**

Per thousand

|                       | 2005      | 2012         | 2013         | 2014          | 2015          | 2016          | 2017       |
|-----------------------|-----------|--------------|--------------|---------------|---------------|---------------|------------|
| Australia             | 5.9       | ..           | 9.6          | ..            | 8.3           | ..            | ..         |
| Austria               | 11.1 d e  | 14.3 d e     | 14.6 d       | 15.5 d e      | 15.7 d        | 16.0 d e      | 16.3 d e p |
| Belgium               | 10.7      | 12.2         | 12.4         | 13.7          | 14.2 b        | 15.0 e        | 15.1 e p   |
| Canada                | 11.5      | 10.6         | 10.4         | 10.8 b        | 11.5          | 9.9           | ..         |
| Chile                 | ..        | 0.8 d e      | 0.7 d        | 0.8 d         | 0.7 d         | 0.8 d p       | ..         |
| Czech Republic        | 5.3 b     | 7.8          | 8.1          | 8.6           | 8.7           | 8.8           | 9.4 e p    |
| Denmark               | 15.3      | 19.8         | 19.3         | 19.3          | 19.7          | 20.2          | 19.8 e p   |
| Estonia               | 3.0       | 4.5          | 4.6          | 4.0           | 3.6           | 3.9 e         | 4.3 e      |
| Finland               | 18.8      | 17.3         | 17.2         | 16.9          | 17.0          | 15.7          | 15.8 e p   |
| France                | 10.8      | 13.3         | 13.5         | 13.3          | 13.5          | ..            | 13.6 e     |
| Germany               | 10.6      | 11.9         | 11.6         | 11.9          | 12.9          | 13.1          | 13.5 e     |
| Greece                | 3.2 d     | 2.1 d        | 2.2 d        | 2.5 d         | 2.6 d         | 2.9 d         | 4.6 d e p  |
| Hungary               | 2.3       | 6.5          | 7.3          | 6.9           | 6.5           | 6.2 e         | 7.2 e p    |
| Iceland               | 13.2      | ..           | 10.2 b d     | ..            | 12.3 d        | 11.7          | ..         |
| Ireland               | 6.7       | 11.3 e       | 12.2         | 12.5 e        | 12.5          | 12.0          | 11.3 e p   |
| Israel <sup>1</sup>   | 22.9 d    | 27.7 d       | 27.1 d       | 28.5 d        | 29.2 d        | 31.0 d        | ..         |
| Italy                 | 3.9       | 6.5          | 6.9          | 7.2           | 7.6           | 9.0 b         | 9.0 e p    |
| Japan                 | 11.3 d e  | 11.2 d e     | 11.2 d e     | 11.7 d e      | 11.4 d e      | 11.2 d e      | 11.4 d e   |
| Korea                 | 8.0 d     | 14.1         | 14.3         | 15.3          | 15.6          | 15.7          | 16.9 e     |
| Latvia                | 1.8 d     | 1.3 d        | 1.4 d        | 2.1 d         | 1.7 d         | 1.3 d         | 1.4 d e p  |
| Lithuania             | 1.1       | 1.8          | 2.4          | 3.3           | 2.7           | 2.5           | 3.6 e      |
| Luxembourg            | 15.0      | 9.6 b        | 9.8          | 10.0          | 9.7           | 9.7           | 9.4 e p    |
| Mexico                | 1.7       | 0.7          | 0.7          | ..            | ..            | ..            | ..         |
| Netherlands           | 8.0       | 12.2 b       | 12.5         | 12.3          | 12.8          | 13.3          | 13.7 e p   |
| New Zealand           | 3.9 e     | ..           | 6.1 e        | ..            | 6.4 e         | ..            | ..         |
| Norway                | 10.1      | 10.8         | 11.0         | 11.7          | 12.3          | 12.7 e        | 13.5 e p   |
| Poland                | 1.3       | 2.1          | 2.5          | 3.0           | 3.4           | 4.4 b         | 5.2 e p    |
| Portugal              | 1.6       | 4.5          | 4.8          | 5.1           | 5.3           | 5.5           | 5.8 e p    |
| Slovak Republic       | 2.2       | 2.2          | 2.1          | 2.4           | 2.5           | 2.5           | 3.0 e      |
| Slovenia              | 5.7       | 12.5         | 13.2         | 13.0          | 12.2          | 12.4          | 12.3 e p   |
| Spain                 | 4.9       | 6.6 d        | 6.8 d        | 6.6 d         | 6.4 d         | 6.4 d         | 6.6 d e p  |
| Sweden                | 19.7 b    | 18.1 e       | 18.2         | 18.2 e        | 18.2          | 20.1 p        | 18.7 e p   |
| Switzerland           | ..        | 13.6         | ..           | ..            | 14.0          | ..            | ..         |
| Turkey                | 0.9       | 2.6          | 2.8          | 2.9           | 3.0           | 3.3           | 3.8 e      |
| United Kingdom        | 6.8       | 7.5          | 8.2          | 8.6           | 9.0           | 9.0           | 9.1 p      |
| United States         | ..        | 12.5         | 13.0         | 13.2          | 13.3          | 13.0          | ..         |
| EU28 (OECD estimates) | 6.8 e     | 8.5 e        | 8.8 e        | 9.0 e         | 9.3 e         | 9.7 e         | 9.9 e      |
| <b>OECD-Total</b>     | <b>..</b> | <b>9.6 e</b> | <b>9.9 e</b> | <b>10.1 e</b> | <b>10.3 e</b> | <b>10.3 e</b> | <b>..</b>  |
| Argentina             | ..        | ..           | ..           | ..            | ..            | ..            | ..         |
| China                 | ..        | ..           | ..           | ..            | ..            | ..            | ..         |
| Romania               | 1.9       | 1.5          | 1.4          | 1.4           | 1.4           | 1.5           | 1.5 p      |
| Russian Federation    | 10.0      | 7.7          | 7.9          | 7.8           | 7.8           | 7.4           | 7.2 e      |
| Singapore             | 8.4       | 6.9          | 7.0          | 6.8           | ..            | ..            | ..         |
| South Africa          | 1.3 e     | 1.1 e        | 1.1 e        | 1.2 e         | 1.1           | ..            | ..         |
| Chinese Taipei        | 11.1      | 17.7         | 18.2         | 18.7          | 19.2          | 19.6          | 19.9       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 33. Business-financed BERD (Business enterprise expenditure on R&D) at 2010 prices and PPP**

Million 2010 USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | 8 092.4            | ..                 | 11 701.3           | ..                 | 10 466.3           | ..                 | ..                 |
| Austria               | ..                 | ..                 | 5 085.4            | ..                 | 5 440.9            | ..                 | ..                 |
| Belgium               | 4 078.3            | 5 842.8            | 5 981.5            | ..                 | 6 266.8            | ..                 | ..                 |
| Canada                | 11 702.8 d w       | 11 233.7 d w       | 10 922.7 d w       | 11 019.3 b         | 10 521.8           | 10 166.3           | 9 502.7 p          |
| Chile                 | ..                 | 395.3              | 441.7              | 406.3              | 432.8              | 465.3 p            | ..                 |
| Czech Republic        | 1 375.9 b          | 1 832.2            | 2 005.4            | 2 033.1            | 1 995.5            | 2 049.8            | 2 270.2 p          |
| Denmark               | 3 316.5            | 4 257.5 e          | 4 217.9            | ..                 | 4 521.6            | ..                 | 4 668.2 p          |
| Estonia               | 98.1               | 342.5              | 226.8              | 168.7              | 194.4              | 200.8              | ..                 |
| Finland               | 4 277.7            | 4 384.3            | 4 032.6            | 3 406.0            | 3 197.5            | 3 245.6            | ..                 |
| France                | 23 038.1           | 28 531.3           | 28 642.6           | 29 151.9           | 29 096.5           | ..                 | ..                 |
| Germany               | 46 613.0 e         | 59 469.8 e         | 58 110.7           | 60 763.4 e         | 62 557.7           | 63 626.4 e         | 68 578.2 e         |
| Greece                | 489.0              | 488.3              | 563.1              | 572.4              | 667.5              | 938.5              | 1 200.3 p          |
| Hungary               | 674.0 d            | 1 189.6            | 1 347.0            | 1 426.6            | 1 537.7            | 1 594.1            | ..                 |
| Iceland               | 140.0              | ..                 | 78.6 b             | 90.7               | 97.5               | 106.5              | 125.7 p            |
| Ireland               | 1 297.5            | 1 588.6 e          | 1 692.1            | 1 767.2 e          | 1 607.6            | 1 664.7 e          | ..                 |
| Israel <sup>1</sup>   | 3 942.1 d          | 3 761.4 d          | 3 437.2 d          | 3 591.6 d          | 3 326.3 d          | 3 990.9 d          | ..                 |
| Italy                 | 8 535.0            | 11 109.0           | 11 497.5           | 12 393.8           | 13 224.7           | 14 287.8 b         | ..                 |
| Japan                 | 106 603.6          | 109 718.7          | 114 643.0          | 120 927.9          | 119 182.2          | 115 422.2          | 120 010.7          |
| Korea                 | 23 446.1 d         | 46 911.0           | 50 367.9           | 53 651.0           | 53 636.8           | 55 923.2           | 62 769.2           |
| Latvia                | 50.3               | 46.6               | 38.5               | 62.1               | 32.4               | 31.6               | ..                 |
| Lithuania             | 75.0               | 101.7              | 107.8              | 176.9              | 154.7              | 198.3              | ..                 |
| Luxembourg            | 479.0              | 94.5 b             | 94.4               | ..                 | 297.5              | ..                 | ..                 |
| Mexico                | 2 627.1            | 2 175.8            | 1 922.9            | 1 951.9 e p        | 2 012.9 e p        | 2 020.8 e p        | ..                 |
| Netherlands           | 5 183.2            | 6 739.9 b          | 6 762.8            | 7 032.1            | 6 862.6            | 7 581.8            | ..                 |
| New Zealand           | 473.7              | ..                 | 581.8              | ..                 | 757.5              | ..                 | ..                 |
| Norway                | 1 697.0            | 2 055.8            | 2 067.2            | 2 211.6            | 2 440.3            | 2 445.4            | ..                 |
| Poland                | 941.3              | 2 270.0            | 2 657.3            | 3 110.0            | 3 464.2            | 4 799.8            | ..                 |
| Portugal              | 745.0              | 1 690.7            | 1 475.8            | 1 432.0            | 1 428.1            | 1 559.3            | ..                 |
| Slovak Republic       | 178.4              | 377.3              | 442.4              | 354.8              | 390.2              | 530.9              | ..                 |
| Slovenia              | 369.8              | 857.3              | 875.6              | 886.6              | 852.1              | 806.8              | ..                 |
| Spain                 | 6 646.6            | 7 835.1            | 7 712.6            | 7 664.3            | 7 738.4            | 7 977.2            | ..                 |
| Sweden                | 7 656.9 b          | ..                 | 7 989.9            | ..                 | 7 934.6            | ..                 | ..                 |
| Switzerland           | ..                 | 8 249.0            | ..                 | ..                 | 9 220.6            | ..                 | ..                 |
| Turkey                | 1 879.2            | 4 936.6            | 5 580.2            | 6 425.8            | 6 860.3            | 7 972.3            | 9 241.6            |
| United Kingdom        | 13 692.6           | 16 047.8           | 17 217.3           | 18 697.0           | 19 920.2           | 21 685.0           | ..                 |
| United States         | 224 552.8 d w      | 244 407.3 d        | 258 194.8 d        | 269 290.4 d        | 279 270.8 d        | 291 095.4 d        | 302 480.6 d e      |
| EU28 (OECD estimates) | 134 074.1 e        | 168 134.7 e        | 169 570.4 e        | 175 124.8 e        | 180 782.5 e        | ..                 | ..                 |
| <b>OECD-Total</b>     | <b>525 600.7 e</b> | <b>613 380.1 e</b> | <b>636 994.7 e</b> | <b>664 157.0 e</b> | <b>677 545.7 e</b> | <b>698 508.3 e</b> | <b>731 828.9 e</b> |
| Argentina             | 763.1              | ..                 | ..                 | ..                 | 848.0 b            | 760.3              | ..                 |
| China                 | 59 565.4           | 199 136.7          | 225 934.3          | 249 711.8          | 269 815.0          | 300 838.0          | 326 454.6 e        |
| Romania               | 350.2              | 447.1              | 318.5              | 359.3              | 593.6              | 853.6              | ..                 |
| Russian Federation    | 6 653.5            | 7 157.2            | 7 639.7            | 7 813.1            | 7 547.4            | 8 393.7            | 9 387.3 e          |
| Singapore             | 3 251.3            | 4 096.3            | 4 159.5            | 4 830.9            | ..                 | ..                 | ..                 |
| South Africa          | 1 771.8            | 1 637.9            | 1 754.2            | 1 880.8            | 1 884.2            | ..                 | ..                 |
| Chinese Taipei        | 11 029.7           | 20 344.2           | 21 586.3           | 22 934.8           | 23 666.9           | 24 823.2           | 27 196.1           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 34. Business-financed BERD (Business enterprise expenditure on R&D) as a percentage of value added in industry**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 1.46          | ..            | 1.71          | ..            | 1.50          | ..            | ..            |
| Austria               | ..            | ..            | 2.15          | ..            | 2.26          | ..            | ..            |
| Belgium               | 1.59          | 2.13          | 2.18          | ..            | 2.21          | ..            | ..            |
| Canada                | 1.38 d w      | 1.23 d w      | 1.16 d w      | 1.14 b        | 1.10 e        | 1.05 e        | 0.95 e p      |
| Chile                 | ..            | 0.16          | 0.18          | 0.16          | 0.17 e        | 0.18 e p      | ..            |
| Czech Republic        | 0.77 b        | 0.92          | 1.01          | 0.98          | 0.92          | 0.92          | 0.98 e p      |
| Denmark               | 2.43          | 3.06 e        | 2.98          | ..            | 3.06          | ..            | 3.03 e p      |
| Estonia               | 0.49          | 1.60          | 1.04          | 0.77          | 0.90          | 0.92          | ..            |
| Finland               | 3.50          | 3.66          | 3.42          | 2.91          | 2.73          | 2.69          | ..            |
| France                | 1.73          | 2.07          | 2.07          | 2.09          | 2.07          | ..            | ..            |
| Germany               | 2.40 e        | 2.81 e        | 2.74          | 2.79 e        | 2.82          | 2.82 e        | 2.97 e        |
| Greece                | 0.25          | 0.35          | 0.41          | 0.42          | 0.49          | 0.70          | 0.87 e p      |
| Hungary               | 0.49 d        | 0.89          | 0.98          | 0.99          | 1.03          | 1.05          | ..            |
| Iceland               | 2.02          | ..            | 0.97 b        | 1.12          | 1.13          | 1.13 e        | 1.29 e p      |
| Ireland               | 0.98          | 1.13 e        | 1.17          | 1.12 e        | 0.75          | 0.73 e        | ..            |
| Israel <sup>1</sup>   | 3.67 d e      | 2.69 d        | 2.34 d        | 2.41 d e      | 2.17 d e      | 2.50 d e      | ..            |
| Italy                 | 0.64          | 0.90          | 0.95          | 1.02          | 1.08          | 1.16 b        | ..            |
| Japan                 | 3.16          | 3.37          | 3.45          | 3.62          | 3.49          | 3.36 e        | 3.43 e        |
| Korea                 | 2.78 d        | 4.27          | 4.45          | 4.61          | 4.49          | 4.57 e        | 4.98 e        |
| Latvia                | 0.20          | 0.18          | 0.15          | 0.23          | 0.12          | 0.11          | ..            |
| Lithuania             | 0.2           | 0.2           | 0.2           | 0.3           | 0.3           | 0.4           | ..            |
| Luxembourg            | 1.87          | 0.32 b        | 0.31          | ..            | 0.85          | ..            | ..            |
| Mexico                | 0.22          | 0.15          | 0.14          | 0.14 e p      | 0.14 e p      | 0.13 e p      | ..            |
| Netherlands           | 1.15          | 1.37 b        | 1.39          | 1.44          | 1.36          | 1.48          | ..            |
| New Zealand           | 0.56          | ..            | 0.61          | ..            | 0.74          | ..            | ..            |
| Norway                | 0.97          | 1.02          | 1.02          | 1.12          | 1.31          | 1.38 e        | ..            |
| Poland                | 0.22          | 0.38          | 0.43          | 0.49          | 0.52          | 0.71          | ..            |
| Portugal              | 0.45          | 1.05          | 0.94          | 0.90          | 0.88          | 0.95          | ..            |
| Slovak Republic       | 0.24          | 0.37          | 0.44          | 0.33          | 0.35          | 0.47          | ..            |
| Slovenia              | 1.07          | 2.39          | 2.48          | 2.39          | 2.25          | 2.07          | ..            |
| Spain                 | 0.70          | 0.87          | 0.89          | 0.87          | 0.84          | 0.83          | ..            |
| Sweden                | 3.43 b        | ..            | 3.21          | ..            | 2.94          | ..            | ..            |
| Switzerland           | ..            | 2.70          | ..            | ..            | 2.89          | ..            | ..            |
| Turkey                | 0.26          | 0.49          | 0.51          | 0.55          | 0.56          | 0.63          | 0.67 e        |
| United Kingdom        | 1.01          | 1.16          | 1.20          | 1.27          | 1.33          | 1.41          | ..            |
| United States         | 2.41 d w      | 2.50 d        | 2.59 d        | 2.62 d        | 2.64 d        | 2.72 d        | 2.76 d e      |
| EU28 (OECD estimates) | 1.33 e        | 1.59 e        | 1.60 e        | 1.63 e        | 1.63 e        | ..            | ..            |
| <b>OECD-Total</b>     | <b>1.95 e</b> | <b>2.09 e</b> | <b>2.13 e</b> | <b>2.17 e</b> | <b>2.16 e</b> | <b>2.19 e</b> | <b>2.23 e</b> |
| Argentina             | 0.19          | ..            | ..            | ..            | 0.17 b e      | 0.15 e        | ..            |
| China                 | 1.02 e        | 1.72 e        | 1.83 e        | 1.90 e        | 1.95 e        | 2.08 e        | 2.11 e        |
| Romania               | 0.17          | 0.18          | 0.12          | 0.14          | 0.21 e        | 0.29 e        | ..            |
| Russian Federation    | 0.35 e        | 0.31 e        | 0.33 e        | 0.33 e        | 0.31 e        | 0.35 e        | 0.38 e        |
| Singapore             | 1.50 e        | 1.27 e        | 1.24 e        | 1.38 e        | ..            | ..            | ..            |
| South Africa          | 0.49 e        | 0.37 e        | 0.39 e        | 0.41 e        | 0.41 e        | ..            | ..            |
| Chinese Taipei        | 2.05 e        | 2.96          | 3.02          | 3.04          | 3.10          | 3.20          | 3.40          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 35. Percentage of Business enterprise expenditure on R&D (BERD) financed by the business enterprise sector**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 94.0          | ..            | 96.2          | ..            | 96.2          | ..            | ..            |
| Austria               | ..            | ..            | 66.7          | ..            | 67.4          | ..            | ..            |
| Belgium               | 82.8          | 82.7          | 82.7          | ..            | 79.2          | ..            | ..            |
| Canada                | 82.5 d w      | 85.9 d w      | 85.3 d w      | 80.0 b        | 76.6          | 73.9          | 72.6 p        |
| Chile                 | ..            | 91.5          | 90.1          | 88.5          | 88.4          | 87.8 p        | ..            |
| Czech Republic        | 78.8 b        | 66.5          | 68.0          | 62.4          | 60.5          | 61.8          | 59.9 p        |
| Denmark               | 86.0          | 89.9 e        | 91.7          | ..            | 91.7          | ..            | 89.0 p        |
| Estonia               | 80.3          | 87.0          | 83.9          | 80.2          | 83.5          | 87.7          | ..            |
| Finland               | 90.9          | 88.8          | 85.5          | 76.6          | 79.7          | 84.0          | ..            |
| France                | 80.7          | 82.9          | 82.4          | 82.8          | 82.0          | ..            | ..            |
| Germany               | 92.1 e        | 91.4 e        | 91.4          | 91.4 e        | 89.7          | 89.7 e        | 89.9 e        |
| Greece                | 85.7          | 77.2          | 81.6          | 78.9          | 82.3          | 87.6          | 84.2 p        |
| Hungary               | 77.8 d        | 66.6 d        | 63.5 d        | 64.3 d        | 64.8 d        | 73.6 d        | ..            |
| Iceland               | 84.9          | ..            | 61.1 b d      | 55.2 d        | 49.3 d        | 53.6 d        | 56.7 p        |
| Ireland               | 86.1          | 69.2 e        | 72.4          | 72.4 e        | 66.8          | 66.8 e        | ..            |
| Israel <sup>1</sup>   | 67.2 d        | 45.5 d        | 40.7 d        | 39.7 d        | 34.9 d        | 38.8 d        | ..            |
| Italy                 | 76.8          | 79.6          | 80.6          | 81.6          | 84.2          | 84.1 b        | ..            |
| Japan                 | 98.3          | 98.2          | 98.1          | 98.3          | 98.3          | 98.1          | 98.2          |
| Korea                 | 94.4 d        | 93.7          | 94.2          | 94.2          | 94.1          | 94.8          | 93.8          |
| Latvia                | 61.7          | 76.3          | 53.3          | 59.7          | 47.9          | 65.6          | ..            |
| Lithuania             | 83.9          | 61.6          | 62.8          | 75.7          | 72.4          | 87.7          | ..            |
| Luxembourg            | 91.7          | 30.3 b        | 30.0          | ..            | 90.1          | ..            | ..            |
| Mexico                | 86.8          | 80.5          | 65.1          | 63.1 e p      | 63.7 e p      | 65.7 e p      | ..            |
| Netherlands           | 79.0          | 82.7 b        | 83.8          | 83.4          | 79.5          | 82.1          | ..            |
| New Zealand           | 80.5          | ..            | 74.4          | ..            | 76.3          | ..            | ..            |
| Norway                | 81.6          | 79.1          | 77.0          | 77.9          | 78.2          | 77.1          | ..            |
| Poland                | 83.0          | 81.0          | 80.8          | 79.4          | 79.8          | 79.1 b        | ..            |
| Portugal              | 91.4          | 90.7          | 87.1          | 88.2          | 89.7          | 89.3          | ..            |
| Slovak Republic       | 67.9          | 80.6          | 81.3          | 74.6          | 78.0          | 84.8          | ..            |
| Slovenia              | 85.3          | 79.0          | 80.6          | 85.5          | 87.8          | 88.7          | ..            |
| Spain                 | 79.9          | 80.4          | 81.6          | 82.3          | 81.9          | 82.2          | ..            |
| Sweden                | 86.1 b        | ..            | 86.7          | ..            | 80.4          | ..            | ..            |
| Switzerland           | ..            | 84.9          | ..            | ..            | 85.4          | ..            | ..            |
| Turkey                | 90.8          | 89.6          | 90.2          | 89.6          | 87.6          | 84.9          | 85.9          |
| United Kingdom        | 64.5          | 68.2          | 69.1          | 70.6          | 72.2          | 75.3          | ..            |
| United States         | 90.3 d w      | 84.1 d        | 84.8 d        | 85.3 d        | 85.6 d        | 85.6 d        | 85.6 d e      |
| EU28 (OECD estimates) | 82.0 e        | 82.4 e        | 82.6 e        | 82.4 e        | 81.9 e        | ..            | ..            |
| <b>OECD-Total</b>     | <b>89.3 e</b> | <b>86.3 e</b> | <b>86.5 e</b> | <b>86.6 e</b> | <b>86.4 e</b> | <b>86.5 e</b> | <b>86.4 e</b> |
| Argentina             | 94.5          | ..            | ..            | ..            | 79.3 b        | 74.8          | ..            |
| China                 | 91.2          | 93.0          | 93.2          | 93.7          | 93.7          | 94.7          | 95.0          |
| Romania               | 57.5          | 66.3          | 72.3          | 59.2          | 69.5          | 77.3          | ..            |
| Russian Federation    | 37.3          | 35.1          | 35.5          | 35.1          | 34.2          | 38.5          | 40.9          |
| Singapore             | 87.8          | 84.9          | 84.5          | 84.4          | ..            | ..            | ..            |
| South Africa          | 68.3          | 79.5          | 81.1          | 81.3          | 82.4          | ..            | ..            |
| Chinese Taipei        | 97.7          | 98.0          | 98.1          | 98.4          | 98.5          | 98.5          | 98.6          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 36. Percentage of Business enterprise expenditure on R&D (BERD) financed by government**

Percentage

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017    |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
| Australia             | 4.0          | ..           | 2.1          | ..           | 2.2          | ..           | ..      |
| Austria               | ..           | ..           | 12.5         | ..           | 12.0         | ..           | ..      |
| Belgium               | 6.2          | 5.4          | 5.2          | ..           | 5.5          | ..           | ..      |
| Canada                | 2.6 d        | 3.8 d        | 4.1 d        | 4.5 b        | 4.6          | 5.3          | 5.6 p   |
| Chile                 | ..           | 6.9          | 8.3 b        | 9.3          | 9.7          | 11.7 p       | ..      |
| Czech Republic        | 15.6 b       | 13.0         | 10.7         | 9.2          | 7.6          | 6.1          | 7.0 p   |
| Denmark               | 2.4 d        | 2.8 d        | 1.8 d        | ..           | 2.7 d        | ..           | 2.0 d p |
| Estonia               | 6.9          | 9.2          | 10.2         | 10.3         | 8.4          | 4.7          | ..      |
| Finland               | 3.8          | 3.0          | 2.8          | 3.0          | 3.6          | 3.6          | ..      |
| France                | 10.1         | 7.9          | 8.1          | 7.8          | 8.8          | ..           | ..      |
| Germany               | 4.5 e        | 4.3 e        | 3.4          | 3.4 e        | 3.3          | 3.4 e        | 3.2 e   |
| Greece                | 5.6          | 8.2          | 7.0          | 10.5         | 8.8          | 3.3          | 4.1 p   |
| Hungary               | 3.9 d        | 15.7 d       | 19.0 d       | 16.5 d       | 19.4 d       | 8.3 d        | ..      |
| Iceland               | 2.8          | ..           | 9.7 b d      | 9.0 d        | 8.3 d        | 9.0 d        | 9.0 p   |
| Ireland               | 4.1          | 5.9 e        | 6.0          | 6.0 e        | 5.0          | 5.0 e        | ..      |
| Israel <sup>1</sup>   | 4.8 d        | 3.3 d        | 2.4 d        | 3.9 d        | 5.9 d        | 5.5 d        | ..      |
| Italy                 | 11.0         | 7.1          | 6.4          | 5.7          | 5.5          | 3.5 b        | ..      |
| Japan                 | 1.2          | 1.1          | 1.1          | 1.0          | 1.0          | 0.9          | 0.9     |
| Korea                 | 4.6 d        | 6.0          | 5.5          | 5.1          | 5.1          | 4.2          | 4.7     |
| Latvia                | 12.7         | 4.6          | 1.5          | 1.4          | 1.6          | 2.6          | ..      |
| Lithuania             | 1.8          | 4.1          | 2.8          | 1.8          | 2.2          | 1.5          | ..      |
| Luxembourg            | 5.2          | .. c         | .. c         | ..           | 7.2          | ..           | ..      |
| Mexico                | 11.0         | 19.1         | 34.1         | 36.1 e p     | 35.3 e p     | 33.2 e p     | ..      |
| Netherlands           | 3.4          | 2.2 b        | 2.0          | 1.8          | 1.9          | 1.7          | ..      |
| New Zealand           | 11.4         | ..           | 11.2         | ..           | 11.0         | ..           | ..      |
| Norway                | 7.9          | 10.1         | 9.3          | 8.5          | 8.6          | 9.4          | ..      |
| Poland                | 13.7         | 11.2         | 10.0         | 11.5         | 10.0         | 16.3 b       | ..      |
| Portugal              | 4.2          | 6.9          | 9.1          | 9.1          | 5.5          | 3.8          | ..      |
| Slovak Republic       | 26.7         | 6.8          | 5.1          | 3.9          | 6.5          | 3.7          | ..      |
| Slovenia              | 7.0          | 13.8         | 12.6         | 7.7          | 4.3          | 3.1          | ..      |
| Spain                 | 13.6         | 12.6         | 10.7         | 9.7          | 9.4          | 8.9          | ..      |
| Sweden                | 4.5 b        | ..           | 6.1          | ..           | .. c         | ..           | ..      |
| Switzerland           | ..           | 0.7          | ..           | ..           | 1.4          | ..           | ..      |
| Turkey                | 6.9          | 9.4          | 8.6          | 8.9          | 10.6         | 9.9          | 9.0     |
| United Kingdom        | 8.3          | 7.9          | 8.9          | 9.3          | 8.7          | 7.8          | ..      |
| United States         | 9.7 d        | 10.2 d       | 9.2 d        | 7.8 d        | 7.6 d        | 6.4 d        | 6.0 d e |
| EU28 (OECD estimates) | 7.4 e        | 6.8 e        | 6.4 e        | 6.4 e        | 6.4 e        | ..           | ..      |
| <b>OECD-Total</b>     | <b>6.8 e</b> | <b>7.1 e</b> | <b>6.5 e</b> | <b>6.0 e</b> | <b>6.0 e</b> | <b>5.3 e</b> | ..      |
| Argentina             | 4.5          | ..           | ..           | ..           | 7.1 b        | 2.0          | ..      |
| China                 | 4.6          | 4.6          | 4.5          | 4.2          | 4.3          | 3.7          | 3.4     |
| Romania               | 36.8         | 19.6         | 14.0         | 19.0         | 13.7         | 12.2         | ..      |
| Russian Federation    | 53.6         | 60.4         | 61.5         | 62.7         | 63.4         | 59.0         | 56.6    |
| Singapore             | 6.2          | 6.2          | 6.6          | 5.3          | ..           | ..           | ..      |
| South Africa          | 16.2         | 6.5          | 5.8          | 5.2          | 3.8          | ..           | ..      |
| Chinese Taipei        | 2.2          | 1.9          | 1.7          | 1.5          | 1.4          | 1.4          | 1.3     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 37. Percentage of Business enterprise expenditure on R&D (BERD) financed by other national sources**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017     |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------|
| Australia             | 0.33          | ..            | 0.07          | ..            | 0.05          | ..            | ..       |
| Austria               | ..            | ..            | 0.06          | ..            | 0.06          | ..            | ..       |
| Belgium               | 0.04          | 0.01          | 0.01          | ..            | 0.02          | ..            | ..       |
| Canada                | .. k          | .. k          | .. k          | .. c          | .. c          | 1.32          | 1.43 p   |
| Chile                 | ..            | 1.39          | 0.05          | 0.23          | 0.08          | 0.08 p        | ..       |
| Czech Republic        | 0.10 b        | 0.04          | 0.08          | 0.04          | 0.05          | 0.07          | 0.08 p   |
| Denmark               | 0.16 d        | 0.26 d e      | 0.50 d        | ..            | 0.31 d        | ..            | 0.75 d p |
| Estonia               | 0.01          | 0.03          | 0.11          | 0.06          | 0.03          | 0.07          | ..       |
| Finland               | 0.01          | 0.06          | 0.06          | 0.06          | 0.02          | 0.02          | ..       |
| France                | 0.05          | 0.06          | 0.09          | 0.09          | 0.08          | ..            | ..       |
| Germany               | 0.17 d        | 0.26 d        | 0.20 d        | 0.20 d        | 0.27 d        | 0.19 d        | 0.15 e   |
| Greece                | 0.37          | 0.15          | 0.06          | 0.04          | 0.01          | 0.02          | 0.05 p   |
| Hungary               | 0.06 d        | 0.05 d        | 0.06 d        | 0.05 d        | 0.04 d        | 0.05 d        | ..       |
| Iceland               | 0.00          | ..            | 0.62 b d      | 3.58 d        | 6.55 d        | 7.13 d        | 2.08 p   |
| Ireland               | 0.00          | 0.07 e        | 0.09          | 0.09 e        | 0.00          | 0.03 e        | ..       |
| Israel <sup>1</sup>   | 0.61 d        | 0.60 d        | 0.61 d        | 0.59 d        | 0.57 d        | 0.55 d        | ..       |
| Italy                 | 0.11          | 0.40          | 0.38          | 0.36          | 0.34          | 0.14 b        | ..       |
| Japan                 | 0.10          | 0.14          | 0.24          | 0.17          | 0.12          | 0.09          | 0.10     |
| Korea                 | 0.06 d        | 0.06          | 0.06          | 0.05          | 0.06          | 0.04          | 0.05     |
| Latvia                | ..            | ..            | ..            | ..            | ..            | ..            | ..       |
| Lithuania             | 0.2           | 0.1           | 2.5           | 0.4           | 0.5           | 0.1           | ..       |
| Luxembourg            | 0.02          | ..            | ..            | ..            | ..            | ..            | ..       |
| Mexico                | 0.02          | 0.06          | 0.30          | 0.32 e p      | 0.37 e p      | 0.43 e p      | ..       |
| Netherlands           | 0.33          | 0.57 b        | 0.69          | 0.49          | 0.22          | 0.23          | ..       |
| New Zealand           | 1.05          | ..            | .. c          | ..            | .. c          | ..            | ..       |
| Norway                | 0.01          | 0.01          | 0.02          | 0.04          | 0.05          | 0.04          | ..       |
| Poland                | 0.08          | 0.13          | 0.06          | 0.11          | 0.14          | 0.10 b        | ..       |
| Portugal              | 0.00          | 0.01          | 0.01          | 0.02          | 0.02          | 0.03          | ..       |
| Slovak Republic       | 0.03          | 0.00          | 0.00          | 0.00          | 0.01          | 0.00          | ..       |
| Slovenia              | 0.48          | 0.13          | 0.01          | 0.05          | 0.00          | 0.00          | ..       |
| Spain                 | 0.68          | 0.22          | 0.25          | 0.18          | 0.85          | 0.24          | ..       |
| Sweden                | 0.20 b        | ..            | 0.27          | ..            | 0.38          | ..            | ..       |
| Switzerland           | ..            | 0.57          | ..            | ..            | 0.52          | ..            | ..       |
| Turkey                | 2.02 d        | 0.21          | 0.20          | 0.09          | 0.14          | 0.12          | 0.27     |
| United Kingdom        | 0.02 d        | 0.22 d        | 0.40 d        | 0.68 d        | 0.62 d        | 0.84 d        | ..       |
| United States         | .. k          | 0.11 d        | 0.08 d        | 0.15 d        | 0.14 d        | 0.26 d        | 0.28 d e |
| EU28 (OECD estimates) | 0.14 e        | 0.21 e        | 0.22 e        | 0.25 e        | 0.28 e        | ..            | ..       |
| <b>OECD-Total</b>     | <b>0.10 e</b> | <b>0.17 e</b> | <b>0.18 e</b> | <b>0.20 e</b> | <b>0.20 e</b> | <b>0.24 e</b> | ..       |
| Argentina             | 0.00          | ..            | ..            | ..            | 0.00 b        | 0.03          | ..       |
| China                 | ..            | ..            | ..            | ..            | ..            | ..            | ..       |
| Romania               | 0.16          | 0.16          | 0.27          | 0.20          | 0.28          | 0.32          | ..       |
| Russian Federation    | 0.04          | 0.10          | 0.13          | 0.16          | 0.18          | 0.05          | 0.05     |
| Singapore             | 0.08          | 0.01          | 0.01          | 0.01          | ..            | ..            | ..       |
| South Africa          | 1.02          | 2.79          | 2.69          | 2.79          | 2.71          | ..            | ..       |
| Chinese Taipei        | 0.04          | 0.01          | 0.01          | 0.01          | 0.01          | 0.01          | 0.02     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 38. Percentage of Business enterprise expenditure on R&D (BERD) financed by the rest of the world**

Percentage

|                       | 2005      | 2012         | 2013         | 2014         | 2015         | 2016         | 2017      |
|-----------------------|-----------|--------------|--------------|--------------|--------------|--------------|-----------|
| Australia             | 1.6       | ..           | 1.6          | ..           | 1.6          | ..           | ..        |
| Austria               | ..        | ..           | 20.7         | ..           | 20.6         | ..           | ..        |
| Belgium               | 11.0      | 11.9         | 12.0         | ..           | 15.3         | ..           | ..        |
| Canada                | 14.9 d    | 10.3 d       | 10.5 d       | 14.7 b       | 17.6         | 19.5         | 20.4 p    |
| Chile                 | ..        | 0.1          | 1.5 b        | 1.9          | 1.9          | 0.5 p        | ..        |
| Czech Republic        | 5.4 b     | 20.5         | 21.2         | 28.3         | 31.9         | 32.0         | 33.0 p    |
| Denmark               | 11.4      | 7.1 e        | 6.1          | ..           | 5.3          | ..           | 8.2 p     |
| Estonia               | 12.7      | 3.8          | 5.7          | 9.4          | 8.1          | 7.5          | ..        |
| Finland               | 5.3 b     | 8.1          | 11.7         | 20.4         | 16.7         | 12.4         | ..        |
| France                | 9.2       | 9.1          | 9.4          | 9.3          | 9.1          | ..           | ..        |
| Germany               | 3.3       | 4.0 e        | 5.0          | 5.0 e        | 6.7          | 6.7 e        | 6.7 e     |
| Greece                | 8.3       | 14.4         | 11.4         | 10.6         | 8.9          | 9.1          | 11.7 p    |
| Hungary               | 18.1 d    | 17.7 d       | 17.4 d       | 19.2 d       | 15.8 d       | 18.0 d       | ..        |
| Iceland               | 12.2      | ..           | 28.5 b d     | 32.2 d       | 35.9 d       | 30.2 d       | 32.2 p    |
| Ireland               | 9.8       | 24.8 e       | 21.5         | 21.5 e       | 28.3         | 28.2 e       | ..        |
| Israel <sup>1</sup>   | 27.4 d    | 50.6 d       | 56.3 d       | 55.8 d       | 58.6 d       | 55.1 d       | ..        |
| Italy                 | 12.1      | 13.0         | 12.6         | 12.3         | 10.0         | 12.2 b       | ..        |
| Japan                 | 0.4       | 0.5          | 0.6          | 0.5          | 0.6          | 0.9          | 0.8       |
| Korea                 | 0.9 d     | 0.3          | 0.2          | 0.6          | 0.8          | 1.0          | 1.4       |
| Latvia                | 25.6      | 19.2         | 45.2         | 38.9         | 50.5         | 31.9         | ..        |
| Lithuania             | 14.1      | 34.2         | 31.9         | 22.1         | 24.9         | 10.7         | ..        |
| Luxembourg            | 3.1       | .. c         | .. c         | ..           | 2.7          | ..           | ..        |
| Mexico                | 2.1       | 0.4          | 0.5          | 0.5 e p      | 0.6 e p      | 0.7 e p      | ..        |
| Netherlands           | 17.2      | 14.5 b       | 13.5         | 14.4         | 18.4         | 16.0         | ..        |
| New Zealand           | 7.0       | ..           | 11.6         | ..           | 10.5         | ..           | ..        |
| Norway                | 10.5      | 10.7         | 13.7         | 13.6         | 13.1         | 13.5         | ..        |
| Poland                | 3.2       | 7.6          | 9.2          | 9.0          | 10.1         | 4.4 b        | ..        |
| Portugal              | 4.5       | 2.4          | 3.8          | 2.7          | 4.9          | 6.9          | ..        |
| Slovak Republic       | 5.3       | 12.7         | 13.6         | 21.5         | 15.5         | 11.5         | ..        |
| Slovenia              | 7.2       | 7.0          | 6.8          | 6.8          | 8.0          | 8.2          | ..        |
| Spain                 | 5.8       | 6.8          | 7.5          | 7.8          | 7.9          | 8.6          | ..        |
| Sweden                | 9.1 b     | ..           | 6.9          | ..           | .. c         | ..           | ..        |
| Switzerland           | ..        | 13.8         | ..           | ..           | 12.6         | ..           | ..        |
| Turkey                | 0.3       | 0.8          | 1.0          | 1.4          | 1.6          | 5.0          | 4.9       |
| United Kingdom        | 27.1      | 23.7         | 21.5         | 19.4         | 18.5         | 16.0         | ..        |
| United States         | .. k      | 5.6 d        | 6.0 d        | 6.8 d        | 6.7 d        | 7.7 d        | 8.1 d e   |
| EU28 (OECD estimates) | 10.5 e    | 10.6 e       | 10.8 e       | 10.9 e       | 11.5 e       | ..           | ..        |
| <b>OECD-Total</b>     | <b>..</b> | <b>6.4 e</b> | <b>6.7 e</b> | <b>7.2 e</b> | <b>7.4 e</b> | <b>7.9 e</b> | <b>..</b> |
| Argentina             | 1.0       | ..           | ..           | ..           | 13.6 b       | 23.2         | ..        |
| China                 | 1.0       | 1.1          | 1.0          | 0.9          | 0.9          | 0.8          | 0.8       |
| Romania               | 5.5       | 14.0         | 13.4         | 21.6         | 16.5         | 10.3         | ..        |
| Russian Federation    | 9.1       | 4.4          | 2.9          | 2.1          | 2.2          | 2.5          | 2.4       |
| Singapore             | 5.8       | 8.8          | 8.9          | 10.3         | ..           | ..           | ..        |
| South Africa          | 14.5      | 11.3         | 10.4         | 10.7         | 11.1         | ..           | ..        |
| Chinese Taipei        | 0.0       | 0.1          | 0.1          | 0.1          | 0.1          | 0.1          | 0.1       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 39. Business enterprise expenditure on R&D (BERD) performed in the pharmaceutical industry at current prices and PPP**

Million USD

|                       | 2005       | 2012       | 2013       | 2014       | 2015       | 2016       | 2017 |
|-----------------------|------------|------------|------------|------------|------------|------------|------|
| Australia             | 178.0 e    | 301.6 e    | 366.2      | ..         | ..         | ..         | ..   |
| Austria               | 269.7 e    | 291.6 e    | 357.1      | 384.4 e    | 368.1      | ..         | ..   |
| Belgium               | 814.5 e    | 1 856.0    | 1 929.4    | 1 948.5    | 1 989.8    | ..         | ..   |
| Canada                | 878.1 d e  | 364.0 d    | 340.7 d    | 375.5 d    | 400.6 d    | 390.3 d    | ..   |
| Chile                 | ..         | 18.5       | 33.7       | 28.0       | 28.8       | ..         | ..   |
| Czech Republic        | 55.1       | 83.9       | 76.9       | 84.6       | 86.9       | 88.8       | 88.8 |
| Denmark               | ..         | 1 065.8    | 1 127.2    | 1 162.6    | 1 239.0    | 1 339.1 e  | ..   |
| Estonia               | ..         | 1.7        | 1.9        | 2.1        | 1.6        | 0.8        | ..   |
| Finland               | ..         | 150.1      | 132.4      | 148.5      | 143.3      | 159.6      | ..   |
| France                | ..         | 956.6      | 991.8      | ..         | ..         | ..         | ..   |
| Germany               | 3 891.4 e  | 5 197.9    | 5 259.4    | 5 247.0    | 5 085.4    | 5 878.0    | ..   |
| Greece                | ..         | 85.0 e     | 93.2       | 82.6 e     | 69.3       | ..         | ..   |
| Hungary               | 279.2 e    | 436.0 e    | 420.3 e    | 433.2      | 406.9      | 406.5      | ..   |
| Iceland               | ..         | ..         | 0.4        | 0.2        | 1.0        | 1.4        | 0.7  |
| Ireland               | ..         | 179.2 e    | 203.0      | 186.9 e    | 179.1      | ..         | ..   |
| Israel <sup>1</sup>   | ..         | 286.2 d    | 383.2 d    | 279.0 d    | 349.6 d    | 338.3 d    | ..   |
| Italy                 | 452.2 e    | 771.5      | 738.2      | 691.7      | 729.6      | 826.0      | ..   |
| Japan                 | 8 087.5    | 12 526.0   | 14 185.8   | 14 510.5   | 14 091.1   | 13 167.5   | ..   |
| Korea                 | 444.0      | 1 221.9    | 1 245.9    | 1 287.1    | 1 576.4    | ..         | ..   |
| Latvia                | ..         | 9.7        | 11.2       | 5.4        | 5.4        | 5.6        | ..   |
| Lithuania             | ..         | 6.0        | 5.6        | 17.1       | 5.0        | 1.2 e      | ..   |
| Luxembourg            | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| Mexico                | 216.8      | 167.9      | 246.1      | 264.1      | 267.7      | 263.4      | ..   |
| Netherlands           | ..         | 318.0      | 305.2      | 316.7      | 318.6      | 290.8      | ..   |
| New Zealand           | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| Norway                | 52.1 e     | 43.4       | 42.5       | 36.8       | 33.3       | 34.7       | ..   |
| Poland                | 71.0       | 144.1      | 122.8      | 150.7      | 216.0      | 176.4      | ..   |
| Portugal              | 63.8 e     | 147.8      | 144.9      | 129.7      | 127.5      | 151.3      | ..   |
| Slovak Republic       | ..         | 18.6       | 4.2        | 8.7        | 6.3        | 11.1       | ..   |
| Slovenia              | 124.1 e    | 271.0      | 272.9      | 275.4      | 308.0      | 305.4      | ..   |
| Spain                 | 711.1 e    | 844.5      | 841.8      | 873.0      | 892.8      | 963.1      | ..   |
| Sweden                | ..         | 829.4 e    | 809.6      | 764.4 e    | 861.1 e    | ..         | ..   |
| Switzerland           | 2 294.2 e  | 3 692.0    | 3 937.4 e  | 4 189.4 e  | 4 481.9    | ..         | ..   |
| Turkey                | ..         | 187.8      | 196.5      | 198.4      | 201.6      | 175.6      | ..   |
| United Kingdom        | ..         | 718.6      | 658.5      | 572.6      | 560.4      | 548.1      | ..   |
| United States         | 34 839.0 d | 48 146.0 d | 52 426.0 d | 56 612.0 d | 58 675.0 d | 64 628.0 d | ..   |
| EU28 (OECD estimates) | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| <b>OECD-Total</b>     | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| Argentina             | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| China                 | ..         | 8 038.2    | 9 805.1    | 11 113.8   | 12 694.5   | 14 065.5   | ..   |
| Romania               | 19.2 e     | 26.8       | 25.1       | 38.8       | 27.9       | 36.3       | ..   |
| Russian Federation    | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| Singapore             | 72.5 e     | 153.4      | 142.5      | ..         | ..         | ..         | ..   |
| South Africa          | ..         | ..         | ..         | ..         | ..         | ..         | ..   |
| Chinese Taipei        | 118.3      | 350.2      | 395.1      | 489.7      | 457.1      | 558.5      | ..   |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, ANBERD database: Research and Development Expenditure in Industry

**Table 40. Business enterprise expenditure on R&D (BERD) performed in the computer, electronic and optical industry at current prices and PPP**

Million USD

|                       | 2005         | 2012       | 2013       | 2014       | 2015       | 2016       | 2017  |
|-----------------------|--------------|------------|------------|------------|------------|------------|-------|
| Australia             | 182.7 e      | ..         | ..         | ..         | ..         | ..         | ..    |
| Austria               | 1 234.0 e    | 713.6 e    | 772.3      | 855.6 e    | 909.9      | ..         | ..    |
| Belgium               | 556.1 e      | 555.7      | 593.4      | 550.1      | 578.7      | ..         | ..    |
| Canada                | 2 398.6 d e  | 2 012.7 d  | 1 820.3 d  | 838.8 d    | 877.4 d    | 867.4 d    | ..    |
| Chile                 | ..           | 0.5        | 1.2        | 1.7        | 1.0        | ..         | ..    |
| Czech Republic        | 105.2        | 92.7       | 119.1      | 147.5      | 152.7      | 182.3      | 205.0 |
| Denmark               | ..           | 373.3      | 406.2      | 412.4      | 438.4      | 468.7 e    | ..    |
| Estonia               | ..           | 4.5        | 5.0        | 8.0        | 12.4       | 16.9       | ..    |
| Finland               | 2 111.4 e    | 2 097.5    | 1 966.8    | 1 916.4    | 1 507.0    | 1 291.3    | ..    |
| France                | ..           | 4 007.9    | 4 520.0    | ..         | ..         | ..         | ..    |
| Germany               | 6 607.9 e    | 9 389.4    | 9 476.1    | 9 762.4    | 9 693.9    | 9 936.2    | ..    |
| Greece                | ..           | 25.5 e     | 23.2       | 20.3 e     | 19.6       | ..         | ..    |
| Hungary               | 57.2 e       | 97.0 e     | 95.4 e     | 35.7       | 37.8       | 44.9       | ..    |
| Iceland               | ..           | ..         | 2.7        | 2.8        | 2.4        | 2.8        | 3.6   |
| Ireland               | ..           | 219.1 e    | 251.6 e    | 289.2 e    | 339.7      | ..         | ..    |
| Israel <sup>1</sup>   | 1 486.5 d e  | 1 497.9 d  | 1 594.5 d  | 1 518.8 d  | 1 461.3 d  | 1 565.7 d  | ..    |
| Italy                 | 1 518.7 e    | 1 828.9    | 1 757.4    | 1 771.2    | 1 857.0    | 1 366.0    | ..    |
| Japan                 | ..           | 28 387.1   | 28 750.8   | 28 017.8   | 27 883.9   | 25 599.2   | ..    |
| Korea                 | 11 753.5     | 25 237.8   | 27 676.6   | 30 402.1   | 29 892.6   | ..         | ..    |
| Latvia                | ..           | 3.8        | 6.4        | 5.8        | 6.6        | 7.3        | ..    |
| Lithuania             | ..           | 12.3       | 12.8       | 17.8       | 18.2       | 18.6       | ..    |
| Luxembourg            | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| Mexico                | 73.0 e       | 80.8       | 94.4       | 101.3      | 102.7      | 101.0      | ..    |
| Netherlands           | ..           | 742.5      | 818.2      | 848.5      | 761.0      | 799.5      | ..    |
| New Zealand           | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| Norway                | 178.9 e      | 182.5      | 180.9      | 195.6      | 196.7      | 184.8      | ..    |
| Poland                | 29.3         | 89.0       | 84.5       | 94.7       | 115.3      | 123.2      | ..    |
| Portugal              | 121.8 e      | 43.0       | 41.0       | 49.8       | 53.1       | 63.0       | ..    |
| Slovak Republic       | 12.4         | 7.2        | 7.8        | 7.2        | 9.0        | 12.7       | ..    |
| Slovenia              | 66.7 e       | 62.8       | 67.8       | 69.1       | 66.5       | 55.9       | ..    |
| Spain                 | 319.2 e      | 258.5      | 260.4      | 257.0      | 246.2      | 258.6      | ..    |
| Sweden                | ..           | 2 059.7 e  | 2 039.0    | 1 949.4 e  | 2 220.9    | ..         | ..    |
| Switzerland           | 797.7 e      | 1 526.1    | 1 619.5 e  | 1 695.8 e  | 1 777.1    | ..         | ..    |
| Turkey                | 279.2 e      | 196.5      | 263.9      | 237.1      | 292.8      | 1 398.6    | ..    |
| United Kingdom        | ..           | 1 391.9    | 1 468.3    | 1 440.9    | 1 422.7    | 1 560.0    | ..    |
| United States         | 49 725.0 d e | 65 068.0 d | 67 205.0 d | 73 891.0 d | 72 110.0 d | 77 385.0 d | ..    |
| EU28 (OECD estimates) | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| <b>OECD-Total</b>     | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| Argentina             | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| China                 | ..           | 33 719.0   | 39 535.5   | 44 463.3   | 51 547.8   | 57 494.4   | ..    |
| Romania               | 8.3 e        | 60.8       | 40.2       | 16.2       | 37.8       | 44.1       | ..    |
| Russian Federation    | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| Singapore             | 1 369.0 e    | 2 059.1    | 1 801.4    | ..         | ..         | ..         | ..    |
| South Africa          | ..           | ..         | ..         | ..         | ..         | ..         | ..    |
| Chinese Taipei        | 7 242.2      | 15 607.0   | 16 855.8   | 18 272.2   | 19 253.5   | 20 276.8   | ..    |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, ANBERD database: Research and Development Expenditure in Industry

**Table 41. Business enterprise expenditure on R&D (BERD) performed in the aerospace industry at current prices and PPP**

Million USD

|                       | 2005       | 2012        | 2013        | 2014       | 2015        | 2016        | 2017 |
|-----------------------|------------|-------------|-------------|------------|-------------|-------------|------|
| Australia             | 39.3 e     | ..          | ..          | ..         | ..          | ..          | ..   |
| Austria               | 5.7 e      | 44.2 e      | 45.9        | 57.8 e     | 73.2        | ..          | ..   |
| Belgium               | 77.9 e     | 138.6       | 156.3       | ..         | ..          | ..          | ..   |
| Canada                | 708.6 d e  | 1 168.2 d e | 1 285.1 d e | 1 317.5 d  | 1 320.0 d e | 1 203.6 d e | ..   |
| Chile                 | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Czech Republic        | 37.6       | 45.7        | 54.0        | 69.4       | 47.6        | 60.3        | 92.0 |
| Denmark               | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Estonia               | 0.0        | 0.0         | 0.0         | 0.0        | 0.0         | 0.0         | ..   |
| Finland               | ..         | 6.4 e       | 5.9 e       | 5.2 e      | 8.4         | 6.7         | ..   |
| France                | ..         | 3 441.3     | 3 842.2     | ..         | ..          | ..          | ..   |
| Germany               | 2 285.8 e  | 3 019.5     | 2 268.4     | 2 342.5    | 2 194.3     | ..          | ..   |
| Greece                | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Hungary               | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Iceland               | ..         | ..          | 0.2         | 0.2        | 0.1         | 0.0         | 0.0  |
| Ireland               | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Israel <sup>1</sup>   | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Italy                 | 924.0 e    | 1 215.7     | 1 121.4     | 1 049.6    | 991.3       | 1 695.0     | ..   |
| Japan                 | 12.4       | 310.3       | 481.4       | 477.7      | 657.3       | 753.9       | ..   |
| Korea                 | 165.5      | 185.7       | 142.6       | 86.6       | 275.1       | ..          | ..   |
| Latvia                | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Lithuania             | ..         | ..          | ..          | 0.0        | ..          | ..          | ..   |
| Luxembourg            | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Mexico                | ..         | 19.3        | 27.3        | 29.3       | 29.7        | 29.2        | ..   |
| Netherlands           | ..         | 53.9        | 59.1        | ..         | ..          | ..          | ..   |
| New Zealand           | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Norway                | ..         | 1.8 e       | 1.2 e       | 1.1 e      | 1.1         | 1.0 e       | ..   |
| Poland                | 30.4       | 75.3        | 92.1        | 92.4       | 104.7       | 98.5        | ..   |
| Portugal              | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Slovak Republic       | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Slovenia              | 0.0 e      | 1.0         | 3.9         | 2.0        | 1.8         | 1.6         | ..   |
| Spain                 | 386.8 e    | 631.0       | 614.6       | 525.8      | 598.1       | 619.2       | ..   |
| Sweden                | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Switzerland           | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Turkey                | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| United Kingdom        | ..         | 1 920.4     | 2 011.5     | 2 137.3    | 2 110.4     | 2 368.5     | ..   |
| United States         | 15 005.0 d | 24 817.0 d  | 27 114.0 d  | 26 181.0 d | 27 464.0 d  | 26 645.0 d  | ..   |
| EU28 (OECD estimates) | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| <b>OECD-Total</b>     | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Argentina             | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| China                 | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Romania               | ..         | 6.1         | 5.6         | 7.8        | 0.7         | 2.1         | ..   |
| Russian Federation    | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Singapore             | 20.7 e     | ..          | ..          | ..         | ..          | ..          | ..   |
| South Africa          | ..         | ..          | ..          | ..         | ..          | ..          | ..   |
| Chinese Taipei        | ..         | ..          | ..          | ..         | ..          | ..          | ..   |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, ANBERD database: Research and Development Expenditure in Industry

**Table 42. Business enterprise expenditure on R&D (BERD) performed in service industries at current prices and PPP**

Million USD

|                       | 2005         | 2012         | 2013         | 2014          | 2015          | 2016        | 2017        |
|-----------------------|--------------|--------------|--------------|---------------|---------------|-------------|-------------|
| Australia             | 3 085.1 e    | 5 823.1 e    | 6 713.6      | 6 695.7 e     | 6 670.3       | ..          | ..          |
| Austria               | 1 306.3 e    | 2 917.9 e    | 3 146.5      | 3 382.5 e     | 3 464.5       | ..          | ..          |
| Belgium               | 1 253.5 e    | 2 839.0      | 3 023.3      | 3 572.5       | 3 819.5       | ..          | ..          |
| Canada                | 5 189.8 d e  | 6 005.9 d    | 6 167.5 d    | 8 135.0 d     | 7 869.8 d e   | 8 231.5 d e | 8 293.4 d e |
| Chile                 | ..           | 219.1        | 218.1        | 220.9         | 202.4         | 238.8       | ..          |
| Czech Republic        | 556.0        | 1 352.7      | 1 452.4      | 1 708.1       | 1 685.7       | 1 707.1     | 2 019.1     |
| Denmark               | ..           | 2 116.1      | 2 033.2      | 2 073.6       | 2 307.6       | 2 724.3 e   | ..          |
| Estonia               | 50.4         | 198.7        | 181.1        | 155.0         | 173.3         | 173.6       | ..          |
| Finland               | 737.2 e      | 1 307.7      | 1 340.9      | 1 277.3       | 1 302.1       | 1 353.6     | ..          |
| France                | ..           | 16 690.9     | 17 499.0     | ..            | ..            | ..          | ..          |
| Germany               | 4 682.3 e    | 8 956.7      | 9 124.9      | 9 219.6       | 11 096.4      | 11 778.7    | ..          |
| Greece                | ..           | 397.9 e      | 479.5        | 544.9 e       | 649.7         | ..          | ..          |
| Hungary               | 162.6 e      | 784.1 e      | 1 088.5 e    | 1 277.2       | 1 477.7       | 1 177.9     | ..          |
| Iceland               | ..           | ..           | 95.0         | 132.5         | 174.3         | 175.5       | 189.2       |
| Ireland               | ..           | 1 399.9 e    | 1 431.2      | 1 515.6 e     | 1 664.1       | ..          | ..          |
| Israel <sup>1</sup>   | 3 497.4 d e  | 6 354.1 d    | 6 980.2 d    | 7 578.2 d     | 8 391.3 d     | 9 597.6 d   | ..          |
| Italy                 | 2 584.7 e    | 3 645.4      | 4 155.2      | 4 533.3       | 4 867.2       | 5 632.0     | ..          |
| Japan                 | 9 828.6      | 12 445.6     | 12 482.7     | 16 299.8      | 16 044.8      | 15 309.9    | ..          |
| Korea                 | 1 611.2      | 4 418.3      | 4 531.4      | 4 722.2       | 4 802.3       | ..          | ..          |
| Latvia                | ..           | ..           | ..           | ..            | 39.6          | ..          | ..          |
| Lithuania             | ..           | 109.2        | 114.6        | 145.8         | 152.9         | 170.0 e     | ..          |
| Luxembourg            | 239.9        | ..           | ..           | ..            | ..            | ..          | ..          |
| Mexico                | 457.5 e      | 1 564.4      | 1 419.8      | 1 523.6       | 1 544.7       | 1 519.7     | ..          |
| Netherlands           | ..           | 3 232.9      | 3 283.5      | 3 277.1       | 3 627.0       | 3 971.7     | ..          |
| New Zealand           | 202.2        | 375.0 e      | 437.1        | 510.6 e       | 565.9         | ..          | ..          |
| Norway                | 886.3 e      | 1 637.9      | 1 720.1      | 1 818.2       | 1 943.7       | 1 987.6     | ..          |
| Poland                | 461.3        | 1 332.8      | 1 647.7      | 2 130.2       | 2 473.1       | 4 286.8 e   | ..          |
| Portugal              | 314.5 e      | 1 069.1      | 1 062.8      | 1 003.2       | 1 010.7       | 1 097.9     | ..          |
| Slovak Republic       | 117.1 e      | 217.6        | 240.2        | 162.7         | 169.8         | 195.3       | ..          |
| Slovenia              | 71.0 e       | 429.0        | 408.1        | 380.9         | 310.5         | 250.2       | ..          |
| Spain                 | 2 975.2 e    | 5 006.6      | 5 107.1      | 5 039.8       | 5 180.6       | 5 321.7     | ..          |
| Sweden                | ..           | 2 681.6 e    | 2 841.5      | 2 755.2 e     | 3 178.3       | ..          | ..          |
| Switzerland           | 1 233.9 e    | 3 164.1      | 3 476.7 e    | 3 761.9 e     | 4 066.2       | ..          | ..          |
| Turkey                | 343.3 e      | 2 612.1      | 3 089.0      | 3 717.1       | 4 277.8       | 4 443.1     | ..          |
| United Kingdom        | ..           | 14 167.4     | 15 453.3     | 16 810.5      | 17 739.9      | 18 014.6    | ..          |
| United States         | 65 828.5 d e | 89 912.0 d e | 96 513.0 d e | 102 696.0 d e | 114 677.0 d e | 120 230.0 d | ..          |
| EU28 (OECD estimates) | ..           | ..           | ..           | ..            | ..            | ..          | ..          |
| <b>OECD-Total</b>     | ..           | ..           | ..           | ..            | ..            | ..          | ..          |
| Argentina             | ..           | ..           | ..           | ..            | 321.5         | 322.8       | ..          |
| China                 | ..           | 14 114.5     | ..           | ..            | ..            | ..          | ..          |
| Romania               | 47.1 e       | 406.0        | 213.7        | 286.0         | 506.8         | 760.3       | ..          |
| Russian Federation    | ..           | ..           | ..           | ..            | ..            | ..          | ..          |
| Singapore             | 1 171.2 e    | 1 986.0      | 2 195.8      | ..            | ..            | ..          | ..          |
| South Africa          | 858.3        | ..           | ..           | ..            | ..            | ..          | ..          |
| Chinese Taipei        | 734.9        | 1 769.5      | 1 961.5      | 2 081.7       | 2 132.0       | 2 264.8     | ..          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, ANBERD database: Research and Development Expenditure in Industry

**Table 43. Higher education expenditure on R&D (HERD) at current prices and PPP**

Million USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | ..                 | 6 239.6            | 6 854.0 e          | 6 984.6            | 6 477.9 e          | 7 495.5            | ..                 |
| Austria               | 1 689.8 e          | 2 804.2 e          | 2 920.3            | 3 047.5 e          | 3 090.7            | 3 133.9 b e        | 3 325.5 p          |
| Belgium               | 1 389.2            | 2 284.2            | 2 469.4            | 2 464.7            | 2 571.8            | 2 794.7 e          | 3 033.5 p          |
| Canada                | 7 841.7            | 10 249.8 b         | 10 460.0           | 10 478.3           | 10 612.9           | 11 090.9           | 11 155.7 p         |
| Chile                 | ..                 | 464.5              | 602.7              | 591.3 b            | 598.1              | 630.9 p            | ..                 |
| Czech Republic        | 486.2              | 1 494.9            | 1 658.0            | 1 702.5            | 1 707.3            | 1 279.0            | 1 415.8 p          |
| Denmark               | 1 090.8            | 2 363.3            | 2 641.0            | 2 641.3            | 2 891.1            | 2 959.9            | 3 158.1 p          |
| Estonia               | 85.6               | 234.8              | 264.0              | 241.0              | 233.0              | 180.1              | 225.0              |
| Finland               | 1 064.0            | 1 623.2            | 1 588.4            | 1 641.9            | 1 631.4            | 1 656.9            | 1 786.8 p          |
| France                | 7 442.5            | 11 476.0           | 12 184.1           | 13 402.3 b         | 13 553.5           | 13 840.6 p         | 13 409.4 e         |
| Germany               | 10 565.9           | 17 757.8           | 18 459.0           | 19 416.8           | 19 724.8           | 21 632.0 b         | 22 684.8 e         |
| Greece                | 772.6              | 780.4              | 869.0              | 905.2              | 1 057.3            | 931.5              | 985.3 p            |
| Hungary               | 399.0 d            | 533.0 d            | 483.8 d            | 460.0 d            | 428.2 d            | 353.7 d            | 505.2 d            |
| Iceland               | 65.2               | ..                 | 90.9 b             | 95.8               | 104.3              | 115.2              | 125.9 p            |
| Ireland               | 543.6              | 777.8              | 816.3 e            | 835.5              | 943.8 e            | 925.1 e            | 959.7 p            |
| Israel <sup>1</sup>   | 1 035.2 d          | 1 335.5 d          | 1 444.8 d          | 1 468.4 d          | 1 540.1 d          | 1 660.5 d          | 1 753.1 d e        |
| Italy                 | 5 509.9 b          | 7 687.0            | 8 054.0            | 7 863.1 e          | 7 654.8 e          | 7 840.5 e          | 8 112.3 p          |
| Japan                 | 17 250.4           | 20 344.9           | 22 172.2 b         | 21 326.7           | 20 694.2           | 20 294.3           | 20 529.6           |
| Korea                 | 3 040.0 d          | 6 172.7            | 6 305.9            | 6 614.4            | 6 996.8            | 7 350.2            | 7 716.5            |
| Latvia                | 66.6               | 144.5              | 119.8              | 132.6              | 152.0              | 97.7               | 131.2 p            |
| Lithuania             | 197.1              | 352.6              | 410.2              | 443.8              | 485.5              | 285.3              | 297.9              |
| Luxembourg            | 7.5                | 104.5              | 125.5              | 116.9              | 139.8              | 155.7 e            | 158.8 e p          |
| Mexico                | 1 536.9            | 2 696.2            | 2 689.4            | 3 069.7 e p        | 3 124.5 e p        | 3 013.0 e p        | ..                 |
| Netherlands           | 3 775.3            | 4 795.4            | 5 127.2            | 5 269.8            | 5 425.4            | 5 312.5            | 5 534.1 p          |
| New Zealand           | 386.3              | ..                 | 565.0              | ..                 | 594.4              | ..                 | ..                 |
| Norway                | 1 010.1            | 1 664.1            | 1 772.1            | 1 802.0            | 1 884.1            | 2 013.3            | 2 307.8 p          |
| Poland                | 942.5              | 2 751.5            | 2 395.1            | 2 668.0            | 2 955.4            | 3 186.0            | 3 865.2 p          |
| Portugal              | 640.1              | 1 397.4            | 1 727.6 b          | 1 758.6            | 1 740.1            | 1 835.9            | 1 881.4 p          |
| Slovak Republic       | 90.1               | 394.7              | 411.7              | 474.8              | 826.3              | 366.9              | 383.4              |
| Slovenia              | 113.3              | 170.2              | 165.0              | 157.4              | 146.1              | 149.3              | 156.2 p            |
| Spain                 | 3 846.5            | 5 346.3            | 5 405.2            | 5 444.4            | 5 573.6            | 5 566.7            | 5 940.2 p          |
| Sweden                | 2 284.9            | 3 788.3 e          | 3 934.9            | 4 111.2 e          | 4 137.9            | 4 270.6 p          | 4 424.2 p          |
| Switzerland           | ..                 | 3 843.2            | ..                 | 4 415.2            | 4 763.1            | ..                 | ..                 |
| Turkey                | 2 509.8            | 5 622.5            | 5 823.0            | 6 457.8            | 7 035.1            | 7 157.0            | 7 290.0            |
| United Kingdom        | 7 885.7            | 10 278.2           | 10 972.1           | 11 294.4           | 11 567.9           | 11 501.3           | 11 698.9 p         |
| United States         | 47 006.0 d         | 60 896.0 d         | 61 546.0 d         | 62 346.0 d         | 64 642.0 d         | 67 813.0 d         | 70 826.0 d p       |
| EU28 (OECD estimates) | 51 292.3 e         | 80 050.2 e         | 83 867.7 e         | 87 115.5 e         | 89 370.8 e         | 90 955.2 e         | 94 824.9 e         |
| <b>OECD-Total</b>     | <b>137 886.1 e</b> | <b>199 512.2 e</b> | <b>207 666.2 e</b> | <b>212 737.4 e</b> | <b>217 680.3 e</b> | <b>224 336.8 e</b> | <b>233 194.8 e</b> |
| Argentina             | 588.4              | 1 560.8            | 1 555.1            | 1 536.5            | 1 420.2            | 1 208.2            | ..                 |
| China                 | 8 588.2            | 22 146.7           | 24 162.4           | 25 573.7           | 28 715.2           | 30 875.1           | 35 663.3           |
| Romania               | 115.5              | 362.4              | 302.5              | 238.9              | 364.8              | 255.6              | 279.2 p            |
| Russian Federation    | 1 047.3            | 3 523.7            | 3 476.9            | 3 944.4            | 3 719.2            | 3 527.5            | 3 776.8            |
| Singapore             | 1 231.2            | 2 394.3            | 2 566.3            | 2 771.0            | ..                 | ..                 | ..                 |
| South Africa          | 781.3              | 1 485.9            | 1 414.5            | 1 567.1            | 1 776.6            | ..                 | ..                 |
| Chinese Taipei        | 1 748.5            | 3 377.9            | 3 423.3            | 3 390.5            | 3 348.6            | 3 366.0            | 3 517.5            |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 44. Higher education expenditure on R&D (HERD) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | 0.63          | 0.62 e        | 0.62          | 0.57 e        | 0.62          | ..            |
| Austria               | 0.59 e        | 0.72 e        | 0.72          | 0.73 e        | 0.72          | 0.69 b e      | 0.70 p        |
| Belgium               | 0.40          | 0.48          | 0.51          | 0.49          | 0.50          | 0.52 e        | 0.54 p        |
| Canada                | 0.67          | 0.70 b        | 0.67          | 0.65          | 0.67          | 0.68          | 0.65 p        |
| Chile                 | ..            | 0.12          | 0.15          | 0.15 b        | 0.15          | 0.15 p        | ..            |
| Czech Republic        | 0.22          | 0.49          | 0.52          | 0.50          | 0.48          | 0.34          | 0.35 p        |
| Denmark               | 0.59          | 0.94          | 1.01          | 0.98          | 1.04          | 1.02          | 1.01 p        |
| Estonia               | 0.38          | 0.68          | 0.73          | 0.63          | 0.61          | 0.44          | 0.51          |
| Finland               | 0.63          | 0.74          | 0.71          | 0.72          | 0.71          | 0.69          | 0.70 p        |
| France                | 0.39          | 0.46          | 0.47          | 0.50 b        | 0.50          | 0.49 p        | 0.45 e        |
| Germany               | 0.40          | 0.51          | 0.51          | 0.51          | 0.50          | 0.53 b        | 0.52 e        |
| Greece                | 0.27          | 0.28          | 0.30          | 0.31          | 0.36          | 0.32          | 0.32 p        |
| Hungary               | 0.23 d        | 0.23 d        | 0.20 d        | 0.18 d        | 0.17 d        | 0.13 d        | 0.18 d        |
| Iceland               | 0.59          | ..            | 0.64 b        | 0.64          | 0.65          | 0.65          | 0.66 p        |
| Ireland               | 0.32          | 0.37          | 0.37 e        | 0.35          | 0.29 e        | 0.27 e        | 0.26 p        |
| Israel <sup>1</sup>   | 0.60 d        | 0.53 d        | 0.52 d        | 0.52 d        | 0.52 d        | 0.52 d        | 0.52 d e      |
| Italy                 | 0.32 b        | 0.36          | 0.37          | 0.36 e        | 0.34 e        | 0.33 e        | 0.33 p        |
| Japan                 | 0.43          | 0.43          | 0.45 b        | 0.43          | 0.40          | 0.39          | 0.38          |
| Korea                 | 0.26 d        | 0.38          | 0.38          | 0.39          | 0.38          | 0.39          | 0.39          |
| Latvia                | 0.21          | 0.33          | 0.26          | 0.28          | 0.31          | 0.19          | 0.24 p        |
| Lithuania             | 0.4           | 0.5           | 0.5           | 0.5           | 0.6           | 0.3           | 0.3           |
| Luxembourg            | 0.02          | 0.21          | 0.24          | 0.21          | 0.24          | 0.25 e        | 0.25 e p      |
| Mexico                | 0.11          | 0.13          | 0.13          | 0.14 e p      | 0.14 e p      | 0.13 e p      | ..            |
| Netherlands           | 0.61          | 0.61          | 0.62          | 0.63          | 0.64          | 0.61          | 0.59 p        |
| New Zealand           | 0.36          | ..            | 0.35          | ..            | 0.34          | ..            | ..            |
| Norway                | 0.46          | 0.51          | 0.52          | 0.53          | 0.60          | 0.66          | 0.70 p        |
| Poland                | 0.18          | 0.30          | 0.25          | 0.27          | 0.29          | 0.30          | 0.34 p        |
| Portugal              | 0.27          | 0.50          | 0.59 b        | 0.59          | 0.57          | 0.57          | 0.56 p        |
| Slovak Republic       | 0.10          | 0.27          | 0.27          | 0.30          | 0.51          | 0.22          | 0.22          |
| Slovenia              | 0.24          | 0.29          | 0.27          | 0.25          | 0.22          | 0.22          | 0.21 p        |
| Spain                 | 0.32          | 0.36          | 0.36          | 0.35          | 0.34          | 0.33          | 0.33 p        |
| Sweden                | 0.74          | 0.89 e        | 0.90          | 0.91 e        | 0.87          | 0.88 p        | 0.86 p        |
| Switzerland           | ..            | 0.83          | ..            | 0.87          | 0.90          | ..            | ..            |
| Turkey                | 0.31          | 0.37          | 0.34          | 0.35          | 0.35          | 0.34          | 0.32          |
| United Kingdom        | 0.40          | 0.43          | 0.43          | 0.43          | 0.42          | 0.41          | 0.39 p        |
| United States         | 0.36 d        | 0.38 d        | 0.37 d        | 0.36 d        | 0.35 d        | 0.36 d        | 0.36 d p      |
| EU28 (OECD estimates) | 0.38 e        | 0.45 e        | 0.45 e        | 0.46 e        | 0.45 e        | 0.44 e        | 0.44 e        |
| <b>OECD-Total</b>     | <b>0.38 e</b> | <b>0.42 e</b> | <b>0.42 e</b> | <b>0.42 e</b> | <b>0.41 e</b> | <b>0.41 e</b> | <b>0.41 e</b> |
| Argentina             | 0.11          | 0.19          | 0.18          | 0.18          | 0.16          | 0.14          | ..            |
| China                 | 0.13          | 0.14          | 0.14          | 0.14          | 0.14          | 0.14          | 0.15          |
| Romania               | 0.06          | 0.10          | 0.08          | 0.06          | 0.09          | 0.05          | 0.05 p        |
| Russian Federation    | 0.06          | 0.10          | 0.09          | 0.10          | 0.11          | 0.10          | 0.10 e        |
| Singapore             | 0.52          | 0.58          | 0.58          | 0.59          | ..            | ..            | ..            |
| South Africa          | 0.17          | 0.23          | 0.21          | 0.22          | 0.24          | ..            | ..            |
| Chinese Taipei        | 0.27          | 0.34          | 0.33          | 0.31          | 0.30          | 0.30          | 0.30          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 45. Higher education expenditure on R&D (HERD) at 2010 prices and PPP**

Million 2010 USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | ..                 | 6 290.5            | 6 400.2 e          | 6 592.6            | 6 236.2 e          | 6 849.3            | ..                 |
| Austria               | 1 931.3 e          | 2 606.6 e          | 2 616.8            | 2 678.3 e          | 2 658.0            | 2 626.9 b e        | 2 721.7 p          |
| Belgium               | 1 617.1            | 2 158.0            | 2 263.9            | 2 227.1            | 2 299.7            | 2 435.9 e          | 2 560.3 p          |
| Canada                | 8 634.4            | 9 992.9 b          | 9 872.4            | 9 748.9            | 10 138.3           | 10 519.0           | 10 379.6 p         |
| Chile                 | ..                 | 429.8              | 550.8              | 535.7 b            | 550.2              | 576.1 p            | ..                 |
| Czech Republic        | 557.1              | 1 432.6            | 1 506.1            | 1 499.5            | 1 513.4            | 1 108.7            | 1 183.6 p          |
| Denmark               | 1 391.3            | 2 285.6            | 2 461.6            | 2 428.0            | 2 637.1            | 2 654.6            | 2 684.1 p          |
| Estonia               | 112.2              | 220.0              | 239.5              | 214.1              | 209.0              | 158.0              | 191.0              |
| Finland               | 1 264.6            | 1 550.5            | 1 474.4            | 1 501.7            | 1 468.1            | 1 475.3            | 1 537.4 p          |
| France                | 8 655.9            | 11 100.9           | 11 242.5           | 12 233.9 b         | 12 246.5           | 12 268.6 p         | 11 524.5 e         |
| Germany               | 12 078.9           | 16 919.4           | 16 975.4           | 17 415.2           | 17 550.7           | 18 761.6 b         | 19 013.7 e         |
| Greece                | 874.9              | 736.9              | 774.8              | 795.9              | 929.4              | 809.5              | 831.1 p            |
| Hungary               | 504.4 d            | 501.0 d            | 439.5 d            | 418.7 d            | 391.6 d            | 325.7 d            | 452.9 d            |
| Iceland               | 70.3               | ..                 | 86.0 b             | 88.4               | 93.3               | 101.2              | 106.8 p            |
| Ireland               | 623.2              | 749.5              | 765.1 e            | 792.5              | 823.7 e            | 814.9 e            | 827.9 p            |
| Israel <sup>1</sup>   | 1 069.4 d          | 1 257.1 d          | 1 292.1 d          | 1 335.3 d          | 1 358.8 d          | 1 414.5 d          | 1 462.6 d e        |
| Italy                 | 6 667.4 b          | 7 226.6            | 7 376.5            | 7 156.0 e          | 6 891.3 e          | 6 747.2 e          | 6 775.2 p          |
| Japan                 | 19 012.2           | 19 469.8           | 20 682.8 b         | 19 890.5           | 18 968.9           | 18 407.1           | 18 632.0           |
| Korea                 | 3 207.2 d          | 6 113.7            | 6 295.6            | 6 585.4            | 6 690.0            | 6 933.2            | 7 146.0            |
| Latvia                | 81.1               | 136.3              | 109.6              | 118.8              | 136.1              | 86.2               | 111.4 p            |
| Lithuania             | 239.7              | 327.9              | 368.9              | 394.4              | 433.0              | 251.7              | 252.9              |
| Luxembourg            | 9.1                | 95.3               | 111.1              | 99.5               | 119.0              | 129.9 e            | 128.2 e p          |
| Mexico                | 1 852.8            | 2 505.8            | 2 469.9            | 2 754.8 e p        | 2 823.2 e p        | 2 695.2 e p        | ..                 |
| Netherlands           | 4 296.5            | 4 553.8            | 4 654.3            | 4 835.2            | 4 945.8            | 4 823.4            | 4 847.1 p          |
| New Zealand           | 458.9              | ..                 | 512.8              | ..                 | 543.7              | ..                 | ..                 |
| Norway                | 1 198.2            | 1 555.8            | 1 612.5            | 1 640.9            | 1 798.9            | 1 940.0            | 2 150.3 p          |
| Poland                | 1 127.5            | 2 591.6            | 2 206.6            | 2 452.9            | 2 692.5            | 2 897.9            | 3 415.0 p          |
| Portugal              | 750.5              | 1 366.7            | 1 592.7 b          | 1 596.1            | 1 563.7            | 1 613.2            | 1 624.4 p          |
| Slovak Republic       | 107.7              | 385.3              | 389.2              | 444.3              | 784.1              | 344.6              | 354.1              |
| Slovenia              | 123.4              | 159.4              | 148.0              | 140.2              | 129.7              | 130.1              | 130.4 p            |
| Spain                 | 4 486.4            | 5 106.0            | 4 994.7            | 4 947.8            | 5 056.1            | 4 966.5            | 5 120.9 p          |
| Sweden                | 2 685.5            | 3 552.6 e          | 3 627.4            | 3 779.9 e          | 3 780.8            | 3 904.6 p          | 3 890.9 p          |
| Switzerland           | ..                 | 3 543.4            | ..                 | 3 876.6            | 4 056.5            | ..                 | ..                 |
| Turkey                | 3 341.1            | 5 360.9            | 5 483.0            | 5 841.6            | 6 209.8            | 6 284.3            | 6 349.2            |
| United Kingdom        | 8 898.9            | 9 920.0            | 10 301.2           | 10 473.3           | 10 587.5           | 10 407.4           | 10 246.1 p         |
| United States         | 51 678.5 d         | 58 527.5 d         | 58 132.0 d         | 57 794.3 d         | 59 288.6 d         | 61 524.2 d         | 63 059.2 d p       |
| EU28 (OECD estimates) | 59 693.1 e         | 76 364.6 e         | 77 256.9 e         | 79 211.7 e         | 80 502.7 e         | 80 375.4 e         | 81 081.0 e         |
| <b>OECD-Total</b>     | <b>156 425.0 e</b> | <b>191 371.2 e</b> | <b>193 737.7 e</b> | <b>195 893.0 e</b> | <b>198 635.1 e</b> | <b>201 660.7 e</b> | <b>204 841.1 e</b> |
| Argentina             | 646.9              | 1 501.6            | 1 472.3            | 1 429.0            | 1 306.7            | 1 097.7            | ..                 |
| China                 | 9 450.6            | 21 306.8           | 22 876.8           | 23 785.5           | 26 420.9           | 28 055.6           | 31 833.7 e         |
| Romania               | 167.4              | 341.4              | 283.2              | 222.8              | 338.5              | 226.6              | 239.0 p            |
| Russian Federation    | 1 518.0            | 3 251.6            | 3 202.2            | 3 656.6            | 3 578.4            | 3 382.9            | 3 440.0 e          |
| Singapore             | 1 352.8            | 2 299.6            | 2 422.6            | 2 567.7            | ..                 | ..                 | ..                 |
| South Africa          | 859.7              | 1 429.5            | 1 339.2            | 1 457.5            | 1 634.6            | ..                 | ..                 |
| Chinese Taipei        | 1 922.3            | 3 246.5            | 3 233.6            | 3 143.0            | 3 071.3            | 3 053.9            | 3 131.9            |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 46. Percentage of Higher education expenditure on R&D (HERD) financed by the business sector**

Percentage

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017    |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
| Australia             | ..           | 4.7          | ..           | 5.1          | ..           | 5.1          | ..      |
| Austria               | ..           | ..           | 5.1          | ..           | 5.3          | ..           | ..      |
| Belgium               | 10.9         | 11.3         | 12.1         | 11.7         | 12.9         | ..           | ..      |
| Canada                | 8.4          | 7.5 b        | 7.1          | 7.7          | 7.9          | 7.9          | 7.9 p   |
| Chile                 | ..           | 5.4          | 4.3          | 3.3 b        | 3.0          | 2.9 p        | ..      |
| Czech Republic        | 0.8          | 0.8          | 2.0          | 2.4          | 4.0          | 4.7          | 5.1 p   |
| Denmark               | 2.4          | 2.7          | 2.5          | 1.9          | 2.5          | 2.6          | 2.6 p   |
| Estonia               | 5.2          | 3.5          | 4.4          | 4.4          | 5.4          | 7.4          | 5.8     |
| Finland               | 6.5          | 5.1          | 5.0          | 4.0          | 3.7          | 3.7          | ..      |
| France                | 1.6          | 2.6          | 2.8          | 2.5 b        | 2.8          | ..           | ..      |
| Germany               | 14.1         | 14.0         | 14.0         | 14.1         | 13.9         | 13.8 b       | ..      |
| Greece                | 8.9          | 7.9          | 5.5          | 6.0          | 7.6          | 7.3          | 8.3 p   |
| Hungary               | 11.8 d       | 9.5 d        | 8.6 d        | 9.1 d        | 8.0 d        | 9.6 d        | ..      |
| Iceland               | 11.3         | ..           | 4.7 b        | 3.4          | 2.0          | 2.3          | 10.9 p  |
| Ireland               | 2.7          | 2.0          | 2.0 e        | 2.0          | 3.1 e        | 3.2 e        | ..      |
| Israel <sup>1</sup>   | 7.3 d        | 6.8 d        | 6.8 d        | 9.5 d        | 8.6 d        | 10.3 d       | ..      |
| Italy                 | 1.4 b        | 1.1          | 1.3          | 1.3 e        | 1.3 e        | 1.3 e        | ..      |
| Japan                 | 2.8          | 2.7          | 2.6 b        | 2.6          | 2.6          | 2.8          | 2.9     |
| Korea                 | 15.2 d       | 11.0         | 12.3         | 11.2         | 12.3         | 12.6         | 13.7    |
| Latvia                | 15.4         | 5.5          | 6.9          | 7.1          | 7.8          | 5.6          | ..      |
| Lithuania             | 3.8          | 14.4         | 16.7         | 13.9         | 11.6         | 12.2         | ..      |
| Luxembourg            | 1.4          | 0.8          | 1.0          | ..           | 1.1          | 1.2 e        | ..      |
| Mexico                | 1.2 e        | 0.5          | 0.8          | 0.7 e p      | 0.7 e p      | 0.8 e p      | ..      |
| Netherlands           | 7.8          | 8.3          | 7.6          | 7.7          | 7.8          | 7.8          | ..      |
| New Zealand           | 8.0          | ..           | 4.0          | ..           | 3.5          | ..           | ..      |
| Norway                | 4.7          | ..           | 4.1          | ..           | 3.1          | 3.1          | ..      |
| Poland                | 5.4          | 2.1          | 3.2          | 2.8          | 2.6          | 3.0          | ..      |
| Portugal              | 1.2          | 1.3          | 1.7 b        | 1.6          | 1.9          | 1.8          | ..      |
| Slovak Republic       | 0.7          | 3.3          | 2.6          | 2.4          | 1.6          | 1.9          | ..      |
| Slovenia              | 9.0          | 11.2         | 11.4         | 12.6         | 11.4         | 10.6         | ..      |
| Spain                 | 6.9          | 7.3          | 6.6          | 5.9          | 5.7          | 5.1          | ..      |
| Sweden                | 5.1          | ..           | 3.8          | ..           | 4.0          | ..           | ..      |
| Switzerland           | ..           | 10.9         | ..           | 10.0         | 9.8          | ..           | ..      |
| Turkey                | 22.7 d       | 1.0          | 0.8          | 1.1          | 1.2          | 1.2          | 1.3     |
| United Kingdom        | 4.6          | 4.1          | 4.1          | 4.3          | 4.4          | 4.4          | ..      |
| United States         | 5.0 d        | 4.5 d        | 4.8 d        | 5.1 d        | 5.2 d        | 5.3 d        | 5.3 d p |
| EU28 (OECD estimates) | 6.5 e        | 6.5 e        | 6.4 e        | 6.4 e        | 6.4 e        | 6.5 e        | ..      |
| <b>OECD-Total</b>     | <b>6.1 e</b> | <b>5.4 e</b> | <b>5.5 e</b> | <b>5.6 e</b> | <b>5.7 e</b> | <b>5.8 e</b> | ..      |
| Argentina             | 0.6          | 0.2          | 0.3          | 0.2          | 0.1          | 0.3          | ..      |
| China                 | 36.7         | 33.4         | 33.8         | 33.7         | 30.2         | 29.0         | 28.5    |
| Romania               | 7.5          | 7.5          | 4.8          | 6.9          | 5.1          | 6.2          | ..      |
| Russian Federation    | 29.3         | 27.2         | 27.6         | 27.3         | 27.4         | 27.7         | 28.2    |
| Singapore             | 1.7          | 4.3          | 6.1          | 7.3          | ..           | ..           | ..      |
| South Africa          | 11.6         | 7.9          | 8.1          | 10.6         | 7.8          | ..           | ..      |
| Chinese Taipei        | 5.8          | 7.8          | 7.5          | 8.3          | 9.3          | 9.7          | 10.0    |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 47. Higher education researchers in full-time equivalent**

FTE

|                       | 2005        | 2012               | 2013        | 2014       | 2015      | 2016       | 2017       |
|-----------------------|-------------|--------------------|-------------|------------|-----------|------------|------------|
| Australia             | ..          | 65 772             | ..          | 68 528     | ..        | 69 287     | ..         |
| Austria               | 8 962 d e   | 12 704 d e         | 12 846 d    | 13 462 d e | 13 658 d  | 13 464 d e | 14 000 d p |
| Belgium               | 13 853      | 18 361             | 18 750      | 19 157     | 20 362 b  | 20 378 e   | 20 605 p   |
| Canada                | 43 400      | 57 510             | 60 270      | 58 550     | 58 850    | 59 260     | ..         |
| Chile                 | ..          | 3 561 d            | 3 259 d     | 3 600 d    | 4 004 d   | 4 360 d p  | ..         |
| Czech Republic        | 7 762 b     | 11 498             | 10 995      | 10 965     | 11 357    | 10 511     | 10 875 p   |
| Denmark               | 8 242       | 14 305             | 15 057      | 15 854     | 16 193    | 16 233     | 16 180 p   |
| Estonia               | 1 905       | 2 534              | 2 398       | 2 443      | 2 431     | 2 426      | 2 452      |
| Finland               | 12 879      | 12 368             | 12 056      | 12 381     | 12 240    | 11 987     | 12 731 p   |
| France                | 66 290      | 71 890 e           | 72 750 m    | 78 409 b   | 79 622    | ..         | 81 560 e   |
| Germany               | 65 363      | 97 199             | 99 123      | 100 992    | 103 148   | 109 877 b  | 113 000 e  |
| Greece                | 11 356 d    | 15 723 d           | 18 957 d    | 18 801 d   | 22 149 d  | 17 241 d   | 17 861 d p |
| Hungary               | 5 911       | 5 932              | 5 939       | 5 860      | 5 610     | 5 592      | 6 032 p    |
| Iceland               | 585         | ..                 | 1 011 b     | 1 033      | 892 b     | 1 151      | ..         |
| Ireland               | 4 400       | 12 117 b           | 12 477      | 12 836     | 10 469    | 8 102      | 8 102 p    |
| Israel <sup>1</sup>   | ..          | 9 433 d e          | 9 615 d e   | 9 639 d e  | 9 590 d e | 9 524 d e  | ..         |
| Italy                 | 37 073 b    | 45 223             | 47 526      | 48 198     | 48 841 e  | 50 816 e   | 51 932 p   |
| Japan                 | 156 176 d   | 125 890 d          | 136 593 b d | 137 586 d  | 137 078 d | 138 095 d  | 138 697 d  |
| Korea                 | 27 416 d    | 43 826             | 41 784      | 41 938     | 40 866    | 40 759     | 38 813     |
| Latvia                | 2 224 d     | 2 607 d            | 2 348 d     | 2 291 d    | 2 318 d   | 1 944 d    | 2 264 d p  |
| Lithuania             | 5 116.0     | 5 334.0            | 5 399.0     | 5 241.0    | 4 830.0   | 4 993.0    | 4 575.0    |
| Luxembourg            | 157         | 651                | 769         | 906        | 945       | 972        | 980 p      |
| Mexico                | 16 691 e    | 13 850             | 14 422      | ..         | ..        | ..         | ..         |
| Netherlands           | 17 928      | 20 990             | 21 216      | 21 921     | 22 342    | 22 244     | 22 200 p   |
| New Zealand           | 7 481       | ..                 | 9 800       | ..         | 9 900     | ..         | ..         |
| Norway                | 7 512       | 9 855              | 10 054      | 10 296     | 10 976    | 11 795     | 12 985 p   |
| Poland                | 40 449      | 38 152             | 37 167      | 39 695     | 40 126    | 44 414     | 43 579 p   |
| Portugal              | 10 956      | 23 825             | 25 760 b    | 24 978     | 25 043    | 26 106     | 27 435 p   |
| Slovak Republic       | 6 458       | 9 782              | 9 625       | 8 959      | 8 508     | 8 154      | 8 745      |
| Slovenia              | 1 695       | 2 398              | 2 201       | 2 180      | 2 069     | 1 951      | 2 020 p    |
| Spain                 | 54 028      | 59 775 d           | 57 641 d    | 57 156 d   | 57 107 d  | 58 413 d   | 62 542 d p |
| Sweden                | 15 125 b    | 16 561 e           | 18 401      | 19 616 e   | 18 215    | 19 726 p   | 21 098 p   |
| Switzerland           | ..          | 18 760             | ..          | ..         | 21 375    | ..         | ..         |
| Turkey                | 25 434      | 40 801             | 42 574      | 41 269     | 43 293    | 40 996     | 42 916     |
| United Kingdom        | 141 762 b e | 153 755            | 158 445     | 163 838    | 167 463   | 167 519    | 168 655 p  |
| United States         | ..          | ..                 | ..          | ..         | ..        | ..         | ..         |
| EU28 (OECD estimates) | 551 645 e   | 668 368 e          | 682 835 e   | 701 232 e  | 709 788 e | 720 266 e  | 735 013 e  |
| <b>OECD-Total</b>     | <b>..</b>   | <b>1 360 556 e</b> | <b>..</b>   | <b>..</b>  | <b>..</b> | <b>..</b>  | <b>..</b>  |
| Argentina             | 14 200      | 23 332             | 23 220      | 23 153     | 21 701    | 22 274     | ..         |
| China                 | 221 908 d   | 262 052            | 272 683     | 282 304    | 298 728   | 307 923    | 327 891    |
| Romania               | 5 386       | 6 591              | 6 578       | 6 378      | 6 480     | 6 314      | 6 413 p    |
| Russian Federation    | 70 494      | 87 259             | 89 085      | 91 501     | 92 503    | 83 024     | 75 977     |
| Singapore             | 8 187       | 15 096             | 15 853      | 16 195     | ..        | ..         | ..         |
| South Africa          | 9 235       | 13 744             | 15 772      | 15 804     | 18 367    | ..         | ..         |
| Chinese Taipei        | 23 180      | 32 588             | 31 712      | 30 621     | 29 828    | 29 099     | 28 810     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 48. Higher education researchers as a percentage of national total**

Percentage

|                       | 2005     | 2012          | 2013     | 2014     | 2015   | 2016       | 2017     |
|-----------------------|----------|---------------|----------|----------|--------|------------|----------|
| Australia             | ..       | ..            | ..       | ..       | ..     | ..         | ..       |
| Austria               | 31.5 d e | 32.0 d e      | 31.8 d   | 31.6 d e | 31.4 d | 30.0 d e p | ..       |
| Belgium               | 41.8     | 40.3          | 40.4     | 37.7     | 38.3 b | 37.5 e     | 36.5 p   |
| Canada                | 31.7     | 35.6          | 36.9     | 36.1 b   | 36.1   | 38.2       | ..       |
| Chile                 | ..       | 52.4 d        | 55.3 d   | 47.5 d   | 49.0 d | 48.5 d p   | ..       |
| Czech Republic        | 32.1 b   | 34.6          | 32.1     | 30.4     | 29.8   | 28.2       | 27.8 p   |
| Denmark               | 29.2     | 35.7          | 37.8     | 38.3     | 37.8   | 36.2       | 35.7 p   |
| Estonia               | 57.2     | 55.3          | 54.4     | 56.5     | 58.1   | 55.9       | 52.5     |
| Finland               | 32.5     | 30.6          | 30.8     | 32.3     | 32.6   | 33.4       | 34.4 p   |
| France                | 32.7     | 27.8 e        | 27.4 e m | 28.9 b   | 28.7   | ..         | 28.3 e   |
| Germany               | 24.0     | 27.6          | 28.0     | 28.7     | 26.6   | 27.5 b     | 27.3 e   |
| Greece                | 58.0 d   | 63.4 d        | 64.9 d   | 62.9 d   | 63.8 d | 58.6 d     | 50.8 d p |
| Hungary               | 37.2     | 24.9          | 23.7     | 22.4     | 22.2   | 21.7       | 21.2 p   |
| Iceland               | 27.2     | ..            | 54.7 b   | ..       | 45.9 b | 52.2       | ..       |
| Ireland               | 38.0     | 54.2 b        | 52.6     | 52.3     | 47.0   | 40.9       | 41.4 p   |
| Israel <sup>1</sup>   | ..       | 14.9 d e      | ..       | ..       | ..     | ..         | ..       |
| Italy                 | 44.9 b   | 40.9          | 40.9     | 40.8     | 38.8 e | 38.0 b e   | 38.1 p   |
| Japan                 | 22.9 d   | 19.5 d        | 20.7 b d | 20.1 d   | 20.7 d | 20.7 d     | 20.5 d   |
| Korea                 | 15.2 d   | 13.9          | 13.0     | 12.1     | 11.5   | 11.3       | 10.1     |
| Latvia                | 67.8 d   | 66.8 d        | 64.8 d   | 61.1 d   | 64.2 d | 61.7 d     | 65.0 d p |
| Lithuania             | 67.0     | 66.5          | 63.1     | 57.8     | 59.1   | 58.6       | 52.6     |
| Luxembourg            | 7.1      | 28.2 b        | 30.7     | 34.5     | 37.2   | 38.8 p     | 35.9 p   |
| Mexico                | 38.0 e   | 47.6          | 48.2     | ..       | ..     | ..         | ..       |
| Netherlands           | 37.5     | 28.7 b        | 27.7     | 28.8     | 28.2   | 27.4       | 26.0 p   |
| New Zealand           | 57.6     | ..            | 54.7     | ..       | 52.9   | ..         | ..       |
| Norway                | 35.4     | 35.4          | 35.5     | 35.2     | 35.8   | 37.0       | 37.8 p   |
| Poland                | 65.1     | 56.9          | 52.0     | 50.5     | 48.6   | 50.4       | 45.2 p   |
| Portugal              | 51.9     | 56.1          | 68.1 b   | 65.5     | 64.8   | 63.1       | 61.9 p   |
| Slovak Republic       | 59.1     | 64.1          | 65.4     | 60.8     | 59.1   | 57.6       | 57.4     |
| Slovenia              | 32.3     | 27.0          | 25.3     | 25.4     | 26.2   | 24.0       | 21.7 p   |
| Spain                 | 49.2     | 47.1 d        | 46.8 d   | 46.8 d   | 46.6 d | 46.1 d     | 47.0 d p |
| Sweden                | 27.5 b e | 33.6 e        | 28.7 b e | 29.4 e   | 27.3 e | 28.0 p     | 28.0 p   |
| Switzerland           | ..       | 52.4          | ..       | ..       | 48.9   | ..         | ..       |
| Turkey                | 65.0     | 49.7          | 47.8     | 46.0     | 45.5   | 40.9       | 38.4     |
| United Kingdom        | 57.0 b e | 60.0 e        | 59.2     | 59.2 e   | 58.9   | 58.0 e     | 58.2 p   |
| United States         | ..       | ..            | ..       | ..       | ..     | ..         | ..       |
| EU28 (OECD estimates) | 40.1 e   | 39.6 e        | 39.3 e   | 39.6 e   | 38.5 e | 38.1 e     | 37.5 e   |
| <b>OECD-Total</b>     | ..       | <b>30.9 e</b> | ..       | ..       | ..     | ..         | ..       |
| Argentina             | 44.6     | 46.2          | 45.7     | 44.8     | 41.0   | 41.2       | ..       |
| China                 | 19.8 d   | 18.7          | 18.4     | 18.5     | 18.5   | 18.2       | 18.8     |
| Romania               | 23.5     | 36.6          | 35.4     | 35.2     | 37.1   | 35.0       | 36.6 p   |
| Russian Federation    | 15.2     | 19.7          | 20.2     | 20.6     | 20.6   | 19.4       | 18.5     |
| Singapore             | 34.4     | 44.2          | 44.0     | 44.2     | ..     | ..         | ..       |
| South Africa          | 53.4     | 64.3          | 67.6     | 67.0     | 70.2   | ..         | ..       |
| Chinese Taipei        | 26.1     | 23.3          | 22.5     | 21.4     | 20.5   | 19.7       | 19.2     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 49. Higher education Total R&D personnel in full-time equivalent**

FTE

|                       | 2005        | 2012       | 2013        | 2014       | 2015       | 2016       | 2017       |
|-----------------------|-------------|------------|-------------|------------|------------|------------|------------|
| Australia             | ..          | 74 669     | ..          | 78 038     | ..         | 79 008     | ..         |
| Austria               | 12 353 d e  | 16 678 d e | 16 840 d    | 17 479 d e | 17 682 d   | 17 571 d e | 18 271 d p |
| Belgium               | 17 767      | 22 770     | 23 156      | 23 733     | 26 156 b   | 25 006 e   | 26 465 p   |
| Canada                | 56 950      | 71 320     | 74 730      | 72 510     | 72 720     | 73 230     | ..         |
| Chile                 | ..          | 6 819 d    | 6 672 d     | 7 361 d    | 7 190 d    | 8 061 d p  | ..         |
| Czech Republic        | 10 972 b    | 16 441     | 16 240      | 16 525     | 16 868     | 15 201     | 15 803 p   |
| Denmark               | 11 561      | 19 991     | 20 925      | 20 956     | 21 258     | 21 978     | 21 907 p   |
| Estonia               | 2 176       | 3 000      | 2 850       | 3 103      | 3 062      | 2 969      | 3 015      |
| Finland               | 17 453      | 16 146     | 15 726      | 16 034     | 15 515     | 15 157     | 16 007 p   |
| France                | 98 743      | 108 794 e  | 109 883 e   | 119 081 b  | 120 480    | ..         | 119 300 e  |
| Germany               | 94 522      | 127 900    | 130 079     | 132 542    | 134 032    | 141 661 b  | 145 300 e  |
| Greece                | 17 401 d    | 20 508 d   | 23 390 d    | 23 924 d   | 27 383 d   | 20 404 d   | 22 051 d p |
| Hungary               | 8 194       | 8 130      | 8 154       | 7 937      | 7 706      | 7 476      | 8 442 p    |
| Iceland               | 742         | ..         | 1 211 b     | 1 232      | 1 062      | 1 360      | ..         |
| Ireland               | 5 220       | 13 050 b   | 13 949      | 14 847     | 12 751     | 10 653     | 10 653 p   |
| Israel <sup>1</sup>   | 9 011 d     | 11 098 d e | 11 311 d e  | 11 340 d e | 11 283 d e | 11 205 d e | ..         |
| Italy                 | 66 976 b    | 76 207     | 76 986      | 75 235     | 76 858 e   | 80 226 e   | 80 715 p   |
| Japan                 | 209 734 d   | 195 043 d  | 207 766 b d | 209 101 d  | 208 579 d  | 210 683 d  | 212 212 d  |
| Korea                 | 42 157 d    | 77 099     | 73 196      | 74 861     | 72 745     | 72 482     | 70 037     |
| Latvia                | 2 856 d     | 3 538 d    | 3 237 d     | 3 177 d    | 3 241 d    | 3 147 d    | 3 448 d p  |
| Lithuania             | 6 699.0     | 6 514.0    | 6 452.0     | 6 260.0    | 5 737.0    | 5 895.0    | 5 387.0    |
| Luxembourg            | 169         | 723        | 866         | 989        | 1 057      | 1 097      | 1 106 p    |
| Mexico                | 25 218 e    | 20 211     | 21 106      | ..         | ..         | ..         | ..         |
| Netherlands           | 32 305      | 31 952     | 32 331      | 33 237     | 33 604     | 33 300     | 33 400 p   |
| New Zealand           | 9 660       | ..         | 11 600      | ..         | 11 900     | ..         | ..         |
| Norway                | 9 420       | 12 413     | 12 715      | 13 010     | 13 952     | 14 937     | 16 252 p   |
| Poland                | 44 763      | 42 917     | 41 441      | 44 304     | 44 961     | 51 652     | 50 670 p   |
| Portugal              | 11 680      | 24 513     | 27 753 b    | 26 870     | 27 001     | 28 265     | 30 023 p   |
| Slovak Republic       | 7 146       | 10 124     | 9 969       | 9 297      | 8 815      | 8 623      | 9 056      |
| Slovenia              | 2 099       | 2 926      | 2 805       | 2 667      | 2 555      | 2 321      | 2 395 p    |
| Spain                 | 66 996      | 77 238 d   | 74 923 d    | 73 428 d   | 73 327 d   | 75 191 d   | 79 286 d p |
| Sweden                | 17 686 b    | 21 781 e   | 21 004      | 22 410 e   | 21 435     | 21 918 p   | 23 196 p   |
| Switzerland           | ..          | 26 945     | ..          | ..         | 29 717     | ..         | ..         |
| Turkey                | 25 434 e    | 40 801 e   | 42 574 e    | 41 269 e   | 43 293 e   | 52 576 b   | 54 289     |
| United Kingdom        | 152 634 b e | 173 499 e  | 177 767 e   | 183 023 e  | 186 724    | 186 770    | 188 036 p  |
| United States         | ..          | ..         | ..          | ..         | ..         | ..         | ..         |
| EU28 (OECD estimates) | 723 258 e   | 863 777 e  | 876 288 e   | 896 324 e  | 907 455 e  | 917 116 e  | 933 329 e  |
| <b>OECD-Total</b>     | ..          | ..         | ..          | ..         | ..         | ..         | ..         |
| Argentina             | 15 507      | 27 178     | 27 737      | 27 896     | 26 015     | 26 619     | ..         |
| China                 | 227 163 d   | 313 520    | 324 942     | 334 794    | 354 861    | 360 049    | 382 160    |
| Romania               | 6 803       | 8 710      | 9 523       | 8 966      | 9 008      | 8 627      | 8 416 p    |
| Russian Federation    | 97 672      | 119 360    | 118 971     | 121 526    | 121 680    | 110 379    | 101 628    |
| Singapore             | 9 337       | 16 252     | 17 099      | 17 405     | ..         | ..         | ..         |
| South Africa          | 10 611      | 15 614     | 17 778      | 17 944     | 20 812     | ..         | ..         |
| Chinese Taipei        | 25 752      | 36 115     | 35 088      | 34 135     | 33 177     | 32 349     | 31 866     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 50. Government intramural expenditure on R&D (GOVERD) at current prices and PPP**

Million USD

|                       | 2005              | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | ..                | 2 419.0            | 2 592.5 e          | 2 292.1            | 2 685.7 e          | 2 259.4            | ..                 |
| Austria               | 355.9 e           | 522.5 e            | 533.1              | 585.3 e            | 602.4              | 999.3 b e          | 1 060.4 p          |
| Belgium               | 520.6             | 908.7 b            | 961.6              | 1 073.8            | 1 162.0            | 1 208.0 e          | 1 606.6 p          |
| Canada                | 2 238.7           | 2 230.4            | 2 354.6            | 2 392.8            | 1 879.0            | 1 868.0            | 1 838.6 p          |
| Chile                 | ..                | 55.3               | 128.7 b            | 123.6              | 121.2              | 198.5 p            | ..                 |
| Czech Republic        | 596.5 b           | 1 044.1            | 1 163.5            | 1 271.0            | 1 398.6            | 1 135.9            | 1 243.5 p          |
| Denmark               | 285.7             | 177.3              | 183.6              | 180.7              | 190.0              | 199.5              | 212.9 p            |
| Estonia               | 23.3              | 67.9               | 55.7               | 59.7               | 60.9               | 57.9               | 66.8               |
| Finland               | 534.0             | 677.9              | 658.7              | 620.7              | 546.8              | 537.6              | 601.0 p            |
| France                | 7 024.1           | 7 248.2            | 7 620.6            | 7 717.1            | 7 863.1            | 8 121.1 p          | 8 186.2 e          |
| Germany               | 9 014.2 d         | 14 405.3 d         | 15 309.6 d         | 16 022.1 d         | 16 050.1 d         | 16 550.3 d         | 17 635.3 d         |
| Greece                | 329.9             | 484.8              | 649.7              | 675.3              | 787.2              | 730.8              | 764.2 p            |
| Hungary               | 444.3 d           | 418.1 d            | 500.7 d            | 468.3 d            | 469.7 d            | 425.6 d            | 477.4 d            |
| Iceland               | 69.8              | ..                 | 16.5 b             | 17.7               | 16.5               | 17.4               | 16.7 p             |
| Ireland               | 148.3             | 160.4              | 159.0              | 159.1              | 168.0              | 164.8              | 178.8 p            |
| Israel <sup>1</sup>   | 186.4 d           | 198.4 d            | 209.1 d            | 217.0 d            | 203.2 d            | 221.5 d e          | 242.2 d e          |
| Italy                 | 3 158.8           | 4 066.2            | 3 984.0            | 4 001.6            | 3 941.3            | 4 078.4            | 4 257.1 p          |
| Japan                 | 10 669.1          | 13 130.7           | 15 096.3           | 14 116.7           | 13 313.1           | 12 437.1           | 13 353.8           |
| Korea                 | 3 631.6 d         | 7 299.4            | 7 446.8            | 8 196.6            | 9 033.8            | 9 289.4            | 9 734.0            |
| Latvia                | 30.7              | 77.9               | 80.7               | 78.4               | 78.4               | 71.0               | 73.4 p             |
| Lithuania             | 90.1              | 129.1              | 148.7              | 144.7              | 149.3              | 191.3              | 235.8              |
| Luxembourg            | 60.1 d            | 172.3 d            | 196.0 d            | 212.7 d            | 224.1 d            | 208.1 d e          | 212.3 e p          |
| Mexico                | 1 238.8           | 3 722.3            | 3 907.1            | 4 439.1 e p        | 4 417.3 e p        | 4 105.1 e p        | ..                 |
| Netherlands           | 1 355.4 d         | 1 797.2 b d        | 1 953.1 d          | 1 943.9 d          | 2 017.3 d          | 1 970.1 d          | 2 118.0 d p        |
| New Zealand           | 308.1             | ..                 | 430.2              | ..                 | 443.2              | ..                 | ..                 |
| Norway                | 513.1             | 873.0              | 898.4              | 884.7              | 911.9              | 874.7              | 941.4 p            |
| Poland                | 1 085.2           | 2 234.1            | 2 196.2            | 2 191.5            | 2 496.7            | 255.2 b            | 268.7 p            |
| Portugal              | 264.3             | 205.2              | 252.1              | 241.6              | 247.7              | 215.8              | 233.1 p            |
| Slovak Republic       | 130.8 d           | 284.4 d            | 254.8 d            | 390.9 d            | 525.7              | 283.8              | 323.4              |
| Slovenia              | 163.7             | 200.2              | 206.1              | 183.2              | 193.6              | 185.3              | 192.3 p            |
| Spain                 | 2 258.7           | 3 678.8            | 3 610.6            | 3 636.5            | 3 792.0            | 3 742.1            | 3 891.0 p          |
| Sweden                | 506.9 b           | 671.0 e            | 533.7 e            | 531.7 e            | 529.5              | 542.1 p            | 636.0 p            |
| Switzerland           | ..                | 102.9 d            | ..                 | 148.7 d            | 157.0 d            | ..                 | ..                 |
| Turkey                | 531.0             | 1 408.9            | 1 442.1            | 1 544.0            | 1 833.5            | 1 871.2 d          | 2 080.4 d          |
| United Kingdom        | 3 234.9           | 3 097.1            | 3 280.7            | 3 181.6            | 3 028.9            | 3 107.8            | 3 218.1 p          |
| United States         | 40 378.0 d        | 53 342.0           | 52 372.0           | 54 106.0           | 54 680.0           | 52 482.0           | 52 888.0           |
| EU28 (OECD estimates) | 31 990.8 e        | 43 407.1 e         | 45 174.9 e         | 46 164.9 e         | 47 240.3 e         | 45 581.0 e         | 48 384.7 e         |
| <b>OECD-Total</b>     | <b>93 112.9 e</b> | <b>127 394.3 e</b> | <b>130 938.0 e</b> | <b>133 891.5 e</b> | <b>135 602.1 e</b> | <b>130 591.1 e</b> | <b>135 282.3 e</b> |
| Argentina             | 904.5             | 2 282.8            | 2 400.4            | 2 406.9            | 2 797.3            | 2 319.0            | ..                 |
| China                 | 18 921.8          | 47 542.1           | 53 982.8           | 58 566.5           | 65 849.3           | 70 851.5           | 75 496.4           |
| Romania               | 288.6             | 751.6              | 755.4              | 674.2              | 800.1              | 751.3              | 849.4 p            |
| Russian Federation    | 4 723.4           | 12 202.6           | 11 684.3           | 12 293.4           | 12 046.4           | 12 387.6           | 12 736.4           |
| Singapore             | 492.0             | 824.8              | 994.9              | 1 151.8            | ..                 | ..                 | ..                 |
| South Africa          | 842.6             | 1 107.0            | 1 164.1            | 1 290.3            | 1 394.8            | ..                 | ..                 |
| Chinese Taipei        | 3 222.4           | 4 103.3            | 4 102.6            | 4 093.1            | 4 195.7            | 4 698.2            | 4 750.1            |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 51. Government intramural expenditure on R&D (GOVERD) as a percentage of GDP**

Percentage

|                       | 2005          | 2012          | 2013          | 2014          | 2015          | 2016          | 2017          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | ..            | 0.24          | 0.23 e        | 0.20          | 0.24 e        | 0.19          | ..            |
| Austria               | 0.12 e        | 0.13 e        | 0.13          | 0.14 e        | 0.14          | 0.22 b e      | 0.22 p        |
| Belgium               | 0.15          | 0.19 b        | 0.20          | 0.21          | 0.23          | 0.23 e        | 0.29 p        |
| Canada                | 0.19          | 0.15          | 0.15          | 0.15          | 0.12          | 0.11          | 0.11 p        |
| Chile                 | ..            | 0.01          | 0.03 b        | 0.03          | 0.03          | 0.05 p        | ..            |
| Czech Republic        | 0.27 b        | 0.34          | 0.36          | 0.37          | 0.39          | 0.31          | 0.31 p        |
| Denmark               | 0.15          | 0.07          | 0.07          | 0.07          | 0.07          | 0.07          | 0.07 p        |
| Estonia               | 0.10          | 0.20          | 0.15          | 0.16          | 0.16          | 0.14          | 0.15          |
| Finland               | 0.32          | 0.31          | 0.29          | 0.27          | 0.24          | 0.22          | 0.24 p        |
| France                | 0.36          | 0.29          | 0.29          | 0.29          | 0.29          | 0.29 p        | 0.28 e        |
| Germany               | 0.34 d        | 0.41 d        | 0.42 d        | 0.42 d        | 0.41 d        | 0.40 d        | 0.41 d        |
| Greece                | 0.12          | 0.17          | 0.23          | 0.23          | 0.27          | 0.25          | 0.25 p        |
| Hungary               | 0.26 d        | 0.18 d        | 0.21 d        | 0.19 d        | 0.18 d        | 0.16 d        | 0.17 d        |
| Iceland               | 0.63          | ..            | 0.12 b        | 0.12          | 0.10          | 0.10          | 0.09 p        |
| Ireland               | 0.09          | 0.08          | 0.07          | 0.07          | 0.05          | 0.05          | 0.05 p        |
| Israel <sup>1</sup>   | 0.11 d        | 0.08 d        | 0.08 d        | 0.08 d        | 0.07 d        | 0.07 d e      | 0.07 d e      |
| Italy                 | 0.18          | 0.19          | 0.18          | 0.18          | 0.18          | 0.17          | 0.17 p        |
| Japan                 | 0.26          | 0.28          | 0.30          | 0.28          | 0.26          | 0.24          | 0.25          |
| Korea                 | 0.31 d        | 0.45          | 0.45          | 0.48          | 0.50          | 0.49          | 0.49          |
| Latvia                | 0.10          | 0.18          | 0.18          | 0.17          | 0.16          | 0.14          | 0.13 p        |
| Lithuania             | 0.2           | 0.2           | 0.2           | 0.2           | 0.2           | 0.2           | 0.3           |
| Luxembourg            | 0.19 d        | 0.35 d        | 0.38 d        | 0.38 d        | 0.38 d        | 0.34 d e      | 0.33 e p      |
| Mexico                | 0.09          | 0.18          | 0.19          | 0.20 e p      | 0.20 e p      | 0.18 e p      | ..            |
| Netherlands           | 0.22 d        | 0.23 b d      | 0.24 d        | 0.23 d        | 0.24 d        | 0.23 d        | 0.23 d p      |
| New Zealand           | 0.29          | ..            | 0.27          | ..            | 0.26          | ..            | ..            |
| Norway                | 0.23          | 0.27          | 0.26          | 0.26          | 0.29          | 0.29          | 0.29 p        |
| Poland                | 0.20          | 0.25          | 0.23          | 0.23          | 0.24          | 0.02 b        | 0.02 p        |
| Portugal              | 0.11          | 0.07          | 0.09          | 0.08          | 0.08          | 0.07          | 0.07 p        |
| Slovak Republic       | 0.15 d        | 0.20 d        | 0.17 d        | 0.25 d        | 0.33          | 0.17          | 0.18          |
| Slovenia              | 0.34          | 0.34          | 0.34          | 0.29          | 0.30          | 0.27          | 0.26 p        |
| Spain                 | 0.19          | 0.25          | 0.24          | 0.23          | 0.23          | 0.22          | 0.21 p        |
| Sweden                | 0.17 b        | 0.16 e        | 0.12 e        | 0.12 e        | 0.11          | 0.11 p        | 0.12 p        |
| Switzerland           | ..            | 0.02 d        | ..            | 0.03 d        | 0.03 d        | ..            | ..            |
| Turkey                | 0.07          | 0.09          | 0.09          | 0.08          | 0.09          | 0.09 d        | 0.09 d        |
| United Kingdom        | 0.16          | 0.13          | 0.13          | 0.12          | 0.11          | 0.11          | 0.11 p        |
| United States         | 0.31 d        | 0.33          | 0.31          | 0.31          | 0.30          | 0.28          | 0.27          |
| EU28 (OECD estimates) | 0.23 e        | 0.24 e        | 0.24 e        | 0.24 e        | 0.24 e        | 0.22 e        | 0.22 e        |
| <b>OECD-Total</b>     | <b>0.26 e</b> | <b>0.27 e</b> | <b>0.27 e</b> | <b>0.26 e</b> | <b>0.26 e</b> | <b>0.24 e</b> | <b>0.24 e</b> |
| Argentina             | 0.17          | 0.28          | 0.28          | 0.28          | 0.32          | 0.26          | ..            |
| China                 | 0.28          | 0.31          | 0.32          | 0.32          | 0.33          | 0.33          | 0.32          |
| Romania               | 0.14          | 0.20          | 0.19          | 0.16          | 0.19          | 0.16          | 0.16 p        |
| Russian Federation    | 0.26          | 0.33          | 0.31          | 0.33          | 0.34          | 0.35          | 0.34 e        |
| Singapore             | 0.21          | 0.20          | 0.23          | 0.25          | ..            | ..            | ..            |
| South Africa          | 0.18          | 0.17          | 0.17          | 0.18          | 0.19          | ..            | ..            |
| Chinese Taipei        | 0.49          | 0.42          | 0.40          | 0.38          | 0.38          | 0.41          | 0.40          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 52. Government intramural expenditure on R&D (GOVERD) at 2010 prices and PPP**

Million 2010 USD

|                       | 2005               | 2012               | 2013               | 2014               | 2015               | 2016               | 2017               |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Australia             | ..                 | 2 438.7            | 2 420.8 e          | 2 163.5            | 2 585.5 e          | 2 064.6            | ..                 |
| Austria               | 406.8 e            | 485.7 e            | 477.6              | 514.4 e            | 518.1              | 837.6 b e          | 867.8 p            |
| Belgium               | 606.0              | 858.5 b            | 881.6              | 970.3              | 1 039.1            | 1 052.9 e          | 1 356.0 p          |
| Canada                | 2 465.0            | 2 174.5            | 2 222.3            | 2 226.3            | 1 795.0            | 1 771.7            | 1 710.7 p          |
| Chile                 | ..                 | 51.1               | 117.6 b            | 112.0              | 111.5              | 181.2 p            | ..                 |
| Czech Republic        | 683.4 b            | 1 000.6            | 1 056.9            | 1 119.4            | 1 239.8            | 984.7              | 1 039.6 p          |
| Denmark               | 364.4              | 171.5              | 171.1              | 166.1              | 173.4              | 178.9              | 181.0 p            |
| Estonia               | 30.6               | 63.6               | 50.6               | 53.1               | 54.6               | 50.8               | 56.7               |
| Finland               | 634.7              | 647.5              | 611.5              | 567.7              | 492.0              | 478.7              | 517.1 p            |
| France                | 8 169.4            | 7 011.4            | 7 031.7            | 7 044.3            | 7 104.8            | 7 198.7 p          | 7 035.5 e          |
| Germany               | 10 305.0 d         | 13 725.2 d         | 14 079.2 d         | 14 370.4 d         | 14 281.0 d         | 14 354.2 d         | 14 781.4 d         |
| Greece                | 373.6              | 457.7              | 579.2              | 593.7              | 692.0              | 635.1              | 644.6 p            |
| Hungary               | 561.6 d            | 393.0 d            | 454.8 d            | 426.2 d            | 429.5 d            | 391.9 d            | 428.0 d            |
| Iceland               | 75.3               | ..                 | 15.7 b             | 16.4               | 14.8               | 15.3               | 14.2 p             |
| Ireland               | 170.0              | 154.5              | 149.0              | 150.9              | 146.6              | 145.2              | 154.2 p            |
| Israel <sup>1</sup>   | 192.6 d            | 186.8 d            | 187.0 d            | 197.4 d            | 179.3 d            | 188.7 d e          | 202.1 d e          |
| Italy                 | 3 822.4            | 3 822.6            | 3 648.9            | 3 641.8            | 3 548.2            | 3 509.7            | 3 555.5 p          |
| Japan                 | 11 758.7           | 12 565.9           | 14 082.2           | 13 166.1           | 12 203.1           | 11 280.6           | 12 119.5           |
| Korea                 | 3 831.4 d          | 7 229.7            | 7 434.7            | 8 160.6            | 8 637.7            | 8 762.3            | 9 014.4            |
| Latvia                | 37.4               | 73.4               | 73.8               | 70.2               | 70.2               | 62.7               | 62.3 p             |
| Lithuania             | 109.6              | 120.0              | 133.7              | 128.6              | 133.1              | 168.7              | 200.2              |
| Luxembourg            | 72.9 d             | 157.1 d            | 173.4 d            | 180.9 d            | 190.7 d            | 173.6 d e          | 171.4 e p          |
| Mexico                | 1 493.5            | 3 459.5            | 3 588.2            | 3 983.8 e p        | 3 991.2 e p        | 3 672.1 e p        | ..                 |
| Netherlands           | 1 542.5 d          | 1 706.7 b d        | 1 773.0 d          | 1 783.6 d          | 1 838.9 d          | 1 788.7 d          | 1 855.1 d p        |
| New Zealand           | 366.1              | ..                 | 390.4              | ..                 | 405.4              | ..                 | ..                 |
| Norway                | 608.6              | 816.1              | 817.4              | 805.5              | 870.7              | 842.8              | 877.1 p            |
| Poland                | 1 298.2            | 2 104.3            | 2 023.4            | 2 014.8            | 2 274.7            | 232.1 b            | 237.4 p            |
| Portugal              | 309.9              | 200.7              | 232.4              | 219.2              | 222.6              | 189.6              | 201.3 p            |
| Slovak Republic       | 156.4 d            | 277.7 d            | 240.9 d            | 365.9 d            | 498.9              | 266.6              | 298.6              |
| Slovenia              | 178.2              | 187.5              | 184.8              | 163.2              | 171.9              | 161.4              | 160.5 p            |
| Spain                 | 2 634.4            | 3 513.4            | 3 336.4            | 3 304.8            | 3 439.9            | 3 338.6            | 3 354.3 p          |
| Sweden                | 595.8 b            | 629.2 e            | 492.0 e            | 488.8 e            | 483.8              | 495.6 p            | 559.4 p            |
| Switzerland           | ..                 | 94.8 d             | ..                 | 130.6 d            | 133.7 d            | ..                 | ..                 |
| Turkey                | 706.9              | 1 343.4            | 1 357.9            | 1 396.7            | 1 618.4            | 1 643.0 d          | 1 811.9 d          |
| United Kingdom        | 3 650.6            | 2 989.1            | 3 080.1            | 2 950.3            | 2 772.2            | 2 812.2            | 2 818.5 p          |
| United States         | 44 391.6 d         | 51 267.3           | 49 466.9           | 50 155.8           | 50 151.7           | 47 615.0           | 47 088.3           |
| EU28 (OECD estimates) | 37 256.3 e         | 41 394.9 e         | 41 585.1 e         | 41 856.5 e         | 42 498.1 e         | 40 105.2 e         | 41 201.5 e         |
| <b>OECD-Total</b>     | <b>104 634.4 e</b> | <b>122 308.6 e</b> | <b>122 655.9 e</b> | <b>123 653.9 e</b> | <b>123 941.7 e</b> | <b>117 554.5 e</b> | <b>119 133.1 e</b> |
| Argentina             | 994.3              | 2 196.1            | 2 272.6            | 2 238.6            | 2 573.7            | 2 106.8            | ..                 |
| China                 | 20 822.0           | 45 739.2           | 51 110.6           | 54 471.4           | 60 587.9           | 64 381.2           | 67 389.4 e         |
| Romania               | 418.4              | 708.0              | 707.0              | 628.7              | 742.4              | 665.9              | 727.1 p            |
| Russian Federation    | 6 846.7            | 11 260.4           | 10 761.1           | 11 396.3           | 11 590.2           | 11 880.1           | 11 600.7 e         |
| Singapore             | 540.6              | 792.1              | 939.2              | 1 067.3            | ..                 | ..                 | ..                 |
| South Africa          | 927.2              | 1 065.0            | 1 102.1            | 1 200.1            | 1 283.3            | ..                 | ..                 |
| Chinese Taipei        | 3 542.7            | 3 943.6            | 3 875.2            | 3 794.4            | 3 848.3            | 4 262.6            | 4 229.3            |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 53. Percentage of Government intramural expenditure on R&D (GOVERD) financed by the business sector**

Percentage

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016         | 2017    |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
| Australia             | ..           | 7.7          | ..           | 9.9          | ..           | 10.3         | ..      |
| Austria               | ..           | ..           | 4.2          | ..           | 6.0          | ..           | ..      |
| Belgium               | 9.2          | 4.9 b        | 5.4          | 3.6          | 6.2          | ..           | ..      |
| Canada                | 3.8          | 2.2          | 2.1          | 2.1          | 0.9          | 0.9          | 0.8 p   |
| Chile                 | ..           | 2.4          | 1.5 b        | 3.3          | 2.7          | 1.8 p        | ..      |
| Czech Republic        | 9.4 b        | 4.5          | 3.7          | 3.8          | 2.8          | 4.0          | 3.6 p   |
| Denmark               | 2.1          | 1.6          | 2.8          | 1.7          | 1.2          | 2.1          | 2.0 p   |
| Estonia               | 0.0          | 1.2          | 1.3          | 1.3          | 1.6          | 2.9          | 1.8     |
| Finland               | 12.4         | 9.9          | 9.9          | 8.3          | 8.7          | 9.1          | ..      |
| France                | 7.4          | 7.8          | 8.0          | 8.0          | 7.6          | ..           | ..      |
| Germany               | 9.9 d        | 10.3 d       | 10.3 d       | 11.2 d       | 11.3 d       | 11.2 d       | ..      |
| Greece                | 1.3          | 5.5          | 3.6          | 3.1          | 4.5          | 3.2          | 5.6 p   |
| Hungary               | 10.3 d       | 9.8 d        | 9.7 d        | 7.8 d        | 8.8 d        | 6.0 d        | ..      |
| Iceland               | 7.4          | ..           | 15.0 b       | 15.3         | 15.5         | 9.7          | 5.8 p   |
| Ireland               | 4.1          | 1.8          | 1.9          | 1.9          | 0.7          | 0.8          | ..      |
| Israel <sup>1</sup>   | 7.7 d        | 1.8 d        | 2.2 d        | 2.5 d        | 2.2 d        | 2.1 d e      | ..      |
| Italy                 | 2.4          | 5.3          | 4.2          | 4.1          | 4.2          | 3.8          | ..      |
| Japan                 | 0.7          | 1.7          | 1.9          | 1.9          | 2.3          | 2.4          | 2.8     |
| Korea                 | 4.3 d        | 3.5          | 2.8          | 2.8          | 2.3          | 3.0          | 3.4     |
| Latvia                | 15.6         | 13.9         | 13.2         | 15.6         | 16.9         | 9.7          | ..      |
| Lithuania             | 6.6          | 11.3         | 11.9         | 12.3         | 13.3         | 13.5         | ..      |
| Luxembourg            | 3.9 d        | 4.6 d        | 2.0 d        | ..           | 1.3 d        | 1.1 d e      | ..      |
| Mexico                | 1.2 e        | 0.9          | 0.7          | 0.7 e p      | 0.7 e p      | 0.8 e p      | ..      |
| Netherlands           | 14.6 d       | 18.3 b d     | 16.6 d       | 16.0 d       | 13.6 d       | 16.1 d       | ..      |
| New Zealand           | 19.0         | ..           | 17.2         | ..           | 18.3         | ..           | ..      |
| Norway                | 10.6         | 9.1          | 8.9          | 9.6          | 7.4          | 8.0          | ..      |
| Poland                | 14.3         | 4.9          | 4.3          | .. c         | 4.5          | 5.3 b        | ..      |
| Portugal              | 2.0          | 1.5          | 1.7          | 1.2          | 1.9          | 5.9          | ..      |
| Slovak Republic       | 8.5 d        | 13.2 d       | 8.2 d        | 13.4 d       | 8.6          | 12.0         | ..      |
| Slovenia              | 12.1         | 8.4          | 7.6          | 7.8          | 8.0          | 6.8          | ..      |
| Spain                 | 7.3          | 5.0          | 5.9          | 5.8          | 6.0          | 5.6          | ..      |
| Sweden                | 1.3 b        | ..           | 3.7 e        | ..           | 3.9          | ..           | ..      |
| Switzerland           | ..           | 0.0 d        | ..           | 0.0 d        | 2.4 d        | ..           | ..      |
| Turkey                | 1.5          | 2.1          | 2.0          | 2.6          | 2.8          | 2.1 d        | 1.9 d   |
| United Kingdom        | 9.9          | 12.5         | 11.6         | 12.0         | 2.2          | 1.8          | ..      |
| United States         | 0.0 d        | 0.3 d        | 0.4 d        | 0.4 d        | 0.4 d        | 0.4 d        | 0.4 d p |
| EU28 (OECD estimates) | 8.3 e        | 8.6 e        | 8.4 e        | 8.6 e        | 7.8 e        | 8.1 e        | ..      |
| <b>OECD-Total</b>     | <b>3.5 e</b> | <b>3.7 e</b> | <b>3.7 e</b> | <b>3.8 e</b> | <b>3.5 e</b> | <b>3.7 e</b> | ..      |
| Argentina             | 0.2          | 1.9          | 0.5          | 0.2          | 0.3          | 0.5          | ..      |
| China                 | 4.9          | 4.1          | 4.6          | 4.1          | 3.9          | 4.7          | 4.6     |
| Romania               | 16.1         | 17.3         | 16.0         | 17.0         | 15.2         | 18.0         | ..      |
| Russian Federation    | 11.4         | 13.1         | 13.8         | 11.5         | 11.6         | 9.1          | 9.7     |
| Singapore             | 2.3          | 3.8          | 6.1          | 4.3          | ..           | ..           | ..      |
| South Africa          | 7.9          | 2.7          | 7.0          | 3.2          | 4.7          | ..           | ..      |
| Chinese Taipei        | 3.0          | 3.0          | 3.1          | 3.4          | 2.9          | 2.9          | 3.9     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database



**Table 54. Government researchers in full-time equivalent**

FTE

|                       | 2005             | 2012             | 2013             | 2014             | 2015             | 2016      | 2017             |
|-----------------------|------------------|------------------|------------------|------------------|------------------|-----------|------------------|
| Australia             | ..               | 8 311            | ..               | 7 637            | ..               | 7 483     | ..               |
| Austria               | 1 232 d e        | 1 555 d e        | 1 567 d          | 1 654 d e        | 1 682 d          | 3 442 d e | 3 579 d p        |
| Belgium               | 2 274            | 3 591 b          | 3 657            | 4 062            | 4 041 b          | 4 068 e   | 5 136 p          |
| Canada                | 8 360            | 9 490            | 9 100            | 9 250            | 7 930            | 7 400     | ..               |
| Chile                 | ..               | 404 d            | 710 b d          | 769 d            | 863 d            | 1 296 d p | ..               |
| Czech Republic        | 6 564 b          | 6 453            | 6 725            | 6 979            | 7 393            | 7 500     | 7 908 p          |
| Denmark               | 2 105            | 1 208            | 1 254            | 1 384            | 1 426            | 1 392     | 1 388 p          |
| Estonia               | 474              | 546              | 553              | 533              | 514              | 504       | 549              |
| Finland               | 4 374            | 4 432            | 4 482            | 4 089            | 3 550            | 3 209     | 3 318 p          |
| France                | 25 889 d         | 27 413           | 27 893           | 28 065           | 28 445           | ..        | 28 480 e         |
| Germany               | 39 911           | 55 597           | 56 755           | 52 854 b         | 54 011 d         | 53 971 d  | 53 700 d         |
| Greece                | 2 076 d          | 4 510 d          | 5 778 d          | 5 844 d          | 7 256 d          | 6 263 d   | 6 372 d p        |
| Hungary               | 4 959            | 4 674            | 4 782            | 4 776            | 4 680            | 4 965     | 4 867 p          |
| Iceland               | 501              | ..               | 181 b            | ..               | 239 b            | 143       | ..               |
| Ireland               | 419              | 495              | 437              | 461              | 494              | 504       | 580 p            |
| Israel <sup>1</sup>   | ..               | 503 d e          | ..               | ..               | ..               | ..        | ..               |
| Italy                 | 14 454           | 20 499           | 21 313           | 21 045           | 21 592           | 21 711    | 21 800 p         |
| Japan                 | 34 035 d         | 31 567 d         | 30 904 d         | 30 373 d         | 30 242 d         | 30 238 d  | 30 610 d         |
| Korea                 | 12 791 d         | 22 204           | 23 292           | 24 750           | 26 431           | 27 170    | 27 185           |
| Latvia                | 589 d            | 703 d            | 707 d            | 681 d            | 691 d            | 626       | 571 d p          |
| Lithuania             | 1 805.0          | 1 372.0          | 1 395.0          | 1 400.0          | 1 449.0          | 1 577.0   | 1 613.0          |
| Luxembourg            | 374              | 732              | 733              | 708              | 617              | 601       | 606 p            |
| Mexico                | 6 589 e          | 7 205            | 7 273            | ..               | ..               | ..        | ..               |
| Netherlands           | 7 028 d          | 8 581 b d        | 8 616 d          | 8 624 d          | 8 953 d          | 8 714 d   | 9 586 p          |
| New Zealand           | 1 800            | ..               | 2 000            | ..               | 1 900            | ..        | ..               |
| Norway                | 3 449 d          | 4 654            | 4 705            | 4 627            | 4 735            | 4 788     | 4 800 p          |
| Poland                | 12 175           | 13 583           | 13 571           | 13 847           | 13 618           | 2 369 b   | 2 329 p          |
| Portugal              | 3 338            | 1 682            | 1 386 b          | 1 447            | 1 351            | 1 340     | 1 453 p          |
| Slovak Republic       | 2 503 d          | 2 967 d          | 2 635 d          | 3 123 d          | 3 084            | 3 087     | 3 078            |
| Slovenia              | 1 591            | 1 850            | 1 825            | 1 744            | 1 629            | 1 667     | 1 502 p          |
| Spain                 | 20 446           | 21 850 d         | 20 673 d         | 20 180 d         | 19 962 d         | 20 663 d  | 20 844 d p       |
| Sweden                | 2 929 b d e      | 2 002 e          | 2 386 b e        | 2 304 e          | 3 322 b e        | 3 362 p   | 3 788 p          |
| Switzerland           | ..               | 430 d            | ..               | 466 d            | 472 d            | ..        | ..               |
| Turkey                | 4 249            | 6 288            | 6 294            | 6 541            | 6 555            | 6 700 d   | 6 672 d          |
| United Kingdom        | 9 311            | 7 729            | 7 641            | 7 769            | 7 057            | 7 047     | 6 789 p          |
| United States         | ..               | ..               | ..               | ..               | ..               | ..        | ..               |
| EU28 (OECD estimates) | 179 520 e        | 204 449 e        | 207 268 e        | 203 743 e        | 206 770 e        | 197 015 e | 199 546 e        |
| <b>OECD-Total</b>     | <b>294 963 e</b> | <b>340 936 e</b> | <b>341 695 e</b> | <b>341 206 e</b> | <b>345 092 e</b> | ..        | <b>334 549 e</b> |
| Argentina             | 13 285           | 23 237           | 23 444           | 24 814           | 26 266           | 27 168    | ..               |
| China                 | 200 377 d        | 269 581          | 288 675          | 295 899          | 305 686          | 336 106   | 356 805          |
| Romania               | 7 082            | 6 372            | 6 583            | 6 409            | 6 659            | 6 755     | 6 526 p          |
| Russian Federation    | 154 827          | 149 593          | 144 776          | 144 700          | 146 840          | 145 956   | 139 479          |
| Singapore             | 1 364            | 1 756            | 1 843            | 1 950            | ..               | ..        | ..               |
| South Africa          | 1 974            | 2 789            | 2 705            | 2 735            | 2 781            | ..        | ..               |
| Chinese Taipei        | 13 789           | 14 630           | 14 599           | 14 753           | 14 887           | 15 366    | 15 542           |

 Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

 1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 55. Government researchers as a percentage of national total**

Percentage

|                       | 2005         | 2012         | 2013         | 2014         | 2015         | 2016      | 2017     |
|-----------------------|--------------|--------------|--------------|--------------|--------------|-----------|----------|
| Australia             | ..           | ..           | ..           | ..           | ..           | ..        | ..       |
| Austria               | 4.3 d e      | 3.9 d e      | 3.9 d        | 3.9 d e      | 3.9 d        | 7.7 d e p | ..       |
| Belgium               | 6.9          | 7.9 b        | 7.9          | 8.0          | 7.6 b        | 7.5 e     | 9.1 p    |
| Canada                | 6.1          | 5.9          | 5.6          | 5.7 b        | 4.9          | 4.8       | ..       |
| Chile                 | ..           | 5.9 d        | 12.1 b d     | 10.1 d       | 10.6 d       | 14.4 d p  | ..       |
| Czech Republic        | 27.2 b       | 19.4         | 19.6         | 19.4         | 19.4         | 20.1      | 20.2 p   |
| Denmark               | 7.5          | 3.0          | 3.1          | 3.3          | 3.3          | 3.1       | 3.1 p    |
| Estonia               | 14.2         | 11.9         | 12.5         | 12.3         | 12.3         | 11.6      | 11.7     |
| Finland               | 11.1         | 11.0         | 11.4         | 10.7         | 9.5          | 8.9       | 9.0 p    |
| France                | 12.8 d       | 10.6 e       | 10.5 e       | 10.3 b       | 10.2         | ..        | 9.9 e    |
| Germany               | 14.7         | 15.8         | 16.0         | 15.0 b       | 13.9 d       | 13.5 d    | 13.0 d e |
| Greece                | 10.6 d       | 18.2 d       | 19.8 d       | 19.6 d       | 20.9 d       | 21.3 d    | 18.1 d p |
| Hungary               | 31.2         | 19.6         | 19.1         | 18.2         | 18.5         | 19.2      | 17.1 p   |
| Iceland               | 23.3         | ..           | 9.8 b        | ..           | 12.3 b       | 6.5       | ..       |
| Ireland               | 3.6          | 2.2          | 1.8          | 1.9          | 2.2          | 2.5       | 3.0 p    |
| Israel <sup>1</sup>   | ..           | 0.8 d e      | ..           | ..           | ..           | ..        | ..       |
| Italy                 | 17.5         | 18.5         | 18.3         | 17.8         | 17.2         | 16.2 b    | 16.0 p   |
| Japan                 | 5.0 d        | 4.9 d        | 4.7 b d      | 4.4 d        | 4.6 d        | 4.5 d     | 4.5 d    |
| Korea                 | 7.1 d        | 7.0          | 7.2          | 7.2          | 7.4          | 7.5       | 7.1      |
| Latvia                | 17.9 d       | 18.0 d       | 19.5 d       | 18.2 d       | 19.1 d       | 19.9 d    | 16.4 d p |
| Lithuania             | 23.6         | 17.1         | 16.3         | 15.4         | 17.7         | 18.5      | 18.6     |
| Luxembourg            | 16.8         | 31.7 b       | 29.3         | 26.9         | 24.3         | 24.0 p    | 22.2 p   |
| Mexico                | 15.0 e       | 24.8         | 24.3         | ..           | ..           | ..        | ..       |
| Netherlands           | 14.7 d       | 11.7 b d     | 11.2 d       | 11.3 d       | 11.3 d       | 10.7 d    | 11.2 p   |
| New Zealand           | 13.9         | ..           | 11.2         | ..           | 10.2         | ..        | ..       |
| Norway                | 16.3 d       | 16.7         | 16.6         | 15.8         | 15.5         | 15.0      | 14.0 p   |
| Poland                | 19.6         | 20.3         | 19.0         | 17.6         | 16.5         | 2.7 b     | 2.4 p    |
| Portugal              | 15.8         | 4.0          | 3.7 b        | 3.8          | 3.5          | 3.2       | 3.3 p    |
| Slovak Republic       | 22.9 d       | 19.4 d       | 17.9 d       | 21.2 d       | 21.4         | 21.8      | 20.2     |
| Slovenia              | 30.3         | 20.8         | 21.0         | 20.3         | 20.6         | 20.5      | 16.2 p   |
| Spain                 | 18.6         | 17.2 d       | 16.8 d       | 16.5 d       | 16.3 d       | 16.3 d    | 15.6 d p |
| Sweden                | 5.3 b d e    | 4.1 e        | 3.7 b e      | 3.5 e        | 5.0 b e      | 4.8 p     | 5.0 p    |
| Switzerland           | ..           | 1.2 d        | ..           | ..           | 1.1 d        | ..        | ..       |
| Turkey                | 10.9         | 7.7          | 7.1          | 7.3          | 6.9          | 6.7 d     | 6.0 d    |
| United Kingdom        | 3.7 b e      | 3.0 e        | 2.9          | 2.8 e        | 2.5          | 2.4 e     | 2.3 p    |
| United States         | ..           | ..           | ..           | ..           | ..           | ..        | ..       |
| EU28 (OECD estimates) | 13.1 e       | 12.1 e       | 11.9 e       | 11.5 e       | 11.2 e       | 10.4 e    | 10.2 e   |
| <b>OECD-Total</b>     | <b>8.0 e</b> | <b>7.7 e</b> | <b>7.5 e</b> | <b>7.3 e</b> | <b>7.2 e</b> | ..        | ..       |
| Argentina             | 41.7         | 46.0         | 46.2         | 48.0         | 49.6         | 50.3      | ..       |
| China                 | 17.9 d       | 19.2         | 19.5         | 19.4         | 18.9         | 19.9      | 20.5     |
| Romania               | 30.8         | 35.4         | 35.4         | 35.4         | 38.1         | 37.4      | 37.3 p   |
| Russian Federation    | 33.3         | 33.7         | 32.9         | 32.5         | 32.7         | 34.0      | 34.0     |
| Singapore             | 5.7          | 5.1          | 5.1          | 5.3          | ..           | ..        | ..       |
| South Africa          | 11.4         | 13.0         | 11.6         | 11.6         | 10.6         | ..        | ..       |
| Chinese Taipei        | 15.5         | 10.4         | 10.3         | 10.3         | 10.2         | 10.4      | 10.3     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 56. Government Total R&D personnel in full-time equivalent**

FTE

|                       | 2005      | 2012       | 2013      | 2014      | 2015      | 2016      | 2017       |
|-----------------------|-----------|------------|-----------|-----------|-----------|-----------|------------|
| Australia             | ..        | 16 381     | ..        | 14 715    | ..        | 14 773    | ..         |
| Austria               | 2 318 d e | 2 544 d e  | 2 538 d   | 2 641 d e | 2 674 d   | 4 842 d e | 5 035 d p  |
| Belgium               | 3 589     | 5 818 b    | 5 932     | 6 381     | 6 470 b   | 6 327 e   | 8 361 p    |
| Canada                | 17 860    | 19 070     | 18 110    | 18 050    | 15 410    | 14 300    | ..         |
| Chile                 | ..        | 607 d      | 1 382 b d | 1 372 d   | 1 495 d   | 2 223 d p | ..         |
| Czech Republic        | 11 054 b  | 11 864     | 12 275    | 12 380    | 12 953    | 13 099    | 13 689 p   |
| Denmark               | 3 240     | 1 543      | 1 544     | 1 686     | 1 792     | 1 721     | 1 715 p    |
| Estonia               | 696       | 774        | 851       | 800       | 782       | 841       | 847        |
| Finland               | 7 422     | 6 360      | 6 319     | 5 880     | 4 519     | 4 039     | 4 240 p    |
| France                | 49 645 d  | 49 903     | 49 982    | 49 375    | 49 413    | ..        | 48 800 e   |
| Germany               | 76 254 d  | 95 882 d   | 98 161 d  | 101 005 d | 101 717 d | 103 206 d | 103 900 d  |
| Greece                | 4 345 d   | 9 982 d    | 11 436 d  | 11 125 d  | 13 628 d  | 11 750 d  | 10 926 d p |
| Hungary               | 7 652     | 7 605      | 7 765     | 7 215     | 8 111     | 7 456     | 7 271 p    |
| Iceland               | 849       | ..         | 266 b     | ..        | 275       | 184       | ..         |
| Ireland               | 1 132     | 921        | 818       | 826       | 951       | 993       | 1 051 p    |
| Israel <sup>1</sup>   | ..        | 883 d e    | ..        | ..        | ..        | ..        | ..         |
| Italy                 | 32 684    | 37 851     | 39 023    | 38 506    | 38 669    | 38 490    | 38 389 p   |
| Japan                 | 62 975 d  | 62 752 d   | 61 486 d  | 61 585 d  | 60 299 d  | 61 615 d  | 62 046 d   |
| Korea                 | 16 847 d  | 32 977     | 34 367    | 35 574    | 38 174    | 38 119    | 37 578     |
| Latvia                | 1 256 d   | 1 170 d    | 1 178 d   | 1 180 d   | 1 184 d   | 1 077 d   | 974 d p    |
| Lithuania             | 3 113.0   | 2 131.0    | 2 227.0   | 2 224.0   | 2 156.0   | 2 399.0   | 2 408.0    |
| Luxembourg            | 560 d     | 1 178 d    | 1 195 d   | 1 187 d   | 1 136 d   | 1 072     | 1 081 p    |
| Mexico                | 14 837 e  | 16 638     | 16 944    | ..        | ..        | ..        | ..         |
| Netherlands           | 12 706 d  | 13 496 b d | 13 485 d  | 14 121 d  | 14 348 d  | 13 982 d  | 14 856 d p |
| New Zealand           | 3 100     | ..         | 3 300     | ..        | 3 500     | ..        | ..         |
| Norway                | 5 147     | 6 670      | 6 780     | 6 690     | 6 820     | 6 810     | 6 850 p    |
| Poland                | 17 877    | 21 804     | 21 884    | 22 614    | 22 073    | 3 733 b   | 3 206 p    |
| Portugal              | 4 533     | 2 204      | 1 983     | 2 037     | 2 066     | 2 098     | 2 188 p    |
| Slovak Republic       | 3 717 d   | 4 168 d    | 3 545 d   | 4 147 d   | 4 335     | 4 414     | 4 213      |
| Slovenia              | 2 517     | 2 579      | 2 596     | 2 490     | 2 437     | 2 501     | 2 323 p    |
| Spain                 | 32 077    | 41 787 d   | 39 349 d  | 38 764 d  | 39 678 d  | 39 972 d  | 40 283 d p |
| Sweden                | 3 444 b e | 3 359 e m  | 3 217 e   | 3 404 e   | 4 234 b e | 4 269 p   | 4 895 p    |
| Switzerland           | ..        | 781 d      | ..        | 897 d     | 909 d     | ..        | ..         |
| Turkey                | 8 825     | 12 088     | 12 004    | 12 230    | 12 328    | 11 799 d  | 11 345 d   |
| United Kingdom        | 20 415    | 16 880     | 16 592    | 16 250    | 14 615    | 14 531    | 13 999 p   |
| United States         | ..        | ..         | ..        | ..        | ..        | ..        | ..         |
| EU28 (OECD estimates) | 321 394 e | 360 563 e  | 363 165 e | 364 447 e | 367 855 e | 349 838 e | 352 298 e  |
| <b>OECD-Total</b>     | ..        | ..         | ..        | ..        | ..        | ..        | ..         |
| Argentina             | 21 688    | 34 472     | 35 850    | 37 757    | 39 271    | 40 248    | ..         |
| China                 | 254 506 d | 446 920    | 467 313   | 479 435   | 493 200   | 505 927   | 531 629    |
| Romania               | 10 055    | 11 381     | 12 336    | 11 866    | 12 080    | 12 663    | 12 500 p   |
| Russian Federation    | 296 428   | 292 894    | 282 051   | 283 161   | 283 968   | 287 129   | 283 620    |
| Singapore             | 2 173     | 3 003      | 3 134     | 3 497     | ..        | ..        | ..         |
| South Africa          | 5 586     | 7 346      | 7 410     | 6 362     | 6 417     | ..        | ..         |
| Chinese Taipei        | 25 673    | 25 246     | 24 727    | 24 876    | 24 948    | 25 578    | 26 173     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 57. Total GBARD (Government budget allocations for R&D) at current prices and PPP**

Million USD

|                       | 2005               | 2013               | 2014               | 2015               | 2016               | 2017               | 2018           |
|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------|
| Australia             | 3 729.1 d          | 4 884.2 d          | 4 842.9 d          | 4 614.5 d          | 4 729.7 d          | 5 270.5 d p        | 5 093.5 d p    |
| Austria               | 1 836.6 d          | 3 246.3 d          | 3 314.3 d          | 3 437.1 d          | 3 643.1 d          | 3 703.1 d          | 3 755.2 d p    |
| Belgium               | 2 004.6            | 3 129.0            | 3 409.3            | 3 172.5            | 3 384.8            | 3 751.1            | ..             |
| Canada                | 6 777.1 d          | 8 192.0 d          | 7 937.5 d          | 7 947.1 d          | 8 189.3 d          | ..                 | ..             |
| Chile                 | ..                 | 801.4              | 843.3              | 821.7              | 914.7              | 965.2              | ..             |
| Czech Republic        | 1 129.0            | 2 088.7            | 2 147.8            | 2 151.6            | 2 184.9            | 2 446.3            | 2 788.1 p      |
| Denmark               | 1 329.3            | 2 673.5            | 2 707.4            | 2 795.2 e          | 2 637.5 e          | 2 796.9 e          | 2 993.2 p      |
| Estonia               | 89.9 e             | 294.7 e            | 269.2 e            | 261.3 e            | 272.2 b            | 267.1 p            | ..             |
| Finland               | 1 648.0            | 2 228.8            | 2 206.3            | 2 205.6            | 2 042.4            | 2 150.2            | 2 164.0 p      |
| France                | 18 220.2           | 18 457.1           | 18 349.2           | 17 531.1           | 17 677.2           | 19 015.4           | ..             |
| Germany               | 19 732.0           | 32 745.9           | 33 186.3           | 34 107.7           | 37 011.9           | 39 966.3           | 41 296.8 p     |
| Greece                | 895.8              | 1 360.1            | 1 278.9            | 1 515.9            | 1 575.8            | 1 508.8            | ..             |
| Hungary               | 696.1              | 1 574.2 d          | 702.5              | 725.6              | 1 040.0            | 1 001.0            | ..             |
| Iceland               | 94.0               | 145.6              | 78.8 b             | 85.6               | 98.1               | 114.3              | ..             |
| Ireland               | 710.7              | 889.5              | 887.4              | 909.6              | 887.9              | 928.2              | ..             |
| Israel <sup>1</sup>   | 1 044.9 d          | 1 686.1 d          | 1 749.9 d          | 1 837.5 d          | 1 978.5 d          | 2 040.4 d          | ..             |
| Italy                 | 11 199.3           | 11 453.0           | 11 425.0           | 11 336.0           | 12 235.3           | 12 627.0           | ..             |
| Japan                 | 27 617.8 d         | 35 633.5 d         | 35 431.8 d         | 33 616.8 d         | 33 661.4 d         | 34 027.7 d         | 37 727.7 b d p |
| Korea                 | 9 886.5 b d        | 19 730.2           | 20 391.9           | 22 032.6           | 22 200.7           | 22 519.2           | ..             |
| Latvia                | 57.4               | 64.9               | 76.8               | 93.7               | 106.4              | 122.3              | ..             |
| Lithuania             | 169.8              | 283.4              | 284.7              | 273.8              | 273.3              | 294.8              | ..             |
| Luxembourg            | 81.5               | 333.9              | 359.1              | 380.0              | 385.6              | 424.1              | 425.7 p        |
| Mexico                | 2 963.4            | 6 321.0            | 7 184.7            | 7 093.7 e          | 6 416.5            | 5 905.9 p          | ..             |
| Netherlands           | 4 391.9            | 6 006.6            | 6 026.0            | 6 027.4            | 6 080.3            | 6 271.5            | 6 952.2 p      |
| New Zealand           | ..                 | 756.4              | 882.1              | 873.8              | 914.8              | 1 025.4            | ..             |
| Norway                | 1 535.9            | 2 759.7            | 2 903.4            | 2 917.1            | 3 018.6            | 3 292.6            | 3 246.3 p      |
| Poland                | 1 548.8            | 3 426.5            | 4 185.8            | 4 158.7            | 3 458.3            | 4 105.5            | ..             |
| Portugal              | 1 045.6            | 1 155.9            | 1 087.4            | 1 174.4            | 1 218.0            | 1 227.7            | ..             |
| Slovak Republic       | 244.6              | 588.9              | 595.9              | 673.0              | 624.4              | 636.1              | 682.7 p        |
| Slovenia              | 273.3              | 295.6              | 272.9              | 268.6              | 276.4              | 296.3              | ..             |
| Spain                 | 6 440.7            | 8 420.5            | 8 721.4            | 9 092.2            | 9 237.5            | 9 351.6            | ..             |
| Sweden                | 2 508.0            | 3 662.5            | 3 766.5            | 3 742.9            | 3 819.3            | 4 141.5            | 4 233.1 p      |
| Switzerland           | ..                 | ..                 | 4 451.7            | 4 754.0            | ..                 | ..                 | ..             |
| Turkey                | ..                 | 6 403.2            | 6 095.5            | 6 915.3            | 7 294.7            | 7 795.1            | ..             |
| United Kingdom        | 12 116.1           | 14 362.8           | 14 663.0           | 14 612.7           | 14 786.2           | 15 700.2 p         | ..             |
| United States         | 111 332.0          | 109 608.0          | 112 502.0          | 115 220.0          | 126 093.0          | 127 306.0          | 130 541.0 p    |
| EU28 (OECD estimates) | 89 609.6 e         | 120 550.1 e        | 121 894.1 e        | 122 970.2 e        | 127 329.8 e        | 134 945.3 e        | ..             |
| <b>OECD-Total</b>     | <b>256 467.5 e</b> | <b>319 911.4 e</b> | <b>325 218.6 e</b> | <b>329 376.3 e</b> | <b>345 204.7 e</b> | <b>356 241.3 e</b> | ..             |
| Argentina             | 1 221.0 d          | ..                 | ..                 | ..                 | ..                 | ..                 | ..             |
| China                 | ..                 | ..                 | ..                 | ..                 | ..                 | ..                 | ..             |
| Romania               | 448.5              | 818.3 b            | 872.6              | 1 104.5            | 1 313.6            | 979.0              | 968.0 e        |
| Russian Federation    | 6 038.6 b          | 21 898.8           | 20 808.0           | 18 627.6           | 16 531.3           | 15 523.9           | ..             |
| Singapore             | ..                 | ..                 | ..                 | ..                 | ..                 | ..                 | ..             |
| South Africa          | ..                 | ..                 | ..                 | ..                 | ..                 | ..                 | ..             |
| Chinese Taipei        | 4 889.6            | 7 318.2            | 7 391.7            | 7 590.4            | 7 977.2            | 8 388.7            | 8 056.7        |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 58. Defence Budget R&D**

As a percentage of total GBARD (Government budget allocations for R&amp;D)

Percentage

|                       | 2005          | 2013          | 2014          | 2015          | 2016          | 2017          | 2018      |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------|
| Australia             | 6.9 d         | 6.3 d         | 6.5 d         | 7.7 d         | 6.8 d         | 6.8 d p       | 6.4 d p   |
| Austria               | 0.0 d         | 0.0 d         | 0.0 d         | 0.0 d         | 0.1 d         | 0.1 d         | 0.2 d p   |
| Belgium               | 0.3           | 0.2           | 0.2           | 0.1           | 0.1           | 0.1           | ..        |
| Canada                | 4.1 d         | 3.0 d         | 2.9 d         | 2.6 d         | 2.2 d         | ..            | ..        |
| Chile                 | ..            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | ..        |
| Czech Republic        | 2.5           | 1.5           | 1.4           | 1.3           | 1.2           | 1.3           | 1.1 p     |
| Denmark               | 0.7           | 0.3           | 0.3           | 0.3 e         | 0.3 e         | 0.3 e         | 0.3 e p   |
| Estonia               | 1.0 e         | 0.5 e         | 1.3 e         | 1.5 e         | 2.3 b         | 1.9 p         | ..        |
| Finland               | 3.3           | 1.9           | 2.1           | 1.9           | 1.9           | 2.2           | 2.5 p     |
| France                | 20.8          | 6.3 d         | 6.6 d         | 7.2 d         | 6.4 d         | 7.5 d         | ..        |
| Germany               | 5.8 s         | 3.7 s         | 3.8 s         | 3.1 s         | 2.7           | 3.8           | 3.3 p     |
| Greece                | 0.5           | 0.4           | 0.1           | 0.1           | 0.9           | 1.8           | ..        |
| Hungary               | 0.1           | 0.2 d         | 0.1           | 0.6           | 0.1           | 0.4           | ..        |
| Iceland               | 0.0           | 0.0           | 0.0 b         | 0.0           | 0.0           | 0.0           | ..        |
| Ireland               | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | ..        |
| Israel <sup>1</sup>   | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| Italy                 | 3.6           | 0.8           | 0.8           | 0.8           | 0.6           | 0.6           | ..        |
| Japan                 | 4.0 d m       | 4.6 d m       | 4.4 d m       | 4.4 d m       | 3.1 d m       | 3.5 d m       | 2.8 b d p |
| Korea                 | 12.4 b d      | 14.8          | 13.5          | 13.5          | 14.0          | 15.0          | ..        |
| Latvia                | 1.1           | 1.2           | 1.8           | 1.9           | 2.7           | .. c          | ..        |
| Lithuania             | 0.2           | 0.1           | 0.0           | 0.1           | 0.3           | 0.1           | ..        |
| Luxembourg            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | 0.0 p     |
| Mexico                | 0.0           | 0.2           | 0.2           | 0.2 e         | 0.1           | 0.2 p         | ..        |
| Netherlands           | 2.0           | 1.2           | 1.2           | 1.3           | 1.2           | 1.1           | 1.2 p     |
| New Zealand           | ..            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | ..        |
| Norway                | 6.4           | 4.2           | 4.0           | 3.8           | 3.7           | 3.5           | 3.6 p     |
| Poland                | 1.3           | 5.2           | 4.8           | 5.1           | 15.5          | 9.2           | ..        |
| Portugal              | 0.1           | 0.2           | 0.3           | 0.3           | 0.3           | 0.3           | ..        |
| Slovak Republic       | 8.3 d         | 1.4           | 1.4           | 1.9           | 1.5           | 1.7           | 1.8 p     |
| Slovenia              | 4.9           | 0.7           | 0.2           | 0.2           | 0.2           | 0.3           | ..        |
| Spain                 | 3.9           | 1.4           | 1.3           | 1.4           | 1.0           | 1.1           | ..        |
| Sweden                | 17.4          | 4.0 d         | 3.8 d         | 3.3 d         | 3.4 e         | 3.0 e         | 3.7 e p   |
| Switzerland           | ..            | ..            | 0.5           | 0.4           | ..            | ..            | ..        |
| Turkey                | ..            | 25.6          | 11.4          | 10.7          | 13.1          | 17.3          | ..        |
| United Kingdom        | 23.5          | 15.3          | 16.7          | 16.4          | 15.8          | 15.2 p        | ..        |
| United States         | 49.1          | 42.8          | 41.0          | 41.6          | 42.7          | 43.5          | 46.3 p    |
| EU28 (OECD estimates) | 10.2 e        | 4.4 e         | 4.7 e         | 4.5 e         | 4.3 e         | 4.7 e         | ..        |
| <b>OECD-Total</b>     | <b>26.1 e</b> | <b>18.5 e</b> | <b>17.7 e</b> | <b>18.0 e</b> | <b>18.8 e</b> | <b>19.2 e</b> | <b>..</b> |
| Argentina             | 0.4 d         | ..            | ..            | ..            | ..            | ..            | ..        |
| China                 | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| Romania               | 1.7           | 1.4 b         | 1.8           | 1.6           | 1.7           | 4.5           | 7.7       |
| Russian Federation    | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| Singapore             | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| South Africa          | ..            | ..            | ..            | ..            | ..            | ..            | ..        |
| Chinese Taipei        | 10.6          | 2.9           | 2.6           | 2.5           | 5.2           | 6.4           | 7.0       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 59. Civil Budget R&D**  
As a percentage of total GBARD (Government budget allocations for R&D)

Percentage

|                       | 2005          | 2013          | 2014          | 2015          | 2016          | 2017          | 2018       |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|
| Australia             | 93.1 d        | 93.7 d        | 93.5 d        | 92.3 d        | 93.2 d        | 93.2 d p      | 93.6 d p   |
| Austria               | 100.0 d       | 100.0 d       | 100.0 d       | 100.0 d       | 99.9 d        | 99.9 d        | 99.8 d p   |
| Belgium               | 99.7          | 99.8          | 99.8          | 99.9          | 99.9          | 99.9          | ..         |
| Canada                | 95.9 d        | 97.0 d        | 97.1 d        | 97.4 d        | 97.8 d        | ..            | ..         |
| Chile                 | ..            | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | ..         |
| Czech Republic        | 97.5          | 98.5          | 98.6          | 98.7          | 98.8          | 98.7          | 98.9 p     |
| Denmark               | 99.3          | 99.7          | 99.7          | 99.7 e        | 99.7 e        | 99.7 e        | 99.7 e p   |
| Estonia               | 99.0 e        | 99.5 e        | 98.7 e        | 98.5 e        | 97.7 b        | 98.1 p        | ..         |
| Finland               | 96.7          | 98.1          | 97.9          | 98.1          | 98.1          | 97.8          | 97.5 p     |
| France                | 79.2          | 93.7 d        | 93.4 d        | 92.8 d        | 93.6 d        | 92.5 d        | ..         |
| Germany               | 94.2 s        | 96.3 s        | 96.2 s        | 96.9 s        | 97.3          | 96.2          | 96.7 p     |
| Greece                | 99.5          | 99.6          | 99.9          | 99.9          | 99.1          | 98.2          | ..         |
| Hungary               | 99.9          | 99.8 d        | 99.9          | 99.4          | 99.9          | 99.6          | ..         |
| Iceland               | 100.0         | 100.0         | 100.0 b       | 100.0         | 100.0         | 100.0         | ..         |
| Ireland               | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | ..         |
| Israel <sup>1</sup>   | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| Italy                 | 96.4          | 99.2          | 99.2          | 99.2          | 99.4          | 99.4          | ..         |
| Japan                 | 96.0 d        | 95.4 d        | 95.6 d        | 95.6 d        | 96.9 d        | 96.5 d        | 97.2 b d p |
| Korea                 | 87.6 b d      | 85.2          | 86.5          | 86.5          | 86.0          | 85.0          | ..         |
| Latvia                | 98.9          | 98.8          | 98.2          | 98.1          | 97.3          | .. c          | ..         |
| Lithuania             | 99.8          | 99.9          | 100.0         | 99.9          | 99.7          | 99.9          | ..         |
| Luxembourg            | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | 100.0 p    |
| Mexico                | 100.0         | 99.8          | 99.8          | 99.8 e        | 99.9          | 99.8 p        | ..         |
| Netherlands           | 98.0          | 98.8          | 98.8          | 98.7          | 98.8          | 98.9          | 98.8 p     |
| New Zealand           | ..            | 100.0         | 100.0         | 100.0         | 100.0         | 100.0         | ..         |
| Norway                | 93.6          | 95.8          | 96.0          | 96.2          | 96.3          | 96.5          | 96.4 p     |
| Poland                | 98.7          | 94.8          | 95.2          | 94.9          | 84.5          | 90.8          | ..         |
| Portugal              | 99.9          | 99.8          | 99.7          | 99.7          | 99.7          | 99.7          | ..         |
| Slovak Republic       | 91.7 d        | 98.6          | 98.6          | 98.1          | 98.5          | 98.3          | 98.2 p     |
| Slovenia              | 95.1          | 99.3          | 99.8          | 99.8          | 99.8          | 99.7          | ..         |
| Spain                 | 96.1          | 98.6          | 98.7          | 98.6          | 99.0          | 98.9          | ..         |
| Sweden                | 82.6          | 96.0 d        | 96.2 d        | 96.7 d        | 96.6 e        | 97.0 e        | 96.3 e p   |
| Switzerland           | ..            | ..            | 99.5          | 99.6          | ..            | ..            | ..         |
| Turkey                | ..            | 74.4          | 88.6          | 89.3          | 86.9          | 82.7          | ..         |
| United Kingdom        | 76.5          | 84.7          | 83.3          | 83.6          | 84.2          | 84.8 p        | ..         |
| United States         | 50.9          | 57.2          | 59.0          | 58.4          | 57.3          | 56.5          | 53.7 p     |
| EU28 (OECD estimates) | 89.8 e        | 95.6 e        | 95.3 e        | 95.5 e        | 95.7 e        | 95.3 e        | ..         |
| <b>OECD-Total</b>     | <b>73.9 e</b> | <b>81.5 e</b> | <b>82.3 e</b> | <b>82.0 e</b> | <b>81.2 e</b> | <b>80.8 e</b> | ..         |
| Argentina             | 99.6 d        | ..            | ..            | ..            | ..            | ..            | ..         |
| China                 | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| Romania               | 98.3          | 98.6 b        | 98.2          | 98.4          | 98.3          | 95.5          | 92.3       |
| Russian Federation    | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| Singapore             | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| South Africa          | ..            | ..            | ..            | ..            | ..            | ..            | ..         |
| Chinese Taipei        | 89.4          | 97.1          | 97.4          | 97.5          | 94.8          | 93.6          | 93.0       |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database

**Table 60. R&D expenditure of foreign affiliates at current prices and PPP**

Million USD

|                       | 2005      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016       |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Australia             | ..        | 3 698.1   | ..        | 3 546.7   | ..        | ..        | ..         |
| Austria               | ..        | 3 426.9   | ..        | 4 307.5   | ..        | 4 637.8   | ..         |
| Belgium               | 2 406.2   | 4 453.4 p | ..        | ..        | ..        | ..        | ..         |
| Canada                | 4 235.2   | 4 974.6 p | 4 820.8 p | 4 839.1 p | 5 122.9 p | 5 073.7 p | 5 459.5 p  |
| Chile                 | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Czech Republic        | 961.8     | ..        | ..        | 1 219.8 b | ..        | 1 239.3   | ..         |
| Denmark               | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Estonia               | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Finland               | 638.2     | 626.0     | ..        | 750.0     | ..        | 1 076.2   | ..         |
| France                | 5 767.3 b | 9 413.1   | 9 776.0   | 7 967.0 b | 7 636.4   | 8 078.2 p | ..         |
| Germany               | 12 159.7  | 16 784.5  | ..        | 15 391.7  | ..        | 16 838.4  | ..         |
| Greece                | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Hungary               | 299.7     | 589.7     | ..        | 753.9     | ..        | 721.0     | ..         |
| Iceland               | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Ireland               | 924.2     | 1 467.6   | ..        | 1 625.6   | ..        | 1 758.4   | 1 687.2 e  |
| Israel <sup>1</sup>   | 3 130.3   | 5 122.3   | 5 745.8   | 6 422.1   | 6 875.8   | 7 409.6   | 8 117.0    |
| Italy                 | 2 315.4   | 3 456.0   | 3 498.6   | 3 620.0   | 3 991.1   | 4 379.8   | 5 032.6 p  |
| Japan                 | 5 038.4   | ..        | 6 510.4   | 7 578.6   | 8 758.0   | 8 927.0   | 6 760.3 p  |
| Korea                 | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Latvia                | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Lithuania             | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Luxembourg            | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Mexico                | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Netherlands           | ..        | 1 602.1   | 1 733.4   | 1 701.4   | 1 806.4   | 1 807.9   | 1 836.7 p  |
| New Zealand           | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Norway                | 394.8     | 672.0     | 679.4     | ..        | ..        | ..        | ..         |
| Poland                | 288.0     | 449.2     | ..        | 860.0     | ..        | 988.0 d   | ..         |
| Portugal              | 236.7     | ..        | ..        | ..        | ..        | ..        | ..         |
| Slovak Republic       | 52.6      | ..        | ..        | ..        | ..        | ..        | ..         |
| Slovenia              | ..        | 214.8     | ..        | .. c      | ..        | 329.5     | ..         |
| Spain                 | 1 868.8   | 1 863.4   | ..        | 1 870.3   | ..        | 1 974.4   | ..         |
| Sweden                | 3 529.5   | 3 641.4   | ..        | 3 899.5   | ..        | 4 545.0 p | ..         |
| Switzerland           | ..        | ..        | 1 906.7   | ..        | ..        | 1 639.4 p | ..         |
| Turkey                | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| United Kingdom        | 7 594.5   | 12 567.1  | 12 936.9  | 14 350.3  | 14 668.3  | 15 522.2  | 16 150.1   |
| United States         | 31 099.0  | 45 177.0  | 50 259.0  | 54 070.0  | 56 952.0  | 56 731.0  | 60 140.0 p |
| EU28 (OECD estimates) | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| <b>OECD-Total</b>     | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Argentina             | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| China                 | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Romania               | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Russian Federation    | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Singapore             | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| South Africa          | ..        | ..        | ..        | ..        | ..        | ..        | ..         |
| Chinese Taipei        | ..        | ..        | ..        | ..        | ..        | ..        | ..         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Activities of Multinational Enterprises database

**Table 61. R&D expenditure of foreign affiliates as a percentage of R&D expenditures of enterprises**

Percentage

|                       | 2005   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| Australia             | ..     | 30.5   | ..     | 27.2   | ..     | ..     | ..     |
| Austria               | ..     | 50.0   | ..     | 50.7   | ..     | 49.4   | ..     |
| Belgium               | 56.8   | 66.0 p | ..     | ..     | ..     | ..     | ..     |
| Canada                | 32.6   | 36.5 p | 35.9 p | 35.7 p | 34.6 p | 35.3 p | 37.6 p |
| Chile                 | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Czech Republic        | 51.5   | ..     | ..     | 62.8 b | ..     | 61.4 p | ..     |
| Denmark               | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Estonia               | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Finland               | 16.1   | 14.8   | ..     | 20.4   | ..     | 35.6   | ..     |
| France                | 23.5 b | 27.5   | 27.5   | 21.1 b | 19.8   | 20.6 p | ..     |
| Germany               | 27.8   | 26.1   | ..     | 22.4   | ..     | 21.5   | ..     |
| Greece                | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Hungary               | 59.7   | 62.6   | ..     | 60.9   | ..     | 66.1   | ..     |
| Iceland               | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Ireland               | 70.3   | 65.6   | ..     | 65.2   | ..     | 63.7   | 59.6 e |
| Israel <sup>1</sup>   | 55.7   | 65.6   | 66.8   | 69.2   | 70.6   | 70.1   | 68.6   |
| Italy                 | 25.2   | 24.2   | 23.6   | 23.3   | 23.9   | 25.1   | 25.5 p |
| Japan                 | 5.1    | ..     | 5.6    | 6.0    | 6.6    | 6.7    | 5.2 p  |
| Korea                 | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Latvia                | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Lithuania             | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Luxembourg            | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Mexico                | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Netherlands           | ..     | 32.5   | 33.5   | 31.3   | 33.5   | 32.4   | 31.1 p |
| New Zealand           | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Norway                | 28.5   | 33.7   | 31.6   | ..     | ..     | ..     | ..     |
| Poland                | 30.4   | 44.8   | ..     | 47.0   | ..     | 44.7 d | ..     |
| Portugal              | 34.0   | ..     | ..     | ..     | ..     | ..     | ..     |
| Slovak Republic       | 23.9   | ..     | ..     | ..     | ..     | ..     | ..     |
| Slovenia              | ..     | 29.1   | ..     | .. c   | ..     | 42.1   | ..     |
| Spain                 | 26.2   | 35.2   | ..     | 37.0   | ..     | 38.4   | ..     |
| Sweden                | 41.5   | 38.5   | ..     | 39.0   | ..     | 42.1 p | ..     |
| Switzerland           | ..     | ..     | 20.1   | ..     | ..     | 12.9 p | ..     |
| Turkey                | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| United Kingdom        | 39.1   | 50.8   | 52.1   | 53.6   | 51.3   | 51.1   | 50.0   |
| United States         | 13.8   | 15.4   | 16.6   | 16.8   | 16.7   | 15.9   | 16.1 p |
| EU28 (OECD estimates) | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| <b>OECD-Total</b>     | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Argentina             | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| China                 | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Romania               | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Russian Federation    | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Singapore             | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| South Africa          | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Chinese Taipei        | ..     | ..     | ..     | ..     | ..     | ..     | ..     |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Activities of Multinational Enterprises database



**Table 62. Triadic patent families**  
By priority year

Number

|                       | 2005          | 2011          | 2012          | 2013          | 2014          | 2015            | 2016            |
|-----------------------|---------------|---------------|---------------|---------------|---------------|-----------------|-----------------|
| Australia             | 479           | 321           | 337           | 309           | 315           | 320 e           | 318 e           |
| Austria               | 410           | 361           | 378           | 379           | 392           | 415 e           | 425 e           |
| Belgium               | 543           | 461           | 429           | 431           | 414           | 418 e           | 416 e           |
| Canada                | 720           | 580           | 527           | 620           | 581           | 553 e           | 536 e           |
| Chile                 | 6             | 16            | 10            | 12            | 8             | 8 e             | 8 e             |
| Czech Republic        | 25            | 35            | 36            | 32            | 43            | 44 e            | 49 e            |
| Denmark               | 389           | 260           | 283           | 263           | 296           | 298 e           | 298 e           |
| Estonia               | 3             | 7             | 4             | 9             | 6             | 6 e             | 6 e             |
| Finland               | 391           | 228           | 290           | 271           | 308           | 305 e           | 309 e           |
| France                | 3 048         | 2 596         | 2 438         | 2 421         | 2 417         | 2 464 e         | 2 450 e         |
| Germany               | 7 142         | 4 824         | 4 591         | 4 909         | 4 620         | 4 544 e         | 4 520 e         |
| Greece                | 24            | 10            | 22            | 21            | 22            | 23 e            | 26 e            |
| Hungary               | 58            | 43            | 31            | 20            | 35            | 38 e            | 38 e            |
| Iceland               | 7             | 2             | 2             | 2             | 1             | 3 e             | 2 e             |
| Ireland               | 98            | 71            | 74            | 94            | 103           | 114 e           | 115 e           |
| Israel <sup>1</sup>   | 502           | 366           | 402           | 437           | 439           | 465 e           | 478 e           |
| Italy                 | 965           | 720           | 725           | 770           | 794           | 822 e           | 846 e           |
| Japan                 | 18 931        | 19 001        | 18 651        | 17 645        | 17 363        | 17 277 e        | 17 391 e        |
| Korea                 | 2 746         | 2 366         | 2 495         | 2 549         | 2 428         | 2 543 e         | 2 599 e         |
| Latvia                | 10            | 3             | 2             | 3             | 1             | 1 e             | 1 e             |
| Lithuania             | 1.0           | 0.4           | 6.3           | 4.3           | 5.6           | 2.7 e           | 2.2 e           |
| Luxembourg            | 21            | 24            | 21            | 15            | 20            | 19 e            | 21 e            |
| Mexico                | 19            | 18            | 16            | 19            | 25            | 28 e            | 33 e            |
| Netherlands           | 1 762         | 969           | 1 040         | 1 137         | 1 248         | 1 329 e         | 1 364 e         |
| New Zealand           | 73            | 51            | 103           | 70            | 93            | 103 e           | 103 e           |
| Norway                | 141           | 94            | 101           | 103           | 109           | 103 e           | 104 e           |
| Poland                | 18            | 65            | 69            | 59            | 54            | 62 e            | 60 e            |
| Portugal              | 16            | 26            | 23            | 21            | 32            | 35 e            | 39 e            |
| Slovak Republic       | 2             | 12            | 8             | 9             | 7             | 8 e             | 10 e            |
| Slovenia              | 22            | 10            | 10            | 14            | 13            | 12 e            | 11 e            |
| Spain                 | 293           | 222           | 231           | 230           | 248           | 251 e           | 253 e           |
| Sweden                | 969           | 615           | 662           | 587           | 659           | 680 e           | 679 e           |
| Switzerland           | 1 084         | 1 059         | 1 141         | 1 116         | 1 145         | 1 176 e         | 1 211 e         |
| Turkey                | 16            | 37            | 31            | 42            | 32            | 35 e            | 38 e            |
| United Kingdom        | 2 165         | 1 727         | 1 702         | 1 822         | 1 674         | 1 686 e         | 1 694 e         |
| United States         | 17 370        | 13 209        | 13 736        | 14 788        | 14 308        | 14 392 e        | 14 221 e        |
| EU28 (OECD estimates) | 18 406        | 13 307        | 13 103        | 13 545        | 13 438        | 13 606 e        | 13 660 e        |
| <b>OECD-Total</b>     | <b>60 468</b> | <b>50 410</b> | <b>50 629</b> | <b>51 233</b> | <b>50 258</b> | <b>50 584 e</b> | <b>50 673 e</b> |
| Argentina             | 16            | 10            | 8             | 6             | 9             | 11 e            | 11 e            |
| China                 | 523           | 1 505         | 1 951         | 2 189         | 2 794         | 3 254 e         | 3 890 e         |
| Romania               | 7             | 9             | 14            | 13            | 9             | 11 e            | 10 e            |
| Russian Federation    | 91            | 86            | 94            | 76            | 111           | 109 e           | 118 e           |
| Singapore             | 170           | 121           | 108           | 130           | 144           | 146 e           | 147 e           |
| South Africa          | 49            | 44            | 33            | 29            | 24            | 22 e            | 20 e            |
| Chinese Taipei        | 145           | 489           | 384           | 335           | 384           | 392 e           | 388 e           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Patent database

**Table 63. Share of countries in triadic patent families**  
By priority year

Percentage

|                       | 2005         | 2011         | 2012         | 2013         | 2014         | 2015           | 2016           |
|-----------------------|--------------|--------------|--------------|--------------|--------------|----------------|----------------|
| Australia             | 0.77         | 0.60         | 0.62         | 0.56         | 0.58         | 0.58 e         | 0.57 e         |
| Austria               | 0.66         | 0.68         | 0.70         | 0.69         | 0.72         | 0.75 e         | 0.76 e         |
| Belgium               | 0.88         | 0.86         | 0.80         | 0.79         | 0.76         | 0.76 e         | 0.74 e         |
| Canada                | 1.16         | 1.09         | 0.98         | 1.13         | 1.07         | 1.00 e         | 0.96 e         |
| Chile                 | 0.01         | 0.03         | 0.02         | 0.02         | 0.02         | 0.02 e         | 0.01 e         |
| Czech Republic        | 0.04         | 0.07         | 0.07         | 0.06         | 0.08         | 0.08 e         | 0.09 e         |
| Denmark               | 0.63         | 0.49         | 0.52         | 0.48         | 0.54         | 0.54 e         | 0.53 e         |
| Estonia               | 0.00         | 0.01         | 0.01         | 0.02         | 0.01         | 0.01 e         | 0.01 e         |
| Finland               | 0.63         | 0.43         | 0.54         | 0.50         | 0.57         | 0.55 e         | 0.55 e         |
| France                | 4.92         | 4.86         | 4.52         | 4.43         | 4.44         | 4.46 e         | 4.37 e         |
| Germany               | 11.52        | 9.03         | 8.51         | 8.97         | 8.49         | 8.22 e         | 8.07 e         |
| Greece                | 0.04         | 0.02         | 0.04         | 0.04         | 0.04         | 0.04 e         | 0.05 e         |
| Hungary               | 0.09         | 0.08         | 0.06         | 0.04         | 0.06         | 0.07 e         | 0.07 e         |
| Iceland               | 0.01         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00 e         | 0.00 e         |
| Ireland               | 0.16         | 0.13         | 0.14         | 0.17         | 0.19         | 0.21 e         | 0.21 e         |
| Israel <sup>1</sup>   | 0.81         | 0.69         | 0.75         | 0.80         | 0.81         | 0.84 e         | 0.85 e         |
| Italy                 | 1.56         | 1.35         | 1.34         | 1.41         | 1.46         | 1.49 e         | 1.51 e         |
| Japan                 | 30.54        | 35.58        | 34.56        | 32.25        | 31.89        | 31.26 e        | 31.04 e        |
| Korea                 | 4.43         | 4.43         | 4.62         | 4.66         | 4.46         | 4.60 e         | 4.64 e         |
| Latvia                | 0.02         | 0.01         | 0.00         | 0.01         | 0.00         | 0.00 e         | 0.00 e         |
| Lithuania             | 0.0          | 0.0          | 0.0          | 0.0          | 0.0          | 0.0 e          | 0.0 e          |
| Luxembourg            | 0.03         | 0.04         | 0.04         | 0.03         | 0.04         | 0.03 e         | 0.04 e         |
| Mexico                | 0.03         | 0.03         | 0.03         | 0.03         | 0.05         | 0.05 e         | 0.06 e         |
| Netherlands           | 2.84         | 1.81         | 1.93         | 2.08         | 2.29         | 2.40 e         | 2.43 e         |
| New Zealand           | 0.12         | 0.10         | 0.19         | 0.13         | 0.17         | 0.19 e         | 0.18 e         |
| Norway                | 0.23         | 0.18         | 0.19         | 0.19         | 0.20         | 0.19 e         | 0.18 e         |
| Poland                | 0.03         | 0.12         | 0.13         | 0.11         | 0.10         | 0.11 e         | 0.11 e         |
| Portugal              | 0.03         | 0.05         | 0.04         | 0.04         | 0.06         | 0.06 e         | 0.07 e         |
| Slovak Republic       | 0.00         | 0.02         | 0.02         | 0.02         | 0.01         | 0.02 e         | 0.02 e         |
| Slovenia              | 0.04         | 0.02         | 0.02         | 0.03         | 0.02         | 0.02 e         | 0.02 e         |
| Spain                 | 0.47         | 0.42         | 0.43         | 0.42         | 0.46         | 0.45 e         | 0.45 e         |
| Sweden                | 1.56         | 1.15         | 1.23         | 1.07         | 1.21         | 1.23 e         | 1.21 e         |
| Switzerland           | 1.75         | 1.98         | 2.11         | 2.04         | 2.10         | 2.13 e         | 2.16 e         |
| Turkey                | 0.03         | 0.07         | 0.06         | 0.08         | 0.06         | 0.06 e         | 0.07 e         |
| United Kingdom        | 3.49         | 3.23         | 3.15         | 3.33         | 3.07         | 3.05 e         | 3.02 e         |
| United States         | 28.02        | 24.73        | 25.45        | 27.03        | 26.28        | 26.04 e        | 25.38 e        |
| EU28 (OECD estimates) | 29.70        | 24.91        | 24.28        | 24.76        | 24.68        | 24.62 e        | 24.38 e        |
| <b>OECD-Total</b>     | <b>97.56</b> | <b>94.38</b> | <b>93.80</b> | <b>93.65</b> | <b>92.32</b> | <b>91.52 e</b> | <b>90.43 e</b> |
| Argentina             | 0.03         | 0.02         | 0.01         | 0.01         | 0.02         | 0.02 e         | 0.02 e         |
| China                 | 0.84         | 2.82         | 3.61         | 4.00         | 5.13         | 5.89 e         | 6.94 e         |
| Romania               | 0.01         | 0.02         | 0.03         | 0.02         | 0.02         | 0.02 e         | 0.02 e         |
| Russian Federation    | 0.15         | 0.16         | 0.17         | 0.14         | 0.20         | 0.20 e         | 0.21 e         |
| Singapore             | 0.28         | 0.23         | 0.20         | 0.24         | 0.26         | 0.26 e         | 0.26 e         |
| South Africa          | 0.08         | 0.08         | 0.06         | 0.05         | 0.04         | 0.04 e         | 0.04 e         |
| Chinese Taipei        | 0.23         | 0.92         | 0.71         | 0.61         | 0.70         | 0.71 e         | 0.69 e         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Patent database

**Table 64. Patents in the ICT sector - applications filed under the PCT**  
By priority year

Number

|                       | 2005          | 2011          | 2012          | 2013          | 2014          | 2015          | 2016          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 387           | 324           | 381           | 398           | 408           | 404           | 401           |
| Austria               | 212           | 162           | 156           | 149           | 162           | 153           | 175           |
| Belgium               | 145           | 205           | 233           | 239           | 234           | 218           | 196           |
| Canada                | 820           | 977           | 1 033         | 935           | 825           | 924           | 921           |
| Chile                 | 2             | 3             | 5             | 5             | 16            | 19            | 10            |
| Czech Republic        | 17            | 12            | 27            | 26            | 21            | 23            | 20            |
| Denmark               | 161           | 157           | 110           | 146           | 152           | 154           | 137           |
| Estonia               | 6             | 11            | 3             | 16            | 10            | 5             | 10            |
| Finland               | 754           | 729           | 771           | 627           | 554           | 501           | 490           |
| France                | 1 504         | 1 344         | 1 381         | 1 363         | 1 437         | 1 351         | 1 297         |
| Germany               | 2 293         | 2 325         | 2 330         | 2 312         | 2 343         | 2 549         | 2 655         |
| Greece                | 14            | 18            | 19            | 20            | 25            | 12            | 21            |
| Hungary               | 27            | 66            | 71            | 54            | 67            | 58            | 75            |
| Iceland               | 5             | 0             | 3             | 1             | 2             | 2             | 0             |
| Ireland               | 82            | 137           | 123           | 109           | 124           | 137           | 172           |
| Israel <sup>1</sup>   | 673           | 629           | 745           | 760           | 748           | 763           | 742           |
| Italy                 | 349           | 318           | 335           | 328           | 325           | 306           | 320           |
| Japan                 | 7 819         | 11 533        | 11 650        | 10 299        | 10 191        | 10 461        | 10 937        |
| Korea                 | 2 132         | 4 354         | 4 423         | 4 648         | 5 100         | 5 401         | 4 942         |
| Latvia                | 4             | 1             | 6             | 1             | 3             | 7             | 1             |
| Lithuania             | 2.1           | 7.0           | 7.8           | 7.0           | 6.0           | 4.0           | 4.3           |
| Luxembourg            | 5             | 10            | 13            | 9             | 15            | 7             | 25            |
| Mexico                | 14            | 22            | 21            | 22            | 33            | 50            | 43            |
| Netherlands           | 1 267         | 643           | 577           | 605           | 593           | 597           | 560           |
| New Zealand           | 43            | 36            | 35            | 39            | 33            | 37            | 31            |
| Norway                | 100           | 75            | 101           | 85            | 71            | 75            | 79            |
| Poland                | 13            | 46            | 37            | 52            | 71            | 103           | 77            |
| Portugal              | 20            | 28            | 18            | 23            | 17            | 36            | 38            |
| Slovak Republic       | 3             | 6             | 8             | 10            | 10            | 13            | 9             |
| Slovenia              | 5             | 14            | 8             | 14            | 7             | 7             | 7             |
| Spain                 | 131           | 297           | 285           | 225           | 233           | 187           | 212           |
| Sweden                | 689           | 1 116         | 1 284         | 1 151         | 1 359         | 1 430         | 1 449         |
| Switzerland           | 219           | 310           | 334           | 310           | 278           | 260           | 349           |
| Turkey                | 11            | 47            | 93            | 102           | 105           | 152           | 136           |
| United Kingdom        | 1 354         | 1 210         | 1 201         | 1 401         | 1 443         | 1 372         | 1 415         |
| United States         | 14 943        | 15 334        | 16 808        | 18 487        | 17 397        | 17 083        | 17 160        |
| EU28 (OECD estimates) | 9 078         | 8 884         | 9 055         | 8 940         | 9 268         | 9 290         | 9 402         |
| <b>OECD-Total</b>     | <b>36 226</b> | <b>42 504</b> | <b>44 638</b> | <b>44 977</b> | <b>44 416</b> | <b>44 862</b> | <b>45 117</b> |
| Argentina             | 7             | 16            | 3             | 4             | 5             | 13            | 3             |
| China                 | 1 812         | 9 672         | 10 716        | 12 789        | 14 519        | 18 977        | 22 059        |
| Romania               | 6             | 14            | 26            | 29            | 32            | 37            | 21            |
| Russian Federation    | 153           | 212           | 286           | 308           | 283           | 263           | 273           |
| Singapore             | 192           | 207           | 191           | 189           | 214           | 244           | 225           |
| South Africa          | 54            | 56            | 74            | 71            | 65            | 52            | 45            |
| Chinese Taipei        | 66            | 172           | 205           | 242           | 283           | 224           | 246           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Patent database

**Table 65. Patents in the biotechnology sector - applications filed under the PCT**  
By priority year

Number

|                       | 2005          | 2011          | 2012          | 2013          | 2014          | 2015          | 2016          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Australia             | 219           | 167           | 161           | 148           | 163           | 159           | 154           |
| Austria               | 61            | 95            | 95            | 67            | 76            | 77            | 62            |
| Belgium               | 118           | 150           | 109           | 107           | 112           | 130           | 136           |
| Canada                | 309           | 297           | 224           | 271           | 239           | 253           | 236           |
| Chile                 | 3             | 20            | 16            | 18            | 29            | 35            | 21            |
| Czech Republic        | 5             | 8             | 11            | 9             | 14            | 14            | 6             |
| Denmark               | 192           | 172           | 185           | 178           | 194           | 164           | 169           |
| Estonia               | 2             | 7             | 4             | 3             | 1             | 3             | 5             |
| Finland               | 50            | 53            | 35            | 61            | 50            | 48            | 54            |
| France                | 341           | 562           | 498           | 520           | 534           | 541           | 513           |
| Germany               | 700           | 693           | 662           | 624           | 641           | 696           | 616           |
| Greece                | 6             | 6             | 4             | 3             | 5             | 5             | 7             |
| Hungary               | 10            | 19            | 14            | 16            | 9             | 16            | 12            |
| Iceland               | 5             | 11            | 2             | 1             | 2             | 2             | 0             |
| Ireland               | 27            | 39            | 22            | 30            | 35            | 29            | 34            |
| Israel <sup>1</sup>   | 170           | 168           | 155           | 144           | 173           | 190           | 183           |
| Italy                 | 169           | 136           | 163           | 136           | 151           | 146           | 163           |
| Japan                 | 1 526         | 1 237         | 1 237         | 1 282         | 1 340         | 1 435         | 1 612         |
| Korea                 | 218           | 552           | 528           | 540           | 620           | 728           | 856           |
| Latvia                | 1             | 0             | 0             | 1             | 1             | 1             | 3             |
| Lithuania             | 1.3           | 2.0           | 7.0           | 6.5           | 5.1           | 4.0           | 2.8           |
| Luxembourg            | 1             | 3             | 4             | 1             | 2             | 7             | 3             |
| Mexico                | 11            | 19            | 11            | 21            | 18            | 25            | 22            |
| Netherlands           | 234           | 225           | 226           | 235           | 223           | 255           | 230           |
| New Zealand           | 53            | 28            | 33            | 32            | 26            | 25            | 24            |
| Norway                | 32            | 33            | 42            | 45            | 62            | 35            | 45            |
| Poland                | 10            | 25            | 33            | 35            | 36            | 32            | 25            |
| Portugal              | 10            | 16            | 13            | 14            | 12            | 16            | 16            |
| Slovak Republic       | 0             | 3             | 0             | 3             | 2             | 2             | 5             |
| Slovenia              | 4             | 8             | 7             | 8             | 6             | 6             | 3             |
| Spain                 | 123           | 195           | 196           | 203           | 172           | 170           | 130           |
| Sweden                | 135           | 129           | 119           | 108           | 114           | 112           | 137           |
| Switzerland           | 150           | 178           | 179           | 186           | 185           | 214           | 202           |
| Turkey                | 2             | 5             | 9             | 14            | 12            | 16            | 23            |
| United Kingdom        | 518           | 409           | 429           | 453           | 511           | 534           | 491           |
| United States         | 4 754         | 4 653         | 4 590         | 5 139         | 4 909         | 5 375         | 5 561         |
| EU28 (OECD estimates) | 2 724         | 2 962         | 2 840         | 2 827         | 2 914         | 3 014         | 2 831         |
| <b>OECD-Total</b>     | <b>10 169</b> | <b>10 323</b> | <b>10 021</b> | <b>10 660</b> | <b>10 685</b> | <b>11 499</b> | <b>11 762</b> |
| Argentina             | 10            | 8             | 14            | 16            | 13            | 6             | 4             |
| China                 | 123           | 524           | 482           | 577           | 653           | 837           | 1 112         |
| Romania               | 1             | 2             | 1             | 2             | 3             | 2             | 0             |
| Russian Federation    | 60            | 64            | 73            | 66            | 55            | 48            | 34            |
| Singapore             | 64            | 73            | 130           | 115           | 98            | 88            | 104           |
| South Africa          | 16            | 11            | 12            | 17            | 22            | 16            | 15            |
| Chinese Taipei        | 11            | 37            | 47            | 42            | 86            | 90            | 83            |

Note: Detailed metadata:<http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel:<http://dx.doi.org/10.1787/888932315602>

Source: OECD, Patent database

**Table 66. Trade balance and export market share: Pharmaceutical industry**

|                    | Trade balance (Million current USD) |                 |                 | Export market share (Percentage) |              |              |
|--------------------|-------------------------------------|-----------------|-----------------|----------------------------------|--------------|--------------|
|                    | 2011                                | 2014            | 2017            | 2011                             | 2014         | 2017         |
| Australia          | -6 927.5                            | -6 205.7        | -5 902.5        | 0.78                             | 0.48         | 0.48         |
| Austria            | 657.1                               | 1 505.1         | 942.2           | 1.83                             | 2.04         | 1.99         |
| Belgium            | 12 537.5                            | 10 509.9        | 9 045.9         | 9.95                             | 9.59         | 8.07         |
| Canada             | -7 377.4                            | -6 066.6        | -6 414.1        | 1.15                             | 1.31         | 1.15         |
| Chile              | -864.0                              | -1 057.5        | -1 251.9        | 0.03                             | 0.04         | 0.03         |
| Czech Republic     | -2 366.0                            | -1 807.4        | -1 995.1        | 0.37                             | 0.50         | 0.47         |
| Denmark            | 6 692.8                             | 8 234.7         | 9 672.8         | 2.15                             | 2.39         | 2.52         |
| Estonia            | -318.8                              | -369.6          | -396.1          | 0.01                             | 0.01         | 0.02         |
| Finland            | -759.6                              | -1 285.2        | -1 263.8        | 0.33                             | 0.21         | 0.15         |
| France             | 4 090.8                             | 3 413.3         | 4 493.7         | 6.88                             | 6.59         | 5.82         |
| Germany            | 16 418.4                            | 28 684.8        | 29 002.9        | 14.09                            | 14.82        | 15.35        |
| Greece             | -3 254.5                            | -2 174.0        | -2 122.2        | 0.26                             | 0.25         | 0.24         |
| Hungary            | 362.0                               | 855.1           | 831.6           | 0.96                             | 0.89         | 0.93         |
| Iceland            | -10.2                               | -55.9           | -131.1          | 0.03                             | 0.02         | 0.00         |
| Ireland            | 30 470.0                            | 23 369.6        | 29 879.7        | 7.46                             | 5.41         | 7.22         |
| Israel             | 5 356.7                             | 4 293.2         | 4 154.8         | 1.44                             | 1.15         | 1.16         |
| Italy              | -4 598.6                            | 1 991.2         | 1 065.7         | 4.15                             | 4.91         | 4.90         |
| Japan              | -17 192.9                           | -17 446.4       | -18 290.3       | 0.90                             | 0.60         | 0.88         |
| Korea              | -2 978.3                            | -3 441.0        | -2 888.9        | 0.26                             | 0.33         | 0.57         |
| Latvia             | -219.1                              | -235.1          | -193.1          | 0.09                             | 0.08         | 0.09         |
| Lithuania          | -487.0                              | -370.6          | -343.6          | 0.08                             | 0.12         | 0.14         |
| Luxembourg         | -381.4                              | -348.2          | -365.7          | 0.02                             | 0.02         | 0.02         |
| Mexico             | -3 128.2                            | -3 477.2        | -3 257.7        | 0.40                             | 0.37         | 0.27         |
| Netherlands        | 2 501.2                             | 6 845.7         | 9 470.6         | 3.32                             | 4.88         | 4.34         |
| New Zealand        | -637.5                              | -642.9          | -622.0          | 0.05                             | 0.06         | 0.06         |
| Norway             | -1 181.7                            | -1 162.0        | -1 544.0        | 0.14                             | 0.17         | 0.14         |
| Poland             | -3 867.9                            | -2 552.5        | -2 206.3        | 0.46                             | 0.66         | 0.78         |
| Portugal           | -2 202.1                            | -1 677.0        | -1 522.4        | 0.17                             | 0.21         | 0.22         |
| Slovak Republic    | -1 591.7                            | -1 425.7        | -1 517.9        | 0.10                             | 0.11         | 0.07         |
| Slovenia           | 1 561.0                             | 1 838.0         | 1 493.4         | 0.54                             | 0.58         | 0.50         |
| Spain              | -3 314.2                            | -2 431.6        | -2 577.0        | 2.49                             | 2.44         | 2.16         |
| Sweden             | 4 443.8                             | 4 174.0         | 4 212.2         | 1.80                             | 1.58         | 1.54         |
| Switzerland        | 34 822.1                            | 41 330.3        | 44 100.5        | 11.66                            | 12.27        | 13.45        |
| Turkey             | -4 452.1                            | -3 860.2        | -3 857.1        | 0.12                             | 0.16         | 0.16         |
| United Kingdom     | 9 496.7                             | -316.3          | -677.7          | 7.31                             | 6.30         | 5.99         |
| United States      | -27 323.7                           | -28 566.5       | -50 986.5       | 8.58                             | 8.76         | 8.75         |
| <b>OECD-Total</b>  | <b>34 462.5</b>                     | <b>50 440.3</b> | <b>38 382.4</b> | <b>90.28</b>                     | <b>90.18</b> | <b>90.50</b> |
| Argentina          | -1 087.2                            | -1 366.6        | -1 649.0        | 0.18                             | 0.17         | 0.16         |
| China              | 703.3                               | -5 428.8        | -11 370.0       | 2.42                             | 2.47         | 2.74         |
| Romania            | -2 217.5                            | -2 385.3        | -2 517.9        | 0.21                             | 0.21         | 0.16         |
| Russian Federation | -13 040.1                           | -12 481.0       | -10 382.9       | 0.07                             | 0.11         | 0.13         |
| Singapore          | 4 251.8                             | 5 619.8         | 3 937.4         | 1.43                             | 1.51         | 1.23         |
| South Africa       | -1 771.7                            | -1 696.6        | -1 829.1        | 0.10                             | 0.08         | 0.09         |
| Chinese Taipei     | -2 105.1                            | -2 275.1        | -2 936.2        | 0.07                             | 0.09         | 0.11         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database

**Table 67. Trade balance and export market share: Computer, electronic and optical industry**

|                    | Trade balance (Million current USD) |                   |                   | Export market share (Percentage) |              |              |
|--------------------|-------------------------------------|-------------------|-------------------|----------------------------------|--------------|--------------|
|                    | 2011                                | 2014              | 2017              | 2011                             | 2014         | 2017         |
| Australia          | -23 883.6                           | -21 658.1         | -22 128.5         | 0.18                             | 0.17         | 0.17         |
| Austria            | -2 384.1                            | -640.7            | -2 300.7          | 0.44                             | 0.47         | 0.38         |
| Belgium            | -6 458.2                            | -4 996.5          | -3 612.3          | 0.63                             | 0.54         | 0.53         |
| Canada             | -29 074.2                           | -26 639.6         | -25 897.1         | 0.73                             | 0.58         | 0.55         |
| Chile              | -5 696.8                            | -5 421.2          | -6 113.8          | 0.01                             | 0.02         | 0.01         |
| Czech Republic     | 1 095.2                             | 1 530.4           | -1 515.4          | 1.23                             | 1.05         | 1.05         |
| Denmark            | -1 818.9                            | -1 589.5          | -1 735.9          | 0.34                             | 0.29         | 0.28         |
| Estonia            | -77.1                               | -110.9            | -182.1            | 0.10                             | 0.10         | 0.07         |
| Finland            | -1 837.4                            | -2 265.1          | -2 668.6          | 0.24                             | 0.16         | 0.14         |
| France             | -20 367.0                           | -18 054.0         | -18 666.9         | 1.75                             | 1.48         | 1.36         |
| Germany            | -11 215.6                           | -4 320.3          | -5 638.9          | 5.32                             | 4.85         | 5.06         |
| Greece             | -2 891.4                            | -2 091.4          | -1 738.4          | 0.04                             | 0.05         | 0.05         |
| Hungary            | 7 737.9                             | 2 040.1           | 678.6             | 1.20                             | 0.67         | 0.62         |
| Iceland            | -240.5                              | -310.1            | -403.3            | 0.00                             | 0.00         | 0.00         |
| Ireland            | 4 514.8                             | 3 999.4           | 8 143.8           | 0.53                             | 0.49         | 0.63         |
| Israel             | 2 876.1                             | 3 164.2           | 1 212.7           | 0.48                             | 0.45         | 0.36         |
| Italy              | -25 355.2                           | -14 921.8         | -14 422.0         | 0.81                             | 0.66         | 0.66         |
| Japan              | 15 952.5                            | -14 218.6         | -9 560.2          | 5.30                             | 3.84         | 3.78         |
| Korea              | 63 805.8                            | 70 503.0          | 76 232.9          | 5.85                             | 5.82         | 6.53         |
| Latvia             | -268.7                              | -280.3            | -373.6            | 0.03                             | 0.06         | 0.05         |
| Lithuania          | -485.4                              | -483.8            | -533.5            | 0.04                             | 0.05         | 0.06         |
| Luxembourg         | -489.0                              | -651.9            | -599.0            | 0.04                             | 0.02         | 0.02         |
| Mexico             | -4 940.8                            | -3 148.5          | 143.0             | 2.91                             | 2.98         | 3.02         |
| Netherlands        | 3 271.4                             | -1 964.5          | -5 132.0          | 3.40                             | 3.00         | 2.70         |
| New Zealand        | -2 902.9                            | -3 107.8          | -3 142.8          | 0.03                             | 0.02         | 0.02         |
| Norway             | -4 790.4                            | -4 799.0          | -5 201.8          | 0.15                             | 0.14         | 0.09         |
| Poland             | -5 668.9                            | -4 344.9          | -4 883.9          | 0.64                             | 0.73         | 0.73         |
| Portugal           | -2 175.6                            | -2 291.9          | -2 087.1          | 0.12                             | 0.10         | 0.13         |
| Slovak Republic    | 2 179.6                             | 1 081.8           | 127.1             | 0.58                             | 0.63         | 0.58         |
| Slovenia           | -598.6                              | -381.3            | -412.0            | 0.05                             | 0.04         | 0.04         |
| Spain              | -17 066.9                           | -15 037.5         | -15 002.9         | 0.30                             | 0.25         | 0.30         |
| Sweden             | -1 491.7                            | -3 935.6          | -4 527.7          | 0.94                             | 0.59         | 0.49         |
| Switzerland        | 16 621.6                            | 17 897.4          | 14 413.0          | 1.52                             | 1.44         | 1.23         |
| Turkey             | -9 626.0                            | -12 850.7         | -15 664.6         | 0.11                             | 0.12         | 0.10         |
| United Kingdom     | -27 627.5                           | -31 955.5         | -30 208.7         | 1.68                             | 1.48         | 1.30         |
| United States      | -146 928.5                          | -167 521.5        | -203 068.7        | 8.52                             | 7.99         | 7.81         |
| <b>OECD-Total</b>  | <b>-237 820.5</b>                   | <b>-269 292.3</b> | <b>-305 937.7</b> | <b>46.23</b>                     | <b>41.29</b> | <b>40.88</b> |
| Argentina          | -7 380.5                            | -5 888.6          | -6 990.3          | 0.01                             | 0.01         | 0.01         |
| China              | 150 852.1                           | 186 830.1         | 163 911.1         | 24.87                            | 27.08        | 26.41        |
| Romania            | -1 654.3                            | -3 276.6          | -3 477.2          | 0.25                             | 0.15         | 0.17         |
| Russian Federation | -24 572.1                           | -22 633.2         | -21 269.1         | 0.12                             | 0.21         | 0.15         |
| Singapore          | 32 419.0                            | 36 203.7          | 32 394.4          | 5.69                             | 5.45         | 5.28         |
| South Africa       | -8 491.7                            | -7 345.8          | -6 742.2          | 0.07                             | 0.08         | 0.06         |
| Chinese Taipei     | 67 319.4                            | 73 294.1          | 80 256.5          | 5.67                             | 5.42         | 6.02         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database

**Table 68. Trade balance and export market share: Aerospace industry**

|                    | Trade balance (Million current USD) |                  |                  | Export market share (Percentage) |              |              |
|--------------------|-------------------------------------|------------------|------------------|----------------------------------|--------------|--------------|
|                    | 2011                                | 2014             | 2017             | 2011                             | 2014         | 2017         |
| Australia          | -121.9                              | 774.7            | -988.7           | 0.40                             | 0.41         | 0.38         |
| Austria            | 120.4                               | 385.5            | 498.7            | 0.36                             | 0.38         | 0.46         |
| Belgium            | 257.1                               | 553.6            | 747.0            | 0.50                             | 0.65         | 0.66         |
| Canada             | 3 530.1                             | 4 071.9          | 2 285.6          | 4.04                             | 3.92         | 3.22         |
| Chile              | -1 061.3                            | -1 504.0         | -146.8           | 0.00                             | 0.01         | 0.00         |
| Czech Republic     | 110.1                               | 164.5            | 367.3            | 0.22                             | 0.21         | 0.26         |
| Denmark            | -397.1                              | -462.2           | -232.3           | 0.12                             | 0.11         | 0.12         |
| Estonia            | -83.7                               | -8.0             | -11.4            | 0.00                             | 0.00         | 0.01         |
| Finland            | -167.4                              | -261.9           | -565.2           | 0.05                             | 0.10         | 0.10         |
| France             | 24 342.5                            | 31 018.3         | 19 700.5         | 19.13                            | 17.39        | 14.97        |
| Germany            | 10 759.0                            | 11 803.6         | 20 368.8         | 14.33                            | 12.52        | 11.21        |
| Greece             | 22.9                                | -141.4           | -207.7           | 0.11                             | 0.02         | 0.02         |
| Hungary            | -13.9                               | -19.7            | -810.2           | 0.03                             | 0.03         | 0.04         |
| Iceland            | -45.8                               | -74.3            | -85.6            | 0.02                             | 0.00         | 0.00         |
| Ireland            | -2 265.5                            | -9 980.3         | -10 208.1        | 0.47                             | 0.94         | 1.74         |
| Israel             | 1 268.8                             | 651.8            | 1 679.2          | 0.67                             | 0.50         | 0.70         |
| Italy              | 3 030.4                             | 4 152.8          | 2 995.1          | 2.01                             | 1.87         | 1.45         |
| Japan              | -1 459.3                            | -2 870.8         | -2 993.1         | 1.77                             | 2.01         | 1.80         |
| Korea              | -3 168.9                            | -1 607.7         | -81.4            | 0.41                             | 0.53         | 0.73         |
| Latvia             | -35.8                               | -30.9            | -76.7            | 0.01                             | 0.00         | 0.04         |
| Lithuania          | -21.6                               | -46.8            | -15.6            | 0.01                             | 0.01         | 0.02         |
| Luxembourg         | -1 033.2                            | -1 546.0         | -761.8           | 0.11                             | 0.03         | 0.04         |
| Mexico             | 570.7                               | 1 015.9          | 1 045.2          | 0.47                             | 0.57         | 0.68         |
| Netherlands        | 422.5                               | 1 103.6          | -168.8           | 1.00                             | 0.93         | 1.26         |
| New Zealand        | -1 090.3                            | -1 869.5         | -1 328.0         | 0.07                             | 0.02         | 0.03         |
| Norway             | -870.3                              | -896.9           | -1 122.1         | 0.22                             | 0.19         | 0.21         |
| Poland             | 229.0                               | 691.4            | 820.9            | 0.49                             | 0.60         | 0.80         |
| Portugal           | -74.1                               | -433.4           | -653.1           | 0.08                             | 0.07         | 0.11         |
| Slovak Republic    | -17.5                               | -93.8            | -169.8           | 0.01                             | 0.01         | 0.00         |
| Slovenia           | -37.7                               | -83.0            | -16.8            | 0.01                             | 0.01         | 0.02         |
| Spain              | 2 427.9                             | 2 369.0          | 401.0            | 1.73                             | 1.51         | 1.96         |
| Sweden             | -18.1                               | -45.4            | 75.8             | 0.28                             | 0.21         | 0.19         |
| Switzerland        | -26.8                               | 763.9            | -1 363.8         | 0.62                             | 0.67         | 0.55         |
| Turkey             | -3 640.0                            | -2 504.2         | -1 831.9         | 0.17                             | 0.22         | 0.45         |
| United Kingdom     | 10 930.2                            | 4 591.0          | 11 269.5         | 10.59                            | 9.13         | 10.66        |
| United States      | 53 775.5                            | 74 344.9         | 81 626.6         | 29.09                            | 32.10        | 31.81        |
| <b>OECD-Total</b>  | <b>96 168.8</b>                     | <b>114 022.9</b> | <b>120 057.8</b> | <b>89.59</b>                     | <b>87.87</b> | <b>86.66</b> |
| Argentina          | -148.7                              | -587.6           | -631.2           | 0.25                             | 0.07         | 0.12         |
| China              | -13 343.7                           | -27 444.1        | -23 523.3        | 0.98                             | 1.30         | 1.73         |
| Romania            | -166.1                              | 168.5            | -229.6           | 0.04                             | 0.08         | 0.09         |
| Russian Federation | 566.9                               | -5 005.4         | -2 945.5         | 0.37                             | 0.74         | 0.91         |
| Singapore          | -3 278.4                            | -2 741.5         | -3 081.1         | 2.46                             | 2.46         | 2.88         |
| South Africa       | -1 776.1                            | -372.9           | -703.7           | 0.14                             | 0.17         | 0.11         |
| Chinese Taipei     | -94.8                               | -1 228.1         | -3 861.3         | 0.17                             | 0.23         | 0.65         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, STAN Bilateral Trade in Goods by Industry and End-use Category database





# **Annex. Background Economic Indicators**

**Table A. Gross domestic product at current prices and PPP**

Million USD

|                       | 2005              | 2012              | 2013              | 2014              | 2015              | 2016              | 2017              |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Australia             | 717 705           | 997 527           | 1 104 626         | 1 118 350         | 1 127 713         | 1 215 898         | 1 279 147         |
| Austria               | 288 087           | 391 635           | 406 370           | 417 060           | 431 078           | 451 297           | 474 006           |
| Belgium               | 349 277           | 471 332           | 486 674           | 499 975           | 513 902           | 535 074           | 561 911           |
| Canada                | 1 167 581         | 1 464 565         | 1 550 270         | 1 617 564         | 1 591 204         | 1 625 347         | 1 707 283         |
| Chile                 | 206 274           | 374 242           | 394 292           | 404 733           | 407 823           | 416 012           | 446 806           |
| Czech Republic        | 224 201           | 305 309           | 320 535           | 339 583           | 355 312           | 372 257           | 402 796           |
| Denmark               | 185 074           | 250 525           | 262 368           | 270 331           | 278 823           | 290 377           | 313 364           |
| Estonia               | 22 376            | 34 420            | 36 239            | 38 075            | 38 427            | 40 655            | 44 064            |
| Finland               | 167 840           | 219 916           | 224 594           | 226 490           | 231 351           | 240 309           | 255 270           |
| France                | 1 926 880         | 2 474 005         | 2 608 524         | 2 662 033         | 2 719 225         | 2 804 274         | 2 954 841         |
| Germany               | 2 636 420         | 3 503 684         | 3 647 778         | 3 821 628         | 3 919 280         | 4 110 953         | 4 345 631         |
| Greece                | 281 028           | 279 267           | 286 169           | 292 336           | 291 109           | 293 903           | 307 366           |
| Hungary               | 172 305           | 229 106           | 242 026           | 251 775           | 259 426           | 263 522           | 281 880           |
| Iceland               | 11 048            | 13 446            | 14 297            | 14 966            | 16 120            | 17 639            | 18 998            |
| Ireland               | 168 218           | 212 881           | 221 790           | 238 441           | 324 245           | 337 276           | 369 244           |
| Israel <sup>1</sup>   | 171 942           | 250 963           | 275 461           | 281 491           | 297 615           | 320 589           | 338 666           |
| Italy                 | 1 742 086         | 2 157 547         | 2 176 320         | 2 192 714         | 2 237 096         | 2 367 104         | 2 477 387         |
| Japan                 | 4 045 734         | 4 746 699         | 4 967 052         | 4 986 566         | 5 142 457         | 5 245 731         | 5 333 444         |
| Korea                 | 1 165 894         | 1 611 273         | 1 644 777         | 1 704 458         | 1 824 332         | 1 903 411         | 1 998 130         |
| Latvia                | 31 002            | 43 235            | 45 640            | 47 468            | 48 891            | 50 634            | 55 086            |
| Lithuania             | 48 263            | 73 673            | 78 854            | 82 617            | 83 982            | 86 907            | 94 052            |
| Luxembourg            | 31 733            | 48 646            | 51 940            | 56 354            | 58 544            | 61 159            | 64 190            |
| Mexico                | 1 341 775         | 2 012 768         | 2 064 491         | 2 171 927         | 2 228 164         | 2 316 428         | 2 424 700         |
| Netherlands           | 614 044           | 792 042           | 827 476           | 830 318           | 852 113           | 874 312           | 932 319           |
| New Zealand           | 106 147           | 145 406           | 160 891           | 168 136           | 172 626           | 185 010           | 195 340           |
| Norway                | 220 866           | 328 453           | 340 620           | 339 137           | 314 014           | 304 327           | 328 137           |
| Poland                | 530 344           | 907 168           | 940 325           | 973 566           | 1 020 166         | 1 053 114         | 1 136 291         |
| Portugal              | 238 842           | 278 161           | 291 753           | 298 995           | 307 476           | 320 523           | 335 319           |
| Slovak Republic       | 89 275            | 144 098           | 151 021           | 156 749           | 161 041           | 167 790           | 176 075           |
| Slovenia              | 47 902            | 59 454            | 61 380            | 63 621            | 65 257            | 68 630            | 75 191            |
| Spain                 | 1 209 299         | 1 496 188         | 1 519 995         | 1 566 855         | 1 626 884         | 1 706 685         | 1 818 879         |
| Sweden                | 307 061           | 426 224           | 438 949           | 451 572           | 474 643           | 487 065           | 517 014           |
| Switzerland           | 301 741           | 462 615           | 486 239           | 506 895           | 529 568           | 537 701           | 560 354           |
| Turkey                | 807 227           | 1 539 111         | 1 690 856         | 1 851 026         | 2 012 362         | 2 087 370         | 2 261 007         |
| United Kingdom        | 1 962 572         | 2 414 959         | 2 533 408         | 2 640 579         | 2 738 206         | 2 819 116         | 2 965 796         |
| United States         | 13 036 637        | 16 197 007        | 16 784 851        | 17 521 747        | 18 219 297        | 18 707 189        | 19 485 394        |
| EU28 (OECD estimates) | 13 655 038        | 17 841 846        | 18 508 574        | 19 090 373        | 19 735 233        | 20 560 702        | 21 785 965        |
| <b>OECD-Total</b>     | <b>36 368 427</b> | <b>47 357 551</b> | <b>49 338 849</b> | <b>51 106 130</b> | <b>52 919 772</b> | <b>54 685 587</b> | <b>57 335 377</b> |
| Argentina             | 541 392           | 824 212           | 857 669           | 851 124           | 883 852           | 878 814           | 920 248           |
| China                 | 6 639 272         | 15 331 822        | 16 788 028        | 18 336 439        | 19 814 259        | 21 411 542        | 23 300 783        |
| Romania               | 207 302           | 379 730           | 395 622           | 410 588           | 428 644           | 470 258           | 520 941           |
| Russian Federation    | 1 827 554         | 3 692 393         | 3 765 661         | 3 768 772         | 3 528 553         | 3 531 999         | 3 776 394 e       |
| Singapore             | 235 638           | 413 259           | 441 954           | 467 716           | 483 323           | 499 929           | 528 080           |
| South Africa          | 468 740           | 659 312           | 686 610           | 711 841           | 728 768           | 742 238           | 765 567           |
| Chinese Taipei        | 658 835           | 985 170           | 1 024 466         | 1 085 852         | 1 106 318         | 1 134 173         | 1 189 191         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inn/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inn/MSTI_documentation_e.pdf).)

**Table B. Implicit GDP price indices**

Year 2010 = 1.000

|                       | 2005  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017    |
|-----------------------|-------|-------|-------|-------|-------|-------|---------|
| Australia             | 0.807 | 1.017 | 1.032 | 1.025 | 1.020 | 1.057 | 1.077   |
| Austria               | 0.916 | 1.039 | 1.056 | 1.079 | 1.103 | 1.118 | 1.132   |
| Belgium               | 0.916 | 1.040 | 1.051 | 1.059 | 1.069 | 1.088 | 1.107   |
| Canada                | 0.902 | 1.045 | 1.062 | 1.083 | 1.069 | 1.075 | 1.102   |
| Chile                 | 0.743 | 1.043 | 1.063 | 1.126 | 1.182 | 1.238 | 1.296   |
| Czech Republic        | 0.930 | 1.015 | 1.029 | 1.055 | 1.067 | 1.081 | 1.096   |
| Denmark               | 0.885 | 1.030 | 1.039 | 1.050 | 1.055 | 1.062 | 1.077   |
| Estonia               | 1     | 1     | 1     | 1     | 1     | 1     | 1       |
| Finland               | 0.915 | 1.056 | 1.083 | 1.101 | 1.120 | 1.121 | 1.132   |
| France                | 0.922 | 1.021 | 1.029 | 1.035 | 1.047 | 1.049 | 1.056   |
| Germany               | 0.948 | 1.026 | 1.046 | 1.065 | 1.086 | 1.101 | 1.118   |
| Greece                | 0.867 | 1.004 | 0.981 | 0.963 | 0.959 | 0.957 | 0.963   |
| Hungary               | 0.819 | 1.057 | 1.088 | 1.125 | 1.146 | 1.156 | 1.201   |
| Iceland               | 0.669 | 1.067 | 1.090 | 1.130 | 1.193 | 1.216 | 1.222   |
| Ireland               | 1.039 | 1.005 | 1.019 | 1.016 | 1.092 | 1.083 | 1.087   |
| Israel <sup>1</sup>   | 0.905 | 1.057 | 1.080 | 1.090 | 1.119 | 1.130 | 1.132   |
| Italy                 | 0.914 | 1.029 | 1.041 | 1.051 | 1.061 | 1.073 | 1.078   |
| Japan                 | 1.053 | 0.976 | 0.973 | 0.989 | 1.011 | 1.013 | 1.011   |
| Korea                 | 0.889 | 1.026 | 1.035 | 1.041 | 1.066 | 1.087 | 1.112   |
| Latvia                | 0.7   | 1.1   | 1.1   | 1.1   | 1.1   | 1.2   | 1.2     |
| Lithuania             | 1     | 1     | 1     | 1     | 1     | 1     | 1       |
| Luxembourg            | 0.843 | 1.075 | 1.093 | 1.123 | 1.118 | 1.129 | 1.153   |
| Mexico                | 0.770 | 1.101 | 1.118 | 1.168 | 1.200 | 1.265 | 1.350   |
| Netherlands           | 0.923 | 1.016 | 1.029 | 1.032 | 1.040 | 1.045 | 1.057   |
| New Zealand           | 0.864 | 1.016 | 1.065 | 1.071 | 1.078 | 1.112 | 1.143   |
| Norway                | 0.830 | 1.056 | 1.084 | 1.113 | 1.136 | 1.162 | 1.181   |
| Poland                | 0.865 | 1.057 | 1.060 | 1.065 | 1.073 | 1.076 | 1.097   |
| Portugal              | 0.909 | 0.993 | 1.016 | 1.023 | 1.044 | 1.063 | 1.079   |
| Slovak Republic       | 0.941 | 1.029 | 1.035 | 1.033 | 1.031 | 1.026 | 1.039   |
| Slovenia              | 0.878 | 1.016 | 1.032 | 1.040 | 1.050 | 1.060 | 1.081   |
| Spain                 | 0.908 | 1.001 | 1.005 | 1.003 | 1.008 | 1.011 | 1.023   |
| Sweden                | 0.894 | 1.023 | 1.033 | 1.052 | 1.073 | 1.091 | 1.116   |
| Switzerland           | 0.931 | 1.002 | 1.002 | 0.996 | 0.989 | 0.983 | 0.979   |
| Turkey                | 0.681 | 1.162 | 1.235 | 1.327 | 1.430 | 1.546 | 1.714   |
| United Kingdom        | 0.893 | 1.035 | 1.054 | 1.072 | 1.077 | 1.099 | 1.124   |
| United States         | 0.910 | 1.040 | 1.059 | 1.079 | 1.090 | 1.102 | 1.123   |
| EU28 (OECD estimates) | ..    | ..    | ..    | ..    | ..    | ..    | ..      |
| <b>OECD-Total</b>     | ..    | ..    | ..    | ..    | ..    | ..    | ..      |
| Argentina             | 0.445 | 1.513 | 1.875 | 2.631 | 3.330 | 4.665 | 5.847   |
| China                 | 0.775 | 1.107 | 1.132 | 1.141 | 1.142 | 1.155 | 1.202 e |
| Romania               | 0.629 | 1.079 | 1.116 | 1.136 | 1.165 | 1.194 | 1.249   |
| Russian Federation    | 0.555 | 1.264 | 1.333 | 1.433 | 1.550 | 1.606 | 1.689 e |
| Singapore             | 0.911 | 1.018 | 1.016 | 1.013 | 1.049 | 1.049 | 1.058   |
| South Africa          | 0.695 | 1.122 | 1.191 | 1.257 | 1.321 | 1.411 | 1.489   |
| Chinese Taipei        | 1.057 | 0.982 | 0.996 | 1.013 | 1.046 | 1.055 | 1.042   |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inn/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inn/MSTI_documentation_e.pdf).)

**Table C. Purchasing power parities**

National currency per USD

|                       | 2005   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| Australia             | 1.39   | 1.54   | 1.45   | 1.45   | 1.47   | 1.45   | 1.44   |
| Austria               | 0.88   | 0.81   | 0.80   | 0.80   | 0.80   | 0.79   | 0.78   |
| Belgium               | 0.89   | 0.82   | 0.81   | 0.80   | 0.80   | 0.79   | 0.78   |
| Canada                | 1.21   | 1.24   | 1.22   | 1.23   | 1.25   | 1.25   | 1.25   |
| Chile                 | 333.69 | 347.23 | 349.68 | 367.21 | 391.36 | 406.87 | 402.36 |
| Czech Republic        | 14.56  | 13.30  | 12.79  | 12.70  | 12.93  | 12.81  | 12.53  |
| Denmark               | 8.57   | 7.56   | 7.35   | 7.33   | 7.30   | 7.23   | 6.95   |
| Estonia               | 1      | 1      | 1      | 1      | 1      | 1      | 1      |
| Finland               | 0.98   | 0.91   | 0.91   | 0.91   | 0.91   | 0.90   | 0.88   |
| France                | 0.92   | 0.84   | 0.81   | 0.81   | 0.81   | 0.79   | 0.78   |
| Germany               | 0.87   | 0.79   | 0.77   | 0.77   | 0.78   | 0.77   | 0.75   |
| Greece                | 0.71   | 0.68   | 0.63   | 0.61   | 0.61   | 0.60   | 0.59   |
| Hungary               | 130.93 | 125.62 | 124.98 | 129.41 | 132.52 | 134.62 | 136.07 |
| Iceland               | 95.84  | 136.97 | 137.02 | 138.55 | 141.94 | 141.89 | 137.73 |
| Ireland               | 1.01   | 0.82   | 0.81   | 0.82   | 0.81   | 0.81   | 0.80   |
| Israel <sup>1</sup>   | 3.72   | 3.96   | 3.84   | 3.94   | 3.92   | 3.83   | 3.75   |
| Italy                 | 0.86   | 0.75   | 0.74   | 0.74   | 0.74   | 0.71   | 0.70   |
| Japan                 | 129.55 | 104.27 | 101.30 | 103.05 | 103.45 | 102.64 | 102.47 |
| Korea                 | 788.92 | 854.89 | 869.08 | 871.88 | 857.37 | 862.55 | 866.01 |
| Latvia                | 0.4    | 0.5    | 0.5    | 0.5    | 0.5    | 0.5    | 0.5    |
| Lithuania             | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| Luxembourg            | 0.95   | 0.91   | 0.90   | 0.88   | 0.88   | 0.87   | 0.86   |
| Mexico                | 7.13   | 7.86   | 7.88   | 8.05   | 8.33   | 8.68   | 9.04   |
| Netherlands           | 0.90   | 0.82   | 0.80   | 0.81   | 0.81   | 0.81   | 0.79   |
| New Zealand           | 1.54   | 1.50   | 1.45   | 1.44   | 1.48   | 1.47   | 1.47   |
| Norway                | 9.01   | 9.04   | 9.03   | 9.28   | 9.93   | 10.25  | 10.07  |
| Poland                | 1.87   | 1.80   | 1.76   | 1.77   | 1.76   | 1.77   | 1.75   |
| Portugal              | 0.66   | 0.61   | 0.58   | 0.58   | 0.58   | 0.58   | 0.58   |
| Slovak Republic       | 0.56   | 0.50   | 0.49   | 0.49   | 0.49   | 0.48   | 0.48   |
| Slovenia              | 0.61   | 0.61   | 0.59   | 0.59   | 0.60   | 0.59   | 0.58   |
| Spain                 | 0.77   | 0.69   | 0.67   | 0.66   | 0.66   | 0.66   | 0.64   |
| Sweden                | 9.48   | 8.65   | 8.60   | 8.73   | 8.85   | 9.00   | 8.86   |
| Switzerland           | 1.69   | 1.35   | 1.31   | 1.28   | 1.24   | 1.23   | 1.19   |
| Turkey                | 0.83   | 1.02   | 1.07   | 1.10   | 1.16   | 1.25   | 1.37   |
| United Kingdom        | 0.71   | 0.70   | 0.70   | 0.70   | 0.69   | 0.70   | 0.69   |
| United States         | 1.00   | 1.00   | 1.00   | 1.00   | 1.00   | 1.00   | 1.00   |
| EU28 (OECD estimates) | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| <b>OECD-Total</b>     | ..     | ..     | ..     | ..     | ..     | ..     | ..     |
| Argentina             | 1.08   | 3.20   | 3.90   | 5.38   | 6.74   | 9.32   | 11.47  |
| China                 | 2.82   | 3.52   | 3.55   | 3.51   | 3.48   | 3.47   | 3.55   |
| Romania               | 1.40   | 1.56   | 1.61   | 1.63   | 1.66   | 1.63   | 1.64   |
| Russian Federation    | 12.74  | 18.46  | 19.42  | 21.01  | 23.59  | 24.36  | 24.34  |
| Singapore             | 0.90   | 0.88   | 0.86   | 0.84   | 0.87   | 0.86   | 0.85   |
| South Africa          | 3.50   | 4.94   | 5.16   | 5.35   | 5.56   | 5.86   | 6.08   |
| Chinese Taipei        | 18.35  | 14.91  | 14.87  | 14.84  | 15.16  | 15.12  | 14.66  |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inno/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inno/MSTI_documentation_e.pdf).)

**Table D. Value added in industry at current prices and PPP**

Million USD

|                       | 2005              | 2012              | 2013              | 2014              | 2015              | 2016              | 2017              |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Australia             | 484 209           | 668 031           | 733 784           | 732 448           | 726 178           | 783 247           | 823 991 e         |
| Austria               | 189 163           | 255 176           | 264 027           | 271 260           | 280 105           | 288 771           | 303 736 e         |
| Belgium               | 220 030           | 290 627           | 298 685           | 306 360           | 316 841           | 328 411           | 344 497 e         |
| Canada                | 772 894           | 938 173           | 993 773           | 1 042 316         | 1 001 160 e       | 1 022 643 e       | 1 074 195 e       |
| Chile                 | 151 417 e         | 263 582           | 275 490           | 281 272           | 277 537 e         | 281 858 e         | 302 722 e         |
| Czech Republic        | 155 817           | 208 734           | 217 781           | 234 396           | 245 668           | 257 352           | 277 069 e         |
| Denmark               | 107 005           | 143 797           | 151 614           | 156 949           | 162 082           | 166 484           | 181 156 e         |
| Estonia               | 15 236            | 22 790            | 23 951            | 24 525            | 24 091            | 24 796            | 26 875 e          |
| Finland               | 102 863           | 125 505           | 127 024           | 127 894           | 130 332           | 135 495           | 146 707 e         |
| France                | 1 141 873         | 1 424 293         | 1 497 601         | 1 526 212         | 1 558 652         | 1 607 942         | 1 689 609 e       |
| Germany               | 1 697 866         | 2 223 338         | 2 306 650         | 2 426 217         | 2 493 521         | 2 602 883         | 2 757 635 e       |
| Greece                | 172 166           | 145 801           | 152 657           | 156 353           | 155 762           | 153 463           | 163 098 e         |
| Hungary               | 109 308           | 142 630           | 151 586           | 158 647           | 162 673           | 164 409           | 176 891 e         |
| Iceland               | 6 436             | 8 138             | 8 587             | 8 806             | 9 611             | 10 706 e          | 11 531 e          |
| Ireland               | 114 952           | 145 930           | 154 546           | 167 050           | 246 658           | 258 807           | 286 414 e         |
| Israel <sup>1</sup>   | 103 938 e         | 148 603           | 164 061           | 164 081 e         | 174 033 e         | 187 241 e         | 197 799 e         |
| Italy                 | 1 104 944         | 1 311 271         | 1 321 820         | 1 331 405         | 1 363 936         | 1 435 938         | 1 503 305 e       |
| Japan                 | 3 061 437         | 3 398 139         | 3 566 122         | 3 586 371         | 3 720 709         | 3 792 423 e       | 3 855 836 e       |
| Korea                 | 798 471           | 1 109 265         | 1 133 309         | 1 169 340         | 1 250 492         | 1 296 023 e       | 1 360 517 e       |
| Latvia                | 20 748            | 27 826            | 28 884            | 29 707            | 30 725            | 31 349            | 34 461 e          |
| Lithuania             | 34 584            | 53 102            | 56 897            | 59 362            | 59 606            | 61 008            | 66 467 e          |
| Luxembourg            | 21 125            | 32 655            | 34 791            | 38 218            | 41 225            | 42 203            | 43 899 e          |
| Mexico                | 995 958           | 1 516 019         | 1 531 083         | 1 591 007         | 1 621 086         | 1 690 724         | 1 804 549 e       |
| Netherlands           | 396 829           | 516 385           | 534 272           | 532 594           | 552 032           | 565 013           | 601 958 e         |
| New Zealand           | 71 276            | 93 046            | 104 319           | 108 916           | 111 557           | 119 560 e         | 126 236 e         |
| Norway                | 146 981           | 215 324           | 221 757           | 217 684           | 194 726           | 183 930 e         | 198 390 e         |
| Poland                | 365 586           | 642 529           | 664 790           | 687 412           | 725 235           | 745 766           | 805 691           |
| Portugal              | 141 458           | 163 956           | 169 903           | 174 386           | 180 593           | 186 763           | 194 019 e         |
| Slovak Republic       | 63 032            | 104 508           | 105 788           | 114 061           | 116 449           | 119 439           | 125 141 e         |
| Slovenia              | 31 859            | 38 353            | 39 422            | 41 599            | 42 725            | 44 813            | 49 097 e          |
| Spain                 | 812 033           | 945 577           | 942 236           | 974 561           | 1 016 760         | 1 072 853         | 1 151 115 e       |
| Sweden                | 189 919           | 263 803           | 269 898           | 277 921           | 295 574           | 302 092           | 320 754 e         |
| Switzerland           | 216 809           | 330 774           | 346 846           | 360 651           | 374 592           | 378 573 e         | 394 522 e         |
| Turkey                | 552 853           | 1 050 945         | 1 154 990         | 1 280 546         | 1 397 562         | 1 435 952         | 1 593 952 e       |
| United Kingdom        | 1 198 108         | 1 434 659         | 1 524 350         | 1 590 867         | 1 642 418         | 1 698 826         | 1 787 217 e       |
| United States         | 8 485 524         | 10 190 334        | 10 567 747        | 11 101 619        | 11 550 115        | 11 807 310        | 12 298 485 e      |
| EU28 (OECD estimates) | 8 661 566         | 11 082 729        | 11 474 271        | 11 855 772        | 12 314 472        | 12 810 405        | 13 600 361        |
| <b>OECD-Total</b>     | <b>24 103 288</b> | <b>30 593 614</b> | <b>31 841 043</b> | <b>33 053 010</b> | <b>34 253 021</b> | <b>35 285 068</b> | <b>37 079 537</b> |
| Argentina             | 368 281           | 518 745           | 539 339 e         | 536 804 e         | 547 633 e         | 545 708 e         | 567 052 e         |
| China                 | 5 308 893 e       | 12 020 105 e      | 13 028 579 e      | 14 145 601 e      | 15 039 716 e      | 15 954 120 e      | 17 361 827 e      |
| Romania               | 144 834           | 261 859           | 275 626           | 282 839           | 298 435 e         | 330 220 e         | 366 037 e         |
| Russian Federation    | 1 302 121 e       | 2 505 698 e       | 2 517 073 e       | 2 576 961 e       | 2 511 867 e       | 2 512 687 e       | 2 686 551 e       |
| Singapore             | 197 861 e         | 334 915 e         | 356 641 e         | 378 096 e         | 390 090 e         | 400 707 e         | 423 625 e         |
| South Africa          | 330 950 e         | 458 602 e         | 475 668 e         | 491 308 e         | 500 230 e         | 506 167 e         | 523 780 e         |
| Chinese Taipei        | 489 962 e         | 715 925           | 755 594           | 813 566           | 831 431           | 854 686           | 897 619           |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inn/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inn/MSTI_documentation_e.pdf).)

**Table E. Total population**

Thousands

|                       | 2005             | 2012             | 2013             | 2014             | 2015             | 2016             | 2017             |
|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Australia             | 20 177           | 22 734           | 23 128           | 23 476           | 23 816           | 24 191           | 24 598           |
| Austria               | 8 225            | 8 426            | 8 477            | 8 544            | 8 630            | 8 740            | 8 795            |
| Belgium               | 10 479           | 11 068           | 11 125           | 11 180           | 11 238           | 11 295           | 11 349           |
| Canada                | 32 242           | 34 751           | 35 152           | 35 535           | 35 833           | 36 265           | 36 708           |
| Chile                 | 16 283           | 17 450           | 17 640           | 17 836           | 18 045           | 18 278           | 18 522           |
| Czech Republic        | 10 234           | 10 509           | 10 511           | 10 525           | 10 543           | 10 565           | 10 590           |
| Denmark               | 5 419            | 5 591            | 5 613            | 5 643            | 5 682            | 5 729            | 5 767            |
| Estonia               | 1 359            | 1 325            | 1 320            | 1 316            | 1 313            | 1 316            | 1 316            |
| Finland               | 5 246            | 5 414            | 5 439            | 5 463            | 5 481            | 5 495            | 5 508            |
| France                | 63 168           | 65 651           | 65 991           | 66 312           | 66 548           | 66 721           | 66 865           |
| Germany               | 81 337           | 80 426           | 80 646           | 80 983           | 81 687           | 82 349           | 82 657           |
| Greece                | 10 987           | 11 045           | 10 965           | 10 892           | 10 821           | 10 776           | 10 755           |
| Hungary               | 10 087           | 9 920            | 9 893            | 9 866            | 9 843            | 9 814            | 9 788            |
| Iceland               | 296              | 321              | 324              | 327              | 331              | 335              | 343              |
| Ireland               | 4 160            | 4 597            | 4 620            | 4 652            | 4 696            | 4 749            | 4 802            |
| Israel <sup>1</sup>   | 6 961            | 7 907            | 8 056            | 8 212            | 8 377            | 8 543            | 8 709            |
| Italy                 | 58 191           | 60 339           | 60 646           | 60 789           | 60 731           | 60 628           | 60 537           |
| Japan                 | 127 755          | 127 552          | 127 333          | 127 262          | 127 110          | 126 960          | 126 728          |
| Korea                 | 48 185           | 50 200           | 50 429           | 50 747           | 51 015           | 51 246           | 51 446           |
| Latvia                | 2 239            | 2 034            | 2 013            | 1 994            | 1 977            | 1 959            | 1 941            |
| Lithuania             | 3 323            | 2 988            | 2 958            | 2 932            | 2 905            | 2 868            | 2 828            |
| Luxembourg            | 466              | 532              | 545              | 558              | 569              | 584              | 597              |
| Mexico                | 107 151          | 117 054          | 118 395          | 119 713          | 121 005          | 122 273          | 123 518          |
| Netherlands           | 16 317           | 16 752           | 16 800           | 16 863           | 16 931           | 17 026           | 17 127           |
| New Zealand           | 4 148            | 4 418            | 4 460            | 4 534            | 4 623            | 4 720            | 4 820            |
| Norway                | 4 623            | 5 019            | 5 080            | 5 137            | 5 191            | 5 236            | 5 277            |
| Poland                | 38 161           | 38 534           | 38 502           | 38 484           | 38 455           | 38 427           | 38 422           |
| Portugal              | 10 503           | 10 515           | 10 457           | 10 401           | 10 358           | 10 326           | 10 300           |
| Slovak Republic       | 5 387            | 5 406            | 5 413            | 5 419            | 5 422            | 5 431            | 5 438            |
| Slovenia              | 2 001            | 2 057            | 2 060            | 2 062            | 2 063            | 2 065            | 2 066            |
| Spain                 | 43 663           | 46 766           | 46 593           | 46 455           | 46 410           | 46 450           | 46 534           |
| Sweden                | 9 030            | 9 519            | 9 600            | 9 696            | 9 799            | 9 923            | 10 058           |
| Switzerland           | 7 482            | 7 997            | 8 089            | 8 189            | 8 282            | 8 373            | 8 452            |
| Turkey                | 68 566           | 74 899           | 75 774           | 76 619           | 77 440           | 78 247           | 79 037           |
| United Kingdom        | 60 413           | 63 705           | 64 106           | 64 597           | 65 110           | 65 648           | 66 040           |
| United States         | 295 993          | 314 374          | 316 598          | 318 953          | 321 323          | 323 668          | 325 983          |
| EU28 (OECD estimates) | 494 908          | 506 038          | 507 093          | 508 294          | 509 704          | 511 196          | 512 254          |
| <b>OECD-Total</b>     | <b>1 183 974</b> | <b>1 257 794</b> | <b>1 264 753</b> | <b>1 272 167</b> | <b>1 279 602</b> | <b>1 287 219</b> | <b>1 294 221</b> |
| Argentina             | 38 592           | 41 733           | 42 203           | 42 670           | 43 132           | 43 590           | 44 045           |
| China                 | 1 307 560        | 1 354 040        | 1 360 720        | 1 367 820        | 1 374 620        | 1 382 710        | 1 390 080        |
| Romania               | 21 320           | 20 060           | 19 989           | 19 916           | 19 820           | 19 707           | 19 644           |
| Russian Federation    | 143 519          | 143 202          | 143 507          | 146 091          | 146 406          | 146 675          | 146 842          |
| Singapore             | 4 266            | 5 312            | 5 399            | 5 470            | 5 535            | 5 607            | 5 612            |
| South Africa          | 47 602           | 52 325           | 53 104           | 53 912           | 54 750           | 55 620           | 56 522           |
| Chinese Taipei        | 22 770           | 23 316           | 23 374           | 23 434           | 23 492           | 23 540           | 23 571           |

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**Table F. Total employment**

Thousands

|                       | 2005           | 2012           | 2013           | 2014           | 2015           | 2016           | 2017           |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Australia             | 9 965          | 11 385         | 11 450         | 11 654         | 11 883         | 12 041         | 12 341 e       |
| Austria               | 3 873          | 4 205          | 4 220          | 4 260          | 4 285          | 4 337          | 4 411 e        |
| Belgium               | 4 255          | 4 555          | 4 540          | 4 560          | 4 601          | 4 658          | 4 723 e        |
| Canada                | 16 407         | 17 749         | 17 988         | 18 091         | 18 262         | 18 454         | 18 798 e       |
| Chile                 | 6 176          | 7 614          | 7 771          | 7 897          | 8 009          | 8 117          | 8 278 e        |
| Czech Republic        | 4 923          | 5 065          | 5 081          | 5 109          | 5 182          | 5 249          | 5 330 e        |
| Denmark               | 2 783          | 2 767          | 2 766          | 2 794          | 2 829          | 2 877          | 2 925 e        |
| Estonia               | 612            | 594            | 601            | 606            | 623            | 625            | 632 e          |
| Finland               | 2 411          | 2 538          | 2 520          | 2 508          | 2 504          | 2 517          | 2 546 e        |
| France                | 26 374         | 27 185         | 27 252         | 27 373         | 27 434         | 27 612         | 27 906 e       |
| Germany               | 39 326         | 42 061         | 42 319         | 42 672         | 43 069         | 43 638         | 44 265 e       |
| Greece                | 4 647          | 4 105          | 3 998          | 4 035          | 4 064          | 4 083          | 4 170          |
| Hungary               | 4 174          | 3 979          | 4 022          | 4 216          | 4 308          | 4 422          | 4 511 e        |
| Iceland               | 162            | 169            | 175            | 178            | 184            | 191            | 198 e          |
| Ireland               | 1 962          | 1 862          | 1 908          | 1 940          | 1 989          | 2 045          | 2 107 e        |
| Israel <sup>1</sup>   | 2 924          | 3 645          | 3 742          | 3 847          | 3 934          | 4 026          | 4 126 e        |
| Italy                 | 24 501         | 24 765         | 24 323         | 24 339         | 24 498         | 24 809         | 25 096 e       |
| Japan                 | 65 531         | 65 177         | 65 549         | 65 934         | 66 220         | 66 852         | 67 531 e       |
| Korea                 | 22 856         | 24 681         | 25 066         | 25 599         | 25 936         | 26 235         | 26 549 e       |
| Latvia                | 969            | 869            | 889            | 877            | 889            | 886            | 886 e          |
| Lithuania             | 1 421          | 1 275          | 1 292          | 1 318          | 1 335          | 1 361          | 1 354 e        |
| Luxembourg            | 308            | 379            | 386            | 396            | 406            | 418            | 433 e          |
| Mexico                | 32 801         | 36 396         | 36 615         | 36 976         | 37 554         | 38 181         | 38 594 e       |
| Netherlands           | 8 339          | 8 836          | 8 732          | 8 724          | 8 806          | 8 901          | 9 094 e        |
| New Zealand           | 2 059          | 2 177          | 2 238          | 2 312          | 2 355          | 2 485          | 2 588 e        |
| Norway                | 2 354          | 2 685          | 2 713          | 2 746          | 2 757          | 2 764          | 2 793          |
| Poland                | 14 057         | 15 475         | 15 464         | 15 731         | 15 970         | 16 061         | 16 281         |
| Portugal              | 5 041          | 4 581          | 4 450          | 4 513          | 4 576          | 4 651          | 4 802          |
| Slovak Republic       | 2 089          | 2 209          | 2 192          | 2 223          | 2 267          | 2 321          | 2 372 e        |
| Slovenia              | 930            | 937            | 927            | 930            | 942            | 960            | 1 006 e        |
| Spain                 | 19 784         | 18 343         | 17 862         | 18 039         | 18 521         | 18 987         | 19 479         |
| Sweden                | 4 349          | 4 627          | 4 672          | 4 737          | 4 807          | 4 889          | 5 002 e        |
| Switzerland           | 4 145          | 4 674          | 4 733          | 4 822          | 4 895          | 4 965          | 5 007          |
| Turkey                | 19 489         | 24 108         | 24 778         | 25 633         | 26 330         | 26 907         | 27 871 e       |
| United Kingdom        | 28 853         | 29 695         | 30 042         | 30 752         | 31 281         | 31 725         | 32 058         |
| United States         | 143 980        | 144 754        | 146 185        | 148 513        | 151 000        | 153 586        | 155 510 e      |
| EU28 (OECD estimates) | 220 916        | 225 127        | 224 531        | 226 847        | 229 316        | 232 114        | 235 832        |
| <b>OECD-Total</b>     | <b>528 653</b> | <b>556 118</b> | <b>559 461</b> | <b>566 854</b> | <b>574 504</b> | <b>582 835</b> | <b>591 573</b> |
| Argentina             | 15 708         | 17 643         | 17 792         | 17 811         | 18 093         | 17 991         | 18 207         |
| China                 | 746 470        | 767 040        | 769 770        | 772 530        | 774 510        | 776 030        | 776 400        |
| Romania               | 9 267          | 8 645          | 8 569          | 8 635          | 8 526          | 8 430          | 8 668          |
| Russian Federation    | 68 339         | 71 545         | 71 391         | 71 539         | 72 324         | 72 393         | 72 142 e       |
| Singapore             | 2 320          | 3 358          | 3 494          | 3 624          | 3 656          | 3 673          | 3 669          |
| South Africa          | 12 769         | 14 425         | 14 866         | 15 146         | 15 741         | 15 780         | 16 169         |
| Chinese Taipei        | 9 942          | 10 860         | 10 967         | 11 079         | 11 198         | 11 267         | 11 352         |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>

1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>

Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inn/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inn/MSTI_documentation_e.pdf).)

**Table G. Industrial employment**

Thousands

|                       | 2005           | 2012           | 2013           | 2014           | 2015           | 2016           | 2017           |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Australia             | 7 453          | 8 267          | 8 255          | 8 399          | 8 493          | 8 566          | 8 800 e        |
| Austria               | 2 951          | 3 169          | 3 176          | 3 206          | 3 211          | 3 247          | 3 305 e        |
| Belgium               | 2 948          | 3 124          | 3 103          | 3 105          | 3 131          | 3 170          | 3 218 e        |
| Canada                | 12 392         | 13 137         | 13 327         | 13 424         | 13 510         | 13 621         | 13 875 e       |
| Chile                 | 4 774 e        | 5 810 e        | 5 967          | 6 003          | 6 053          | 6 175          | 6 245 e        |
| Czech Republic        | 3 960          | 4 083          | 4 087          | 4 100          | 4 164          | 4 220          | 4 266 e        |
| Denmark               | 1 858          | 1 816          | 1 814          | 1 839          | 1 872          | 1 919          | 1 965 e        |
| Estonia               | 471            | 444            | 452            | 453            | 469            | 470 e          | 480 e          |
| Finland               | 1 707          | 1 787          | 1 766          | 1 757          | 1 749          | 1 762          | 1 786 e        |
| France                | 18 048         | 18 556         | 18 550         | 18 604         | 18 628         | 18 788 e       | 18 988 e       |
| Germany               | 28 729         | 30 803         | 30 940         | 31 123         | 31 279         | 31 594         | 32 006 e       |
| Greece                | 3 648          | 3 151          | 3 068          | 3 111          | 3 132          | 3 144          | 3 213 e        |
| Hungary               | 3 242          | 3 062          | 3 057          | 3 207          | 3 250          | 3 344 e        | 3 440 e        |
| Iceland               | 116            | 121            | 124            | 127            | 131            | 137            | 143 e          |
| Ireland               | 1 538          | 1 357          | 1 404          | 1 431          | 1 468          | 1 520          | 1 562 e        |
| Israel <sup>1</sup>   | 1 882          | 2 330          | 2 403          | 2 447          | 2 494          | 2 569          | 2 634 e        |
| Italy                 | 18 355         | 18 417         | 17 999         | 17 929         | 18 058         | 18 320         | 18 533 e       |
| Japan                 | 53 833 e       | 51 774 e       | 51 950 e       | 52 016 e       | 51 957 e       | 52 280 e       | 52 811 e       |
| Korea                 | 19 172         | 19 925         | 20 135         | 20 505         | 20 778         | 20 890         | 21 010 e       |
| Latvia                | 747            | 663            | 683            | 673            | 685            | 679            | 678 e          |
| Lithuania             | 1 084          | 966            | 983            | 1 008          | 1 015          | 1 033          | 1 028 e        |
| Luxembourg            | 245            | 295            | 299            | 306            | 313            | 323            | 334 e          |
| Mexico                | 25 303         | 27 674         | 27 817         | 28 077         | 28 449         | 29 070         | 29 449 e       |
| Netherlands           | 6 066          | 6 273          | 6 188          | 6 220          | 6 323          | 6 421          | 6 577 e        |
| New Zealand           | 1 557 e        | 1 601 e        | 1 647 e        | 1 698 e        | 1 730 e        | 1 826 e        | 1 902 e        |
| Norway                | 1 527          | 1 721          | 1 738          | 1 758          | 1 756          | 1 749 e        | 1 768 e        |
| Poland                | 11 097         | 12 181         | 12 091         | 12 302         | 12 516         | 12 634         | 12 819 e       |
| Portugal              | 3 922          | 3 460          | 3 346          | 3 410          | 3 469          | 3 533          | 3 648 e        |
| Slovak Republic       | 1 629          | 1 736          | 1 721          | 1 743          | 1 781          | 1 827          | 1 870 e        |
| Slovenia              | 765            | 753            | 744            | 747            | 757            | 771            | 808 e          |
| Spain                 | 15 365         | 13 548         | 13 090         | 13 212         | 13 669         | 14 064         | 14 475 e       |
| Sweden                | 2 842          | 3 082          | 3 108          | 3 141          | 3 169          | 3 199          | 3 274 e        |
| Switzerland           | 3 202          | 3 514          | 3 537          | 3 595          | 3 629          | 3 658          | 3 680          |
| Turkey                | 16 854         | 20 406         | 20 992         | 21 577         | 22 040         | 22 299         | 23 098 e       |
| United Kingdom        | 21 261         | 21 481         | 21 680         | 22 331         | 22 822         | 23 247         | 23 599         |
| United States         | 102 536        | 100 257        | 101 477        | 103 356        | 104 808        | 106 826        | 108 164 e      |
| EU28 (OECD estimates) | 165 443        | 166 280        | 165 289        | 167 010        | 168 806        | 171 074        | 174 043        |
| <b>OECD-Total</b>     | <b>398 302</b> | <b>410 744</b> | <b>412 718</b> | <b>417 940</b> | <b>422 757</b> | <b>428 895</b> | <b>435 450</b> |
| Argentina             | ..             | ..             | ..             | ..             | ..             | ..             | ..             |
| China                 | ..             | ..             | ..             | ..             | ..             | ..             | ..             |
| Romania               | 8 321          | 7 508          | 7 466          | 7 556          | 7 334          | 7 257          | 7 475          |
| Russian Federation    | 52 372         | 53 781         | 53 947         | 54 110         | 54 582         | 54 407         | 54 219 e       |
| Singapore             | 2 040          | 2 938          | 3 059          | 3 165          | 3 190          | 3 194          | 3 183          |
| South Africa          | 9 714 e        | 10 705 e       | 11 026 e       | 11 202 e       | 11 694         | 11 749         | 12 091         |
| Chinese Taipei        | 8 727          | 9 426          | 9 523          | 9 624          | 9 735          | 9 797          | 9 876          |

Note: Detailed metadata: <http://metalinks.oecd.org/msti/20190326/b818>1. Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>Source: OECD, Main Science and Technology Indicators database (underlying sources described in section 10 of the documentation, [http://www.oecd.org/sti/inn/MSTI\\_documentation\\_e.pdf](http://www.oecd.org/sti/inn/MSTI_documentation_e.pdf).)



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