

### F.1. R&D in OECD and non-OECD economies

■ The landscape for technology and knowledge has become increasingly global. While research and development (R&D) investments are still heavily concentrated in OECD countries, non-OECD economies account for a growing share of the world's R&D. In 2007, non-OECD countries for which data are available (see box) accounted for almost 16% of the business sector R&D expenditure (expressed in current USD purchasing power parity [PPP]) of OECD and non-OECD economies combined.

■ China made by far the largest contribution, accounting for 54% of the non-OECD share. It ranked third worldwide, behind the United States and Japan, but ahead of individual EU member states. Israel had the world's highest R&D intensity in the business sector, spending 3.7% of gross domestic product (GDP) on civil industrial R&D, twice the OECD average.

■ In most of the non-OECD economies covered, growth rates were well above the OECD average. R&D expenditures have grown particularly impressively in

China, at an annual average rate of 22.1% for 2000-07, up from 20.9% over the preceding five years. China has set a target of raising its R&D intensity to 2% by 2010 and to 2.5% or above by 2020. This ambitious target implicitly means that R&D expenditure will need to continue to increase by at least 10-15% annually.

#### Sources

- OECD, *Main Science and Technology Indicators Database*, December 2009 and national sources.
- Eurostat, *New Cronos Database*.

#### For further reading

- OECD (2002), *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD, Paris, [www.oecd.org/sti/frascaticmanual](http://www.oecd.org/sti/frascaticmanual).
- OECD (2010), *Main Science and Technology Indicators 2009/2*, OECD, Paris.

#### Measuring R&D in non-OECD economies

R&D data for Argentina, China, Israel, Romania, the Russian Federation, Singapore, South Africa, Slovenia and Chinese Taipei are included in the OECD's R&D database and are published in the OECD's *Main Science and Technology Indicators* (MSTI). Data for Brazil, Hong Kong (China) and India are from national S&T ministries (or equivalent) or the central statistical office.

The R&D data for non-OECD countries that are included in the *MSTI Database* largely comply with the recommended methodology of the *Frascati Manual*. Data for the other countries included here may not be completely in accordance with the *Frascati Manual* guidelines.

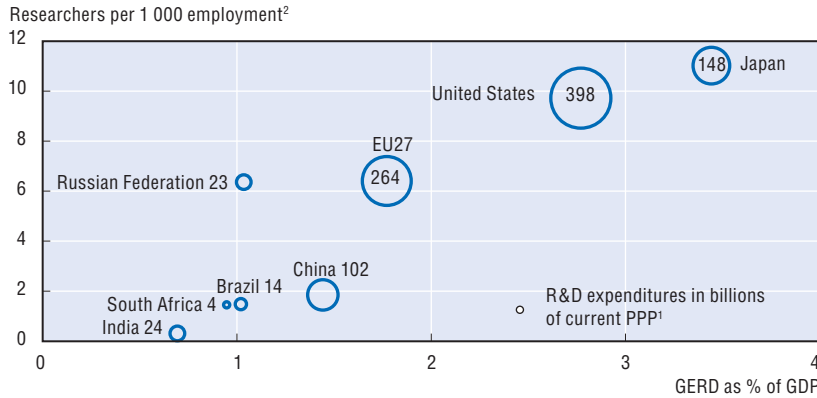
When examining the data, the following should be kept in mind.

- In Brazil, data for the business enterprise sector are collected through innovation surveys, which were held in 2000, 2003 and 2005. Data for other years are estimated. In 2000 and 2003, only mining and quarrying and manufacturing were covered. In 2005, in addition, telecommunications, computer activities and the R&D sector were covered. Therefore there is a break in series between 2004 and 2005.
- In India, the small-scale industry sector is only partially covered. Data for 2004-05 were estimated by applying sector-wise growth rates for the period 1998-99 to 2002-03.
- In Israel, defence R&D is not covered.
- In Romania and the Russian Federation, much R&D is traditionally performed by public enterprises, which are classified in the business enterprise sector.
- Owing to the lack of a comprehensive business register for South Africa, R&D expenditure may be underestimated by 10% to 15%.

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Figure F.1.1. **Gross expenditure on R&D (GERD) in OECD and non-OECD areas, 2007**

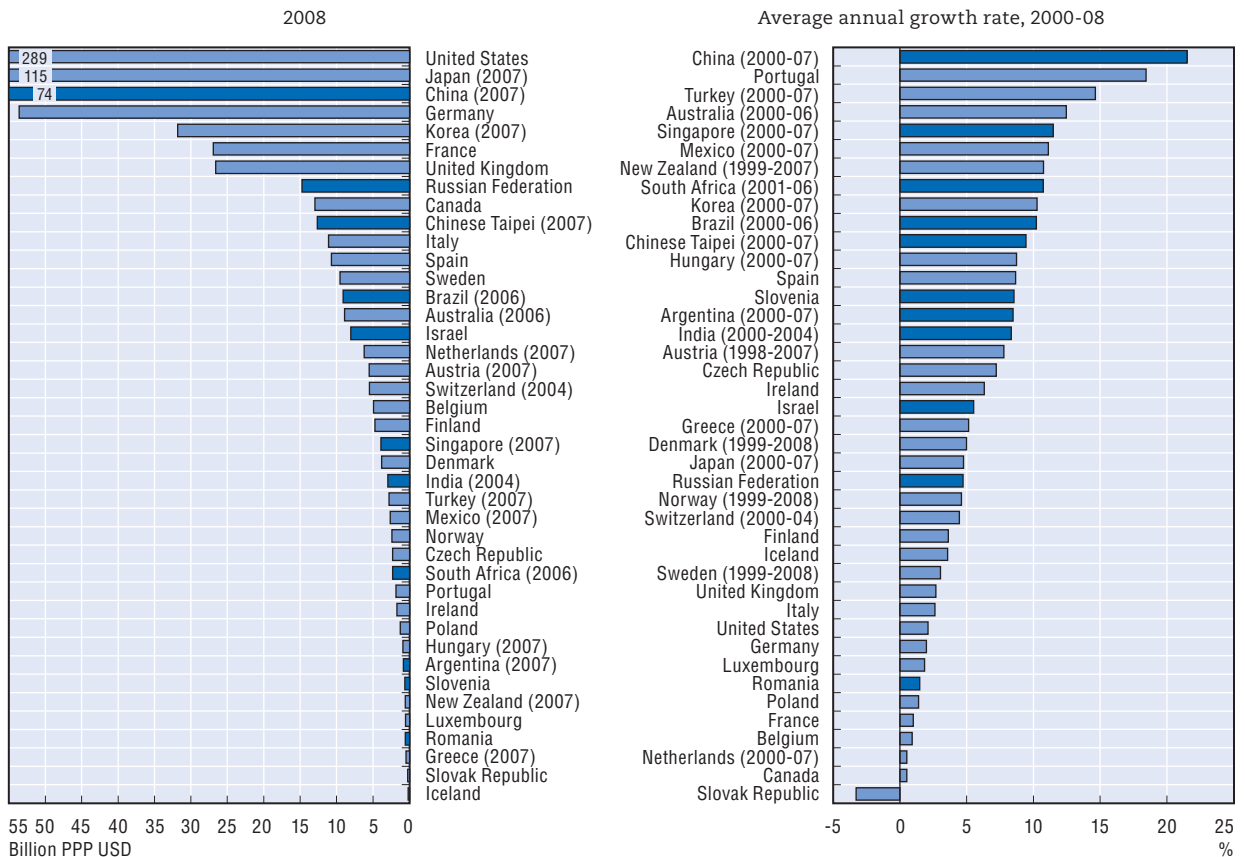
As a percentage of GDP, in billions of current USD PPP and researchers per 1 000 persons employed<sup>2</sup>



1. The size of the bubble represents R&D expenditure in billions of current USD in PPP; data for the Russian Federation and for the United States are for 2008, data for Brazil and South Africa are for 2006 and data for India are for 2004.
2. For researchers per 1 000 persons employed: data for the United States are for 2006, data for India are for 2000.

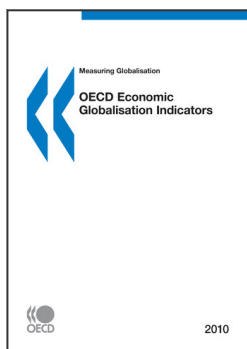
StatLink <http://dx.doi.org/10.1787/842786737584>

Figure F.1.2. **Business enterprise R&D (BERD) in OECD and non-OECD economies**



StatLink <http://dx.doi.org/10.1787/842807561645>

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



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