

1. RESPONDING TO THE ECONOMIC CRISIS

1.6. Business R&D by technology intensity

Manufacturing industries can be grouped into four categories according to their research and development (R&D) intensity: high, medium-high, medium-low and low technology. In the OECD area since the early 1990s, high-technology industries had on average stronger growth of R&D expenditure than other manufacturing industries, particularly in the mid-1990s and up to the bursting of the Internet bubble after 2000.

In 2006, OECD area high-technology industries accounted for more than 52% of total manufacturing R&D. They accounted for over 67% of total manufacturing R&D in the United States and for 45% and 42% in the European Union and Japan, respectively.

Manufacturing R&D expenditure is highly skewed towards high-technology industries in Finland, Hungary, Ireland and the United States (more than two-thirds of manufacturing BERD). Medium-high-technology industries account for around 60% of manufacturing BERD in the Czech Republic and Germany. Australia, Greece and Norway are the only OECD countries in which medium-low and low-technology industries account for more than 30%. This indicator does not take into account the fact that in some countries, the ranking of industries by R&D intensity might be different from that of the OECD average.

Technology classification

Medium-low-technology: Coke, refined petroleum products and nuclear fuel (ISIC 23), Rubber and plastics products (ISIC 25), Other non-metallic products (ISIC 26), Basic metals and fabricated metal products (ISIC 27-28), Building and repairing of ships and boats (ISIC 351).

Low-technology: Food products, beverages and tobacco (ISIC 15-16), Textiles, textile products, leather and footwear (ISIC 17-19), Wood and products of wood and cork (ISIC 20), Pulp, paper, paper products, printing and publishing (ISIC 21-22), Manufacturing not elsewhere classified and recycling (ISIC 36-37).

Manufacturing industries are classified according to technology intensity using the ISIC Rev. 3 breakdown of activity. The classification is based on a ranking which uses data on R&D expenditure divided by value added, and R&D expenditure divided by production for 12 OECD countries during the period 1991-99.

High-technology: Pharmaceuticals (ISIC 2423), Office, accounting and computing machinery (ISIC 30), Radio, television and communication equipment (ISIC 32), Medical, precision and optical instruments, watches and clocks (ISIC 33).

Medium-high-technology: Chemicals excluding pharmaceuticals (ISIC 24 less 2423), Machinery and equipment not elsewhere classified (ISIC 29), Electrical machinery and apparatus not elsewhere classified (ISIC 31), Motor vehicles, trailers and semi-trailers (ISIC 34), Railroad equipment and transport equipment not elsewhere classified (ISIC 352 plus 359).

Source

OECD, ANBERD Database, June 2009.

Going further

OECD, (2002), *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD, Paris, www.oecd.org/sti/frascatiannual.

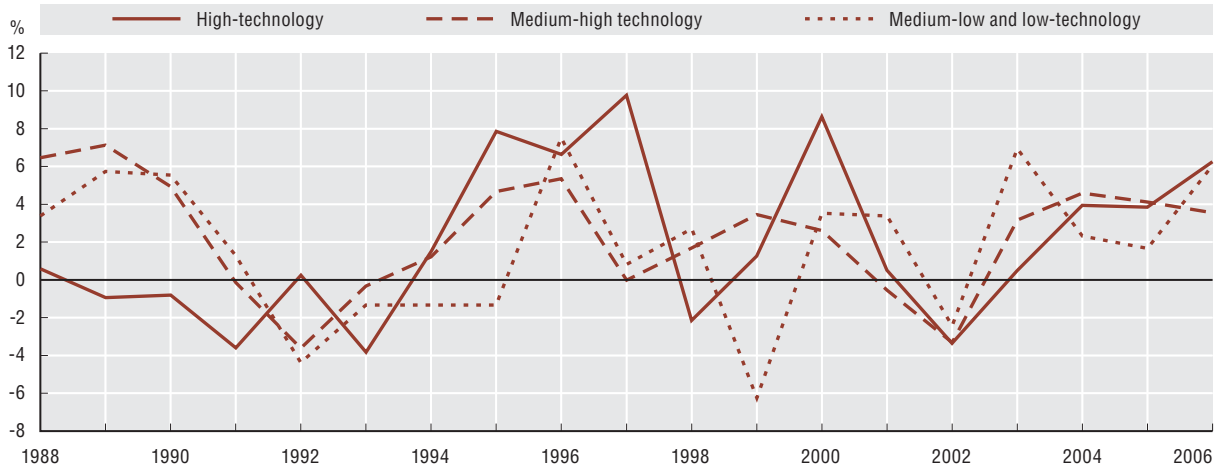
OECD (2009), *Research and Development in Industry – ANBERD 1990-2007*, OECD, Paris.

Figure notes

The EU aggregate includes Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Poland, Spain, Sweden and the United Kingdom.

Changes in R&D over the business cycle by technological intensity, OECD 1988-2006

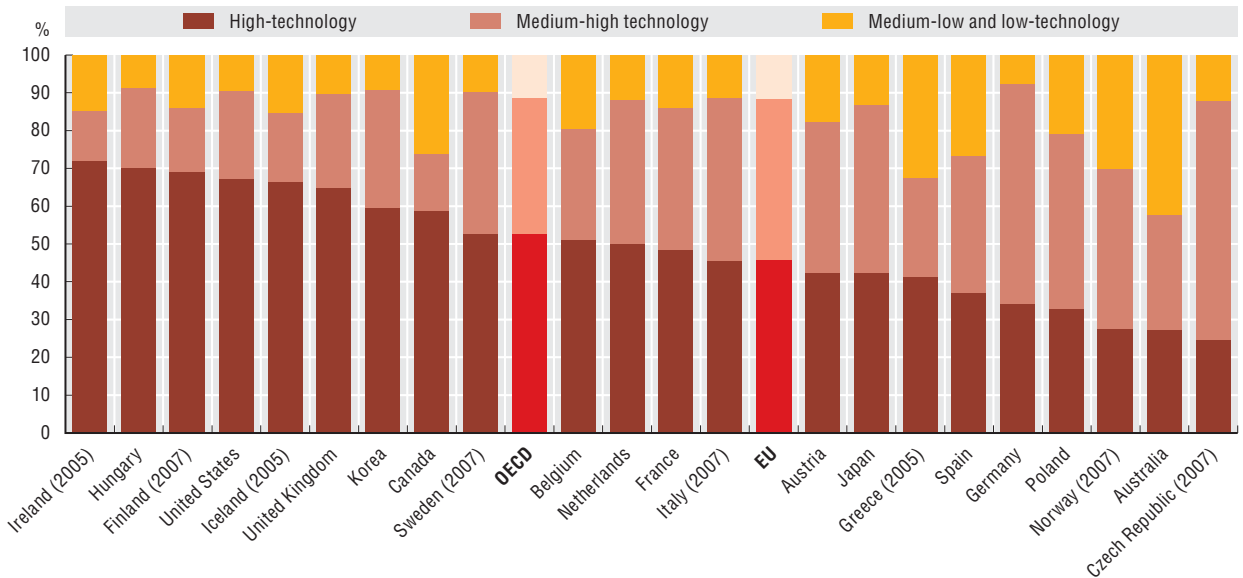
Average annual real growth rate in percentage



StatLink <http://dx.doi.org/10.1787/742253324386>

Business R&D in the manufacturing sector by technological intensity, 2006

As a percentage of manufacturing BERD



StatLink <http://dx.doi.org/10.1787/742334876661>



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