

Foreword

This publication is prepared by the Economic Analysis and Statistics (EAS) Division of the OECD Secretariat in collaboration with the Working Party of National Experts on Science and Technology Indicators (NESTI). It contains key data series selected from the OECD Scientific and Technological Indicators Database.

The first part of this publication presents a summary table and charts of key science and technology indicators.

The second part consists of 72 standard tables of data series on the resources devoted to research and experimental development (R&D) as well as some indicators of output and the impact of scientific and technological activities. It is complemented by a description of the general methodology used. National specifications and background economic indicators are shown in annex.

R&D data

The OECD has been collecting R&D data on a regular basis since the early 1960s. During the 1990s, the collection was widened to include selected non-Member economies. This publication presents various indicators of the level and trends in total national R&D efforts. The flagship measure is the Gross Domestic Expenditure on Research and Experimental Development (GERD), which captures all spending on R&D carried out within each economy each year. The pattern of financing and of performance of GERD is also presented.

Further information is given on R&D performed in the Business Enterprise sector – the main R&D performing sector. This includes tables showing the most intensive industries carrying out Business Enterprise R&D (BERD). Data sets are also provided for R&D carried out in the Higher Education and Government sectors. All the above tables are essentially based on retrospective surveys of the units carrying out the R&D though national forecasts have been included when available.

Two tables show data on R&D expenditure of foreign affiliates. These data come from the OECD database on foreign affiliates and in some cases are not directly comparable with standard Business Enterprise R&D. They do, however, provide useful supplementary information.

Measures of the output and impact of science and technology

The publication contains no direct measures of the output of Scientific and Technological activities. However, three types of proxy indicators based on data originally collected for other purposes are presented: patent numbers, the technology balance of payments, and international trade in R&D-intensive industries. While each of these indicators has its shortcomings, together they may throw light on countries' technological performance.

Patent data can be considered as a proxy for the output of R&D in the form of inventions. The data presented show the total number and national percentages of triadic patent families, as well as the number of patent applications to the European Patent Office (EPO) in two specific sectors of interest: the Information and Communications Technology (ICT) and biotechnology sectors.

The Technology Balance of Payments (TBP) series comprise data extracted from national sources (balance of payments or survey results) with the aim of measuring the flow of technological know-

how and services into and out of the economy concerned. The OECD manual “Proposed Standard Method of Compiling and Interpreting Technology Balance of Payments Data” (TBP Manual, 1990), gives the methodology for the international standards for compiling such data. The series quoted comprise money paid or received for the acquisition or use of patents, licences, trademarks, designs, inventions, know-how and closely related technical services.

Indicators of trade performance in R&D intensive industries can be used as proxy measures of the industrial and economic impact of scientific and technological activity. The tables concerned give trade balances and export market shares for three selected groups of R&D intensive industries: “pharmaceuticals”, “computer, electronic, and optical industry”, and “aerospace”.



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