

## **Data Sources, Suitability and Uses**

The information below relates to the Business Enterprise Research and Development Scotland publication. The aim is to draw attention to interesting or unique aspects of the data so that users are well informed.

### **Description**

The Business Enterprise Research and Development (BERD) Scotland publication provides information on expenditure and employment on research and development (R&D) by businesses in Scotland. The published data tables include information broken down by product group, company size, country ownership and Local Authority area.

### **Source**

The data source is the annual Office for National Statistics' (ONS) Business Enterprise Research and Development Survey.

The sample and survey results cover "business enterprises" as defined in the '[Frascati Manual](#)'. This excludes government organisations, higher education establishments and charities. R&D surveys pose special problems relating to survey design and estimation. R&D takes place in only a small proportion of businesses but a comprehensive list of who these businesses are does not exist. A simple random sample of the businesses population would not be suitable for a R&D survey because many of the sampled businesses would not undertake R&D, and many significant R&D performers would be missed in such a sample. The solution is to implement a stratified sample design. The stratification variable is the known level of R&D performance of the businesses. This information is gained from the previous year's survey and extra information from various sources, for example, the Department for Business, Energy and Industrial Strategy (BEIS), filter questions on other ONS surveys and the Scottish Government supplies information on businesses that have been given government R&D grants.

### **Use**

Data from the Research and Development publications are used by the Scottish Government to monitor performance and inform policies. Some of the external users of R&D statistics published by the Scottish Government include the Enterprise Networks and Local Authorities. Some common uses of the R&D statistics are as follows:

Performance Monitoring:

Gross Expenditure on Research and Development as percentage of Gross Domestic Product (GDP) is the basis of the Scottish Government National Indicator: Increase Research and Development Spending. The Indicator compares Scotland's GERD as a percentage of GDP with the equivalent average figure for the EU 28. Further information can be found [here](#).

BERD and GERD data have also been used in the following:

- [Scotland CAN DO: an innovation action plan for Scotland](#), published in January 2017 by the Scottish Government, refers to Scotland's performance on HERD and BERD.
- [A Plan for Scotland: The Scottish Government's Programme For Scotland 2016-17](#) was published in September 2016 by the Scottish Government. Page 42 refers to Scotland's performance on GERD over time and compared to other countries.
- [Europe 2020: Scottish National Reform Programme 2016](#) was published in March 2016 by the Scottish Government. Chapter 3 is dedicated to Innovation and R&D.
- [Reindustrialising Scotland for the 21<sup>st</sup> Century: A Sustainable Industrial Strategy for a Modern, Independent Nation](#) was published by the Scottish Government in June 2014. Page 37 mentions the importance of manufacturing to BERD expenditure, pages 62 to 65 refers to Scotland's performance on both GERD and BERD expenditure compared to other OECD countries.
- [Scotland CAN DO: Becoming a World-leading Entrepreneurial and Innovative Nation](#) was published in November 2013 by the Scottish Government. Page 3 refers to the Research and Development Spending National Indicator and page 13 refers to Scotland's performance on Higher Education R&D spending (HERD).

Use of the Scottish Research and Development Statistics results, outside the Scottish Government, are provided below:

- [Scotland's Manufacturing Action Plan](#), published by Scottish Enterprise in August 2016, refers to the importance of manufacturing to BERD expenditure.
- Scottish Enterprise, [Scottish Key Facts](#). The September 2016 publication includes BERD and GERD data for Scotland and comparisons with the UK and the EU.
- [Europe 2020: UK National Reform Programme](#), published in March 2016 includes Gross Expenditure on Research and Development as a percentage of GDP for Scotland on page 77.

### **Geographical Availability**

All published data are available at Scotland level. Local Authority area level data are available for expenditure broken down by main sectors. Comparisons on expenditure are available for the UK regions.

### **Quality Assurance**

Business Enterprise Research and Development is a National Statistics publication. It has been produced to the high professional standards set out in the [Code of Practice for Official Statistics](#) and the [Pre-release Access to Official Statistics \(Scotland\) Order 2008](#). These statistics undergo regular quality assurance reviews to ensure that they meet customer needs.

A summary quality report for the ONS BERD survey is available: [ONS Summary Quality Report](#).

In 2010, a consultation was carried out by the Scottish Government on Scottish Research and Development Statistics and a summary of the findings are available: [Scottish Research and Development Consultation](#).

In 2012, the Research and Development publications were assessed by the UK Statistics Authority for compliance against the Code of Practice for Official Statistics. Details of the assessment are available at: [Statistics on Scottish Businesses and Research and Development \(Scottish Government\)](#).

The UKSA has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

A UKSA assessment has also been carried out for the ONS Research and Development statistical publications. Details of the assessment are available: [Statistics on Research and Development \(produced by the Office for National Statistics\)](#).

### **Data Available**

Most tables provide time series figures from 2001 onwards.

Breakdowns of the published expenditure data include:

- by broad product group
- by detailed product group
- by company size (based on employee sizeband)
- by country of ownership
- by source of funds
- by broad industry group
- by growth sector

Breakdowns of the published employment data include:

- by type of profession
- by broad product group

### **Timeliness of Data**

The data are published annually. The ONS UK BERD publication is released in November. It is the aim to publish Business Enterprise Research and Development Scotland publication as soon as possible after the release of the ONS UK BERD publication.

### **Accuracy**

The BERD data are compiled from an annual survey. When a new year's BERD data are released, the previous' two years' data are revised at the same time to take account of businesses misreporting and late returns.

### **Comparability**

The BERD survey questionnaire was redesigned in 2007 to better reflect user needs and to address concerns about data quality and difficulty in completion. While the changes are an improvement, they could have an impact on the comparability of the data returned, as businesses better understand what is required and quality improves.

Comparable GERD data for the UK are available: [Gross Domestic UK Expenditure on Research and Development](#).

Comparable BERD data for the UK are available: [Business enterprise research and development, UK](#).

### **Statistical Disclosure Control**

Statistical disclosure control is applied to tables in order to maintain the confidentiality of the data. Expenditure and employment values associated with business counts below a minimum threshold are suppressed. Additionally, a dominance rule identifies and suppresses any cells where a small number of businesses account for a majority of the associated expenditure or employment. Additional cells are also suppressed to avoid disclosure by deduction.

### **Links to Data**

Data tables are available [here](#).