Office for National Statistics

Statistical bulletin

Business enterprise research and development, UK: 2014

Annual spending and numbers employed on research and development in the UK broken down by product sector, and civil and defence businesses.

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1 . Main points

- In 2014, total expenditure on Research and Development (R&D) performed in UK businesses, in current prices, increased by 6% to £19.9 billion compared with 2013
- Civil R&D expenditure increased by 7% in 2014 to £18.4 billion, while defence R&D expenditure decreased by 6% in 2014 to £1.6 billion
- In 2014, expenditure on R&D performed in UK foreign-owned businesses increased by 2% and accounted for 52% of total expenditure
- Business R&D expenditure as a proportion of current price Gross Domestic Product (GDP) in 2014 remained unchanged from 2013, at 1.1%
- In 2014, total expenditure on R&D performed in UK businesses, in constant prices, increased by 5% compared with 2013
- In 2014, total business employment in R&D in the UK increased by 7% to 192,000 Full Time Equivalents (FTE)

2 . Overview

This release provides estimates of businesses' expenditure and employment relating to R&D performed in the UK in 2014. These statistics are presented on a current price basis, which reports prices as they were at the time of measurement and not adjusted for inflation, and constant prices, which are prices adjusted for inflation between years using the GDP deflator. The latter is more appropriate when analysing changes in R&D expenditure over time.

R&D is defined as “creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications”. The statistics are produced according to internationally agreed standards defined by the Organisation for Economic Cooperation and Development (OECD), as published in the “Frascati” Manual.

R&D statistics are collated using information from 5,500 businesses [1] from across the UK and provide data from 1993 onwards. These data are used across government for policy and monitoring purposes on science and technology, of which R&D is an important part, and are also used in academia and the private sector. From 2014, R&D will contribute to the formation of UK assets, and therefore feed into key economic statistics such as GDP and the value of the UK’s net worth.

In March 2016, we will publish UK Gross Domestic Expenditure on Research and Development (GERD) for the year 2014. The GERD statistical bulletin will include estimates for R&D carried out by 4 sectors of the economy: namely business enterprise (BERD), higher education (HERD), government including research councils (GovERD) and private non-profit (PNP) organisations. GERD is the preferred measure for use in international comparisons of overall R&D expenditure.

We also publish the UK Government Expenditure on Science, Engineering and Technology (SET) statistical bulletin. SET statistics are broader than just research and development (R&D), as they comprise government R&D expenditure (performed in the UK and overseas), knowledge transfer activities, the indicative UK contributions to the European Union’s (EU) R&D expenditure, and personnel associated with scientific and technical postgraduate education and training.

Notes for overview

1. Each year approximately 4,000 businesses are selected for this survey by us from a continually updated register of known R&D performers in England, Scotland and Wales. In addition to this, approximately 1,500 businesses in Northern Ireland are surveyed by the Department for Finance and Personnel, Northern Ireland (DFPNI) and their estimates added to those collected by us to form UK totals.

3 . Your views matter

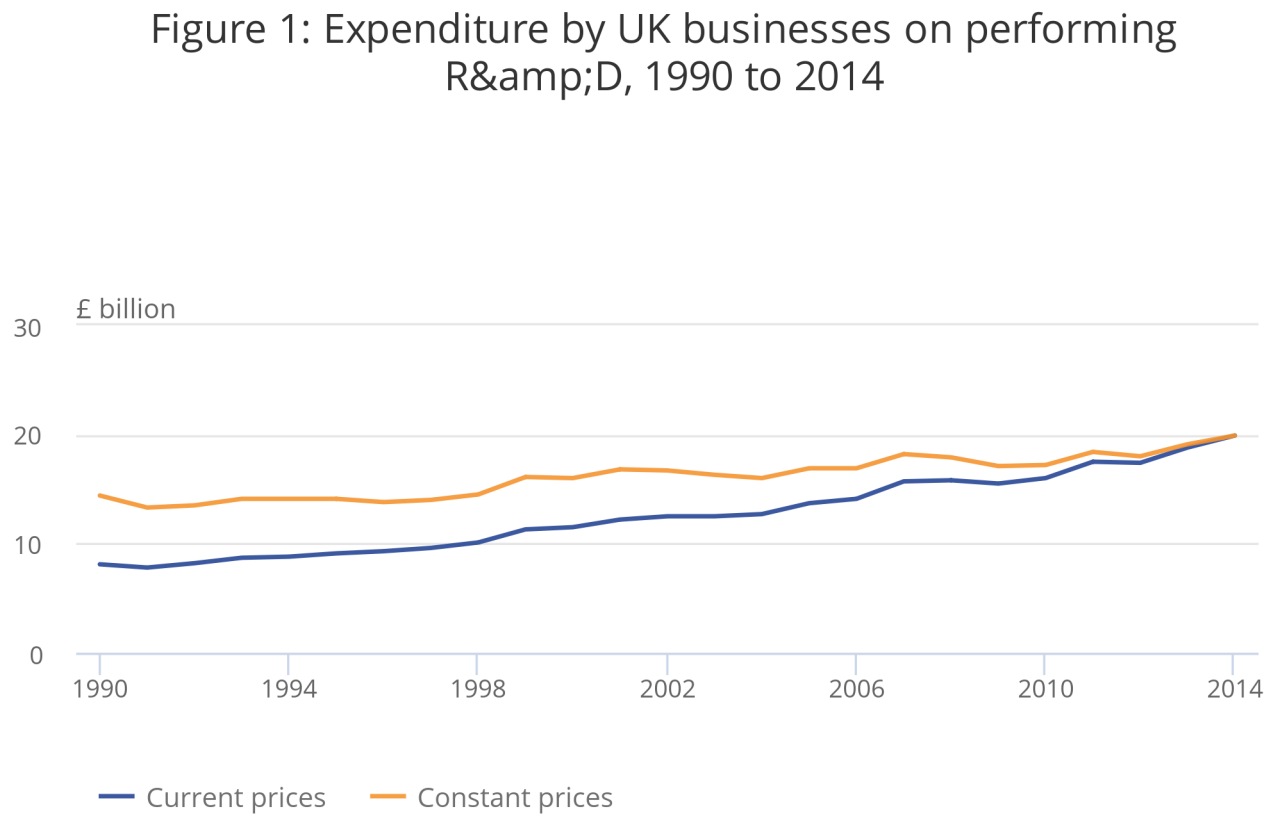
We are constantly aiming to improve this release and its associated commentary. We would welcome any feedback you might have, and would be particularly interested in knowing how you make use of these data to inform your work. Please contact us via email: RandD@ons.gsi.gov.uk or telephone Cecil Prescott on +44 (0) 1633 456767.

4 . R&D expenditure

Expenditure on R&D by UK businesses reached £19.9 billion in 2014 in current prices, up from £8.1 billion in 1990. The change in R&D expenditure reflected a steady increase over the period, with an average annual growth rate of 3.8%.

In constant price terms, the value of R&D expenditure in 2014 (£19.9 billion) reached its highest level on record, surpassing 2013's high by £0.9 billion. A long-term upward trend is still evident when considering R&D expenditure in constant price terms, with an average annual growth rate of 1.4% since 1990 levels (£14.4 billion) (Figure 1).

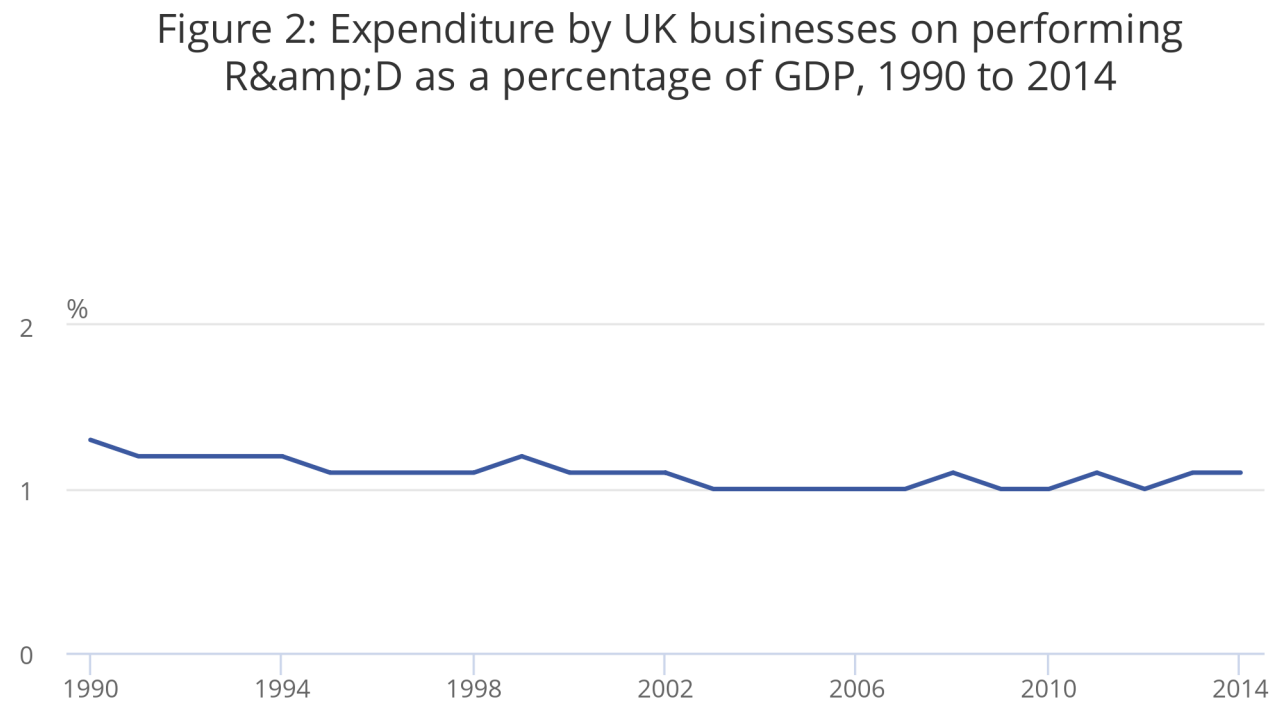
Figure 1: Expenditure by UK businesses on performing R&D, 1990 to 2014



Source: Office for National Statistics

Figure 2 shows total business R&D expenditure in 2014 represented 1.1% of GDP. This estimate is in line with recent years which have fluctuated between 1.0 and 1.1 every year since 2000.

Figure 2: Expenditure by UK businesses on performing R&D as a percentage of GDP, 1990 to 2014



Source: Office for National Statistics

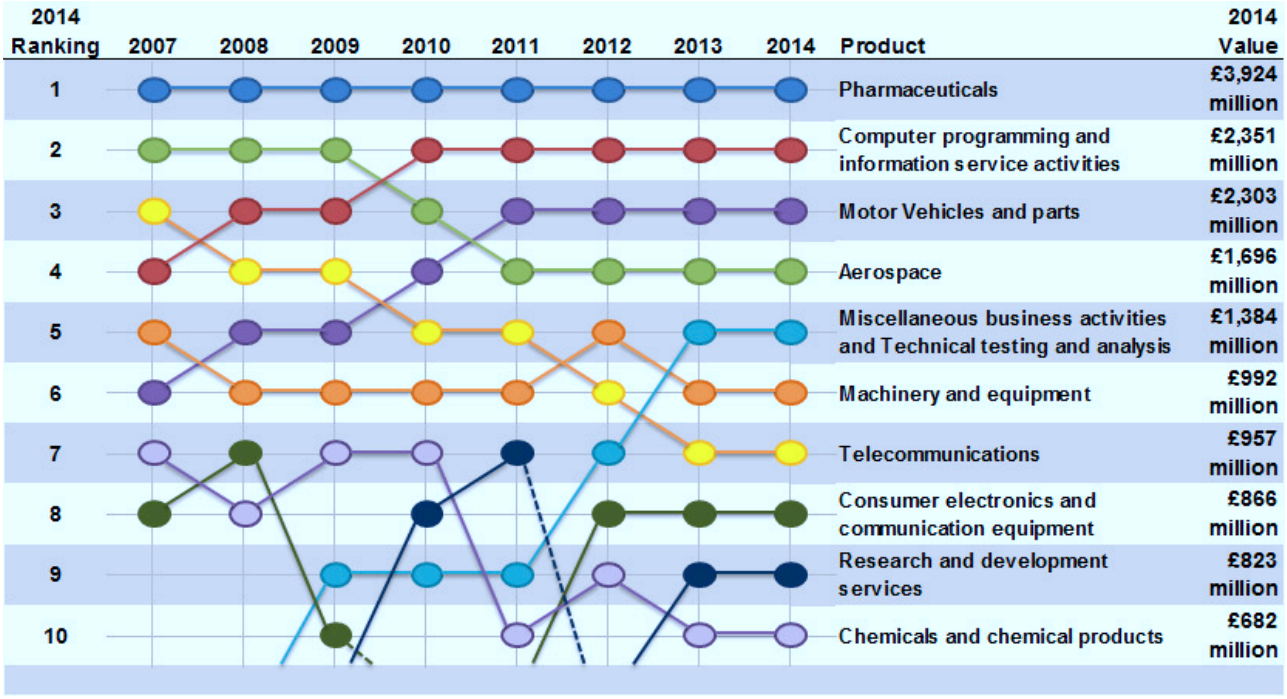
5 . R&D expenditure by product group

On an annual basis, the 400 largest R&D performers, which accounted for approximately 79% of the 2014 total R&D expenditure estimate, are asked to select the industry product groups that best describe the type of R&D activities that they undertake. For the 2014 survey, the largest 400 performers were those businesses previously reporting more than approximately £4.4 million expenditure on performing R&D. The concept of "product groups" is discussed in detail as part of the background notes to this release (Background Note 9).

Since 2013, 24 of the 33 product groups experienced an increase in levels of R&D expenditure by UK businesses in current prices, while 7 product groups decreased. In terms of percentage growth, the largest increases were in the Casting of iron and steel (89%), Wholesale and retail trade (47%) and Construction (45%) product groups.

In 2014, Pharmaceuticals continued to be the largest product group, with £3.9 billion expenditure in current prices, accounting for 20% of total expenditure on R&D performed in UK businesses, despite experiencing decreasing expenditure for a third successive year (Figure 3).

Figure 3: Expenditure by UK businesses on performing R&D in current prices, by largest product groups, 2007 to 2014



Source: Office for National Statistics

The largest increase in an individual product group was in the Motor vehicles and parts group, which increased for the third year in succession, to £2.3 billion in 2014, an increase of £236 million (11%) from the estimate of £2.1 billion in 2013, accounting for 12% of total expenditure on R&D performed in UK businesses in 2014.

More evidence of the growth in the Motor Industry can be viewed in our statistical bulletin "UK Manufacturers" Sales by Product (PRODCOM) for 2014.

Another notable increase was in the Computer programming and information services activities group which increased by £220 million in current prices from the 2013 estimate of £2.1 billion in 2013, a 10% increase to £2.4 billion. In 2014, this group also accounted for 12% of total expenditure on R&D performed in UK businesses.

Other product groups reporting around £1.0 billion or more R&D expenditure in the UK in 2014 were:

- Aerospace, £1.7 billion (9% of total R&D expenditure)
- Miscellaneous business activities; Technical testing and analysis, £1.4 billion (7%)
- Machinery and equipment, £992 million (5%)
- Telecommunications £957 million (5%)

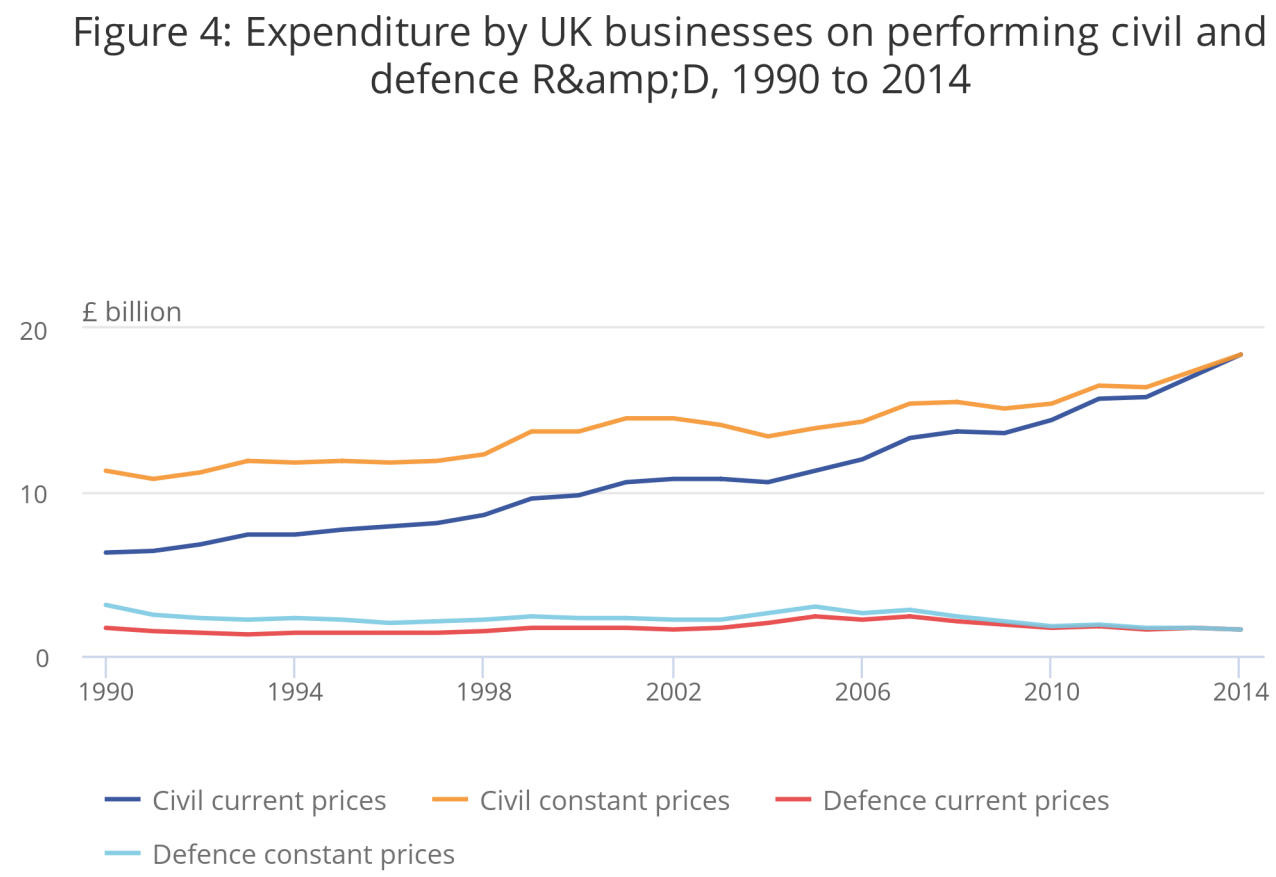
These 7 product groups accounted for 68% of the total UK business R&D expenditure in 2014.

6 . Civil and defence R&D expenditure, by broad product group

R&D expenditure statistics can be split between the civil and defence sectors. Expenditure on R&D performed by UK businesses in the civil sector in 2014 (£18.4 billion) accounted for 92% of the total, with the remainder accounted for by defence (£1.6 billion). The value of R&D expenditure within the civil sector in 2014 reflected a 7% rise on the previous year, while expenditure on defence R&D experienced a decline of 6% over the same period.

Figure 4 presents civil and defence R&D expenditure since 1990, and highlights that, while R&D expenditure by businesses in the civil sector increased by an annual average growth rate of 2.1% in constant prices since 1990, business expenditure on R&D in the defence sector decreased by an average of 2.9% per annum over the same period.

Figure 4: Expenditure by UK businesses on performing civil and defence R&D, 1990 to 2014



Source: Office for National Statistics

Civil R&D expenditure can be further split between the Manufacturing, Services and “Other” sectors (see Table 5 in 2014 Datasets). In 2014, expenditure in Manufacturing accounted for 65% of total civil expenditure on R&D performed in UK businesses, compared with 75% in 2003. Manufacturing accounted for 88% of total defence expenditure on R&D performed in UK businesses in 2014, compared with 90% in 2003.

Mechanical engineering, part of the Manufacturing sector, was the largest contributor to defence expenditure on R&D performed in UK businesses (29% of total defence expenditure) in 2014, with Aerospace (23%) the second highest.

7 . R&D expenditure by industry

Estimates of R&D expenditure on an industry basis, according to the Standard Industrial Classification (SIC), were first introduced in the 2011 BERD statistical bulletin to broaden the scope of the estimates (See Table 27 in 2014 datasets).

It is important to note that estimates of R&D by industry are not directly comparable with the estimates of R&D expenditure by product group. This is because businesses may report significant R&D in product groups which are different to the main classification of their business according to the SIC. See Background Notes 9 and 10, which explain the concepts of product groups and SIC in more detail.

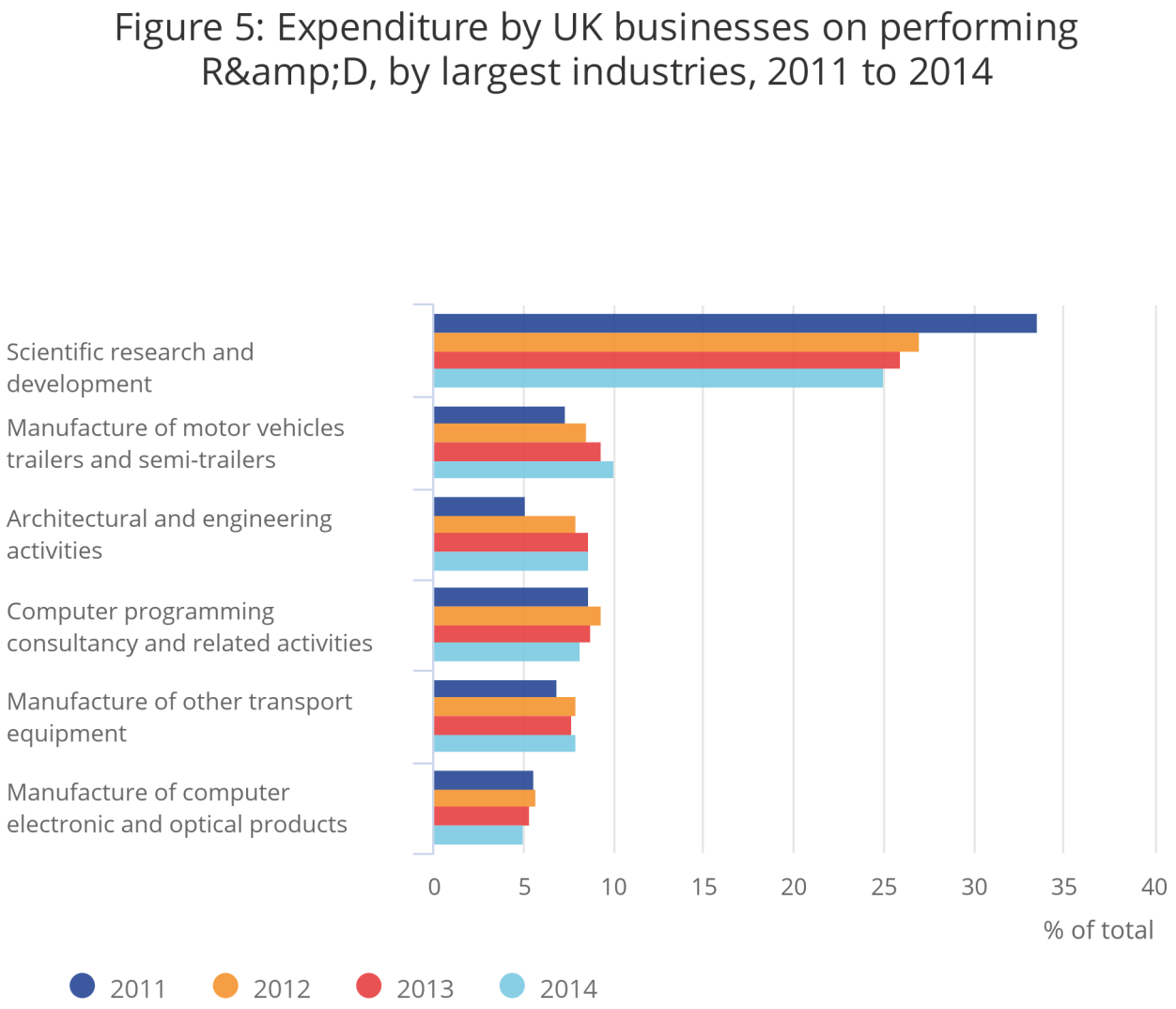
The highest level of business R&D expenditure in 2014 by SIC was performed by businesses that were classified to the “Scientific Research and Development” industry, at £5.0 billion which represented 25% of total expenditure (Figure 5).

Five other industries had R&D expenditure of around £1.0 billion or more:

- Manufacture of motor vehicles and trailers, £2.0 billion (10%)
- Architectural and engineering activities, £1.7 billion (9%)
- Computer programming, consultancy and related activities £1.6 billion (8%)
- Manufacture of other transport equipment, £1.6 billion (8%)
- Manufacture of computer, electronic and optical products, £1.0 billion (5%)

These 6 industries accounted for 65% of the total UK business R&D expenditure in 2014.

Figure 5: Expenditure by UK businesses on performing R&D, by largest industries, 2011 to 2014



Source: Office for National Statistics

8 . Employment in UK businesses on performing R&D

Estimates of employment in R&D are produced on a full-time equivalent (FTE) basis, whereby businesses convert part-time employees' hours into full-time employees' equivalent. FTE estimates provide a better indication of total labour input than a simple headcount.

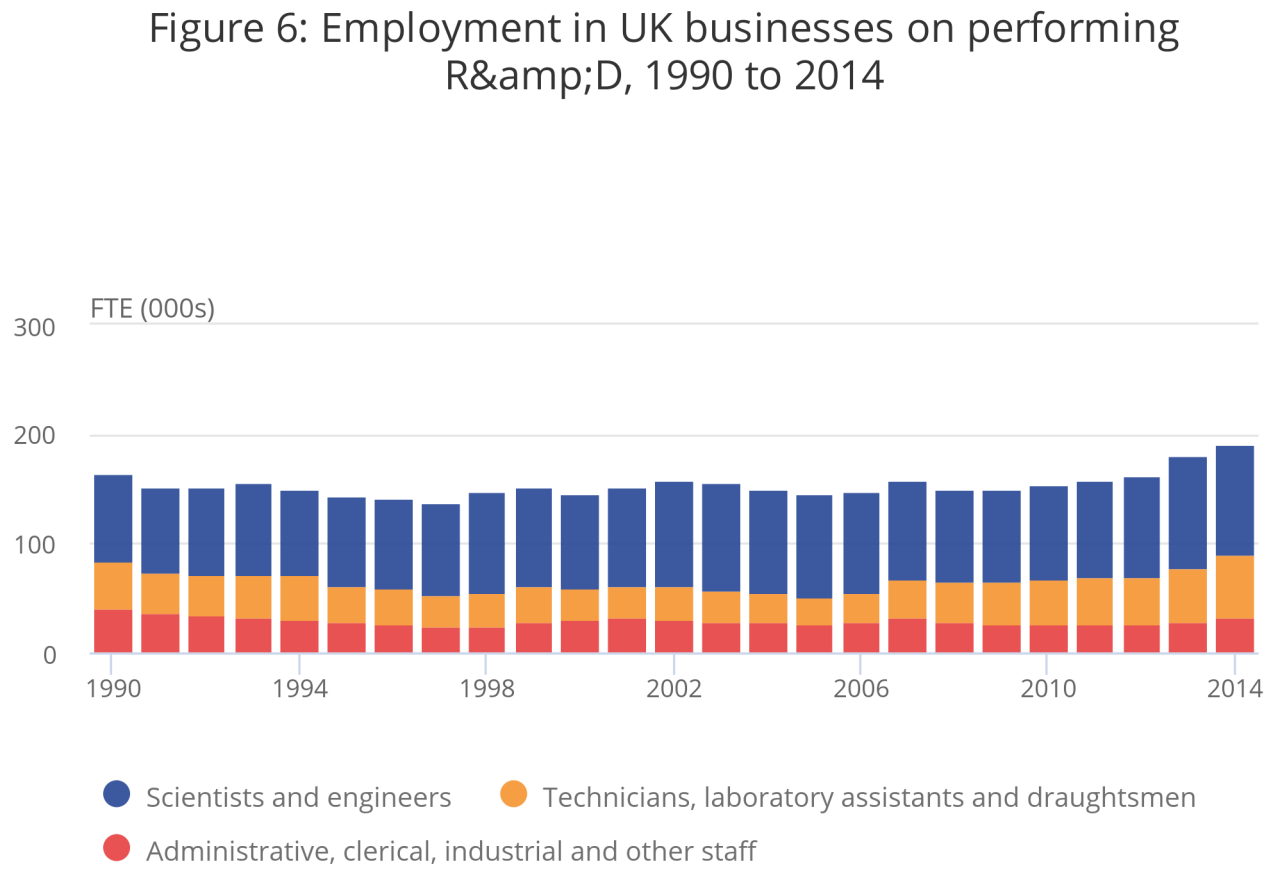
The lowest level of employment in R&D in the last decade occurred in 2005, when 146,000 FTE were employed, while the highest level (192,000) was reached in 2014 (Figure 6).

The number of FTE staff employed in R&D has increased from 179,000 in 2013 to 192,000 in 2014, an increase of 7%. While there has been growth in recent years in the number of people working on R&D, this should be seen in the context of a growth in the total employment in the UK labour market. Therefore, part of the growth in employment on R&D may be reflective of the wider growth in total employment in the economy. See our labour market statistics for more information on total employment levels.

The 2014 estimate comprised:

- 102,000 scientists and engineers (53%)
- 57,000 technicians (30%)
- 33,000 administrative staff (17%)

Figure 6: Employment in UK businesses on performing R&D, 1990 to 2014



Source: Office for National Statistics

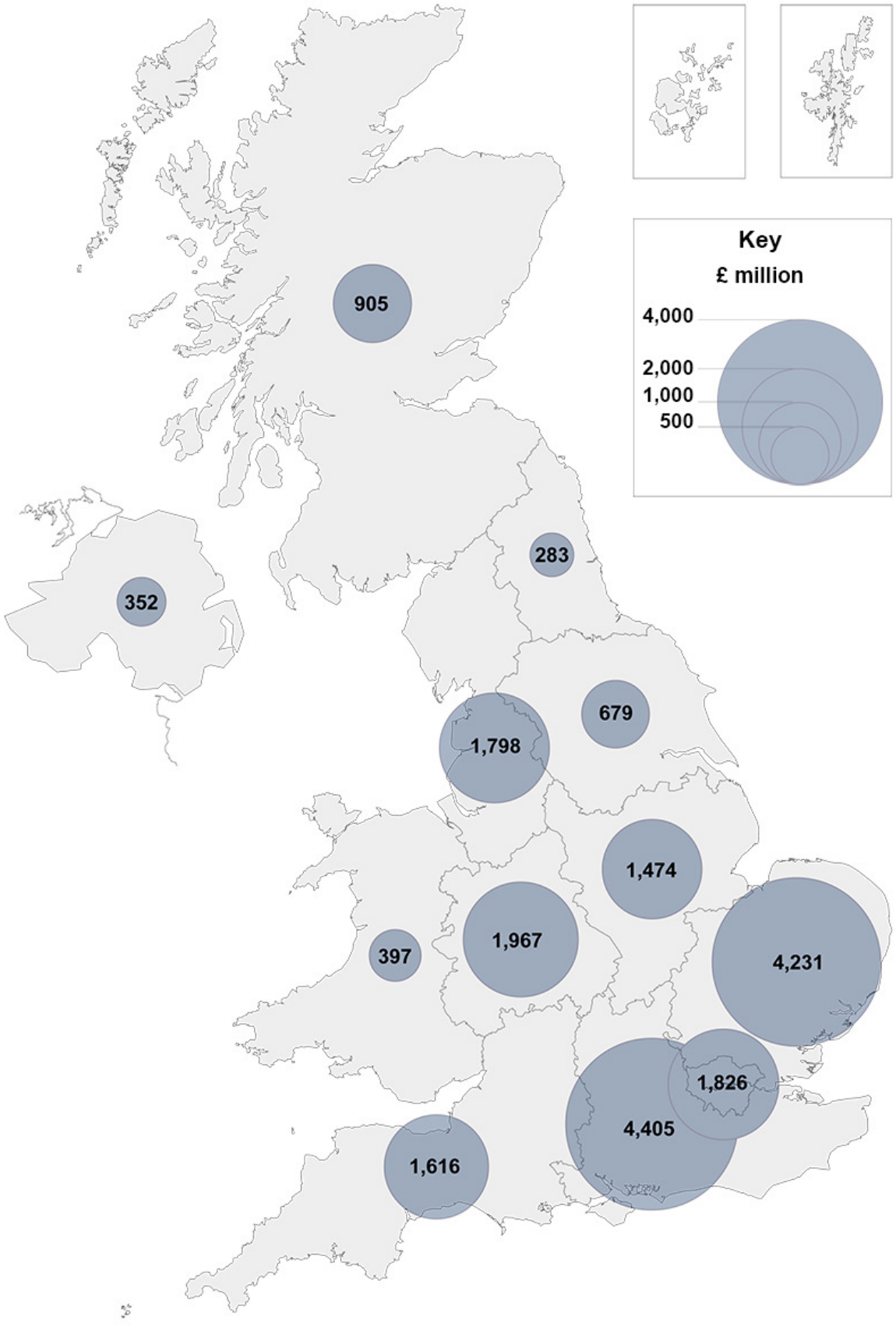
9 . Country and regional breakdown of expenditure and employment in UK businesses on performing R&D

It is possible, using data from the BERD survey, to analyse R&D expenditure by country and region. In this context, “region” refers to the location where a business performs R&D, not the location of either the business’ headquarters or that of any external funders.

The South East and East of England continue to dominate where R&D expenditure takes place in the UK. These 2 regions combined accounted for 43% of UK business R&D expenditure in 2014 (Map 1). These regions combined also employed 75,000 FTE which made up 39% of total R&D employment in 2014.

The regions or countries with the lowest levels of employment in R&D were the North East employing 4,000 FTE, with Wales and Northern Ireland both employing 5,000 FTE R&D staff. (Map 2). These regions or countries also have the lowest corresponding totals of expenditure on business R&D.

Map 1: Expenditure by UK businesses on performing R&D, by country or region, 2014



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Source of boundary for Northern Ireland: UNEP (2015): UNEP Environmental Data Explorer. United Nations Environment Programme. http://geodata.grid.unep.ch.

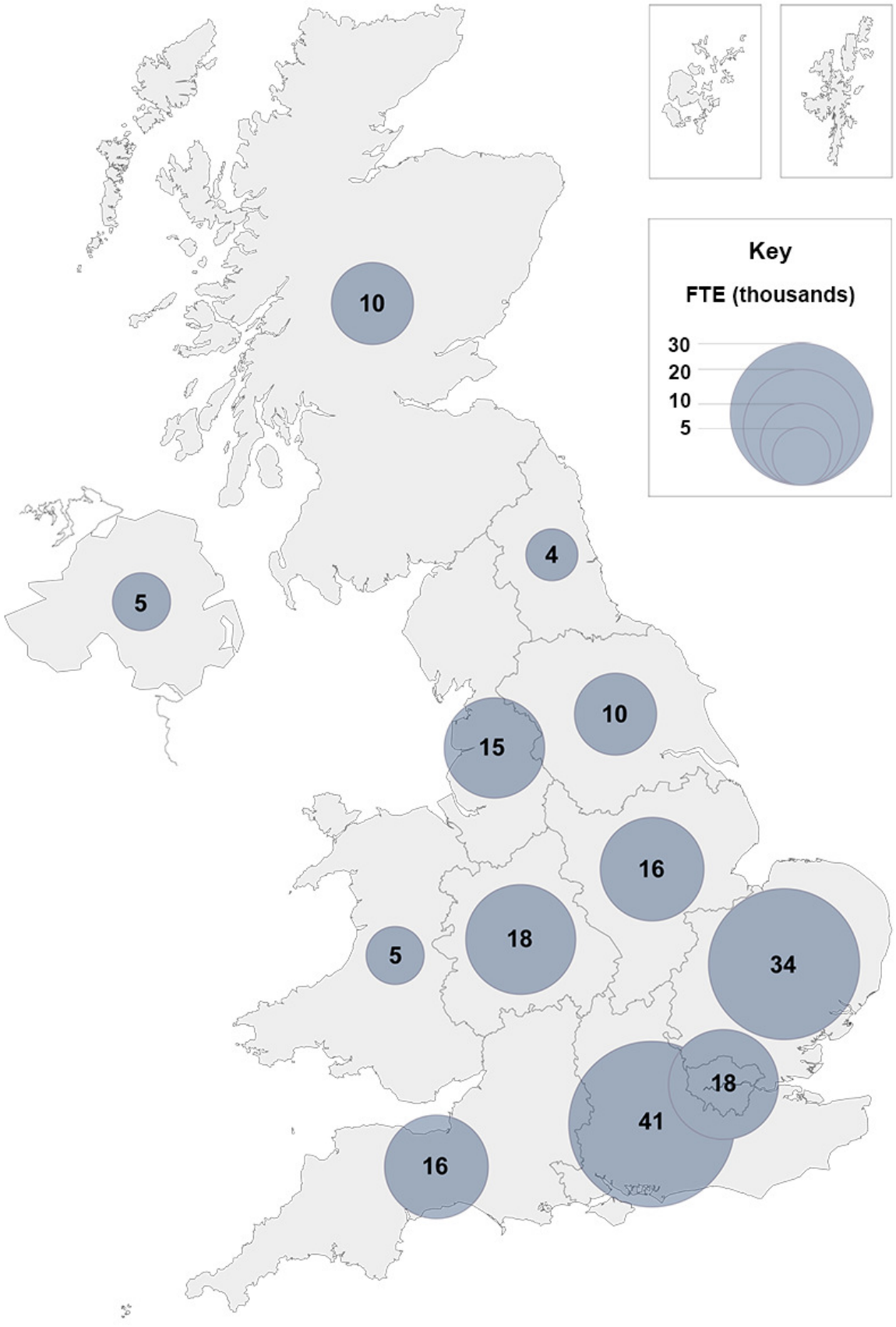
Source: Office for National Statistics

The majority (92%) of UK R&D expenditure was carried out in England in 2014.

The largest overall increase in expenditure by region since 2013 was in London, which rose by £490 million (37%) in current prices from the 2013 estimate of £1.3 billion. West Midlands also showed an increase in expenditure of 16% in current prices since 2013, from £1.7 billion to £2.0 billion in 2014. South West, Wales and Yorkshire and The Humber also showed increases of 11%, 8% and 8% respectively in R&D expenditure in 2014 compared with 2013.

The largest overall decrease in expenditure by region since 2013 was in Northern Ireland, which fell by £82 million (19%) in current prices from the 2013 estimate of £434 million. The change in R&D expenditure in Northern Ireland is the result of several factors, including revisions to reported data, relocation of R&D performance or R&D projects reaching maturity resulting in the R&D work for companies coming to a natural conclusion. The latter can have a large impact on annual Northern Ireland R&D estimates particularly where larger companies have concluded a significant R&D project.

Map 2: Employment in UK businesses on performing R&D, by country or region, 2014



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Source of boundary for Northern Ireland: UNEP (2015): UNEP Environmental Data Explorer. United Nations Environment Programme. http://geodata.grid.unep.ch.

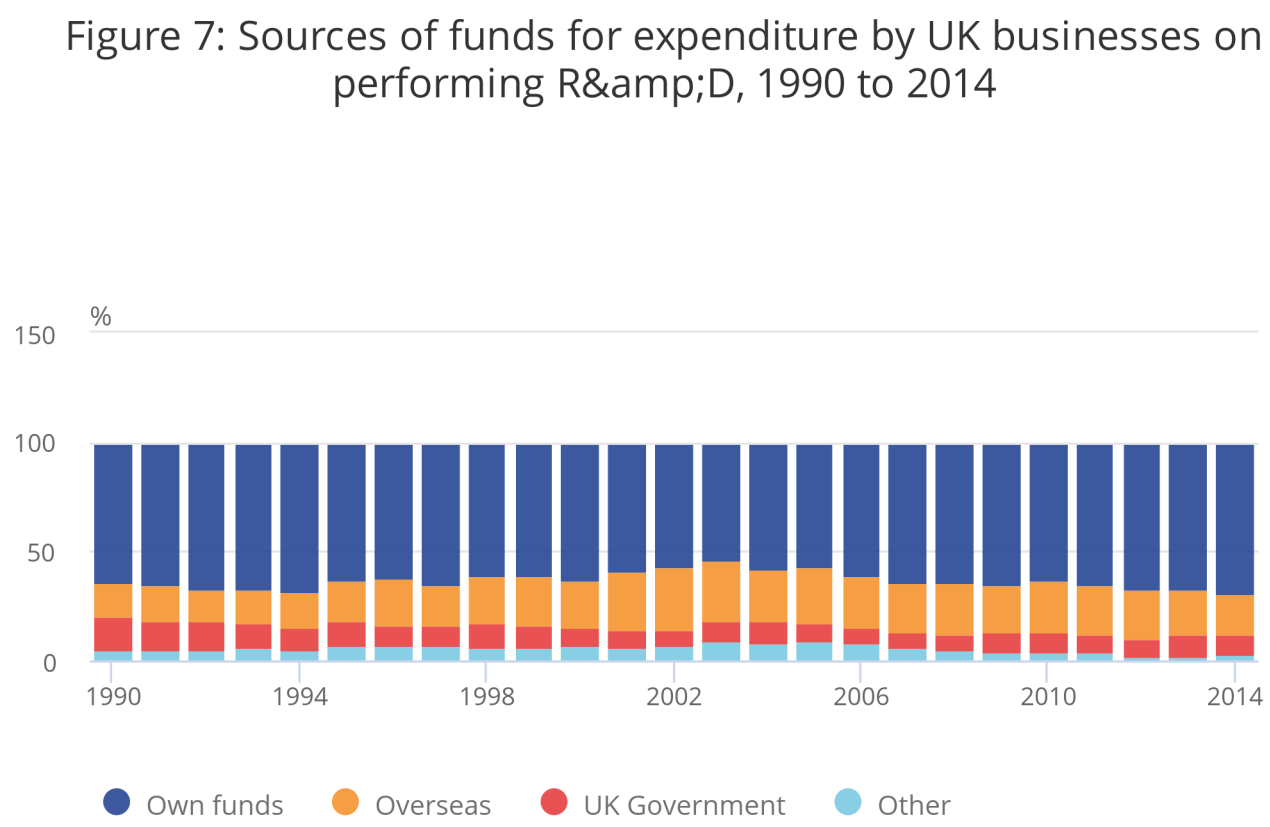
Source: Office for National Statistics

10 . Sources of funds for expenditure on R&D performed in UK businesses

The largest source of R&D funding in 2014 was businesses' own funds at £13.7 billion, which increased by £1.0 billion (8%) on the 2013 estimate of £12.7 billion. Businesses' own funds accounted for 69% of total business R&D expenditure in 2014 compared with the 2013 estimate of 68%.

Overseas funding of UK businesses' R&D was £3.8 billion in 2014, as it was in 2013. This accounted for 19% of total expenditure by UK businesses on performing R&D in 2014, compared with the 2013 estimate of 20% (Figure 7).

Figure 7: Sources of funds for expenditure by UK businesses on performing R&D, 1990 to 2014



Source: Office for National Statistics

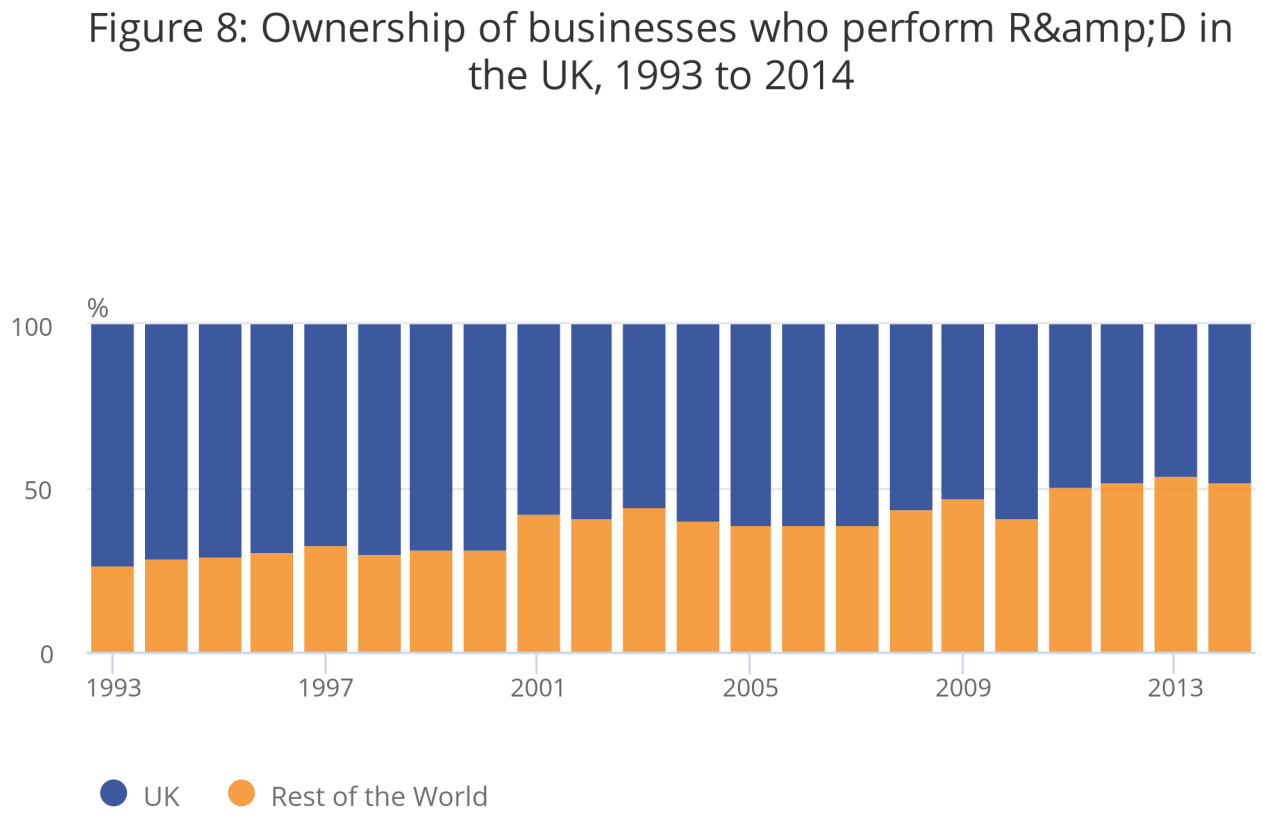
The UK government's funding of businesses' R&D in 2014 was £1.9 billion, an increase of £55 million (3%) in current prices from the 2013 estimate of £1.8 billion. This represented 9% of total business R&D expenditure. UK government funding was mostly in the defence sector (£1.1 billion), which made up 57% of government funding of business R&D expenditure. This includes government-awarded contracts to UK businesses to develop aircraft, naval ships, submarines and their systems and equipment.

11 . Ownership of businesses performing R&D in the UK

In 1993, when the BERD survey began on an annual basis, 73% of UK business R&D expenditure was by UK-owned businesses and 27% by foreign-owned businesses. The majority of UK business R&D expenditure continued to be performed by UK-owned businesses until 2011, when for the first time, just over half (51%) of business R&D expenditure in the UK was by foreign-owned businesses. This pattern of ownership continued in 2012 and 2013 with 52% and 54% respectively. In 2014, expenditure on R&D in the UK by UK-owned businesses increased by 11% from 2013. Expenditure on R&D in the UK by foreign-owned businesses increased by 2% and now constitutes 52% of total expenditure in 2014, a slight decrease from the 54% estimate in 2013 (Figure 8).

On 15 March 2013, we published R&D expenditure by foreign owned businesses, which contained more detailed analysis of the pattern of ownership of businesses that performed R&D between 1995 and 2011. This was based on the estimates that had been included in the 2011 BERD statistical bulletin. It should be noted that the original 2011 estimate of the proportion of R&D expenditure by foreign-owned businesses has been revised upwards from 50% to 51%.

Figure 8: Ownership of businesses who perform R&D in the UK, 1993 to 2014



Source: Office for National Statistics

12 . International comparison

When comparing total business R&D intensity across countries, it is important to take into account differences in industrial structure. The Organisation for Economic Co-operation and Development (OECD) produces a Science, Technology and Industry Scoreboard to facilitate these comparisons.

In March 2012, as part of a publication "The UK R&D Landscape", it was reported that "the business enterprise component of R&D expenditure in the UK is low by international standards, even after adjusting for structural difference between countries. It is also concentrated in the hands of a few very large firms and the small number of industrial sectors in which they are based".

13. Background notes

1. **Main issues specific to this bulletin**

   This is the latest annual release about expenditure and employment in Research and Development (R&D) by UK businesses. The results in this release are in respect of 2014. We began publishing annual data on business expenditure and employment in R&D in 1993. The source of the information is the Business Enterprise Research and Development (BERD) survey. A quality report (242.6 Kb Pdf) for the BERD survey is available on our website.

   We conduct the BERD survey annually from a continually updated register of known R&D performers in England, Scotland and Wales. In addition to this, businesses in Northern Ireland are surveyed by the Department for Finance and Personnel, Northern Ireland (DFPNI) and their estimates added to those we collect to form UK totals. As part of the 2014 survey, approximately 5,500 (4,000 Great Britain and 1,500 Northern Ireland) questionnaires were sent to businesses known to perform R&D; this included around 400 of the largest R&D performers, which accounted for approximately 79% of the 2014 total R&D expenditure estimate. Smaller R&D performers and others believed to be performing R and D were selected using various sampling fractions. Industry product group and business employment sizes were the stratification variables. Completed questionnaires were returned by 5,065 businesses representing a response rate of 92%.

   This statistical bulletin reports business R&D performed in the UK, irrespective of the residence of the ultimate owner. Overseas activities of affiliates of UK businesses are not included. Gross expenditure of R&D in the UK performed by all sectors of the economy, commonly referred to as GERD, is reported separately in the annual GERD statistical bulletin.

2. **National statistics**

   The UK Statistics Authority (UKSA) has reviewed this publication in its report: "Assessment of compliance with the Code of Practice for Official Statistics: Statistics on Research and Development" which was published on 28 June 2012. This review recommended that the UK Business Enterprise Research and Development estimates be designated as National Statistics, subject to the Office for National Statistics (ONS) carrying out certain requirements. We have carried out the necessary work to meet these requirements and on 3 June 2013, the UKSA confirmed the National Statistics designation of the BERD publication.

3. **Timeliness and punctuality**

   An internal investigation was carried out in 2012 to identify if it is feasible to publish these R&D statistics earlier than at present. This investigation concluded that it is not possible for us to bring forward the publication of these estimates in the short-term.

   The main reason for this is that DFPNI runs a business R&D survey in Northern Ireland on an annual basis, and provides us with estimates for Northern Ireland to allow aggregate UK statistics to be produced. DFPNI cannot release these data to us earlier than mid-October. As such, production of the BERD UK statistics cannot be brought forward from November.

   As part of this investigation we sought the views of some of the known users of this publication. They unanimously stated that they were content with the current publication timetable.

   It is important to note that improvements have been made to the processes underpinning the production of these estimates over the last few years and as a consequence timeliness has been improved. For example, 2007 data were published in January 2009, thirteen months after the end of the reference year. In contrast, this statistical bulletin has been published less than 11 months after the end of the reference year.

4. **Completeness of coverage**

As part of the assessment of “Statistics on Research and Development” by the UKSA, a requirement was placed on ONS to review the methodology for producing R&D statistics to identify potential gaps in coverage and meet the coverage requirements of European System of Accounts (2010) (ESA10). To meet this requirement and to assist users in their understanding of this complex issue, an information note entitled ” Coverage of the Business Enterprise Research and Development Survey (147 Kb Pdf) ”. was published on 20 November 2012 to address this issue.

5. **Revisions**

The 2012 and 2013 estimates have been revised where necessary to take account of businesses misreporting and late returns.

One indication of the reliability of the main indicators in this release can be obtained by monitoring the size of revisions. Table 1 records the size and pattern of revisions that have occurred over the last 5 years. Please note that these indicators only report summary measures for revisions. (The revised data may itself be subject to sampling or other sources of error).

Table 1: Revisions between first publication and estimates 3 years later, 2007 to 2011

£ million

	Value in latest period	Average revision	Average revision without regard to sign
Expenditure on R and D performed by UK businesses	19,935	-117	135

Source: Office for National Statistics

A spreadsheet is available giving the revisions of estimates from 2007 and the calculations behind the averages in the table.

The revisions table covers estimates of the UK business enterprise R&D expenditure first published from November 2008 (for 2007) to November 2012 (for 2011). A statistical test has been applied to the average revision to find out if there is bias in the estimates. No statistically significant bias was identified.

6. **Sampling variability**

The estimates in this publication are based on a stratified sample drawn from the population of businesses known to actually perform R&D or are likely to be R&D performers. As with any sample survey, the R&D survey is subject to 2 types of possible errors:

- sampling errors, due to only a sample of the population being surveyed - the methodology for estimation of the standard errors used to measure these is currently under review and therefore the standard errors have not been included in this statistical bulletin

- non-sampling errors - these include factors such as population coverage, misreporting and non-response bias; these errors are generally hard to quantify, because of the difficulty in identifying the population of actual or likely R&D performers and because of the problems ensuring that businesses adhere to Frascati R&D definitions - the information note (147 Kb Pdf) referred to in background note 4 provides an overview of the survey design and looks at the methods and sources used to update the sampling frame

7. **Discontinuities in data**

The BERD questionnaire was redesigned after the 2007 survey to better reflect user needs to address concerns about data quality and difficulty in completion. While these changes are viewed as being an improvement, they may have had an impact on the comparability of the data returned. Unfortunately, it is not possible to measure this impact.

8. **General information**

These points should be noted when examining the data tables:

- there may be differences between totals and the sum of their independently rounded totals
- in some tables, entries have been aggregated to avoid disclosure of figures in which the returns of individual businesses could be identified - where this happens, footnotes have been added to the tables
- respondents were asked to make a return for the calendar year 2014 or the nearest 12 month period for which figures were available - data for all years published in this statistical bulletin were collected on the same basis
- it is sometimes necessary to suppress figures for certain items in order to avoid disclosing data from individual institutions - tables which contain data which are disclosive will contain a relevant footnote
- note that £1.0 billion = £1,000 million in this release

9. **Product groups**

The 400 largest R&D performers are asked to select the industry product groups that best describe the type of R&D activities they undertake. In 2010, these product group descriptions were updated to better reflect the current Standard Industrial Classification (SIC 2007) descriptions. For the smaller R&D performers, no product group data were collected. However, the businesses' Standard Industrial Classification (SIC) codes are known from the Inter-Departmental Business Register (IDBR). An assumption is therefore made that R&D expenditure is for the detailed product group that corresponds to the individual businesses' dominant SIC. This approach must be regarded as an approximation since, in practice; an individual business can perform R&D for a range of product groups.

The implementation of SIC 2007, in 2010, resulted in some businesses' R&D moving to a different product group than previously published. The largest impact was with businesses with publishing activities as these moved out of the manufacturing sector and started to be included under miscellaneous business activities. There was also an increase in the Other manufactured goods product group due to businesses being reclassified from Textiles, clothing and leather products, Pulp and paper products, Rubber and plastic products, Fabricated metal products, Machinery and equipment and Precision instruments and optical products.

The broad product groups, which consist of aggregations of the detailed product groups, were refined and expanded in 2002 in order to more accurately categorise the data within the Manufacturing and Service sectors.

10. **Standard Industrial Classification (SIC)**

The UKSA placed a requirement on ONS, as part of the assessment of R&D statistics, to "Review the statistical disclosure practices for BERD statistics, with a view to presenting industry statistics in BERD, and publish the results".

The SIC was first introduced into the UK in 1948 for use in classifying business establishments and other statistical units by the type of economic activity in which they were engaged. The classification provides a framework for the collection, tabulation, presentation and analysis of data, and its use promotes uniformity.

Estimates by SIC are derived by allocating business expenditure to industry classifications using the IDBR. The IDBR is a list of UK businesses that we maintain and holds information on the business activity (based on SIC) of every business.

Estimates of R&D expenditure on an industry basis can be found in Table 27 of this bulletin.

11. **Employment**

Employment estimates are provided by businesses on the basis of "full-time equivalent" staff, averaged over the year. The categories of employment used are:

- Researchers (scientists and engineers) – engaged in the conception or creation of new knowledge, products, methods and systems

- Technicians – perform scientific and technical tasks normally under the supervision of researchers

- Others (administrative) – support staff including skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects

12. **Small and Medium Enterprises (SMEs)**

A table providing estimates of R&D expenditure by Small and Medium Enterprises (SMEs) is included as part of this publication (Table 26). The SME definition used is that under the European Commission Recommendation (2003/361/EC) of 1 January 2003, in which SMEs are defined as enterprises with less than 250 employees. In addition, a criterion of independence is used to exclude enterprises that are part of a larger enterprise group, so that only true SMEs are evaluated. This criterion is important in the context of R&D estimates, given that R&D activity is often carried out by smaller businesses which form part of larger, sometimes multinational, businesses. To apply the SME definition, historic information on business ownership has been obtained using that currently held on the IDBR. Caution should therefore be exercised in making comparisons over time.

13. **Country or regional data**

The following process is used to produce regional estimates of R&D. Businesses receiving the long questionnaire (the 400 largest R&D performers) accounted for approximately 79% of total R&D expenditure in 2014. Each business was asked to provide the workplace postcodes for all the sites at which the business performed R&D and to allocate the total expenditure figures of the business to the sites on a percentage basis. Data for the remaining businesses, which accounted for the remaining 21% of total expenditure, had their regional proportions estimated by grossing up using county region codes from the business register of R&D performers. Aggregation is undertaken at broad product group and county level.

Estimates for regional breakdowns by product group cannot be accurately measured. Regional estimates are compiled by asking for all workplace post codes where in-house R&D is performed and the percentage of the R&D carried out at each workplace. Where there are multiple product groups and multiple regions, R&D for all product groups is pro-rated according to the reported post code breakdown.

14. **Users and uses of data**

A primary use of the data in this statistical bulletin is that it is a main component in measuring the UK's gross domestic expenditure on R&D. The other components are the UK government sector, the higher education sector and the non-profit business sector. Gross expenditure of R&D in the UK performed by all sectors of the economy is reported separately, as part of a publication commonly referred to as GERD. The 2014 GERD estimates will be published in March 2016.

Changes introduced as part of the amendments to the System of National Accounts (SNA) in 2008 and European System of Accounts (ESA) in 2010 specify that R&D, from 2014 onwards, should not be considered as an ancillary activity. Instead expenditure on R&D should constitute investment in R&D assets, which as a consequence need to be capitalised in the UK National Accounts. From 2014, R&D expenditure will contribute to the compilation of the value of the UK's net worth and be included as part of Gross Domestic Product (GDP) estimates.

There are numerous other users within and outside government who use these data to produce various analyses and to inform policy decisions. These include:

- Eurostat (the European Union's Statistical Office) - the UK provides statistics measuring R&D activity in accordance with the European Commission Regulation No. 995/2012 of the European Parliament and the Council. The business estimates in this statistical bulletin are used to provide information that is consistent with other EU member states and to enable benchmarking to be achieved. Europe 2020 targets for economic growth include 3% of the EU's Gross Domestic Product (GDP) (both private and publicly funded) to be invested in R&D by 2020. This means that the estimates in this release are essential in monitoring progress towards this target. It should be noted that at the time of this publication, Eurostat have already published provisional estimates for EU member states gross expenditure on R&D in 2014. These estimates include business sector data. The provisional estimates for the UK were based on projections and therefore when making comparisons with other countries, users are advised to use estimates from this release for UK business R&D expenditure, rather than Eurostat's provisional estimates for the UK.

- OECD – use BERD data for constructing internationally comparable data tables and producing regular statistical publications such as the "Main Science and Technology indicators" (MSTI) and

"The Annual Business Enterprise Research and Development" statistics (ANBERD). The data are also used for analytical studies, which underpin economic analyses and policy reviews.

- The Department for Business Innovation and Skills (BIS) use BERD data to assess policy impact and inform debate. R&D data underpin their assessments of UK innovation performance as well as international work in the field. BIS produced an R&D Scoreboard until 2010. The R&D Scoreboard was the leading source of information and analysis on the world's top R&D active companies, both in the UK and globally. It listed the 1,000 UK and 1,000 global companies investing most in R&D, enabling companies to benchmark their own investments against sector leaders. The Scoreboard was based on data extracted from companies' annual reports and accounts. The last Scoreboard to be published includes commentary and analysis prepared by the Economist Intelligence Unit for the year 2010. View the latest R&D Scoreboard.

- The Welsh Government (WG) and the Scottish Government (SG) use BERD data as a main indicator for measuring the performance of their respective economies within the UK, as well as to monitor and develop R&D policies which seek to increase R&D investment.

- HM Revenue and Customs (HMRC) use BERD data to support analysis and advice on policy development. BERD is one of the main data sources for policy evaluation.

- The Department for Finance and Personnel, Northern Ireland (DFPNI) carry out their own annual survey into R&D and then provide us with the Northern Ireland R&D data for inclusion in the UK published results.

- The Research and Development Society is a UK-based organisation formed to promote the better understanding of R&D in all its forms. It holds regular meetings, usually at the Royal Society in London. The society utilizes BERD data, as a main source of information, for understanding how much UK businesses are investing in R&D on an annual basis and to inform wider debates about R&D.

Requests for BERD data are made from a variety of sources including academics, government departments, and economic consultants. This means that the data are used in various publications. For example, in June 2013, the National Audit Office published Research and Development funding for science and technology in the UK. This report was published in response to a request from the House of Commons Science and Technology Committee, and provides an overview of R&D spending in the UK since 1985.

Do you make use of our annual estimates of UK Business Enterprise Research and Development? If yes, we would like to hear from you (RandD@ons.gsi.gov.uk) and understand how you make use of these statistics. This will enable us, in the future, to better meet your needs as a user.

15. **Coherence and international comparisons**

An information note (807.8 Kb Pdf) providing an assessment of the coherence of R&D statistics with other official statistics was published in 2012 on our website.

16. **ONS business statistics**

There is a Business and Trade Statistics community on the StatsUserNet website. StatsUserNet is the Royal Statistical Society's interactive site for users of official statistics. The community objectives are to promote dialogue and share information between users and producers of official business and trade statistics about the structure, content and performance of businesses within the UK. Anyone can join the discussions by registering via either of the links above.

17. **Social media**

Follow ONS on Twitter and receive up to date information about our statistics.

Like ONS on Facebook to receive our updates in your newsfeed and to post comments on our page.

18. **Special events**

We recently published commentary, analysis and policy on "Special Events" which may affect statistical outputs. For full details go to the Special Events page on our website.

19. **Release policy**

    Details of the policy governing the release of new data are available from our media relations office. Also available is a list of those given pre-publication access to the contents of this release. All data in this release can be downloaded free of charge from our website. Here are the instructions to obtain a full time series of data from the statistical bulletin or release pages:

    - Select “Data in this release”,
    - Select “View datasets associated with this release”,
    - Select the latest release,
    - Select “Select series from this dataset”,
    - Select the reference table of interest,
    - Select “View series”,
    - Select the series of interest (Hint: for a custom download you can use SHIFT to select a range of series or CTRL to select multiple individual series),
    - Select “View selection”,
    - Select “Download”

    Additional standard extracts containing more detail are available on request. Bespoke analyses are also available but there will be a charge for these, please see the R&D charging policy. For more information about either of these services please email RandD@ons.gsi.gov.uk, or telephone +44 (0)1633 456767.

    Any bespoke analysis carried out for R&D customers will be available free of charge on the Published ad hoc data and analysis: Business and Energy pages of our website.

20. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

    These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.

Research and Development in UK Businesses, 2014 - Datasets

Please click on the links below to access the datasets:

UK Business Enterprise Research and Development 2014 - Time Series Datasets

1 Expenditure on R&D Performed in UK Businesses: Current and Constant Prices and as a Percentage of GDP, 2003 to 2014
2 Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2003 to 2014
3 Sources of Funds for R&D Performed in UK Businesses: 2003 to 2014
4 Employment in R&D Performed in UK Businesses: 2003 to 2014
5 Expenditure on Civil and Defence R&D Performed in UK Businesses: Broad Product Groups, 2003 to 2014
6 Sources of Funds for R&D Performed in UK Businesses: Civil and Defence, 2003 to 2014
7 Breakdown of R&D Performed in UK Businesses by Country or Region: Expenditure and Employment, 2003 to 2014

UK Business Enterprise Research and Development 2014 - Additional Datasets

Expenditure on Research and Development

8 Expenditure on R&D Performed in UK Businesses: Broad Product Groups, 2003 to 2014
9 Current and Capital Expenditure on R&D Performed in UK Businesses: 2003 to 2014
10 Current and Capital Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2014
11 Current Expenditure on R&D Performed in UK Businesses: Detailed Product Groups and Type of Research, 2014
12 Extramural Expenditure on R&D by UK R&D Performing Businesses: Detailed Product Groups and Source of Funds, 2014

Sources of Funds for Research and Development

13 Sources of Funds for R&D Performed in UK Businesses: Detailed Product Groups, 2014

Employment on Research and Development

14 Employment in R&D Performed in UK Businesses: Detailed Product Groups, 2014
15 Employment in Civil and Defence R&D Performed in UK Businesses: 2003 to 2014

Civil and Defence Research and Development

16 Expenditure on Civil and Defence R&D Performed in UK Businesses: Detailed Products Groups, 2014
17 Current and Capital Expenditure on Civil and Defence R&D in UK Businesses: 2003 to 2014

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23 Expenditure and Employment on R&D Performed in UK Businesses: By Country of Ownership of Business Performing R&D, 2003 to 2014
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26 Expenditure on R&D Performed in UK Businesses: By Small and Medium Size Enterprises, 2003 to 2014

Standard Industry Classification (SIC) Division

27 Expenditure on R&D Performed in UK Businesses: Standard Industry Classification (SIC) Division, 2010 to 2014

Intensity in Services

28 R&D Intensity in Services: Detailed Product Groups, 2010 to 2014

List of Broad Product Groups Numbers and Titles

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1 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: CURRENT AND CONSTANT PRICES AND AS A PERCENTAGE OF GDP, 2003 TO 2014

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£ million

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Current prices	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**
Constant prices (2014)		16,291 †	15,997	16,858	16,863	18,171	17,858	17,135	17,185	18,406	18,030	19,068	19,935
Current prices GDP	**DLHT**	**1,207,642** †	**1,270,156**	**1,353,624**	**1,428,636**	**1,500,464**	**1,504,135**	**1,503,577**	**1,574,905**	**1,629,096**	**1,678,863**	**1,755,227**	**1,829,221**
As a % of GDP		1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.1	1.1

2014 = 100

Source: Office for National Statistics

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GDP deflator used to convert current prices to constant prices	76.761 †	79.154	81.469	83.877	86.268	88.553	90.647	93.368	94.818	96.555	98.589	100

1 † crosses denote earliest data revision.

2 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2003 TO 2014

CURRENT PRICES

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		£ million											% of total
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2014
TOTAL	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**	**100**
Agriculture, hunting and forestry; Fishing	DLBY	136	..	..	88	..	88	..	102	133	132	121 †	119	0.6
Extractive Industries	DLBZ	41	36	59	59	82	90	140	152	195	172 †	294	315	1.6
Food products and beverages; Tobacco products	DLCP	256	258	276	314	328	303	290	306	366	364	437 †	430	2.2
Textiles, clothing and leather products	DLCQ	20	21	18	17	19	15	10	11	14	20	22	22	0.1
Pulp, paper and paper products; Printing; Wood and straw products	DLCT	45	40	52	55	53	56	26	28	21	28	48 †	48	0.2
Refined petroleum products and coke oven products	DLCE	258	234	245	279	274	94	95	73	72	76	69	86	0.4
Chemicals and chemical products	DLCC	614	625	637	684	668	630	610	666	523	665 †	669	682	3.4
Pharmaceuticals	DLCD	3,127	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914	4,208 †	4,099	3,924	19.7
Rubber and plastic products	DLCR	65	63	55	90	79	78	62	80	97	105	99 †	129	0.6
Other non-metallic mineral products	DLCS	56	62	44	51	48	53	57	56	60	47	47	61	0.3
Casting of iron and steel	DLCJ	29	30	34	38	..	47	43	28	44	45	27	51	0.3
Non-ferrous metals	DLCK	4	4	8	6	..	72	..	86	77	56 †	56	76	0.4
Fabricated metal products except machinery and equipment	DLCL	65	77	74	68	91	73	93	93	119	105	113 †	110	0.6
Machinery and equipment	DLCO	662	761	905	929	1,033	790	873	809	973	997 †	1,024	992	5.0
Computers and peripheral equipment	DLCN	55	53	92	67	83	123	151	157	180	187	162	170	0.9
Electrical equipment	DLCA	360	406	394	458	547	577	577	513	509	463	398 †	460	2.3
Consumer electronics and communication equipment	DLCB	871	763	788	748	667	700	547	474	511	689	833 †	866	4.3
Precision instruments and optical products; photographic equipment	DLCM	476	486	475	462	544	591	498	490	599	644 †	622	680	3.4
Motor vehicles and parts	DLCG	894	789	744	754	933	1,156	1,039	1,237	1,525	1,763	2,067 †	2,303	11.6
Other transport equipment	DLCI	..	23	21	25	28	30	..	46	50	48	60	78	0.4
Shipbuilding	DLCH	..	125	127	134	136	157	173	185	226	229	233	262	1.3
Aerospace	DLCF	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511 †	1,639	1,696	8.5
Other manufactured goods	DLCU	35	33	26	24	27	36	98	136	146	133	169 †	200	1.0
Sewerage, waste management, remediation activities	DLCV	2	2	1	1	3	3	9	11	10	12	17	12	0.1
Electricity, gas and water supply	DLCW	36	21	15	21	35	40	66	60	58	106 †	123	133	0.7
Construction	DLCX	..	..	..	17	..	21	..	14	31	64	91 †	132	0.7
Wholesale and retail trade	DLDE	53	76	60	70	37	74	76	177	242	166 †	167	245	1.2
Transport and storage, incl. postal and courier activities	DLCY	..	12	8	16	21	12	24	17	18	..	35	38	0.2
Telecommunications	DLCZ	637	639	1,164	1,330	1,535	1,404	1,330	1,129	1,037	875	838 †	957	4.8
Miscellaneous business activities; Technical testing and analysis	DLDC	308	349	438	399	510	494	555	583	570	864 †	1,208	1,384	6.9
Computer programming and information service activities	DLDB	1,207	1,060	1,069	1,415	1,498	1,465	1,385	1,526	1,847	2,067 †	2,131	2,351	11.8
Research and development services	DLDA	404	211	179	122	156	384	507	618	783	482 †	774	823	4.1
Public administration	DLDD	11	31	32	52	103	71	73	70	67	..	106	98	0.5

Source: Office for National Statistics

1 .. denotes disclosive figures.

2 † crosses denote earliest data revision.

3 Differences may occur between totals and the sum of their independently rounded components.

4 The sum of percentages may be more or less than 100 due to rounding.

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3 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES: 2003 TO 2014

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CURRENT PRICES

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
£ Million													
TOTAL	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**
UK Government	DLDO	1,165	1,290	1,101	1,060	1,072	1,135	1,324	1,407	1,513	1,430 †	1,802	1,857
Overseas total of which:	DLHK	3,548	2,958	3,584	3,262	3,636	3,721	3,458	3,789	3,939	3,850 †	3,848	3,843
European Commission grants	DLDQ	90	42	73	41	27	47	47	62	55	55 †	61	61
Other Overseas	DLDS	3,459	2,917	3,512	3,221	3,609	3,674	3,411	3,727	3,884	3,796 †	3,787	3,782
Other UK Business	DLDU	1,105	1,056	1,272	1,155	994	865	698	718	595	344 †	351	376
Own funds	DLDW	6,685	7,351	7,775	8,665	9,959	10,086	10,047	10,129	11,283	11,696 †	12,691	13,707
Other	DLDY	3	6	2	2	15	7	4	3	122	88 †	106	152

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Per cent												
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
UK Government	9	10	8	7	7	7	9	9	9	8	10 †	9
Overseas total of which:	28	23	26	23	23	24	22	24	23	22 †	20	19
European Commission grants	1	-	1	-	-	-	-	-	-	-	-	-
Other Overseas	28	23	26	23	23	23	22	23	22	22 †	20	19
Other UK Business	9	8	9	8	6	5	4	4	3	2	2	2
Own funds	53	58	57	61	64	64	65	63	65	67 †	68	69
Other	-	-	-	-	-	-	-	-	1	1 †	1	1

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 † crosses denote earliest data revision.

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3 Differences may occur between totals and the sum of their independently rounded components.
4 The sum of percentages may be more or less than 100 due to rounding.
5 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

4 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES: 2003 TO 2014

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		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Full time equivalent in thousands													
TOTAL	**DLEI**	**155**	**150**	**146**	**147**	**158**	**151**	**151**	**154**	**159**	**162** †	**179**	**192**
Scientists and engineers	DLEJ	99	94	94	92	90	86	85	87	90	92 †	101	102
Technicians, laboratory assistants and draughtsmen	DLEK	28	27	25	27	35	37	40	41	42	43 †	51	57
Administrative, clerical, industrial and other staff	DLEL	29	29	26	28	33	28	26	27	27	27	28	33

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Per cent												
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Scientists and engineers	64	63	64	63	57	57	56	56	57	57	56 †	53
Technicians, laboratory assistants and draughtsmen	18	18	17	18	22	25	26	27	26	27	28 †	30
Administrative, clerical, industrial and other staff	19	19	18	19	21	19	17	18	17	17	16	17

Source: Office for National Statistics

1 † crosses denote earliest data revision.
2 Differences may occur between totals and the sum of their independently rounded components.
3 The sum of percentages may be more or less than 100 due to rounding.

5 EXPENDITURE ON CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: BROAD PRODUCT GROUPS, 2003 TO 2014

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£ million

CURRENT PRICES

		Civil													Defence											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TOTAL	**DLBV**	**10,800**	**10,623**	**11,288**	**11,975**	**13,268**	**13,717**	**13,646**	**14,392**	**15,667**	**15,808** †	**17,145**	**18,381**	**DLBW**	**1,706**	**2,039**	**2,446**	**2,169**	**2,409**	**2,097**	**1,886**	**1,653**	**1,785**	**1,601** †	**1,654**	**1,554**
Manufacturing	**DLEP**	**8,098**	**8,180**	**8,270**	**8,564**	**9,372**	**9,712**	**9,484**	**10,036**	**10,815**	**10,868** †	**11,404**	**11,952**	**DLEX**	**1,538**	**1,878**	**2,290**	**1,991**	**2,239**	**1,960**	**1,746**	**1,549**	**1,647**	**1,515** †	**1,491**	**1,375**
Chemicals	DLEQ	..	..	..	..	..	..	..	..	..	..	..	..	DLEY	..	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	DLER	402	492	458	464	634	435	..	456	520	575 †	615	660	DLEZ	326	346	520	533	489	429	..	446	572	526	522 †	443
Electrical machinery	DLES	1,029	935	978	930	934	1,018	867	751	847	1,069	1,194 †	1,308	DLFA	258	287	296	343	362	381	408	393	353	270	199 †	189
Transport equipment	DLET	..	..	..	..	..	..	..	..	..	..	..	..	DLFB	..	..	..	..	..	..	..	..	..	..	..	..
Aerospace	DLEU	871	939	902	908	902	836	905	1,018	1,036	1,162 †	1,229	1,339	DLFC	772	1,026	1,267	924	1,168	897	560	419	402	349 †	410	357
Other manufacturing	DLEV	1,140	1,123	1,146	1,266	1,321	1,226	1,136	1,168	1,398	1,388 †	1,481	1,670	DLFD	105	108	90	70	100	122	115	127	98	130 †	116	113
Services	**DLEW**	**..**	**..**	**2,792**	**3,226**	**3,690**	**3,767**	**3,811**	**..**	**4,425**	**..**	**5,095** †	**..**	**DLFE**	**..**	**..**	**..**	**178**	**169**	**137**	**140**	**..**	**138**	**..**	**163**	**..**
Other: Total	**LDIL**	**..**	**..**	**225**	**185**	**205**	**238**	**350**	**..**	**426**	**..**	**646**	**..**	**LDJJ**	**..**	**..**	**-**	**-**	**-**	**-**	**-**	**..**	**-**	**..**	**-**	**..**
Agriculture, hunting & forestry; Fishing	LDIN	136	..	..	88	..	88	..	102	133	132	121 †	119	LDJL	-	-	..	-	..	-	-	-	-	-	-	-
Extractive industries	LDIS	41	36	59	59	82	90	140	152	195	172 †	294	315	LDKF	-	-	-	-	-	-	-	-	-	-	-	-
Electricity, gas & water supply; Waste management	LDJB	36	21	15	21	35	40	75	..	68	..	140	144	LDKG	-	-	-	-	-	-	-	-	-	-	-	-
Construction	LDJG	..	..	..	17	..	21	24	..	31	..	91	..	LDKS	..	..	..	-	..	-	-	..	-	..	-	..

CONSTANT PRICES (2014)

£ million

		Civil													Defence											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TOTAL	**DLBA**	**14,070** †	**13,421**	**13,856**	**14,277**	**15,380**	**15,490**	**15,054**	**15,414**	**16,523**	**16,372**	**17,390**	**18,381**	**DLBB**	**2,222** †	**2,576**	**3,002**	**2,586**	**2,792**	**2,368**	**2,081**	**1,770**	**1,883**	**1,658**	**1,678**	**1,554**
Manufacturing	**DLBD**	**10,550** †	**10,334**	**10,151**	**10,210**	**10,864**	**10,967**	**10,463**	**10,749**	**11,406**	**11,256**	**11,567**	**11,952**	**DLBL**	**2,004** †	**2,373**	**2,811**	**2,374**	**2,595**	**2,213**	**1,926**	**1,659**	**1,737**	**1,569**	**1,512**	**1,375**
Chemicals	DLBE	..	..	..	..	..	..	..	..	..	..	..	..	DLBM	.. †	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	DLBF	524 †	622	562	553	735	491	..	488	548	596	624	660	DLBN	425 †	437	638	635	567	484	..	478	603	545	529	443
Electrical machinery	DLBG	1,341 †	1,181	1,200	1,109	1,083	1,150	956	804	893	1,107	1,211	1,308	DLBO	336 †	363	363	409	420	430	450	421	372	280	202	189
Transport equipment	DLBH	..	..	..	..	..	..	..	..	..	..	..	..	DLBP	.. †	..	..	..	..	..	..	..	..	..	..	..
Aerospace	DLBI	1,135 †	1,186	1,107	1,083	1,046	944	998	1,090	1,093	1,203	1,247	1,339	DLBQ	1,006 †	1,296	1,555	1,102	1,354	1,013	618	449	424	361	416	357
Other manufacturing	DLBJ	1,485 †	1,419	1,407	1,509	1,531	1,384	1,253	1,251	1,474	1,438	1,502	1,670	DLBR	137 †	136	110	83	116	138	127	136	103	135	118	113
Services	**DLBK**	**..** †	**..**	**3,427**	**3,846**	**4,277**	**4,254**	**4,204**	**..**	**4,667**	**..**	**5,168**	**..**	**DLBS**	**..** †	**..**	**193**	**212**	**196**	**155**	**154**	**..**	**146**	**..**	**165**	**..**
Other: Total	**C3ZE**	**..** †	**..**	**276**	**221**	**238**	**269**	**386**	**..**	**449**	**..**	**655**	**..**	**C3ZJ**	**..** †	**..**	**-**	**-**	**-**	**-**	**-**	**..**	**-**	**..**	**-**	**..**
Agriculture, hunting & forestry; Fishing	C3ZF	177 †	..	..	105	..	99	..	109	140	137	123	119	C3ZK	- †	-	..	-	..	-	-	-	-	-	-	-
Extractive industries	C3ZG	53 †	45	72	70	95	102	154	163	206	178	298	315	C3ZL	- †	-	-	-	-	-	-	-	-	-	-	-
Electricity, gas & water supply; Waste management	C3ZH	47 †	27	18	25	41	45	83	77	72	122	142	144	C3ZM	- †	-	-	-	-	-	-	-	-	-	-	-
Construction	C3ZI	.. †	..	..	20	..	24	26	..	33	..	92	..	C3ZN	.. †	..	..	-	..	-	-	..	-	..	-	..

Source: Office for National Statistics

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GDP deflator used to convert current prices to constant prices	76.761 †	79.154	81.469	83.877	86.268	88.553	90.647	93.368	94.818	96.555	98.589	100		76.761	79.154	81.469	83.877	86.268	88.553	90.647	93.368	94.818	96.555	98.589	100

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 † crosses denote earliest data revision.
4 Differences may occur between totals and the sum of their independently rounded components.
5 See list for detailed breakdown of broad product groups

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6 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES: CIVIL AND DEFENCE, 2003 TO 2014

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CURRENT PRICES

£ million

		Civil													Defence											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
UK Government	DLFG	386	162	156	150	183	258	350	410	394	366 †	719	796	DLFN	778	1,128	945	910	889	877	974	996	1,119	1,064 †	1,083	1,061
Overseas total of which:	DLHS	2,980	2,440	2,656	2,686	2,985	3,189	3,206	3,584	3,788	3,691 †	3,688	3,696	DLIF	568	518	928	576	652	532	251	205	151	159 †	160	148
European Commission grants	DLFH	90	42	73	41	27	47	45	60	53	52 †	60	60	DLFO	-	-	-	-	1	-	2	2	3	2	1 †	1
Other Overseas	DLFI	2,890	2,398	2,583	2,645	2,958	3,143	3,161	3,524	3,735	3,639 †	3,628	3,636	DLFP	568	518	928	576	651	531	250	203	149	157 †	158	147
Other UK Business	DLFJ	1,024	988	1,147	1,044	..	729	..	607	485	277 †	..	323	DLFQ	81	68	125	111	..	136	..	111	109	68 †	..	53
Own	DLFK	6,407	7,027	7,326	8,093	9,196	9,534	9,503	9,787	10,922	11,392 †	12,380	13,426	DLFR	278	325	449	572	763	552	545	341	361	304	312 †	281
Other	DLFL	3	6	2	2	..	7	..	3	78	82 †	..	141	DLFS	-	-	-	-	..	-	..	1	44	6	..	11
TOTAL	**DLBV**	**10,800**	**10,623**	**11,288**	**11,975**	**13,268**	**13,717**	**13,646**	**14,392**	**15,667**	**15,808 †**	**17,145**	**18,381**	**DLBW**	**1,706**	**2,039**	**2,446**	**2,169**	**2,409**	**2,097**	**1,886**	**1,653**	**1,785**	**1,601 †**	**1,654**	**1,554**

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 † crosses denote earliest data revision.
4 Differences may occur between totals and the sum of their independently rounded components.
5 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

7 **BREAKDOWN OF R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION: EXPENDITURE AND EMPLOYMENT, 2003 TO 2014**

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CURRENT PRICES

		Expenditure £ million												% of total	Employment FTE in thousands											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2014	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
United Kingdom	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**	**100**	**155**	**150**	**146**	**147**	**158**	**151**	**151**	**154**	**159**	**162** †	**179**	**192**
England	**DLKI**	**11,748**	**11,885**	**12,847**	**13,312**	**14,649**	**14,847**	**14,360**	**14,868**	**16,151**	**16,017** †	**17,100**	**18,281**	**91.7**	**142**	**137**	**133**	**135**	**145**	**139**	**137**	**140**	**144**	**146** †	**160**	**172**
North East	DLJO	149	257	289	292	331	318	315	308	259	282	323 †	283	1.4	3	3	3	3	4	4	4	4	4	3	5	4
North West	DLJT	1,538	1,739	1,892	1,623	2,021	2,130	1,926	2,074	2,220	1,781 †	1,788	1,798	9	17	16	15	16	17	16	14	14	13	13	13	15
Yorkshire and the Humber	DLJP	335	343	344	384	436	433	454	488	550	600	629 †	679	3.4	6	6	6	6	7	7	7	7	8	8	9	10
East Midlands	DLJQ	862	936	1,006	985	1,062	976	992	1,137	1,146	1,218 †	1,340	1,474	7.4	13	11	11	11	13	12	10	11	12	13	15	16
West Midlands	DLJN	794	758	721	915	995	886	847	886	1,281	1,460 †	1,689	1,967	9.9	14	13	12	13	14	12	12	11	12	14	16	18
East of England	DLJR	2,915	2,672	3,718	3,650	3,992	4,182	3,812	3,846	3,639	3,606 †	4,293	4,231	21.2	32	28	29	26	28	29	30	32	32	30 †	33	34
London	DLKL	669	759	552	882	1,067	1,109	907	877	1,118	1,570 †	1,336	1,826	9.2	8	9	8	10	11	11	10	10	11	13	14	18
South East	DLJS	3,266	3,125	3,125	3,347	3,515	3,466	3,758	3,798	4,579	4,133 †	4,244	4,405	22.1	37	37	36	37	37	35	36	36	37	37	39	41
South West	DLJM	1,221	1,296	1,201	1,232	1,229	1,345	1,349	1,454	1,359	1,367 †	1,459	1,616	8.1	13	13	13	13	14	15	15	16	15	15	16	16
Wales	**DLJU**	**200**	**226**	**232**	**216**	**308**	**243**	**243**	**234**	**252**	**268** †	**368**	**397**	**2**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**4**	**5**
Scotland	**DLJV**	**441**	**430**	**506**	**460**	**543**	**554**	**631**	**619**	**697**	**709**	**897** †	**905**	**4.5**	**6**	**6**	**7**	**6**	**7**	**7**	**7**	**7**	**8**	**8**	**10**	**10**
Northern Ireland	**DLJW**	**116**	**120**	**148**	**157**	**177**	**171**	**297**	**324**	**352**	**415** †	**434**	**352**	**1.8**	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**4**	**4**	**5**	**5**	**5**

Source: Office for National Statistics

1 † crosses denote earliest data revision.
2 FTE - Full Time Equivalents.
3 Differences may occur between totals and the sum of their independently rounded components.
4 The sum of percentages may be more or less than 100 due to rounding.

8 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: BROAD PRODUCT GROUPS, 2003 TO 2014

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£ million

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CURRENT PRICES													
TOTAL	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**
Manufacturing: Total	**DLDF**	**9,636**	**10,058**	**10,560**	**10,555**	**11,612**	**11,672**	**11,230**	**11,585**	**12,462**	**12,383** †	**12,895**	**13,328**
Chemicals	DLDG	3,741	3,864	4,011	4,205	4,602	4,985	5,034	5,339	5,437	4,873 †	4,768	4,607
Mechanical engineering	DLDH	728	838	978	997	1,124	864	..	902	1,091	1,102 †	1,137	1,102
Electrical machinery	DLDI	1,286	1,222	1,274	1,273	1,297	1,400	1,275	1,144	1,200	1,339	1,393 †	1,497
Transport equipment	DLDJ	994	937	892	913	1,097	1,344	..	1,468	1,800	2,040	2,361 †	2,643
Aerospace	DLDK	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511 †	1,639	1,696
Other manufacturing	DLDL	1,245	1,231	1,236	1,336	1,422	1,348	1,251	1,295	1,495	1,518 †	1,597	1,783
Services	**DLDM**	**2,629**	**2,378**	**2,949**	**3,404**	**3,860**	**3,904**	**3,952**	**4,120**	**4,563**	**4,539** †	**5,258**	**5,896**
Other: Total	**LABA**	**..**	**226**	**225**	**185**	**205**	**238**	**350**	**340**	**426**	**487** †	**646**	**711**
Agriculture, hunting & forestry; Fishing	LADE	136	..	..	88	..	88	..	102	133	132	121 †	119
Extractive industries	LADM	41	36	59	59	82	90	140	152	195	172 †	294	315
Electricity, gas & water supply; Waste management	LAEB	36	21	15	21	35	40	75	72	68	118 †	140	144
Construction	LAEM	..	..	..	17	..	21	..	14	31	64	91 †	132

£ million

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CONSTANT PRICES (2014)												
TOTAL	**16,291** †	**15,997**	**16,858**	**16,863**	**18,171**	**17,858**	**17,135**	**17,185**	**18,406**	**18,030**	**19,068**	**19,935**
Manufacturing: Total	**12,553** †	**12,707**	**12,962**	**12,584**	**13,460**	**13,181**	**12,389**	**12,408**	**13,143**	**12,825**	**13,080**	**13,328**
Chemicals	4,874 †	4,882	4,923	5,013	5,335	5,629	5,553	5,718	5,734	5,047	4,836	4,607
Mechanical engineering	948 †	1,059	1,200	1,189	1,303	976	..	966	1,151	1,141	1,153	1,102
Electrical machinery	1,675 †	1,544	1,564	1,518	1,503	1,581	1,407	1,225	1,266	1,387	1,413	1,497
Transport equipment	1,295 †	1,184	1,095	1,088	1,272	1,518	..	1,572	1,898	2,113	2,395	2,643
Aerospace	2,140 †	2,483	2,662	2,184	2,399	1,956	1,617	1,539	1,517	1,565	1,662	1,696
Other manufacturing	1,622 †	1,555	1,517	1,593	1,648	1,522	1,380	1,387	1,577	1,572	1,620	1,783
Services	**3,425** †	**3,004**	**3,620**	**4,058**	**4,474**	**4,409**	**4,360**	**4,413**	**4,812**	**4,701**	**5,333**	**5,896**
Other: Total	**..** †	**286**	**276**	**221**	**238**	**269**	**386**	**364**	**449**	**504**	**655**	**711**
Agriculture, hunting & forestry; Fishing	177 †	..	..	105	..	99	..	109	140	137	123	119
Extractive industries	53 †	45	72	70	95	102	154	163	206	178	298	315
Electricity, gas & water supply; Waste management	47 †	27	18	25	41	45	83	77	72	122	142	144
Construction	.. †	..	..	20	..	24	..	15	33	66	92	132

Source: Office for National Statistics

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GDP deflator used to convert current prices to constant prices	76.761 †	79.154	81.469	83.877	86.268	88.553	90.647	93.368	94.818	96.555	98.589	100

1 .. denotes disclosive figures.
2 † crosses denote earliest data revision.
3 Differences may occur between totals and the sum of their independently rounded components.
4 See list for detailed breakdown of broad product groups

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9 CURRENT AND CAPITAL EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: 2003 TO 2014

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CURRENT PRICES

£ million

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TOTAL	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**
Capital total	**DLEA**	**1,172**	**1,184**	**1,168**	**956**	**1,070**	**865**	**928**	**927**	**1,051**	**1,132** †	**1,030**	**1,634**
of which:													
Land and buildings	DLHO	338	251	204	154	201	185	221	143	126	111 †	152	460
Plant and machinery	DLHQ	834	933	964	802	869	680	706	784	925	1,021 †	878	1,174
Current total	**DLEC**	**11,334**	**11,477**	**12,566**	**13,188**	**14,606**	**14,950**	**14,604**	**15,118**	**16,401**	**16,276** †	**17,769**	**18,301**
of which:													
Salaries and wages	DLEE	5,602	5,977	6,354	6,782	7,697	7,539	7,723	7,937	8,109	8,475 †	9,243	9,489
Other	DLEG	5,732	5,501	6,212	6,407	6,908	7,410	6,881	7,181	8,292	7,801 †	8,527	8,812

Source: Office for National Statistics

1 † crosses denote earliest data revision.

2 Differences may occur between totals and the sum of their independently rounded components.

10 CURRENT AND CAPITAL EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2014

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£ million

	Total	Capital Total	Current Total	Salaries and wages	Other current
TOTAL	**19,935**	**1,634**	**18,301**	**9,489**	**8,812**
Agriculture, hunting and forestry; Fishing	**119**	9	110	45	65
Extractive Industries	**315**	32	284	176	108
Food products and beverages; Tobacco products	**430**	30	400	218	182
Textiles, clothing and leather products	**22**	-	22	17	5
Pulp, paper and paper products; Printing; Wood and straw products	**48**	5	43	25	18
Refined petroleum products and coke oven products	**86**	2	84	52	33
Chemicals and chemical products	**682**	53	629	319	311
Pharmaceuticals	**3,924**	175	3,750	1,676	2,073
Rubber and plastic products	**129**	11	118	65	54
Other non-metallic mineral products	**61**	5	56	35	21
Casting of iron and steel	**51**	-	51	25	25
Non-ferrous metals	**76**	16	60	44	16
Fabricated metal products except machinery and equipment	**110**	8	102	59	44
Machinery and equipment	**992**	39	953	555	398
Computers and peripheral equipment	**170**	5	165	74	91
Electrical equipment	**460**	52	408	225	183
Consumer electronics and communication equipment	**866**	110	757	434	323
Precision instruments and optical products; photographic equipment	**680**	39	641	312	329
Motor vehicles and parts	**2,303**	146	2,158	772	1,386
Other transport equipment	**78**	4	74	46	28
Shipbuilding	**262**	-	262	117	145
Aerospace	**1,696**	172	1,524	797	727
Other manufactured goods	**200**	28	172	106	67
Sewerage, waste management, remediation activities	**12**	-	11	10	1
Electricity, gas and water supply	**133**	34	99	42	57
Construction	**132**	1	131	100	31
Wholesale and retail trade	**245**	6	239	122	117
Transport and storage, incl. postal and courier activities	**38**	-	38	29	9
Telecommunications	**957**	22	935	483	453
Miscellaneous business activities; Technical testing and analysis	**1,384**	38	1,346	766	581
Computer programming and information service activities	**2,351**	449	1,902	1,253	649
Research and development services	**823**	146	677	429	249
Public administration	**98**	1	96	63	34

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 Differences may occur between totals and the sum of their independently rounded components.

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11 CURRENT EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS AND TYPE OF RESEARCH, 2014

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£ million

	Total current	Basic	Applied	Experimental Development
TOTAL	**18,301**	**1,191**	**7,481**	**9,629**
Agriculture, hunting and forestry; Fishing	**110**	-	77	33
Extractive Industries	**284**	6	151	127
Food products and beverages; Tobacco products	**400**	74	154	173
Textiles, clothing and leather products	**22**	1	7	14
Pulp, paper and paper products; Printing; Wood and straw products	**43**	-	14	28
Refined petroleum products and coke oven products	**84**	44	3	37
Chemicals and chemical products	**629**	14	365	251
Pharmaceuticals	**3,750**	227	1,463	2,059
Rubber and plastic products	**118**	20	80	18
Other non-metallic mineral products	**56**	8	16	32
Casting of iron and steel	**51**	-	-	50
Non-ferrous metals	**60**	..	28	..
Fabricated metal products except machinery and equipment	**102**	1	89	12
Machinery and equipment	**953**	24	391	538
Computers and peripheral equipment	**165**	1	53	111
Electrical equipment	**408**	32	59	318
Consumer electronics and communication equipment	**757**	24	410	323
Precision instruments and optical products; photographic equipment	**641**	7	334	301
Motor vehicles and parts	**2,158**	12	300	1,845
Other transport equipment	**74**	-	38	36
Shipbuilding	**262**	..	71	..
Aerospace	**1,524**	208	975	341
Other manufactured goods	**172**	4	49	120
Sewerage, waste management, remediation activities	**11**	-	1	10
Electricity, gas and water supply	**99**	7	45	47
Construction	**131**	13	28	90
Wholesale and retail trade	**239**	3	92	144
Transport and storage, incl. postal and courier activities	**38**	3	9	26
Telecommunications	**935**	38	242	656
Miscellaneous business activities; Technical testing and analysis	**1,346**	76	850	420
Computer programming and information service activities	**1,902**	103	739	1,060
Research and development services	**677**	219	335	124
Public administration	**96**	18	13	65

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 .. denotes disclosive figures.

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3 Differences may occur between totals and the sum of their independently rounded components.

12 EXTRAMURAL EXPENDITURE ON R&D BY UK R&D PERFORMING BUSINESSES: DETAILED PRODUCT GROUPS AND SOURCE OF FUNDS, 2014

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£ million

	Total	United Kingdom	Overseas Government Funded	Overseas Other funds
TOTAL	**6,912**	**1,280**	**95**	**5,537**
Agriculture, hunting and forestry; Fishing	**..**	..	-	..
Extractive Industries	**46**	9	-	37
Food products and beverages; Tobacco products	**56**	26	1	29
Textiles, clothing and leather products	**15**	7	-	7
Pulp, paper and paper products; Printing; Wood and straw products	**1**	-	-	-
Refined petroleum products and coke oven products	**50**	..	..	34
Chemicals and chemical products	**..**	52	..	37
Pharmaceuticals	**4,869**	568	..	..
Rubber and plastic products	**6**	3	-	3
Other non-metallic mineral products	**2**	1	-	1
Casting of iron and steel	**20**	1	-	19
Non-ferrous metals	**4**	-	-	4
Fabricated metal products except machinery and equipment	**4**	1	-	3
Machinery and equipment	**26**	19	-	8
Computers and peripheral equipment	**10**	10	-	-
Electrical equipment	**39**	31	-	8
Consumer electronics and communication equipment	**169**	7	..	..
Precision instruments and optical products; photographic equipment	**79**	13	-	66
Motor vehicles and parts	**701**	233	-	468
Other transport equipment	**-**	-	-	-
Shipbuilding	**4**	2	-	1
Aerospace	**183**	116	10	56
Other manufactured goods	**32**	20	-	13
Sewerage, waste management, remediation activities	**2**	1	-	1
Electricity, gas and water supply	**36**	1	-	35
Construction	**11**	4	-	7
Wholesale and retail trade	**39**	26	2	10
Transport and storage, incl. postal and courier activities	**1**	1	-	-
Telecommunications	**34**	-	-	34
Miscellaneous business activities; Technical testing and analysis	**73**	65	-	8
Computer programming and information service activities	**170**	2	-	168
Research and development services	**90**	15	75	-
Public administration	**4**	3	-	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 .. denotes disclosive figures.

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3 Differences may occur between totals and the sum of their independently rounded components.

4 Extramural R&D is R&D conducted outside the business, in the UK and overseas, funded by the business. The survey covers only those businesses which perform intramural R&D. Businesses whose R&D expenditure is only extramural are excluded from the survey and therefore from these figures. Some businesses extramural expenditure may also be included as part of the intramural expenditure of other companies.

13 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2014

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£ million

	Total Expenditure	UK Government	Overseas	Own Funds	Other
TOTAL	**19,935**	**1,857**	**3,843**	**13,707**	**528**
Agriculture, hunting and forestry; Fishing	**119**	4	34	74	7
Extractive Industries	**315**	2	72	241	-
Food products and beverages; Tobacco products	**430**	3	102	323	3
Textiles, clothing and leather products	**22**	1	-	21	-
Pulp, paper and paper products; Printing; Wood and straw products	**48**	-	2	45	-
Refined petroleum products and coke oven products	**86**	..	..	84	..
Chemicals and chemical products	**682**	10	98	574	1
Pharmaceuticals	**3,924**	19	1,196	2,642	67
Rubber and plastic products	**129**	1	6	122	-
Other non-metallic mineral products	**61**	1	1	59	-
Casting of iron and steel	**51**	6	5	36	3
Non-ferrous metals	**76**	4	1	18	53
Fabricated metal products except machinery and equipment	**110**	1	51	57	-
Machinery and equipment	**992**	405	107	455	25
Computers and peripheral equipment	**170**	-	26	144	-
Electrical equipment	**460**	96	29	308	27
Consumer electronics and communication equipment	**866**	98	436	320	12
Precision instruments and optical products; photographic equipment	**680**	88	53	531	8
Motor vehicles and parts	**2,303**	..	288	1,978	..
Other transport equipment	**78**	15	2	53	8
Shipbuilding	**262**	..	..	32	..
Aerospace	**1,696**	202	200	1,189	106
Other manufactured goods	**200**	5	72	122	1
Sewerage, waste management, remediation activities	**12**	-	-	10	1
Electricity, gas and water supply	**133**	1	31	94	6
Construction	**132**	-	-	127	4
Wholesale and retail trade	**245**	11	40	194	-
Transport and storage, incl. postal and courier activities	**38**	1	7	25	5
Telecommunications	**957**	16	165	748	28
Miscellaneous business activities; Technical testing and analysis	**1,384**	197	103	1,049	34
Computer programming and information service activities	**2,351**	37	555	1,750	8
Research and development services	**823**	370	133	213	108
Public administration	**98**	2	28	68	1

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 .. denotes disclosive figures.

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3 Differences may occur between totals and the sum of their independently rounded components.

4 'Other' includes funds from other UK sources and international organisations.

14 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2014

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Full time equivalent in thousands

	R&D Employment	Scientists and Engineers	Technicians laboratory assistants and draughtsmen	Administrative clerical and others
TOTAL	**192**	**102**	**57**	**33**
Agriculture, hunting and forestry; Fishing	**1**	-	-	-
Extractive Industries	**1**	1	-	-
Food products and beverages; Tobacco products	**4**	2	1	1
Textiles, clothing and leather products	**1**	-	-	-
Pulp, paper and paper products; Printing; Wood and straw products	**1**	-	-	-
Refined petroleum products and coke oven products	**-**	-	-	-
Chemicals and chemical products	**8**	4	3	1
Pharmaceuticals	**24**	11	5	9
Rubber and plastic products	**2**	1	1	-
Other non-metallic mineral products	**1**	1	-	-
Casting of iron and steel	**-**	-	-	-
Non-ferrous metals	**1**	-	-	-
Fabricated metal products except machinery and equipment	**3**	1	1	1
Machinery and equipment	**12**	5	4	2
Computers and peripheral equipment	**2**	1	-	-
Electrical equipment	**5**	4	1	1
Consumer electronics and communication equipment	**7**	5	2	-
Precision instruments and optical products; photographic equipment	**7**	4	2	1
Motor vehicles and parts	**16**	8	4	3
Other transport equipment	**1**	-	1	-
Shipbuilding	**2**	1	1	-
Aerospace	**14**	9	4	1
Other manufactured goods	**3**	1	1	-
Sewerage, waste management, remediation activities	**-**	-	-	-
Electricity, gas and water supply	**1**	-	-	-
Construction	**3**	-	-	2
Wholesale and retail trade	**4**	3	1	1
Transport and storage, incl. postal and courier activities	**-**	-	-	-
Telecommunications	**10**	6	3	1
Miscellaneous business activities; Technical testing and analysis	**18**	8	7	3
Computer programming and information service activities	**28**	15	11	3
Research and development services	**11**	7	2	2
Public administration	**2**	1	1	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 Differences may occur between totals and the sum of their independently rounded components.

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15 **EMPLOYMENT IN CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: 2003 TO 2014**

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Full time equivalent in thousands

		Civil													Defence											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Scientist and engineers	DLHD	83	78	77	76	76	74	74	77	81	83 †	92	93	DLHH	16	17	17	16	14	12	11	10	9	9	9 †	9
Technicians laboratory assistants & draughtmen	DLHE	24	24	23	25	31	33	36	37	38	39	46 †	52	DLHI	3	2	2	2	3	4	4	4	4	4	5	5
Admin. clerical industrial & other staff	DLHF	25	25	23	24	29	25	24	25	25	24	25 †	32	DLHJ	4	4	4	4	4	3	2	2	2	2	2	2
TOTAL	**DLHC**	**132**	**126**	**123**	**125**	**136**	**132**	**134**	**138**	**144**	**146** †	**163**	**176**	**DLHG**	**24**	**23**	**23**	**22**	**22**	**19**	**18**	**16**	**15**	**16**	**16**	**16**

Source: Office for National Statistics

1 † crosses denote earliest data revision.
2 Differences may occur between totals and the sum of their independently rounded components.

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16 EXPENDITURE ON CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2014

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£ million

	Total	Civil	Defence
TOTAL	**19,935**	**18,381**	**1,554**
Agriculture, hunting and forestry; Fishing	**119**	119	-
Extractive Industries	**315**	315	-
Food products and beverages; Tobacco products	**430**	430	-
Textiles, clothing and leather products	**22**	22	-
Pulp, paper and paper products; Printing; Wood and straw products	**48**	48	-
Refined petroleum products and coke oven products	**86**	..	..
Chemicals and chemical products	**682**	..	..
Pharmaceuticals	**3,924**	3,924	-
Rubber and plastic products	**129**	..	..
Other non-metallic mineral products	**61**	61	-
Casting of iron and steel	**51**	51	-
Non-ferrous metals	**76**	..	..
Fabricated metal products except machinery and equipment	**110**	..	..
Machinery and equipment	**992**	550	442
Computers and peripheral equipment	**170**	164	6
Electrical equipment	**460**	315	145
Consumer electronics and communication equipment	**866**	829	37
Precision instruments and optical products; photographic equipment	**680**	567	112
Motor vehicles and parts	**2,303**	2,282	22
Other transport equipment	**78**	62	15
Shipbuilding	**262**	..	..
Aerospace	**1,696**	1,339	357
Other manufactured goods	**200**	..	..
Sewerage, waste management, remediation activities	**12**	12	-
Electricity, gas and water supply	**133**	133	-
Construction	**132**	..	..
Wholesale and retail trade	**245**	..	..
Transport and storage, incl. postal and courier activities	**38**	38	-
Telecommunications	**957**	942	15
Miscellaneous business activities; Technical testing and analysis	**1,384**	1,261	123
Computer programming and information service activities	**2,351**	2,326	25
Research and development services	**823**	807	16
Public administration	**98**	..	..

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 .. denotes disclosive figures.

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3 Differences may occur between totals and the sum of their independently rounded components.

17 CURRENT AND CAPITAL EXPENDITURE ON CIVIL AND DEFENCE R&D IN UK BUSINESSES: 2003 TO 2014

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CURRENT PRICES

£ million

		Civil													Defence										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital total	**DLGJ**	**1,112**	**1,127**	**932**	**731**	**834**	**824**	**891**	**907**	**1,024**	**1,101** †	**996**	**1,610**	**DLGT**	**60**	**57**	**236**	**225**	**236**	**41**	**36**	**20**	**27**	**32**	**34** †	**24**
of which:																										
Land & buildings	DLIH	305	237	184	..	..	185	220	142	124	109 †	142	460	DLIL	33	13	20	..	..	-	1	2	2	2	9 †	-
Plant & machinery	DLIJ	807	890	747	..	..	639	671	766	900	991 †	854	1,151	DLIN	27	43	217	..	..	41	35	18	25	30	24	23
Current total	**DLGP**	**9,688**	**9,496**	**10,356**	**11,244**	**12,434**	**12,894**	**12,755**	**13,485**	**14,643**	**14,707** †	**16,149**	**16,770**	**DLGZ**	**1,646**	**1,982**	**2,210**	**1,944**	**2,172**	**2,056**	**1,850**	**1,633**	**1,758**	**1,569** †	**1,620**	**1,530**
of which:																										
Salaries & Wages	DLGL	4,906	5,080	5,451	5,767	6,508	6,488	6,783	7,095	7,223	7,611 †	8,392	8,666	DLGV	696	897	903	1,015	1,190	1,052	941	842	886	864 †	850	823
Other	DLGN	4,782	4,416	4,905	5,477	5,926	6,406	5,972	6,390	7,420	7,096 †	7,756	8,105	DLGX	950	1,085	1,307	929	982	1,004	909	791	872	705 †	770	707
TOTAL	**DLBV**	**10,800**	**10,623**	**11,288**	**11,975**	**13,268**	**13,717**	**13,646**	**14,392**	**15,667**	**15,808** †	**17,145**	**18,381**	**DLBW**	**1,706**	**2,039**	**2,446**	**2,169**	**2,409**	**2,097**	**1,886**	**1,653**	**1,785**	**1,601** †	**1,654**	**1,554**

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 † crosses denote earliest data revision.
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18 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION: BROAD PRODUCT GROUPS, 2014

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£ million

	TOTAL UK	England	North East	North West	Yorkshire and the Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
TOTAL	**19,935**	**18,281**	**283**	**1,798**	**679**	**1,474**	**1,967**	**4,231**	**1,826**	**4,405**	**1,616**	**397**	**905**	**352**
Manufacturing: Total	**13,328**	**12,302**	**198**	**1,519**	**476**	**1,292**	**1,648**	**2,834**	**341**	**2,835**	**1,159**	**320**	**488**	**218**
Chemicals	4,607	4,401	..	717	191	114	..	1,488	262	1,452	54	..	138	..
Mechanical engineering	1,102	1,016	43	40	46	..	162	364	..	228	72	24	34	28
Electrical machinery	1,497	1,261	..	..	53	56	53	275	26	383	347	47	145	43
Transport equipment	2,643	2,605	10	347	..	348	..	451	5	136	51	25	..	..
Aerospace	1,696	1,506	..	..	..	..	79	21	..	216	509	..	..	..
Other manufacturing	1,783	1,511	25	271	143	137	120	234	36	419	126	61	164	47
Services	**5,896**	**5,452**	**72**	**265**	**184**	**151**	**306**	**1,340**	**1,455**	**1,306**	**374**	**70**	**245**	**128**
Other: Total	**711**	**527**	**13**	**14**	**18**	**31**	**13**	**58**	**30**	**265**	**84**	**7**	**172**	**6**
Agriculture, hunting & forestry; Fishing	119	113	..	..	..	..	..	..	..	..	1	..	5	..
Extractive industries	315	195	..	..	..	..	..	..	..	116	45	..	117	..
Electricity, gas & water supply; Waste management	144	108	..	6	12	..	6	4	8	..	33	..	31	..
Construction	132	110	2	7	5	6	5	21	17	41	6	2	19	1

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
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3 Differences may occur between totals and the sum of their independently rounded components.
4 See list for detailed breakdown of broad product groups

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19 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION: BROAD PRODUCT GROUPS, 2014

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Full time equivalent in thousands

	TOTAL UK	England	North East	North West	Yorkshire and the Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland
TOTAL	**192**	**172**	**4**	**15**	**10**	**16**	**18**	**34**	**18**	**41**	**16**	**5**	**10**	**5**
Manufacturing: Total	**113**	**102**	**3**	**11**	**7**	**13**	**13**	**20**	**3**	**22**	**10**	**4**	**5**	**2**
Chemicals	32	29	1	4	3	2	-	8	2	8	1	1	1	-
Mechanical engineering	15	13	1	1	1	1	2	3	-	3	1	-	1	-
Electrical machinery	14	11	-	1	1	1	1	2	-	3	3	1	1	-
Transport equipment	18	18	..	2	1	..	7	4	-	2	1	..	-	..
Aerospace	14	13	..	1	..	..	1	-	-	2	3	..	-	..
Other manufacturing	20	17	..	3	..	2	2	2	1	4	2	1	1	1
Services	**74**	**66**	**1**	**4**	**3**	**3**	**5**	**13**	**15**	**17**	**5**	**1**	**4**	**2**
Other: Total	**6**	**5**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**2**	**1**	**-**	**1**	**-**
Agriculture, hunting & forestry; Fishing	1	1	..	..	..	..	..	..	-	..	-	..	-	..
Extractive industries	1	1	..	..	-	..	..	..	..	..	-	..	-	..
Electricity, gas & water supply; Waste management	1	1	-	-	..	-	-	-	..	-	-	..	-	-
Construction	3	2	-	-	-	-	-	-	-	1	-	-	-	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
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4 See list for detailed breakdown of broad product groups

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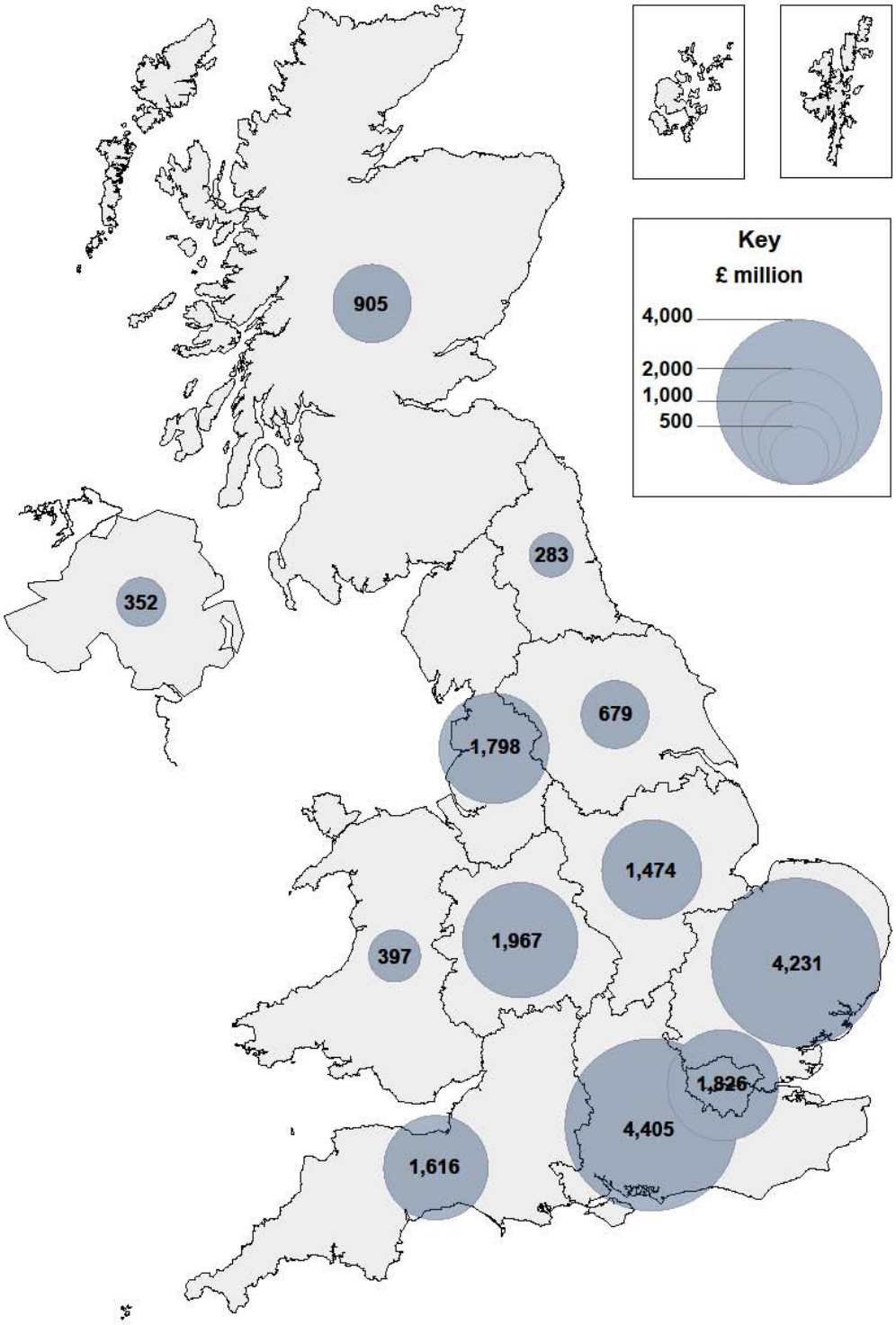
Map 1 **Expenditure by UK businesses on performing R&D, by country or region, 2014**



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Source of boundary for Northern Ireland: UNEP (2015): UNEP Environmental Data Explorer. United Nations Environment Programme. http://geodata.grid.unep.ch.

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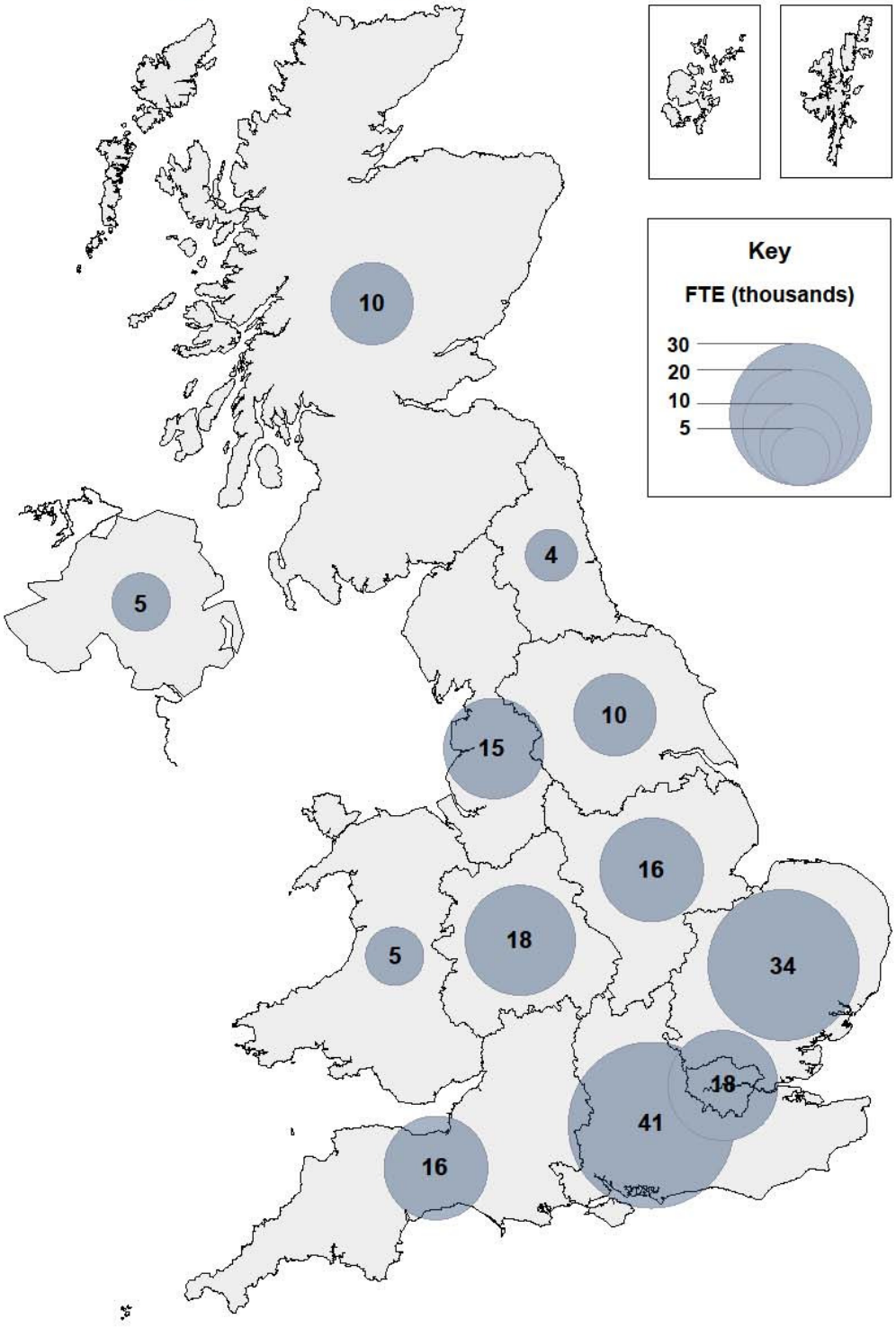
Map 2

Employment in UK businesses on performing R&D by country or region, 2014



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Source of boundary for Northern Ireland: UNEP (2015): UNEP Environmental Data Explorer. United Nations Environment Programme. http://geodata.grid.unep.ch.

20 EXPENDITURE AND EMPLOYMENT ON R&D PERFORMED IN UK BUSINESSES: TOP 100 ENTERPRISE GROUPS, 2014

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	R&D Employment (Full time equivalents in thousands)	Total Expenditure (£ million)	Funded by UK Government (£ million)
TOTAL OF ALL ENTERPRISES	**192**	**19,935**	**1,857**
Enterprise groups with the largest expenditure on R&D			
Top 5	25	3,913	248
Top 10	31	5,302	416
Top 15	42	6,446	832
Top 20	47	7,346	840
Top 50	67	10,148	1,154
Top 100	86	12,374	1,305

1 An Enterprise Group consists of all the enterprises under the control of the same owner.

Source: Office for National Statistics

21 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES BY TOTAL COMPANY EMPLOYMENT SIZE-BANDS: BROAD PRODUCT GROUPS, 2014

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£ million

	TOTAL ALL EMPLOYEES	0 to 99 employees	100 to 399 employees	400 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 19,999 employees	20,000 employees and over
TOTAL	**19,935**	**2,292**	**3,564**	**3,423**	**6,680**	**1,326**	**..**	**..**
Manufacturing: Total	**13,328**	**816**	**2,444**	**2,461**	**4,840**	**970**	**..**	**..**
Chemicals	4,607	217	802	952	2,581	..	-	..
Mechanical engineering	1,102	141	236	230	370	..	..	-
Electrical machinery	1,497	148	574	404	371	-	-	-
Transport equipment	2,643	40	184	223	681	402	..	..
Aerospace	1,696	11	43	200	381	..	..	-
Other manufacturing	1,783	258	606	452	457	..	..	-
Services	**5,896**	**1,464**	**1,009**	**813**	**1,464**	**330**	**..**	**..**
Other: Total	**711**	**12**	**111**	**149**	**375**	**27**	**..**	**..**
Agriculture, hunting & forestry; Fishing	119	2	11	..	-	..	-	-
Extractive industries	315	2	49	25	240	-	-	-
Electricity, gas & water supply; Waste management	144	2	22	1	75	8	..	..
Construction	132	6	29	..	60	..	-	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 Differences may occur between totals and the sum of their independently rounded components.
4 See list for detailed breakdown of broad product groups

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22 R&D EMPLOYMENT IN UK BUSINESSES BY COMPANY EMPLOYMENT SIZE-BANDS: BROAD PRODUCT GROUPS, 2014

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Full time equivalent in thousands

	TOTAL ALL EMPLOYEES	0 to 99 employees	100 to 399 employees	400 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 19,999 employees	20,000 employees and over
TOTAL	**192**	**42**	**38**	**32**	**47**	**14**	**..**	**..**
Manufacturing: Total	**113**	**15**	**24**	**21**	**32**	**9**	**..**	**..**
Chemicals	32	3	6	7	15	..	-	..
Mechanical engineering	15	3	3	3	3	..	-	..
Electrical machinery	14	3	5	3	3	-	-	-
Transport equipment	18	1	2	3	4	4	..	..
Aerospace	14	-	1	2	3	..	..	-
Other manufacturing	20	5	7	4	4	..	..	-
Services	**74**	**27**	**12**	**9**	**13**	**5**	**..**	**..**
Other: Total	**6**	**-**	**2**	**1**	**2**	**..**	**..**	**-**
Agriculture, hunting & forestry; Fishing	1	-	-	..	-	..	-	-
Extractive industries	1	-	-	-	1	-	-	-
Electricity, gas & water supply; Waste management	1	-	-	..	-	-	..	-
Construction	3	-	1	-	1	..	..	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 Differences may occur between totals and the sum of their independently rounded components.
4 See list for detailed breakdown of broad product groups

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23 EXPENDITURE AND EMPLOYMENT ON R&D PERFORMED IN UK BUSINESSES: BY COUNTRY OF OWNERSHIP OF BUSINESSES PERFORMING R&D, 2003 TO 2014

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CURRENT PRICES

		Expenditure (£ million)													Employment (FTE in thousands)										
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TOTAL	**DLBX**	**12,505**	**12,662**	**13,734**	**14,144**	**15,676**	**15,814**	**15,532**	**16,045**	**17,452**	**17,409** †	**18,799**	**19,935**	**DLEI**	**155**	**150**	**146**	**147**	**158**	**151**	**151**	**154**	**159**	**162** †	**179**	**192**
United Kingdom	GFWP	6,934	7,538	8,360	8,583	9,512	8,874	8,231	9,458	8,579	8,332 †	8,686	9,611	GFWO	96	95	91	89	94	83	82	94	88	88	97 †	108
United States	GFWR	3,102	2,719	2,570	2,781	3,122	3,366	3,402	3,103	4,003	3,818 †	4,276	4,115	GFWQ	33	29	27	31	33	34	32	29	33	33	37 †	39
Germany	GFWT	217	235	243	218	353	394	363	359	444	450	523 †	585	GFWS	3	3	3	2	4	4	4	4	3	4	4	4
France	GFWV	792	643	870	1,025	692	688	784	747	1,022	971	645 †	663	GFWU	7	6	8	9	6	6	6	6	7	7	5	5
Other EU	GFWX	728	762	877	878	1,159	1,142	1,242	1,190	1,204	1,438 †	1,753	2,077	GFWW	8	8	8	9	11	11	13	12	12	13 †	15	16
Japan	GFWZ	229	263	284	225	303	378	409	363	468	470 †	581	532	GFWY	3	3	3	3	3	4	4	3	3	3 †	4	4
Rest of the world	GFXB	503	503	529	435	536	972	1,100	826	1,732	1,929 †	2,335	2,352	GFXA	6	6	5	5	6	10	10	7	13	14	18	16

Source: Office for National Statistics

1 † crosses denote earliest data revision.

2 Differences may occur between totals and the sum of their independently rounded components.

24 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES, UK OR OVERSEAS OWNERSHIP: DETAILED PRODUCT GROUPS, 2014

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£ million

	United Kingdom	Overseas	Total
TOTAL	**9,611**	**10,324**	**19,935**
Agriculture, hunting and forestry; Fishing	..	..	**119**
Extractive Industries	86	230	**315**
Food products and beverages; Tobacco products	187	243	**430**
Textiles, clothing and leather products	15	8	**22**
Pulp, paper and paper products; Printing; Wood and straw products	38	10	**48**
Refined petroleum products and coke oven products	79	7	**86**
Chemicals and chemical products	339	343	**682**
Pharmaceuticals	1,857	2,067	**3,924**
Rubber and plastic products	85	44	**129**
Other non-metallic mineral products	21	41	**61**
Casting of iron and steel	4	47	**51**
Non-ferrous metals	63	13	**76**
Fabricated metal products except machinery and equipment	66	44	**110**
Machinery and equipment	371	621	**992**
Computers and peripheral equipment	35	135	**170**
Electrical equipment	263	197	**460**
Consumer electronics and communication equipment	430	436	**866**
Precision instruments and optical products; photographic equipment	335	345	**680**
Motor vehicles and parts	185	2,118	**2,303**
Other transport equipment	32	46	**78**
Shipbuilding	259	3	**262**
Aerospace	935	761	**1,696**
Other manufactured goods	128	72	**200**
Sewerage, waste management, remediation activities	..	..	**12**
Electricity, gas and water supply	55	78	**133**
Construction	58	74	**132**
Wholesale and retail trade	121	124	**245**
Transport and storage, incl. postal and courier activities	31	7	**38**
Telecommunications	783	174	**957**
Miscellaneous business activities; Technical testing and analysis	1,050	334	**1,384**
Computer programming and information service activities	1,016	1,335	**2,351**
Research and development services	608	215	**823**
Public administration	55	42	**98**

Source: Office for National Statistics

1 .. denotes disclosive figures.

2 Differences may occur between totals and the sum of their independently rounded components.

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25 R&D INTENSITY IN MANUFACTURED PRODUCTS: DETAILED PRODUCT GROUPS, 2003 TO 2014

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		R&D expenditure (£ million)													R&D as a percentage of sales											
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Manufacturing: TOTAL	**DLDF**	**9,636**	**10,058**	**10,560**	**10,555**	**11,612**	**11,672**	**11,230**	**11,585**	**12,462**	**12,383** †	**12,895**	**13,328**	**DLIQ**	**3.1**	**3.2**	**3.4**	**3.3**	**3.5**	**3.3**	**3.7**	**3.3**	**3.6**	**3.6** †	**3.6**	**3.6**
Food products and beverages; Tobacco products	DLCP	256	258	276	314	328	303	290	306	366	364	437 †	430	DLJF	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6
Textiles, clothing and leather products	DLCQ	20	21	18	17	19	15	10	11	14	20	22	22	DLJG	0.2	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.3 †	0.3	0.3
Pulp, paper and paper products; Printing; Wood and straw products	DLCT	45	40	52	55	53	56	26	28	21	28	48 †	48	DLJJ	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Refined petroleum products and coke oven products	DLCE	258	234	245	279	274	94	95	73	72	76	69	86	LDOP	-	-	-	-	-	-	8.5	6.0	5.7	7.9 †	7.0	10.7
Chemicals and chemical products	DLCC	614	625	637	684	668	630	610	666	523	665 †	669	682	DLIT	2.6	2.6	2.7	2.7	2.7	2.7	3.0	3.0	2.3	3.0 †	3.0	3.1
Pharmaceuticals	DLCD	3,127	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914	4,208 †	4,099	3,924	DLIU	31.4	34.1	32.2	32.6	33.9	42.7	36.2	31.7	34.8	34.3 †	34.0	36.1
Rubber and plastics	DLCR	65	63	55	90	79	78	62	80	97	105	99 †	129	DLJH	0.4	0.4	0.3	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.7	0.9
Other non-metallic mineral products	DLCS	56	62	44	51	48	53	57	56	60	47	47	61	DLJI	0.6	0.6	0.4	0.5	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.6
Casting of iron and steel	DLCJ	29	30	34	38	..	47	43	28	44	45	27	51	DLIZ	1.3	1.1	1.1	1.2	..	1.7	2.0	1.3	1.6	1.7	1.1 †	2.3
Non-ferrous metals	DLCK	4	4	8	6	..	72	..	86	77	56 †	56	76	DLJA	0.1	0.1	0.2	0.1	..	1.3	..	1.8	1.5	1.3 †	1.4	1.9
Fabricated metal products except machinery and equipment	DLCL	65	77	74	68	91	73	93	93	119	105	113 †	110	DLJB	0.4	0.4	0.4	0.3	0.4	0.3	0.5	0.4	0.5	0.5	0.5	0.5
Machinery and equipment	DLCO	662	761	905	929	1,033	790	873	809	973	997 †	1,024	992	DLJE	2.8	2.8	3.6	3.6	3.7	2.5	3.6	2.9	3.2	3.2 †	3.4	3.2
Computers and peripheral equipment	DLCN	55	53	92	67	83	123	151	157	180	187	162	170	DLJD	1.2	1.2	2.2	2.6	4.3	7.0	8.5	9.2	9.9	9.5 †	7.7	8.5
Electrical equipment	DLCA	360	406	394	458	547	577	577	513	509	463	398 †	460	DLIR	4.0	4.2	4.1	4.5	5.3	4.5	5.3	4.2	3.9	3.7 †	3.3	3.9
Consumer electronics and communication equipment	DLCB	871	763	788	748	667	700	547	474	511	689	833 †	866	DLIS	11.5	9.4	10.7	9.7	11.0	20.9	14.3	11.6	17.0	26.0 †	32.6	39.2
Precision instruments and optical products; photographic equipment	DLCM	476	486	475	462	544	591	498	490	599	644 †	622	680	DLJC	5.6	5.6	5.1	4.8	5.6	5.9	5.1	4.7	5.6	5.9 †	5.6	6.0
Motor vehicles and parts	DLCG	894	789	744	754	933	1,156	1,039	1,237	1,525	1,763	2,067 †	2,303	DLIW	2.6	2.3	2.1	2.2	2.6	3.2	3.9	3.4	4.0	4.5	4.6	4.9
Other transport equipment	DLCI	..	23	21	25	28	30	..	46	50	48	60	78	DLIY	..	0.9	1.1	1.4	0.7	0.6	..	1.1	1.1	1.0 †	1.2	1.6
Shipbuilding	DLCH	..	125	127	134	136	157	173	185	226	229	233	262	DLIX	..	5.7	10.3	10.3	9.1	4.5	4.8	4.6	5.6	4.6 †	4.7	5.3
Aerospace	DLCF	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511 †	1,639	1,696	DLIV	14.1	16.4	22.7	18.9	18.6	10.3	7.8	8.0	7.7	7.4	6.9	7.0
Other manufactured goods	DLCU	35	33	26	24	27	36	98	136	146	133	169 †	200	DLJK	0.7	0.3	0.3	0.3	0.2	0.2	0.6	0.9	0.9	0.8	1.0	1.1

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 † crosses denote earliest data revision.
4 Differences may occur between totals and the sum of their independently rounded components.
5 R&D intensity in each product group is estimated by dividing the R&D expenditure of the product group by the sales of the associated manufactured products derived from the Products of the European Community (PRODCOM) Survey.
6 Total sales is a narrower measure than total turnover as used in the estimates in table 28 (R&D Intensity in services) so the two measures are not directly comparable.

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26 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: BY SMALL AND MEDIUM SIZE ENTERPRISES, 2003 TO 2014

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£ million

	Total Expenditure	250 employees and over	0 to 249 employees	of which, SME
	DLBX	SFAA	SEZU	SEZY
2003	**12,505**	9,412	3,094	407
2004	**12,662**	10,578	2,083	373
2005	**13,734**	11,515	2,220	456
2006	**14,144**	12,126	2,019	336
2007	**15,676**	12,626	3,050	405
2008	**15,814**	12,991	2,823	342
2009	**15,532**	12,569	2,962	543
2010	**16,045**	12,761	3,284	556
2011	**17,452**	13,656	3,797	620
2012	**17,409** †	12,748 †	4,661 †	763 †
2013	**18,799**	14,562	4,237	658
2014	**19,935**	15,296	4,639	767

1 The definition of SME used is that under the European Commission Recommendation (2003/361/EC) of 1 January 2005, in which SMEs are defined as being enterprises with less than 250 employees, and also a criterion of independence is used to exclude enterprises that are part of a larger enterprise group. To apply this definition, historic information on company ownership has been obtained using that currently held on the ONS IDBR. Caution should therefore be used in making comparisons over time.

2 † crosses denote earliest data revision.

3 Differences may occur between totals and the sum of their independently rounded components.

27 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: STANDARD INDUSTRY CLASSIFICATION (SIC) DIVISION, 2010 to 2014

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CURRENT PRICES

£ million

SIC	Industry description	2010	2011	2012	2013	2014
01-03	Agriculture, forestry and fishing	14	12	14	10	13
05-09	Mining and quarrying	137	174	143 †	183	183
10	Manufacture of food products	136	212	197	243 †	243
11-12	Manufacture of beverages and tobacco products	95	80	84	96	87
13	Manufacture of textiles	9	24	27	17	17
14	Manufacture of wearing apparel	1	1	3	3	3
15	Manufacture of leather and related products	1	1	2	3	2
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3	1	4	7	6
17	Manufacture of paper and paper products	9	9	7	11	12
18	Printing and reproduction of recorded media	5	5	11	19	22
19	Manufacture of coke and refined petroleum products	..	..	..	..	..
20	Manufacture of chemicals and chemical products	319	284	262 †	346	366
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	474	528	477 †	436	400
22	Manufacture of rubber and plastic products	68	81	100	95	111
23	Manufacture of other non-metallic mineral products	41	41	34	34	48
24	Manufacture of basic metals	49	88	63	44	71
25	Manufacture of fabricated metal products, except machinery and equipment	594	551	495	596 †	531
26	Manufacture of computer, electronic and optical products	835	982	987	1,022 †	1,006
27	Manufacture of electrical equipment	165	152	170	157 †	181
28	Manufacture of machinery and equipment n.e.c.	607	634	764 †	727	747
29	Manufacture of motor vehicles, trailers and semi-trailers	1,039	1,296	1,478	1,751 †	2,017
30	Manufacture of other transport equipment	1,158	1,198	1,397 †	1,439	1,590
31	Manufacture of furniture	33	50	36	51	39
32	Other manufacturing	143	117	104	126	124
33	Repair and installation of machinery and equipment	156	77	83	105 †	128
35	Electricity, gas, steam and air conditioning supply	13	21	60	85	81
36	Water collection, treatment and supply	9	6	10	13	16
37-39	Sewerage, waste management, remediation activities	7	7	11	15	12
41-43	Construction	45	46	60	91 †	105
45-47	Wholesale and retail trade; repair of motor vehicles and motorcycles	760	736	671 †	691	701
49	Land transport and transport via pipelines	2	6	..	2	3
50	Water transport	-	-	-	-	-
51	Air transport	-	..	-	..	..
52-53	Warehousing and support activities for transportation; postal and courier activities	27	24	..	14	17
55-56	Accommodation and food service activities	19	27	27 †	16	29
58	Publishing activities	44	61	52	88	83
59	Motion picture, video and television programme production, sound recording and music publishing activities	18	17	11	22	27
60	Programming and broadcasting activities	3	6	7	11	..
61	Telecommunications	826	719	701	727 †	796
62	Computer programming, consultancy and related activities	1,109	1,523	1,627 †	1,663	1,635
63	Information service activities	45	44	198 †	214	307
64-66	Financial and insurance activities	308	302	253 †	344	375
68	Real estate activities	10	10	12	17	22
69	Legal and accounting activities	19	12	15	28	31
70	Activities of head offices; management consultancy activities	54	51	69	86 †	112
71	Architectural and engineering activities	748	885	1,399 †	1,616	1,722
72	Scientific research and development	5,510	5,863	4,700	4,881 †	4,975
73	Advertising and market research	15	14	15	19	29
74	Other professional, scientific and technical activities	7	25	29	90	95
75	Veterinary activities	1	..	1	1	2
77	Rental and leasing activities	21	55	55	125	145
78	Employment activities	12	11	15	21	31
79	Travel agency, tour operator and other reservation service and related activities	7	6	8	17 †	28
80	Security and investigation activities	3	3	5	7	9
81	Services to buildings and landscape activities	7	11	11	12	18
82	Office administrative, office support and other business support activities	80	102	178	98	219
84-85	Public administration and defence; compulsory social security and education	..	..	11 †	13	15
86-88	Human health and social work activities	25	18	17	31	40
90-93	Arts, entertainment and recreaction	152	192	181	154 †	136
94-99	Other service activities; Activities of households as employers and of extraterritorial organisations and bodies	27	25	25	35 †	26
	TOTAL	**16,045**	**17,452**	**17,409 †**	**18,799**	**19,935**

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.

2 .. denotes disclosive figures.

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3 † crosses denote earliest data revision.

4 Differences may occur between totals and the sum of their independently rounded components.

28 R&D INTENSITY IN SERVICES: DETAILED PRODUCT GROUPS, 2010 TO 2014

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	R&D expenditure (£ million)					R&D as a percentage of turnover				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Services: TOTAL	**4,120**	**4,563**	**4,539** †	**5,258**	**5,896**	**0.2**	**0.2**	**0.2** †	**0.2**	**0.2**
Wholesale and retail trade	177	242	166 †	167	245	-	-	-	-	-
Transport and storage, incl. postal and courier activities	17	18	..	35	38	-	-	..	-	-
Telecommunications	1,129	1,037	875	838 †	957	1.7	1.6	1.4	1.3 †	1.5
Miscellaneous business activities; Technical testing and analysis	583	570	864 †	1,208	1,384	0.1	0.1	0.1	0.1	0.1
Computer programming and information service activities	1,526	1,847	2,067 †	2,131	2,351	2.2	2.5	2.6 †	2.5	2.5
Research and development services	618	783	482 †	774	823	3.8	4.9	3.0 †	4.9	4.3
Public administration	70	67	..	106	98	-	-	..	-	-

Source: Office for National Statistics

1 - denotes nil, figures unavailable or too small to display.
2 .. denotes disclosive figures.
3 † crosses denote earliest data revision.
4 Differences may occur between totals and the sum of their independently rounded components.
5 R&D intensity in each product group is estimated by dividing the R&D expenditure
of the product group by the turnover of the associated industries, derived from the
6 Annual Business Survey (ABS).
Total turnover is a wider measure than product sales as used in the estimates in
table 25 (R&D Intensity in manufactured products) so the two measures are not directly comparable.

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CONSTRUCTION OF BROAD PRODUCT GROUPS

Broad Product Group	Product Group Number and Title	
Manufactured products: Total	**C.**	Food products and beverages; Tobacco products
	D.	Textiles, clothing and leather products
	E.	Pulp, paper and paper products; Printing; Wood and straw products
	F.	Refined petroleum products and coke oven products
	G.	Chemicals and chemical products
	H.	Pharmaceuticals
	I.	Rubber and plastic products
	J.	Other non-metallic mineral products
	K.	Casting of iron and steel
	L.	Non-ferrous metals
	M.	Fabricated metal products, except machinery and equipment
	N.	Machinery and equipment
	O.	Office machinery and computers
	P.	Electrical equipment
	Q.	Radio, television and communication equipment
	R.	Computer, electronic and optical products; photographic equipment
	S.	Motor vehicles and parts
	T.	Other transport equipment
	U.	Shipbuilding
	V.	Aerospace
	W.	Other manufactured goods
Chemicals	**G.**	Chemicals and chemical products
	H.	Pharmaceuticals
Mechanical engineering	**M.**	Fabricated metal products, except machinery and equipment
	N.	Machinery and equipment
Electrical machinery	**O.**	Office machinery and computers
	P.	Electrical equipment
	Q.	Radio, television and communication equipment
Transport	**S.**	Motor vehicles and parts
	T.	Other transport equipment
	U.	Shipbuilding
Aerospace	**V.**	Aerospace
Other manufactured products	**C.**	Food products and beverages; Tobacco products
	D.	Textiles, clothing and leather products
	E.	Pulp, paper and paper products; Printing; Wood and straw products
	F.	Refined petroleum products and coke oven products
	I.	Rubber and plastic products
	J.	Other non-metallic mineral products
	K.	Casting of iron and steel
	L.	Non-ferrous metals
	R.	Computer, electronic and optical products; photographic equipment
	W.	Other manufactured goods
Other: Total	**A.**	Agriculture, hunting and forestry; Fishing
	B.	Extractive Industries
	X.	Sewerage, waste management, remediation activities
	Y.	Electricity, gas and water supply
	Z.	Construction
Agriculture, hunting and forestry; Fishing	**A.**	Agriculture, hunting and forestry; Fishing
Extractive Industries	**B.**	Extractive Industries
Electricity, gas and water supply; Waste management	**X.**	Sewerage, waste management, remediation activities
	Y.	Electricity, gas and water supply
Construction	**Z.**	Construction
Services	**AA.**	Wholesale and retail trade
	AB.	Transport and storage, incl. postal and courier activities
	AC.	Telecommunications
	AD.	Miscellaneous business activities; Technical testing and analysis
	AE.	Computer and related activities
	AF.	Research and development services
	AG.	Public administration