

Statistical bulletin

Business enterprise research and development, UK: 2013

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



Contact:
Cecil Prescott
RandD@ons.gsi.gov.uk
+44 (0)1633 456767

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1 . Key points

- In 2013, total expenditure on Research and Development (R&D) performed in UK businesses, in current prices, increased by 8% to £18.4 billion compared with 2012. In constant prices, R&D expenditure increased by 6% compared with 2012
- Civil R&D expenditure increased by 8% in 2013 to £16.7 billion while Defence R&D expenditure increased by 7% in 2013 to £1.7 billion
- In 2013, expenditure on R&D performed in UK foreign owned businesses increased by 11% and constituted 54% of total expenditure
- Expenditure on Business R&D in 2013 represented 1.1% of Gross Domestic Product (GDP)
- In 2013, total business employment in R&D in the UK increased by 11% to 178,000 Full Time Equivalents (FTE), the largest annual increase since 1985

2 . Overview

Estimates of expenditure and employment relating to R&D performed in the UK businesses in 2013, irrespective of the residence of the ultimate owner or user of the R&D produced are provided in this release.

Two types of estimates are presented in this release, current and constant price terms. Estimates in current prices present the value of R&D expenditure collected from the Business Enterprise Research and Development (BERD) survey. Constant price estimates have been adjusted for inflation between years using the GDP deflator. This allows changes in the volume of R&D expenditures to be examined on a comparable basis over time.

While R&D is often thought of as synonymous with ‘high-tech’ firms that are on the cutting edge of new technology, many established businesses that produce consumer goods and services spend large sums of money, on a systematic basis, improving existing products.

For the purposes of this release, R&D and related concepts follow internationally agreed standards defined by the Organisation for Economic Cooperation and Development (OECD), as published in the ‘Frascati’ Manual. In the [Frascati Manual](#), 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 Frascati Manual was originally written by, and for, the experts in OECD member countries that collect and issue national data on R&D. The definitions provided in this manual are internationally accepted and now serve as a common language for designing and evaluating science and technology policy.

The estimates in this release are derived from the BERD survey. The survey has been run annually since 1993. Each year approximately 5,000 UK businesses are selected for this survey from a continually updated register of known R&D performers. The main purpose of the BERD survey is to supply data for policy and monitoring purposes on science and technology, of which R&D is an important part.

The National Accounts provide the framework that is used to define and measure the UK’s economic performance, such as the value of the UK’s Gross Domestic Product (GDP). Changes to the European System of Accounts (ESA) mean that from 2014 onwards, expenditure on R&D will contribute to the formation of assets and therefore the value of the UK’s net worth.

In March 2015 ONS will publish UK Gross Domestic Expenditure on Research and Development (GERD) for the year 2013. The UK [GERD statistical bulletin](#) includes estimates for R&D carried out by the following four sectors of the economy, as defined in the Frascati manual, namely business enterprise (BERD), higher education (HERD), government including research councils (GovERD) and Private Non-Profit (PNP) organisations. GERD uniquely provides information on total R&D expenditure in the UK, and is the preferred measure for use in international comparisons of overall R&D expenditure.

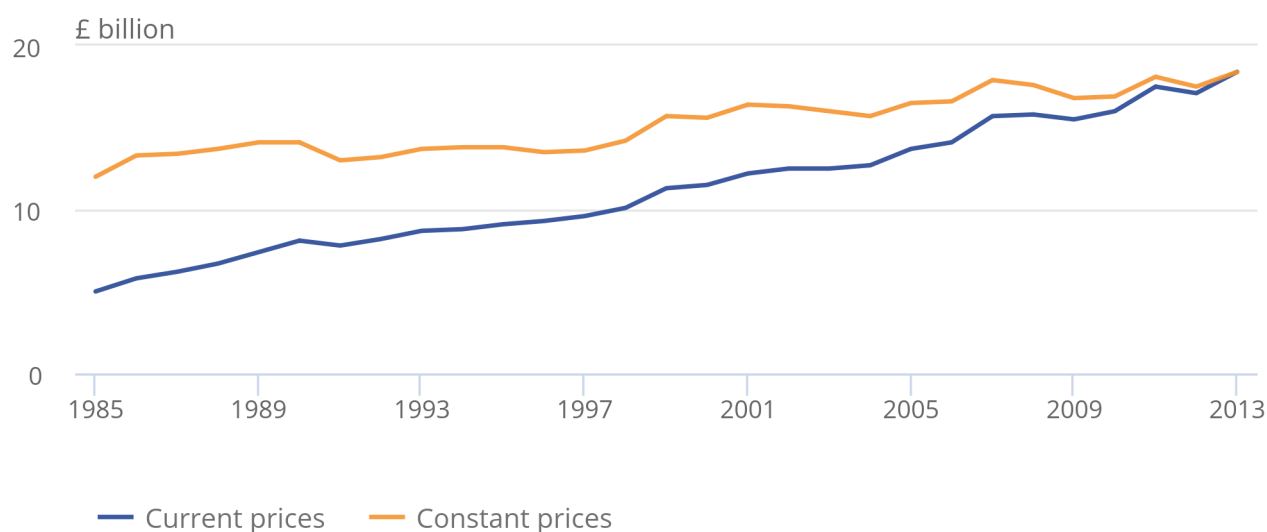
3 . Your views matter

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

Figure 1: Expenditure on business R&D in the UK

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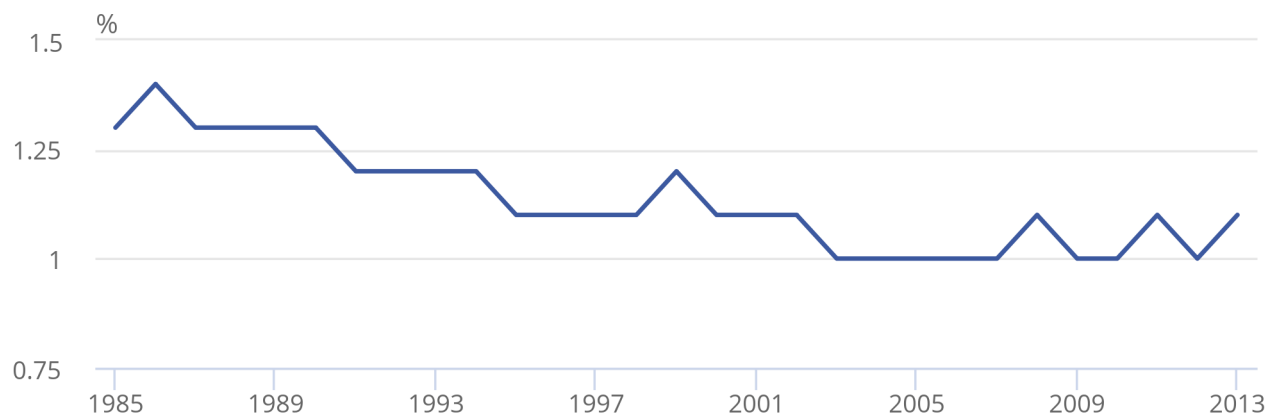


Source: Office for National Statistics

Figure 2 shows expenditure on business R&D as a percentage of GDP since 1985. Total business R&D expenditure in 2013 represented 1.1% of GDP. This estimate is in line with recent years which have fluctuated between 1.0 and 1.1 and is a slight decrease on the 1.2% estimate for the year 1999. Figure 2 highlights that R&D expenditure performed by UK businesses as a percentage of GDP peaked in 1986 at 1.4%

Figure 2: Expenditure on business R&D in the UK as a percentage of GDP

Figure 2: Expenditure on business R&D in the UK as a percentage of GDP



Source: Office for National Statistics

A target set by the UK government in the [Science and Innovation Framework 2004 - 2014](#) was to increase business investment in R&D towards a goal of 1.7% of GDP by the end of 2014.

5 . R&D expenditure by product group

On an annual basis, the 400 largest R&D performers are asked to select the industry product groups that best describe the type of R&D activities that they undertake. For the 2013 survey, the largest 400 spenders were those businesses previously reporting more than approximately £4.4 million expenditure on R&D. The concept of 'product groups' is discussed in detail as part of the background notes to this release (Background Note 9).

Of the 33 R&D product groups used in the collation of this statistical bulletin, 22 saw an increase in levels of R&D expenditure by UK businesses in current prices, since 2012, while 11 product groups decreased. In terms of percentage growth, the largest increases were in the Transport and storage, including postal and courier activities; Pulp, paper and paper products; Printing; Wood and straw products; Research and development services; Miscellaneous business activities; Technical testing and analysis and Recycling product groups.

The largest overall increase in expenditure since 2012 was in the Research and development services product group which increased by £322 million to £929 million in 2013 in current prices, a 53% increase. This group includes businesses who carry out a variety of different R&D activities which they cannot further breakdown and businesses whose expenditure has defaulted to the product group related to their Standard Industrial Classification (SIC), (Division 72). See Background Notes 9 and 10, which explain the concepts of product groups and SIC in more detail.

Another notable increase was in the Miscellaneous business activities product group which increased by £298 million in current prices from the 2012 estimate of £673 million in 2013, a 44% increase to £972 million. In 2013 this group accounts for 5% of total expenditure on R&D performed in UK businesses. This group includes R&D activities such as publishing activities, motion picture, TV and broadcasting activities, information service activities, financial and insurance, real estate, professional, scientific and technical activities, admin and support activities and other service activities.

The largest increase in an individual product was in the Motor vehicles and parts product group, which increased for the second year in succession to £2.0 billion in 2013, an increase of £297 million (17%) from the estimate of £1.8 billion in 2012, accounting for 11% of total expenditure on R&D performed in UK businesses in 2013. This increase in R&D expenditure in the Motor vehicles and parts product group is supported by several reports which indicate that not only has the motor industry recently shown to be one of the strongest parts of the British economy, but that a resurgence in British car design and engineering has seen demand for UK models increase worldwide.

More evidence of the growth in motor product sales can be viewed in the ONS statistical bulletin [UK Manufacturers' Sales by Product \(PRODCOM\)](#) for 2013.

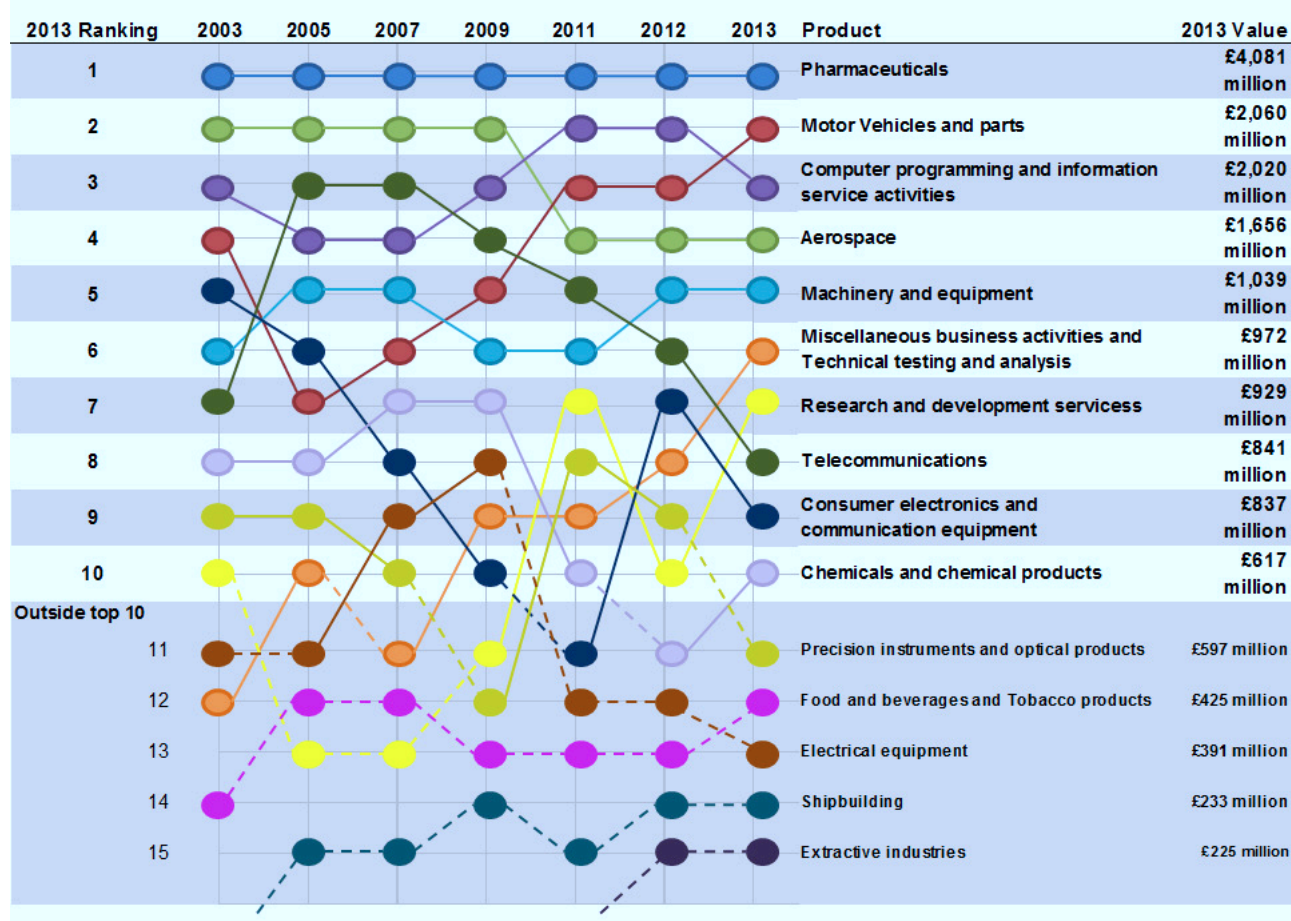
The UK is home to some of the world's largest pharmaceutical companies. Since 1988 the Pharmaceuticals product group has remained the largest contributor to the total expenditure on business R&D in the UK. In 2013, Pharmaceuticals expenditure in current prices was £4.1 billion, accounting for 22% of total expenditure on R&D performed in UK businesses, despite experiencing decreasing expenditure for a second successive year. Following a 15% decrease in expenditure between 2011 and 2012, R&D expenditure in Pharmaceuticals decreased by a further 3% in current prices compared with the 2012 estimate of £4.2 billion. (Figure 3).

Other product groups reporting around £1 billion or more R&D expenditure in the UK in 2013 were:

- computer programming and information service activities, £2.0 billion (11% of total business R&D expenditure)
- aerospace, £1.7 billion (9%)
- machinery and equipment, £1.0 billion (6%)

These seven product groups accounted for 69% of the total UK business R&D expenditure in 2013.

Figure 3: Expenditure on business R&D in the UK in current prices, by largest product groups, 2013



Source: Office for National Statistics

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

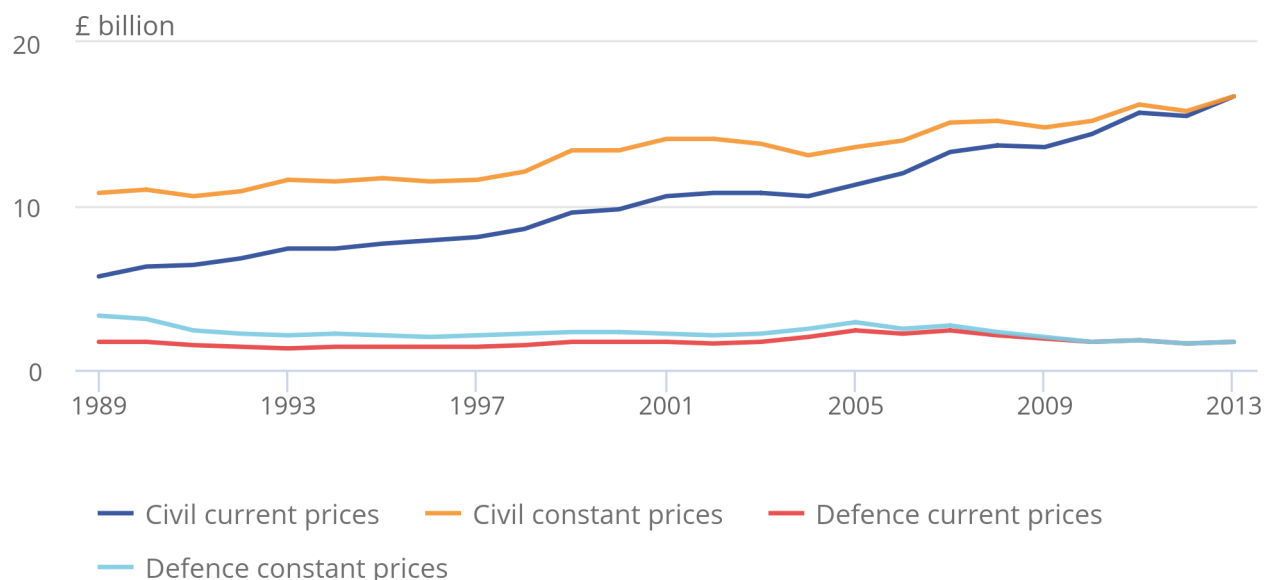
R&D expenditure and employment can be split between the civil and defence sectors. Expenditure in the civil sector in 2013 (£16.7 billion) accounted for 91% of total expenditure on business R&D.

In 2013, in current prices, civil R&D expenditure increased by 8% from £15.5 billion to £16.7 billion and defence R&D increased by 7% from £1.6 billion to £1.7 billion compared with 2012.

Figure 4 shows that while expenditure on business R&D in the civil sector increased by 55% in constant prices since 1989, expenditure on business R&D in the defence sector decreased by 47% in constant prices over this period.

Figure 4: Expenditure on Civil and Defence R&D performed in UK businesses

Figure 4: Expenditure on Civil and Defence R&D performed in UK businesses



Source: Office for National Statistics

Civil R&D expenditure can be further split between the Manufacturing, Services and 'Other' sectors (see Table SB5 in [2013 Datasets \(1.6 Mb Excel sheet\)](#)). In 2013, expenditure in Manufacturing accounted for 68% of total civil expenditure on R&D performed in UK businesses, compared with 75% in 2002. Manufacturing accounted for 88% of total defence expenditure on R&D performed in UK businesses in 2013, compared with 92% in 2002.

Mechanical engineering, part of the Manufacturing sector, was the largest contributor to defence expenditure on R&D performed in UK businesses (31% of total defence expenditure) in 2013, with Aerospace (24%) 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 meet an expressed user need (See Table 27 in [2013 datasets \(1.6 Mb Excel sheet\)](#)).

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 groups. 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 expenditure on business R&D in 2013 by SIC was performed by businesses that were classified to the 'Scientific Research and Development' industry, at £4.9 billion (26% of total expenditure) (Figure 5).

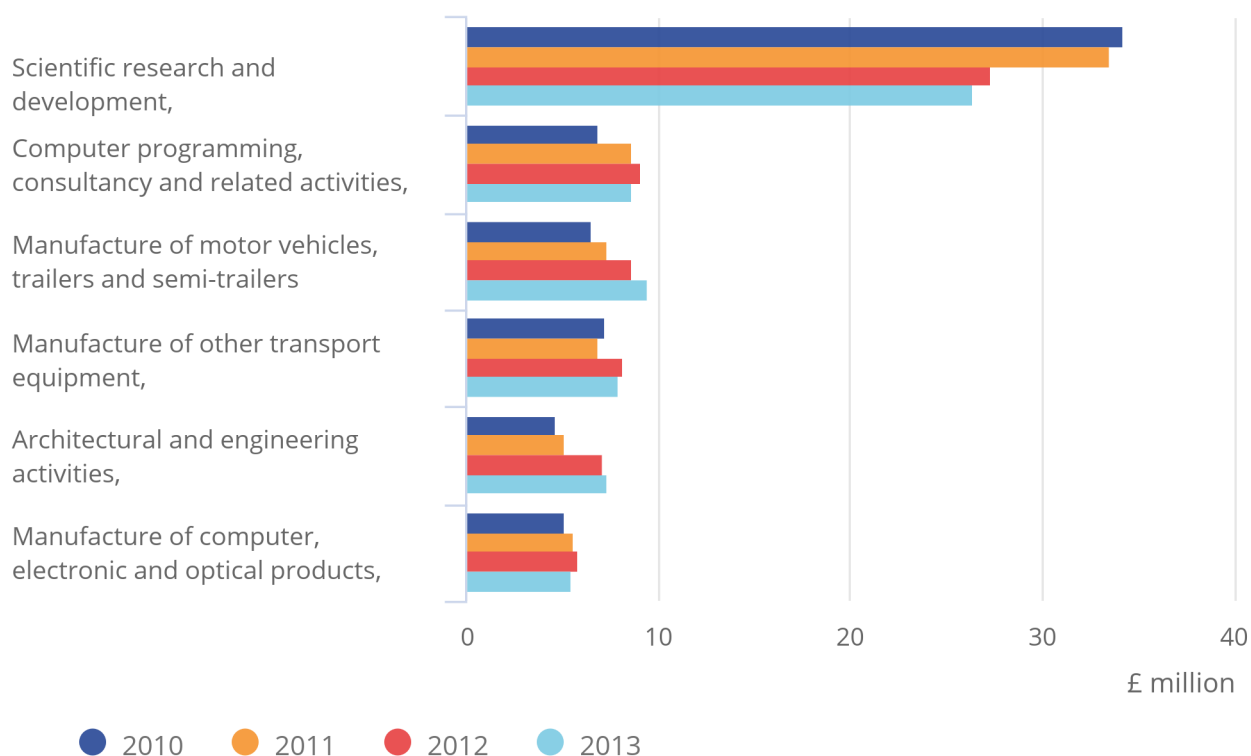
Five other industries had R&D expenditure of around £1 billion or more:

- manufacture of motor vehicles and trailers, £1.7 billion (9%)
- computer programming, consultancy and related activities, £1.6 billion (9% of total R&D expenditure)
- manufacture of other transport equipment, £1.5 billion (8%)
- architectural and engineering activities, £1.4 billion (7%)
- manufacture of computer, electronic and optical products, £1.0 billion (6%)

These six industries accounted for 65% of the total expenditure on business R&D in 2013

Figure 5a: Expenditure on business R&D in the UK (current prices), by largest industries

Figure 5a: Expenditure on business R&D in the UK (current prices), by largest industries



Source: Office for National Statistics

Figure 5b: Expenditure on business R&D in the UK (current prices), by largest industries

	2010	2011	2012	2013
Scientific research and development	5,510	5,863	4,700	4,862
Computer programming, consultancy and related activities	1,109	1,523	1,561	1,612
Manufacture of motor vehicles, trailers and semi-trailers	1,039	1,296	1,478	1,744
Manufacture of other transport equipment	1,158	1,198	1,407	1,454
Architectural and engineering activities	748	885	1,212	1,357
Manufacture of computer, electronic and optical products	835	982	987	1,021

Source: Office for National Statistics

8 . Employment in R and D performed in UK businesses

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

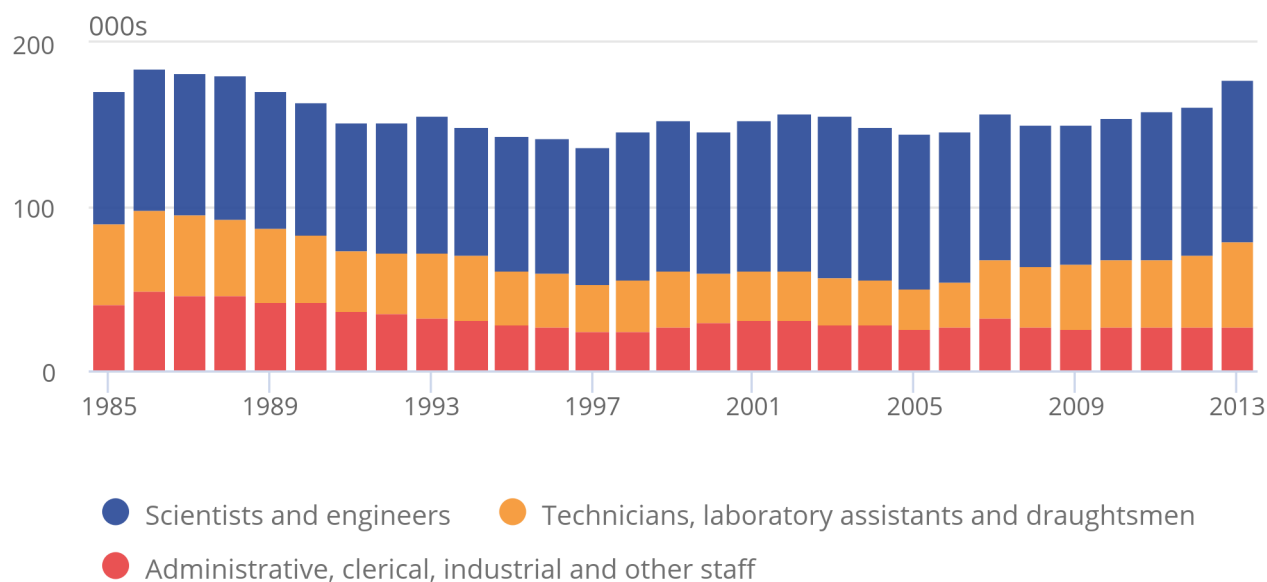
Employment in R&D has remained relatively stable in recent years. The lowest level of employment in R&D in the last decade occurred in 2005, when 146,000 FTE were employed, while the highest level (178,000) was reached in the most recent period, 2013 (Figure 6).

The number of FTE staff employed in R&D has increased from 161,000 in 2012 to 178,000 in 2013 an increase of 11%, the largest annual increase since 1985. The 2013 estimate comprised of:

- 98,000 scientists and engineers (55%)
- 52,000 technicians (29%)
- 28,000 administrative staff (16%)

Figure 6: Employment in R&D performed in UK businesses

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Source: Office for National Statistics

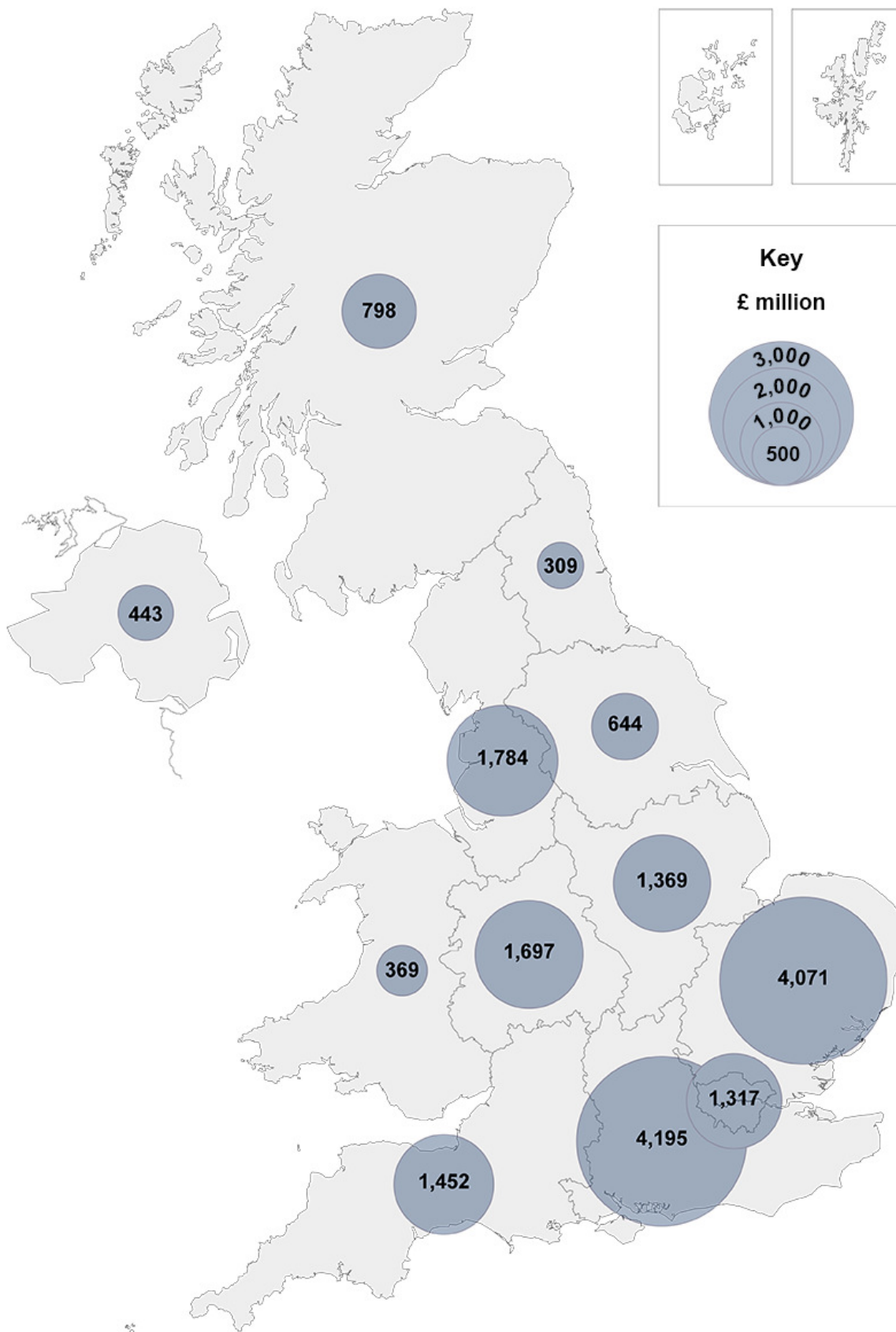
9 . Country and regional breakdown of R&D expenditure and employment

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 two regions combined accounted for 45% of UK business R&D expenditure in 2013 (Map 1). These regions combined also employed 72,000 FTE which made up 40% of total R&D employment in 2013.

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

Map 1: Expenditure on R&D performed in UK businesses, 2013



Source: Office for National Statistics

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Contains Ordnance Survey data © Crown copyright and database right 2014

Source of boundary for Northern Ireland: UNEP (2014): UNEP Environmental Data Explorer. United Nations Environment Programme. <http://geodata.grid.unep.ch>.

Source: Office for National Statistics

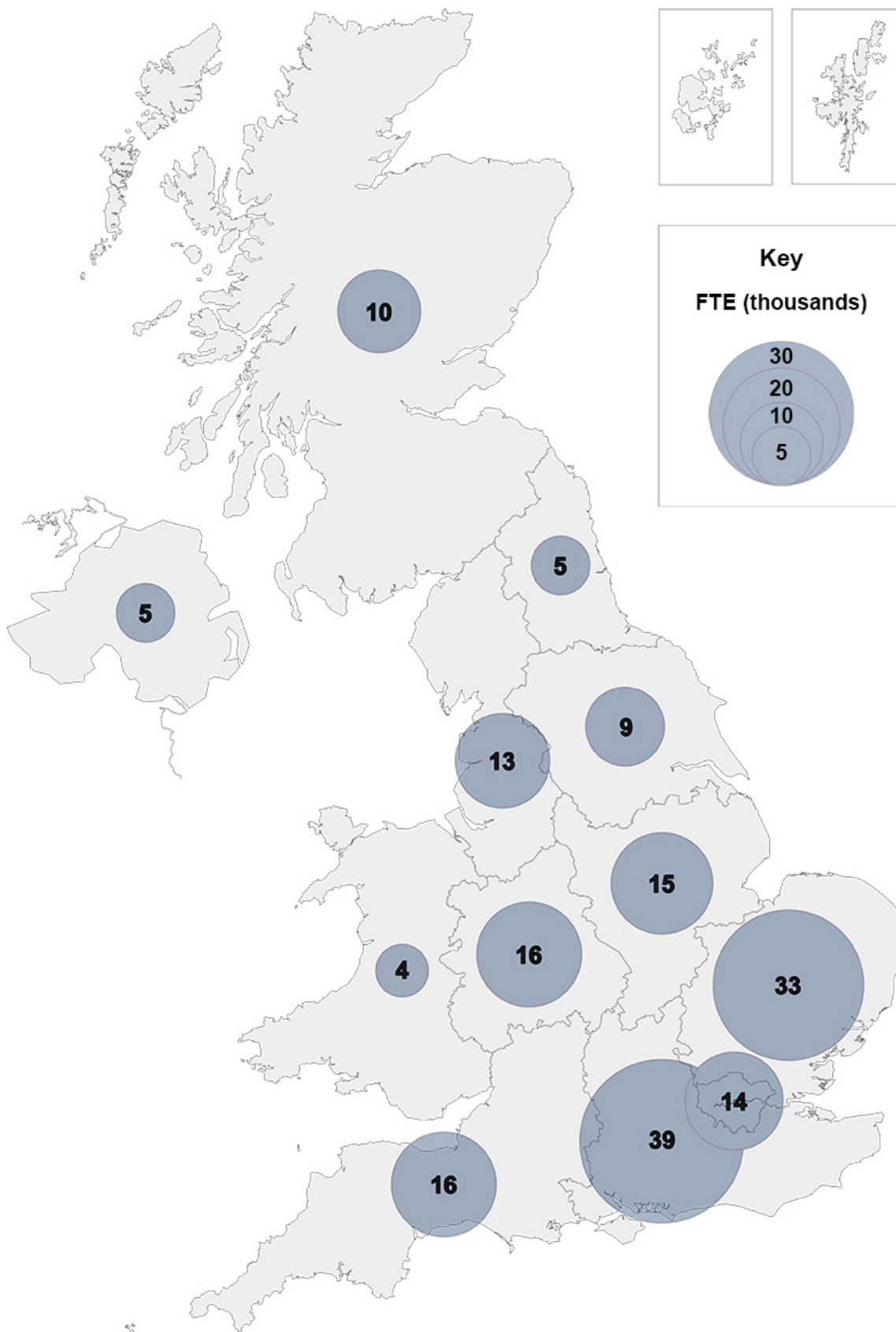
The majority (91%) of UK R&D expenditure was carried out in England in 2013.

The largest overall increase in expenditure by region since 2012 was in Wales which increased by £100 million in current prices from the 2012 estimate of £269 million in 2013, a 37% increase. Scotland also showed a large increase in expenditure of 13% in current prices since 2013, from £709 million to £798 million in 2013. England and Northern Ireland showed increases of 7% and 5% respectively in R&D expenditure in 2013 compared with 2012.

The only region to show a decrease in expenditure was London whose expenditure decreased by £145 million in current prices from the 2012 estimate of £1.5 billion in 2013, a 10% decrease.

The change in expenditure on R&D in London could be the result of several factors, the most likely being businesses relocating their R&D or R&D projects reaching maturity resulting in the R&D work in the region coming to a natural conclusion.

Map 2: Employment in R and D performed in UK businesses, 2013



Source: Office for National Statistics

Contains National Statistics data © Crown copyright and database right 2014

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Source of boundary for Northern Ireland: UNEP (2014): 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

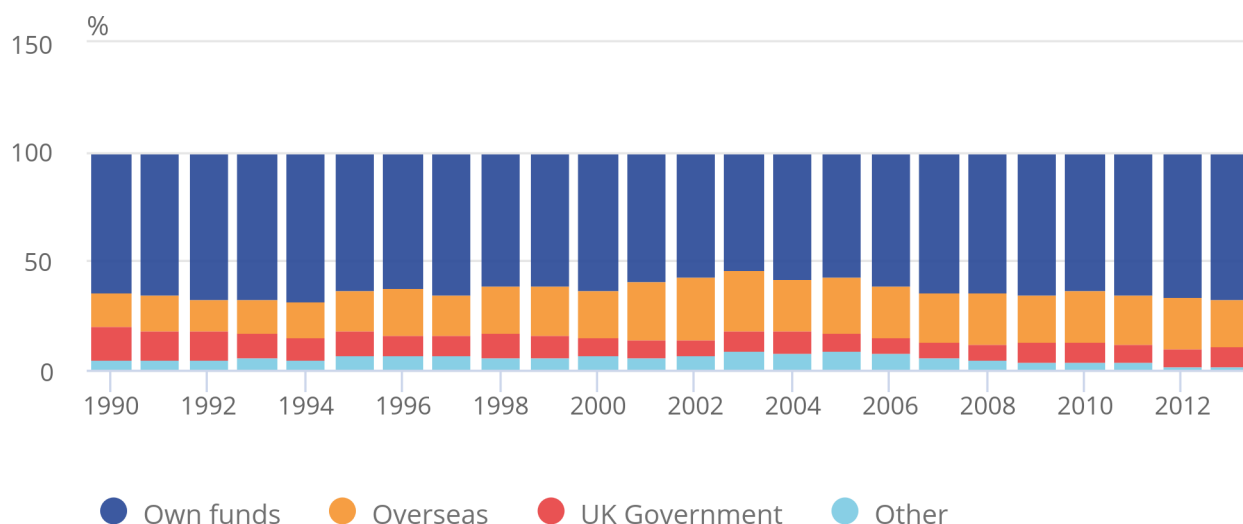
Sources of funds for expenditure on R&D performed in UK businesses

The largest source of R&D funding in 2013 was businesses' own funds at £12.4 billion which increased by £987 million, an increase of 9% on the 2012 estimate of £11.4 billion. Businesses' own funds accounted for 67% of expenditure on business R&D in 2013 compared with the 2012 estimate of 66%.

Overseas funding of expenditure on business R&D was £4.0 billion in 2013 as it was in 2012 but accounted for 21% of the total in 2013 compared with the 2012 estimate of 23%. (Figure 7).

Figure 7: Sources of funds for expenditure on R&D performed in UK businesses

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Source: Office for National Statistics

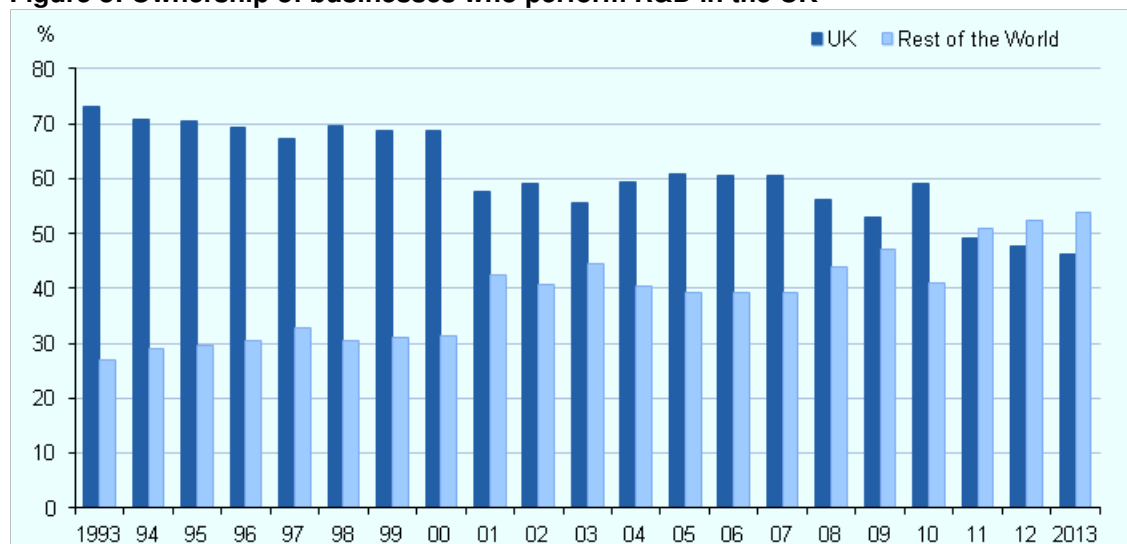
The UK Government's funding of businesses' R&D in 2013 was £1.6 billion, an increase of £269 million (19%) in current prices from the 2012 estimate of £1.4 billion. This represented 9% of total business R&D expenditure. UK government funding was predominantly in the defence sector (£1.1 billion), which made up 69% of government funding of business R&D. 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 expenditure on business R&D was performed by UK owned businesses and 27% by foreign owned businesses. The majority of expenditure continued to be performed by UK owned businesses until 2010, when 59% of UK expenditure on business R&D was performed by UK owned businesses. In 2011, 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 with 52%. In 2013, expenditure on R&D in the UK by UK owned businesses increased by 4% from 2012. Expenditure on R&D in the UK by foreign owned businesses increased by 11% and now constitutes 54% of total expenditure in 2013. (Figure 8).

On 15 March 2013, ONS 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. Estimates for 2011 have been revised in this 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



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 their industrial structure. 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. Key issues specific to this bulletin

This is the latest annual release about expenditure and employment in R&D by UK businesses. The results in this release are in respect of 2013. ONS 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 \(242.6 Kb Pdf\)](#) or the BERD survey is available on the ONS website.

The BERD survey is conducted annually by ONS. As part of the 2013 survey, approximately 5,400 questionnaires were sent to businesses known to perform R&D; this included around 400 of the largest R&D spenders, which accounted for approximately 77% of the 2013 total R&D expenditure estimate. Smaller R&D performers and others believed to be performing R&D were selected using various sampling fractions. Industry product group and business employment size were the stratification variables. Completed questionnaires were returned by 5,112 businesses representing a response rate of 95%.

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 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 ONS carrying out certain requirements. ONS has carried out the necessary work to meet these requirements and on 3 June 2013, the UK Statistics Authority 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 they are at present. Unfortunately, this investigation concluded that it is not possible for ONS to bring forward the publication of these estimates in the short-term.

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

As part of this investigation ONS 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 2008, 13 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 UK Statistics Authority, 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 the European System of Accounts (2010). 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 & Development Survey \(147 Kb Pdf\)](#)' was published on 20 November 2012 to address this issue.

5. Revisions

The 2011 and 2012 estimates have been revised where necessary to take account of businesses misreporting and late returns. One indication of the reliability of the key indicators in this release can be obtained by monitoring the size of revisions. The table below records the size and pattern of revisions that have occurred over the last five 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 three years later

			£ million
	Value in latest period	Average revision	Average revision without regard to sign
Expenditure on R&D performed by UK businesses	18,448	-159	159

Source: Office for National Statistics

A [spreadsheet \(42 Kb Excel sheet\)](#) is available giving the revisions of estimates from 2006 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 2007 (for 2006) to November 2011 (for 2010). 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

It is possible to calculate the standard error for each detailed product group. For example, the total expenditure for the Aerospace product group was £1,656 million in 2013. The calculated standard error for this estimate, as shown in Table 25, is £42 million. The 95% confidence interval for this estimate can then be given as £1,574 million to £1,738 million. This is calculated as £1,656 million (the survey estimate) \pm 1.96 x the value of the standard error. A 95% confidence interval means that it is expected that if the survey was repeated 100 times, 95% of the time the true value would fall within this range.

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 two types of possible errors:

- sampling errors, due to only a sample of the population being surveyed. These errors can be quantified, as shown in Table 25
- 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/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 and 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 discrepancies 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 2013 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 billion = £1,000 million

9. Product groups

The 400 largest R&D spenders 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 new 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 the 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

The UK Statistics Authority placed a requirement on ONS, as part of the assessment of Research and Development 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 is maintained by ONS 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. The businesses receiving the long questionnaire (the 400 largest R&D spenders) accounted for approximately 77% of total R&D expenditure in 2013. 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. Regional data for the remaining businesses, which accounted for the remaining 23% of total expenditure, all had a value 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 key 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 2013 GERD estimates will be published in March 2015.

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 and 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. In short, 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 \(European Union's Statistical Office\)](#) - the UK provides statistics measuring R&D activity in accordance with the European Commission Regulation No. 955/2012 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 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 2012. 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 key 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 key data sources for policy evaluation
- [The Department for Finance and Personnel](#), Northern Ireland carry out their own annual survey into R&D and then provide ONS with the Northern Ireland business 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 Research and Development Society makes use of BERD data, as a key 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 the ONS 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.

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

ONS has recently published commentary, analysis and policy on 'Special Events' which may affect statistical outputs. For full details go to the special events page on the ONS website.

19. Release policy

Details of the policy governing the release of new data are available from the 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 the ONS 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 web pages](#)

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, 2013 - Datasets

Please click on the links below to access the datasets:

UK Business Enterprise Research and Development 2013 - Time Series Datasets

- [SB1](#) Expenditure on R&D Performed in UK Businesses: Current and Constant Prices and as a Percentage of GDP, 2002 to 2013
- [SB2](#) Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2002 to 2013
- [SB3](#) Sources of Funds for R&D Performed in UK Businesses: 2002 to 2013
- [SB4](#) Employment in R&D Performed in UK Businesses: 2002 to 2013
- [SB5](#) Expenditure on Civil and Defence R&D Performed in UK Businesses: Broad Product Groups, 2002 to 2013
- [SB6](#) Sources of Funds for R&D Performed in UK Businesses: Civil and Defence, 2002 to 2013
- [SB7](#) Breakdown of R&D Performed in UK Businesses by Country or Region: Expenditure and Employment, 2002 to 2013

UK Business Enterprise Research and Development 2013 - Additional Datasets

Expenditure on Research and Development

- [1](#) Expenditure on R&D Performed in UK Businesses: Broad Product Groups, 2002 to 2013 - Current and Constant Prices (2013 Prices)
- [2](#) Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2002 to 2013
- [3](#) Current and Capital Expenditure on R&D Performed in UK Businesses: 2002 to 2013
- [4](#) Current and Capital Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2013
- [5](#) Current Expenditure on R&D Performed in UK Businesses: Detailed Product Groups and Type of Research, 2013
- [6](#) Extramural Expenditure on R&D by UK R&D Performing Businesses: Detailed Product Groups and Source of Funds, 2013

Sources of Funds for Research and Development

- [7](#) Sources of Funds for R&D Performed in UK Businesses: 2002 to 2013
- [8](#) Sources of Funds for R&D Performed in UK Businesses: Detailed Product Groups, 2013

Employment on Research and Development

- [9](#) Employment in R&D Performed in UK Businesses: 2002 to 2013
- [10](#) Employment in R&D Performed in UK Businesses: Detailed Product Groups, 2013
- [11](#) Employment in Civil and Defence R&D Performed in UK Businesses: 2002 to 2013

Civil and Defence Research and Development

- [12](#) Expenditure on Civil and Defence R&D Performed in UK Businesses: Detailed Products Groups, 2013
- [13](#) Current and Capital Expenditure on Civil and Defence R&D in UK Businesses: 2002 to 2013
- [14](#) Sources of Funds for Civil and Defence R&D in UK Businesses: 2002 to 2013

Region

- [15](#) Expenditure on R&D Performed in UK Businesses by Country or Region: Broad Product Groups, 2013
- [16](#) Employment in R&D Performed in UK Businesses by Country or Region: Broad Product Groups, 2013
- [17](#) R&D Performed in UK Businesses by Country or Region: Expenditure and Employment, 2002 to 2013

Business Size and Product

- [18](#) Expenditure and Employment on R&D Performed in UK Businesses: Top 100 Enterprise Groups, 2013
- [19](#) Expenditure on R&D Performed in UK Businesses by Total Company Employment Size-Bands: Broad Product Groups, 2013
- [20](#) R&D Employment in UK Businesses by Company Employment Size-Bands: Broad Product Groups, 2013
- [21](#) Expenditure on R&D Performed in UK Businesses by Employment Size-Bands and Broad Product Groups: As an Average per R&D Employee, 2013

By Country of Ownership

- [22](#) Expenditure and Employment on R&D Performed in UK Businesses: By Country of Ownership of Business Performing R&D, 2002 to 2013
- [23](#) Expenditure on R&D Performed in UK Businesses, UK or Overseas Ownership: Detailed Product Groups, 2013

Intensity in Manufactured Products

- [24](#) R&D Intensity in Manufactured Products: Detailed Product Groups, 2002 to 2013

Standard Errors

- [25](#) R&D Business Survey Standard Errors: Detailed Product Groups, 2013

Small and Medium Size Enterprises

- [26](#) Expenditure on R&D Performed in UK Businesses: By Small and Medium Size Enterprises, 2002 to 2013

Standard Industry Classification (SIC) Division

- [27](#) Expenditure on R&D Performed in UK Businesses: Standard Industry Classification (SIC) Division, 2010 to 2013

Intensity in Services

- [28](#) R&D Intensity in Services: Detailed Product Groups, 2010 to 2013

[List of Broad Product Groups Numbers and Titles](#)

Statistical contact: Cecil Prescott, Office for National Statistics

Telephone number: +44 (0)1633 456767

Email: RandD@ons.gsi.gov.uk

SB1 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
CURRENT AND CONSTANT PRICES AND AS A PERCENTAGE OF GDP, 2002 TO 2013

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												£ million	
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Current prices	DLBX	12,484	12505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448
Constant prices (2013)		16,264 [†]	15,966	15,672	16,537	16,581	17,855	17,571	16,823	16,910	18,070	17,460	18,448
Current prices GDP	DLHT	1,135,829 [†]	1,209,281	1,269,505	1,350,055	1,424,361	1,498,594	1,502,318	1,501,670	1,576,231	1,628,485	1,663,163	1,732,914
As a % of GDP		1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.1
2013 = 100												Source: Office for National Statistics	
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP deflator used to convert current prices to constant prices		76.759 [†]	78.322	80.792	83.049	85.300	87.796	90.000	92.327	94.882	96.580	98.190	100

1 [†] crosses denote earliest data revision.

SB2 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
DETAILED PRODUCT GROUPS, 2002 TO 2013
CURRENT PRICES

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														% of total
														£ million

SB3 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES:
2002 TO 2013
CURRENT PRICES

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		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
£ Million													
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448
UK Government	DLDO	881	1,165	1,290	1,101	1,060	1,072	1,135	1,324	1,407	1,513	1,380	1,649
Overseas total of which:	DLHK	3,699	3,548	2,958	3,584	3,262	3,636	3,721	3,458	3,789	3,939	3,957	3,965
EC Programmes	DLDQ	134	90	42	73	41	27	47	47	62	55	47	44
All other funding from abroad	DLDS	3,565	3,459	2,917	3,512	3,221	3,609	3,674	3,411	3,727	3,884	3,910	3,920
Other UK Business	DLDU	848	1,105	1,056	1,272	1,155	994	865	698	718	595	358	381
Own funds	DLDW	7,053	6,685	7,351	7,775	8,665	9,959	10,086	10,047	10,129	11,283	11,381	12,368
Other	DLDY	4	3	6	2	2	15	7	4	3	122	67	84
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013

Per cent													
TOTAL		100	100	100	100	100	100	100	100	100	100	100	100
UK Government		7	9	10	8	7	7	7	9	9	9	8	9
Overseas total of which:		30	28	23	26	23	23	24	22	24	23	23	21
EC Programmes		1	1	-	1	-	-	-	-	-	-	-	-
All other funding from abroad		29	28	23	26	23	23	23	22	23	22	23	21
Other UK Business		7	9	8	9	8	6	5	4	4	3	2	2
Own funds		56	53	58	57	61	64	64	65	63	65	65	67
Other		-	-	-	-	-	-	-	-	-	1	-	-

Source: Office for National Statistics

- 1 - denotes nil, figures unavailable or too small to display.
2 [†] crosses denote earliest data revision.
3 The sum of percentages may be more or less than 100 due to rounding.
4 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

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SB4 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES: 2002 TO 2013

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		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Full time equivalent in thousands													
TOTAL	DLEI	158	155	150	146	147	158	151	151	154	159[†]	161	178
Scientists and engineers	DLEJ	96	99	94	94	92	90	86	85	87	90	91 [†]	98
Technicians, laboratory assistants and draughtsmen	DLEK	31	28	27	25	27	35	37	40	41	42	44 [†]	52
Administrative, clerical, industrial and other staff	DLEL	31	29	29	26	28	33	28	26	27	27	27	28
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013

Per cent

TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100
Scientists and engineers	61	64	63	64	63	57	57	56	56	56	57 [†]	57	55
Technicians, laboratory assistants and draughtsmen	20	18	18	17	18	22	25	26	27	27	26	27	29
Administrative, clerical, industrial and other staff	20	19	19	18	19	21	19	17	18	18	17	17	16

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

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

SB5 EXPENDITURE ON CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES:
BROAD PRODUCT GROUPS, 2002 TO 2013

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BROAD PRODUCT GROUPS, 2002 TO 2013																									£ million		
		Civil												Defence													
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013			2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CURRENT PRICES																											
TOTAL	DLBV	10,839	10,800	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667 [†]	15,539	16,734	DLBW	1,645	1,706	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785 [†]	1,604	1,713	
Manufacturing	DLEP	8,173	8,098	8,180	8,270	8,564	9,372	9,712	9,484	10,036	10,815 [†]	10,807	11,318	DLEX	1,519	1,538	1,878	2,290	1,991	2,239	1,960	1,746	1,549	1,647 [†]	1,511	1,502	
Chemicals	DLEQ	..	..	..	..	..	..	..	..	..	..	..	..	DLEY	..	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	DLER	552	402	492	458	464	634	435	..	456	520	600 [†]	628	DLEZ	319	326	346	520	533	489	429	..	446	572	526 [†]	527	
Electrical machinery	DLES	1,044	1,029	935	978	930	934	1,018	867	751	847	1,069 [†]	1,197	DLFA	305	258	287	296	343	362	381	408	393	353	270 [†]	194	
Transport equipment	DLET	..	..	..	..	..	..	..	..	..	..	..	..	DLFB	..	..	..	..	..	..	..	..	..	..	..	..
Aerospace	DLEU	659	871	939	902	908	902	836	905	1,018	1,036	1,167	1,240	DLFC	693	772	1,026	1,267	924	1,168	897	560	419	402	351 [†]	416	
Other manufacturing	DLEV	1,207	1,140	1,123	1,146	1,266	1,321	1,226	1,136	1,168	1,398 [†]	1,383	1,453	DLFD	97	105	108	90	70	100	122	115	127	98 [†]	124	114	
Services	DLEW	2,393	..	..	..	3,226	3,690	3,767	3,811	..	4,425 [†]	..	4,857	DLFE	125	..	..	..	178	169	137	140	..	138	..	212
Other: Total	LDIL	273	..	..	..	185	205	238	350	..	426	..	559	LDJJ	1	..	..	..	..	..	..	..	..	..	..	..
Agriculture, hunting & forestry; Fishing	LDIN	147	136	..	..	88	..	88	111	102	133	132	124	LDJL	..	..	..	..	..	..	..	..	..	..	..	..
Extractive industries	LDIS	45	41	36	59	59	82	90	140	152	195	206	225	LDKF	..	..	..	..	..	..	..	..	..	..	..	..
Electricity, gas & water supply; Waste management	LDJB	46	36	21	15	21	35	40	75	..	68	..	139	LDKG	..	..	..	..	..	..	..	..	..	..	..	..
Construction	LDJG	35	..	..	..	17	..	21	24	..	31	..	72	LDKS	1	..	..	..	..	..	..	..	..	..	..	..

	Civil													Defence												£ million
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
CONSTANT PRICES (2013)																										
TOTAL	14,121 †	13,789	13,149	13,592	14,039	15,112	15,241	14,780	15,168	16,222	15,825	16,734		2,143 †	2,178	2,524	2,945	2,543	2,744	2,330	2,043	1,742	1,848	1,634	1,713	
Manufacturing	10,648 †	10,339	10,125	9,958	10,040	10,675	10,791	10,272	10,577	11,198	11,006	11,318		1,979 †	1,964	2,324	2,757	2,334	2,550	2,178	1,891	1,633	1,705	1,539	1,502	
Chemicals	..	..	..	..	..	..	..	..	..	..	..	..		.. †	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	719 †	513	609	551	544	722	483	..	481	538	611	628		416 †	416	428	626	625	557	477	..	470	592	536	527	
Electrical machinery	1,360 †	1,314	1,157	1,178	1,090	1,064	1,131	939	792	877	1,089	1,197		397 †	329	355	356	402	412	423	442	414	366	275	194	
Transport equipment	..	..	..	..	..	..	..	..	..	..	..	..		.. †	..	..	..	..	..	..	..	..	..	..	..
Aerospace	859 †	1,112	1,162	1,086	1,064	1,027	929	980	1,073	1,073	1,189	1,240		903 †	986	1,270	1,526	1,083	1,330	997	607	442	416	357	416	
Other manufacturing	1,572 †	1,456	1,390	1,380	1,484	1,505	1,362	1,230	1,231	1,448	1,408	1,453		126 †	134	134	108	82	114	136	125	134	101	126	114	
Services	3,118 †	..	..	..	3,782	4,203	4,186	4,128	..	4,582	..	4,857		163 †	..	..	..	209	192	152	152	..	143	..	212
Other: Total	356 †	..	..	..	217	233	264	379	..	441	..	559		1 †	..	..	..	..	..	..	..	..	..	..	..
Agriculture, hunting & forestry; Fishing	192 †	174	..	..	103	..	98	120	108	138	134	124		.. †	..	..	..	..	..	..	..	..	..	..	..
Extractive industries	59 †	52	45	71	69	93	100	152	160	202	210	225		.. †	..	..	..	..	..	..	..	..	..	..	..
Electricity, gas & water supply; Waste management	60 †	46	26	18	25	40	44	81	..	70	..	139		.. †	..	..	..	..	..	..	..	..	..	..	..
Construction	46 †	..	..	..	20	..	23	26	..	32	..	72		1 †	..	..	..	..	..	..	..	..	..	..	..

Source: Office for National Statistics

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP deflator used to convert current prices to constant prices	76.759 [†]	78.322	80.792	83.049	85.300	87.796	90.000	92.327	94.882	96.580	98.190	100.000	76.759 [†]	78.322	80.792	83.049	85.300	87.796	90.000	92.327	94.882	96.580	98.190	100.000

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

2 .. denotes disclosive figures.

3 [†] crosses denote earliest data revision.

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SB6 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES:
CIVIL AND DEFENCE, 2002 TO 2013
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		Civil												Defence												£ million
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
UK Government	DLFG	188	386	162	156	150	183	258	350	410	394	315 [†]	518	DLFN	693	778	1,128	945	910	889	877	974	996	1,119 [†]	1,065	1,131
Overseas total of which:	DLHS	3,148	2,980	2,440	2,656	2,686	2,985	3,189	3,206	3,584	3,788 [†]	3,800	3,805	DLIF	551	568	518	928	576	652	532	251	205	151 [†]	157	160
EC Programmes	DLFH	134	90	42	73	41	27	47	45	60	53	45 [†]	42	DLFO	-	-	-	-	-	1	-	2	2	3	2	3
All other funding from abroad	DLFI	3,014	2,890	2,398	2,583	2,645	2,958	3,143	3,161	3,524	3,735 [†]	3,755	3,763	DLFP	551	568	518	928	576	651	531	250	203	149 [†]	155	157
Other UK Business	DLFJ	..	1,024	988	1,147	1,044	..	729	..	607	485	286 [†]	..	DLFQ	..	81	68	125	111	..	136	..	111	109	72	..
Own	DLFK	6,747	6,407	7,027	7,326	8,093	9,196	9,534	9,503	9,787	10,922 [†]	11,076	12,052	DLFR	306	278	325	449	572	763	552	545	341	361 [†]	304	317
Other	DLFL	..	3	6	2	2	..	7	..	3	78	62	..	DLFS	..	-	-	-	-	..	-	..	1	44	6 [†]	..
TOTAL	DLBV	10,839	10,800	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667 [†]	15,539	16,734	DLBW	1,645	1,706	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785 [†]	1,604	1,713

Source: Office for National Statistics

- 1 - denotes nil, figures unavailable or too small to display.
2 - denotes disclosure figures.
3 [†] crosses denote earliest data revision.
4 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

SB7 BREAKDOWN OF R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION:
EXPENDITURE AND EMPLOYMENT, 2002 TO 2013
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		Expenditure £ million												Employment FTE in thousands													
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% of total 2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
United Kingdom	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448	100.0	DLEI	158	155	150	146	147	158	151	151	154	159 [†]	161	178
England	DLKI	11,642	11,748	11,885	12,847	13,312	14,649	14,847	14,360	14,868	16,151 [†]	15,746	16,838	91.3	DLKJ	145	142	137	133	135	145	139	137	140	144	145 [†]	159
North East	DLJO	124	149	257	289	292	331	318	315	308	259	282	309	1.7	DLJZ	2	3	3	3	3	4	4	4	4	3	5	
North West	DLJT	1,604	1,538	1,739	1,892	1,623	2,021	2,130	1,926	2,074	2,220	1,775 [†]	1,784	9.7	DLKE	18	17	16	15	16	17	16	14	14	13	13	
Yorkshire and the Humber	DLJP	337	335	343	344	384	436	433	454	488	550 [†]	600	644	3.5	DLKA	6	6	6	6	6	7	7	7	7	8	9	
East Midlands	DLJQ	974	862	936	1,006	985	1,062	976	992	1,137	1,146 [†]	1,242	1,369	7.4	DLKB	14	13	11	11	11	13	12	10	11	12	13	
West Midlands	DLJN	774	794	758	721	915	995	886	847	886	1,281 [†]	1,462	1,697	9.2	DLJY	15	14	13	12	13	14	12	12	11	12	14	
East of England	DLJR	2,650	2,915	2,672	3,718	3,650	3,992	4,182	3,812	3,846	3,639 [†]	3,443	4,071	22.1	DLKC	30	32	28	29	26	28	29	30	32	32	29	
London	DLKL	865	669	759	552	882	1,067	1,109	907	877	1,118	1,462 [†]	1,317	7.1	DLKM	10	8	9	8	10	11	11	10	10	11	13	
South East	DLJS	3,156	3,266	3,125	3,125	3,347	3,515	3,466	3,758	3,798	4,579 [†]	4,108	4,195	22.7	DLKD	37	37	37	36	37	37	35	36	36	37	39	
South West	DLJM	1,158	1,221	1,296	1,201	1,232	1,229	1,345	1,349	1,454	1,359	1,372 [†]	1,452	7.9	DLJX	14	13	13	13	13	14	15	15	16	15	16	
Wales	DLJU	187	200	226	232	216	308	243	243	234	252 [†]	269	369	2.0	DLKF	3	4	3	3	3	3	3	3	3	3 [†]	3	
Scotland	DLJV	507	441	430	506	460	543	554	631	619	697 [†]	709	798	4.3	DLKG	7	6	6	7	6	7	7	7	7	8	10	
Northern Ireland	DLJW	149	116	120	148	157	177	171	297	324	352	420	443	2.4	DLKH	3	3	3	3	3	3	2	3	4	4	5	

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

2 FTE - Full Time Equivalents.

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

**1 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
BROAD PRODUCT GROUPS, 2002 TO 2013**
CURRENT PRICES

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		£ million											
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448
Manufacturing: Total	DLDF	9,692	9,636	10,058	10,560	10,555	11,612	11,672	11,230	11,585	12,462 [†]	12,318	12,820
Chemicals	DLDG	3,768	3,741	3,864	4,011	4,205	4,602	4,985	5,034	5,339	5,437 [†]	4,789	4,698
Mechanical engineering	DLDH	871	728	838	978	997	1,124	864	..	902	1,091	1,126 [†]	1,155
Electrical machinery	DLDI	1,349	1,286	1,222	1,274	1,273	1,297	1,400	1,275	1,144	1,200	1,339 [†]	1,391
Transport equipment	DLDJ	1,049	994	937	892	913	1,097	1,344	..	1,468	1,800	2,040 [†]	2,353
Aerospace	DLDK	1,352	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,518	1,656
Other manufacturing	DLDL	1,304	1,245	1,231	1,236	1,336	1,422	1,348	1,251	1,295	1,495 [†]	1,506	1,567
Services	DLDM	2,519	2,629	2,378	2,949	3,404	3,860	3,904	3,952	4,120	4,563 [†]	4,306	5,069
Other: Total	LABA	273	240	226	225	185	205	238	350	340	426	519 [†]	559
Agriculture, hunting & forestry; Fishing	LADE	147	136	..	..	88	..	88	..	102	133	132	124
Extractive industries	LADM	45	41	36	59	59	82	90	140	152	195	206 [†]	225
Electricity, gas & water supply; Waste management	LAEB	46	36	21	15	21	35	40	75	72	68	116 [†]	139
Construction	LAEM	35	27	..	..	17	..	21	..	14	31	64 [†]	72

1 .. denotes disclosive figures.

2 [†] crosses denote earliest data revision.

**1A EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
BROAD PRODUCT GROUPS, 2002 TO 2013**
CONSTANT PRICES (2013)

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		£ million											
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TOTAL		16,264 [†]	15,966	15,672	16,537	16,581	17,855	17,571	16,823	16,910	18,070	17,460	18,448
Manufacturing: Total		12,627 [†]	12,303	12,449	12,715	12,374	13,226	12,969	12,163	12,210	12,903	12,545	12,820
Chemicals		4,909 [†]	4,776	4,783	4,830	4,930	5,242	5,539	5,452	5,627	5,630	4,877	4,698
Mechanical engineering		1,135 [†]	929	1,037	1,178	1,169	1,280	960	..	951	1,130	1,147	1,155
Electrical machinery		1,757 [†]	1,642	1,513	1,534	1,492	1,477	1,556	1,381	1,206	1,242	1,364	1,391
Transport equipment		1,367 [†]	1,269	1,160	1,074	1,070	1,249	1,493	..	1,547	1,864	2,078	2,353
Aerospace		1,761 [†]	2,098	2,432	2,612	2,148	2,358	1,924	1,588	1,515	1,489	1,546	1,656
Other manufacturing		1,699 [†]	1,590	1,524	1,488	1,566	1,620	1,498	1,355	1,365	1,548	1,534	1,567
Services		3,282 [†]	3,357	2,943	3,551	3,991	4,397	4,338	4,280	4,342	4,725	4,385	5,069
Other: Total		356 [†]	306	280	271	217	233	264	379	358	441	529	559
Agriculture, hunting & forestry; Fishing		192 [†]	174	..	..	103	..	98	..	108	138	134	124
Extractive industries		59 [†]	52	45	71	69	93	100	152	160	202	210	225
Electricity, gas & water supply; Waste management		60 [†]	46	26	18	25	40	44	81	76	70	118	139
Construction		46 [†]	34	..	..	20	..	23	..	15	32	65	72

Source: Office for National Statistics

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP deflator used to convert current prices to constant prices	76.759 [†]	78.322	80.792	83.049	85.300	87.796	90.000	92.327	94.882	96.580	98.190	100

1 .. denotes disclosive figures.

2 [†] crosses denote earliest data revision.

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**EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
DETAILED PRODUCT GROUPS, 2002 TO 2013**
CURRENT PRICES

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CURRENT PRICES		£ million											
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 †	17,144	18,448
Agriculture, hunting and forestry; Fishing	DLBY	147	136	..	..	88	..	88	..	102	133	132	124
Extractive Industries	DLBZ	45	41	36	59	59	82	90	140	152	195	206 †	225
Food products and beverages; Tobacco products	DLCP	269	256	258	276	314	328	303	290	306	366 †	364	425
Textiles, clothing and leather products	DLCQ	19	20	21	18	17	19	15	10	11	14	20	22
Pulp, paper and paper products; Printing; Wood and straw products	DLCT	44	45	40	52	55	53	56	26	28	21	28	49
Refined petroleum products and coke oven products	DLCE	247	258	234	245	279	274	94	95	73	72	76	69
Chemicals and chemical products	DLCC	599	614	625	637	684	668	630	610	666	523	592 †	617
Pharmaceuticals	DLCD	3,169	3,127	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914 †	4,197	4,081
Rubber and plastic products	DLCR	60	65	63	55	90	79	78	62	80	97	105 †	101
Other non-metallic mineral products	DLCS	51	56	62	44	51	48	53	57	56	60	47 †	47
Casting of iron and steel	DLCJ	29	29	30	34	38	..	47	43	28	44	45	27
Non-ferrous metals	DLCK	16	4	4	8	6	..	72	..	86	77	60 †	60
Fabricated metal products except machinery and equipment	DLCL	90	65	77	74	68	91	73	93	93	119	105 †	116
Machinery and equipment	DLCO	780	662	761	905	929	1,033	790	873	809	973	1,021 †	1,039
Computers and peripheral equipment	DLCN	87	55	53	92	67	83	123	151	157	180	187	162
Electrical equipment	DLCA	372	360	406	394	458	547	577	577	513	509	463 †	391
Consumer electronics and communication equipment	DLCB	890	871	763	788	748	667	700	547	474	511	689 †	837
Precision instruments and optical products; photographic equipment	DLCM	532	476	486	475	462	544	591	498	490	599 †	628	597
Motor vehicles and parts	DLCG	916	894	789	744	754	933	1,156	1,039	1,237	1,525	1,763 †	2,060
Other transport equipment	DLCI	..	..	23	21	25	28	30	..	46	50	48	60
Shipbuilding	DLCH	..	..	125	127	134	136	157	173	185	226	229	233
Aerospace	DLCF	1,352	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,518	1,656
Other manufactured goods	DLCU	35	35	33	26	24	27	36	98	136	146	133 †	170
Sewerage, waste management, remediation activities	DLCV	3	2	2	1	1	3	3	9	11	10	12	17
Electricity, gas and water supply	DLCW	46	36	21	15	21	35	40	66	60	58	104 †	122
Construction	DLCX	35	27	..	..	17	..	21	..	14	31	64 †	72
Wholesale and retail trade	DLDE	74	53	76	60	70	37	74	76	177	242 †	174	167
Transport and storage, incl. postal and courier activities	DLCY	..	..	12	8	16	21	12	24	17	18	..	35
Telecommunications	DLCZ	726	637	639	1,164	1,330	1,535	1,404	1,330	1,129	1,037 †	875	841
Miscellaneous business activities; Technical testing and analysis	DLDC	363	308	349	438	399	510	494	555	583	570 †	673	972
Computer programming and information service activities	DLDB	866	1,207	1,060	1,069	1,415	1,498	1,465	1,385	1,526	1,847	1,886 †	2,020
Research and development services	DLDA	446	404	211	179	122	156	384	507	618	783 †	606	929
Public administration	DLDD	34	11	31	32	52	103	71	73	70	67	..	106

Source: Office for National Statistics

1 .. denotes disclosive figures.

2 [†] crosses denote earliest data revision.
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3 CURRENT AND CAPITAL EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: 2002 TO 2013 CURRENT PRICES

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		£ million											
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448
Capital total of which:	DLEA	1,115	1,172	1,184	1,168	956	1,070	865	928	927	1,051	1,117 [†]	1,023
Land and buildings	DLHO	299	338	251	204	154	201	185	221	143	126	110 [†]	142
Plant and machinery	DLHQ	816	834	933	964	802	869	680	706	784	925 [†]	1,008	881
Current total of which:	DLEC	11,369	11,334	11,477	12,566	13,188	14,606	14,950	14,604	15,118	16,401 [†]	16,026	17,424
Salaries and wages	DLEE	5,567	5,602	5,977	6,354	6,782	7,697	7,539	7,723	7,937	8,109 [†]	8,389	9,301
Other	DLEG	5,802	5,732	5,501	6,212	6,407	6,908	7,410	6,881	7,181	8,292 [†]	7,637	8,123

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

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CURRENT AND CAPITAL EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
DETAILED PRODUCT GROUPS, 2013[Return to Main Menu](#)

£ million

	Total	Capital Total	Current Total	Salaries and wages	Other current
TOTAL	18,448	1,023	17,424	9,301	8,123
Agriculture, hunting and forestry; Fishing	124	..	..	44	..
Extractive Industries	225	9	216	123	93
Food products and beverages; Tobacco products	425	36	389	202	187
Textiles, clothing and leather products	22	-	22	15	6
Pulp, paper and paper products; Printing; Wood and straw products	49	4	45	18	28
Refined petroleum products and coke oven products	69	1	68	36	32
Chemicals and chemical products	617	66	551	271	280
Pharmaceuticals	4,081	142	3,938	1,765	2,173
Rubber and plastic products	101	4	97	51	46
Other non-metallic mineral products	47	4	44	25	18
Casting of iron and steel	27	-	27	17	10
Non-ferrous metals	60	8	52	33	19
Fabricated metal products except machinery and equipment	116	6	110	53	57
Machinery and equipment	1,039	44	995	567	428
Computers and peripheral equipment	162	7	155	60	94
Electrical equipment	391	39	352	188	164
Consumer electronics and communication equipment	837	40	798	441	357
Precision instruments and optical products; photographic equipment	597	27	569	289	281
Motor vehicles and parts	2,060	107	1,953	836	1,118
Other transport equipment	60	1	59	31	28
Shipbuilding	233	..	..	73	..
Aerospace	1,656	135	1,521	812	709
Other manufactured goods	170	3	167	108	59
Sewerage, waste management, remediation activities	17	-	17	14	3
Electricity, gas and water supply	122	20	102	28	74
Construction	72	12	60	37	23
Wholesale and retail trade	167	20	148	72	76
Transport and storage, incl. postal and courier activities	35	-	35	25	10
Telecommunications	841	7	834	545	289
Miscellaneous business activities; Technical testing and analysis	972	14	958	696	262
Computer programming and information service activities	2,020	188	1,832	1,250	582
Research and development services	929	68	860	512	349
Public administration	106	1	105	64	41

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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**CURRENT EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
DETAILED PRODUCT GROUPS AND TYPE OF RESEARCH, 2013**

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£ million

	Total current	Basic	Applied	Experimental Development
TOTAL	17,424	969	7,738	8,717
Agriculture, hunting and forestry; Fishing	..	..	78	..
Extractive Industries	216	5	159	52
Food products and beverages; Tobacco products	389	78	135	175
Textiles, clothing and leather products	22	1	7	14
Pulp, paper and paper products; Printing; Wood and straw products	45	-	15	30
Refined petroleum products and coke oven products	68	41	3	25
Chemicals and chemical products	551	9	299	243
Pharmaceuticals	3,938	235	1,652	2,052
Rubber and plastic products	97	15	67	15
Other non-metallic mineral products	44	5	12	26
Casting of iron and steel	27	-	-	27
Non-ferrous metals	52	-	22	30
Fabricated metal products except machinery and equipment	110	3	81	26
Machinery and equipment	995	44	457	494
Computers and peripheral equipment	155	1	38	116
Electrical equipment	352	20	73	259
Consumer electronics and communication equipment	798	26	512	260
Precision instruments and optical products; photographic equipment	569	5	294	270
Motor vehicles and parts	1,953	51	269	1,633
Other transport equipment	59	-	30	29
Shipbuilding	..	..	46	..
Aerospace	1,521	138	932	451
Other manufactured goods	167	8	47	112
Sewerage, waste management, remediation activities	17	-	2	15
Electricity, gas and water supply	102	9	64	29
Construction	60	2	30	27
Wholesale and retail trade	148	6	88	54
Transport and storage, incl. postal and courier activities	35	-	18	17
Telecommunications	834	46	216	572
Miscellaneous business activities; Technical testing and analysis	958	17	616	325
Computer programming and information service activities	1,832	65	813	954
Research and development services	860	120	648	92
Public administration	105	14	16	75

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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£ million

	Total	United Kingdom	Overseas Government Funded	Overseas Other funds
TOTAL	4,957	1,652	10	3,295
Agriculture, hunting and forestry; Fishing	..	..	-	..
Extractive Industries	13	12	-	1
Food products and beverages; Tobacco products	41	21	-	20
Textiles, clothing and leather products	-	-	-	-
Pulp, paper and paper products; Printing; Wood and straw products	1	1	-	-
Refined petroleum products and coke oven products	46	11	-	35
Chemicals and chemical products	79	50	-	29
Pharmaceuticals	3,045	..	..	2,238
Rubber and plastic products	5	4	-	1
Other non-metallic mineral products	5	5	-	-
Casting of iron and steel	..	..	..	..
Non-ferrous metals	2	-	-	2
Fabricated metal products except machinery and equipment	13	1	-	11
Machinery and equipment	55	16	-	39
Computers and peripheral equipment	7	7	-	-
Electrical equipment	29	20	1	8
Consumer electronics and communication equipment	103	14	-	89
Precision instruments and optical products; photographic equipment	157	22	-	136
Motor vehicles and parts	681	259	-	422
Other transport equipment	1	-	-	-
Shipbuilding	1	1	-	-
Aerospace	150	97	8	45
Other manufactured goods	3	1	-	2
Sewerage, waste management, remediation activities	2	1	-	1
Electricity, gas and water supply	34	-	-	34
Construction	8	..	..	..
Wholesale and retail trade	9	7	-	2
Transport and storage, incl. postal and courier activities	1	1	-	-
Telecommunications	..	..	-	3
Miscellaneous business activities; Technical testing and analysis	59	46	-	13
Computer programming and information service activities	73	10	-	63
Research and development services	190	125	-	65
Public administration	8	7	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

3 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.

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**SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES:
2002 TO 2013
CURRENT PRICES**

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		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
£ Million													
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448
UK Government	DLDO	881	1,165	1,290	1,101	1,060	1,072	1,135	1,324	1,407	1,513 [†]	1,380	1,649
Overseas total of which:	DLHK	3,699	3,548	2,958	3,584	3,262	3,636	3,721	3,458	3,789	3,939	3,957 [†]	3,965
European Commission grants	DLDQ	134	90	42	73	41	27	47	47	62	55 [†]	47	44
Other Overseas	DLDS	3565	3459	2917	3512	3221	3609	3674	3411	3727	3884	3910 [†]	3920
Other UK Business	DLDU	848	1,105	1,056	1,272	1,155	994	865	698	718	595 [†]	358	381
Own funds	DLDW	7,053	6,685	7,351	7,775	8,665	9,959	10,086	10,047	10,129	11,283 [†]	11,381	12,368
Other	DLDY	4	3	6	2	2	15	7	4	3	122	67 [†]	84
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Per cent													
TOTAL		100	100	100	100	100	100	100	100	100	100	100	100
UK Government		7	9	10	8	7	7	7	9	9	9	8	9
Overseas total of which:		30	28	23	26	23	23	24	22	24	23	23 [†]	21
European Commission grants		1	1	-	1	-	-	-	-	-	-	-	-
Other Overseas		29	28	23	26	23	23	23	22	23	22	23	21
Other UK Business		7	9	8	9	8	6	5	4	4	3	2	2
Own funds		56	53	58	57	61	64	64	65	63	65	66	67
Other		-	-	-	-	-	-	-	-	-	1	-	-

Source: Office for National Statistics

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

2 [†] crosses denote earliest data revision.

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

4 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

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£ million

	Total Expenditure	UK Government	Overseas	Own Funds	Other
TOTAL	18,448	1,649	3,965	12,368	465
Agriculture, hunting and forestry; Fishing	124	..	..	79	..
Extractive Industries	225	1	74	150	-
Food products and beverages; Tobacco products	425	2	95	325	3
Textiles, clothing and leather products	22	2	-	20	-
Pulp, paper and paper products; Printing; Wood and straw products	49	-	5	43	-
Refined petroleum products and coke oven products	69	..	..	67	..
Chemicals and chemical products	617	16	29	571	1
Pharmaceuticals	4,081	28	1,211	2,789	52
Rubber and plastic products	101	1	10	90	-
Other non-metallic mineral products	47	1	-	46	-
Casting of iron and steel	27	1	2	23	1
Non-ferrous metals	60	3	1	19	38
Fabricated metal products except machinery and equipment	116	8	39	70	-
Machinery and equipment	1,039	465	147	393	34
Computers and peripheral equipment	162	..	..	147	..
Electrical equipment	391	97	29	243	22
Consumer electronics and communication equipment	837	48	305	473	11
Precision instruments and optical products; photographic equipment	597	73	39	484	-
Motor vehicles and parts	2,060	..	333	1,680	..
Other transport equipment	60	..	..	43	..
Shipbuilding	233	..	1	27	..
Aerospace	1,656	197	210	1,133	116
Other manufactured goods	170	3	4	162	-
Sewerage, waste management, remediation activities	17	1	5	3	8
Electricity, gas and water supply	122	2	29	83	8
Construction	72	6	-	62	4
Wholesale and retail trade	167	21	2	145	-
Transport and storage, incl. postal and courier activities	35	-	13	16	6
Telecommunications	841	..	164	671	..
Miscellaneous business activities; Technical testing and analysis	972	185	123	613	51
Computer programming and information service activities	2,020	52	567	1,400	1
Research and development services	929	174	469	205	80
Public administration	106	2	10	93	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

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9

EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES:
2002 TO 2013[Return to Main Menu](#)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Full time equivalent in thousands													
TOTAL	DLEI	158	155	150	146	147	158	151	151	154	159 [†]	161	178
Scientists and engineers	DLEJ	96	99	94	94	92	90	86	85	87	90	91 [†]	98
Technicians, laboratory assistants and draughtsmen	DLEK	31	28	27	25	27	35	37	40	41	42	44 [†]	52
Administrative, clerical industrial and other staff	DLEL	31	29	29	26	28	33	28	26	27	27	27	28
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Per cent													
TOTAL		100	100	100	100	100	100	100	100	100	100	100	100
Scientists and engineers		61	64	63	64	63	57	57	56	56	57 [†]	57	55
Technicians, laboratory assistants and draughtsmen		20	18	18	17	18	22	25	26	27	26	27	29
Administrative, clerical industrial and other staff		20	19	19	18	19	21	19	17	18	17	17	16

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

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

10 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2013

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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	178	98	52	28
Agriculture, hunting and forestry; Fishing	1	-	-	-
Extractive Industries	1	1	-	-
Food products and beverages; Tobacco products	4	2	2	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	7	3	3	1
Pharmaceuticals	23	10	5	9
Rubber and plastic products	1	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	2	1	1	1
Machinery and equipment	11	6	3	2
Computers and peripheral equipment	1	1	-	-
Electrical equipment	5	4	1	-
Consumer electronics and communication equipment	7	5	1	-
Precision instruments and optical products; photographic equipment	7	4	2	1
Motor vehicles and parts	14	7	4	3
Other transport equipment	1	-	-	-
Shipbuilding	2	1	-	-
Aerospace	15	10	4	1
Other manufactured goods	3	1	2	1
Sewerage, waste management, remediation activities	-	-	-	-
Electricity, gas and water supply	1	-	-	-
Construction	1	1	-	-
Wholesale and retail trade	2	1	1	1
Transport and storage, incl. postal and courier activities	-	-	-	-
Telecommunications	9	6	2	-
Miscellaneous business activities; Technical testing and analysis	15	7	7	1
Computer programming and information service activities	27	14	10	2
Research and development services	11	8	2	1
Public administration	1	1	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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11 EMPLOYMENT IN CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: 2002 TO 2013

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		Civil													Defence													Full time equivalent in thousands			
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013					
Scientist and engineers	DLHD	79	83	78	77	76	76	74	74	77	81	82 [†]	89	DLHH	17	16	17	17	16	14	12	11	10	9	9	10					
Technicians laboratory assistants & draughtmen	DLHE	26	24	24	23	25	31	33	36	37	38	39 [†]	47	DLHI	5	3	2	2	2	3	4	4	4	4	4 [†]	5					
Admin. clerical industrial & other staff	DLHF	26	25	25	23	24	29	25	24	25	25	24 [†]	26	DLHJ	5	4	4	4	4	4	3	2	2	2	2	2					
TOTAL	DLHC	131	132	126	123	125	136	132	134	138	144 [†]	145	162	DLHG	27	24	23	23	22	22	19	18	16	15	16	16					

Source: Office for National Statistics

[†] crosses denote earliest data revision.

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	£ million		
	Total	Civil	Defence
TOTAL	18,448	16,734	1,713
Agriculture, hunting and forestry; Fishing	124	124	-
Extractive Industries	225	225	-
Food products and beverages; Tobacco products	425	425	-
Textiles, clothing and leather products	22	22	-
Pulp, paper and paper products; Printing; Wood and straw products	49	49	-
Refined petroleum products and coke oven products	69	..	..
Chemicals and chemical products	617	606	12
Pharmaceuticals	4,081	4,081	-
Rubber and plastic products	101	100	-
Other non-metallic mineral products	47	47	-
Casting of iron and steel	27	27	-
Non-ferrous metals	60	60	-
Fabricated metal products except machinery and equipment	116	112	5
Machinery and equipment	1,039	517	522
Computers and peripheral equipment	162	..	..
Electrical equipment	391	261	130
Consumer electronics and communication equipment	837	775	63
Precision instruments and optical products; photographic equipment	597	485	112
Motor vehicles and parts	2,060	..	..
Other transport equipment	60	..	..
Shipbuilding	233	..	..
Aerospace	1,656	1,240	416
Other manufactured goods	170	..	..
Sewerage, waste management, remediation activities	17	17	-
Electricity, gas and water supply	122	122	-
Construction	72	72	-
Wholesale and retail trade	167	167	-
Transport and storage, incl. postal and courier activities	35	35	-
Telecommunications	841	823	17
Miscellaneous business activities; Technical testing and analysis	972	865	106
Computer programming and information service activities	2,020	2,011	9
Research and development services	929	850	78
Public administration	106	106	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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CURRENT PRICES		Civil													Defence													£ million
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		
Capital total of which:	DLGJ	1,077	1,112	1,127	932	731	834	824	891	907	1,024	1,085	†	991	DLGT	38	60	57	236	225	236	41	36	20	27	32	33	
Land & buildings	DLIH	285	305	237	184	..	..	185	220	142	124	108	†	134	DLIL	13	33	13	20	..	..	-	1	2	2	2	8	
Plant & machinery	DLIJ	791	807	890	747	..	..	639	671	766	900	978	†	857	DLIN	25	27	43	217	..	..	41	35	18	25	30	24	
Current total of which:	DLGP	9,762	9,688	9,496	10,356	11,244	12,434	12,894	12,755	13,485	14,643	†	14,454	15,743	DLGZ	1,607	1,646	1,982	2,210	1,944	2,172	2,056	1,850	1,633	1,758	†	1,572	1,681
Salaries & Wages	DLGL	4,806	4,906	5,080	5,451	5,767	6,508	6,488	6,783	7,095	7,223	†	7,523	8,416	DLGV	760	696	897	903	1,015	1,190	1,052	941	842	886	†	866	886
Other	DLGN	4,956	4,782	4,416	4,905	5,477	5,926	6,406	5,972	6,390	7,420	†	6,931	7,328	DLGX	847	950	1,085	1,307	929	982	1,004	909	791	872	†	706	795
TOTAL	DLBV	10,839	10,800	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667	†	15,539	16,734	DLBW	1,645	1,706	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785	†	1,604	1,713

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.

		Civil												Defence												£ million
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
UK Government	DLFG	188	386	162	156	150	183	258	350	410	394	315 [†]	518	DLFN	693	778	1,128	945	910	889	877	974	996	1,119 [†]	1,065	1,131
Overseas total	DLHS	3,148	2,980	2,440	2,656	2,686	2,985	3,189	3,206	3,584	3,788 [†]	3,800	3,805	DLIF	551	568	518	928	576	652	532	251	205	151 [†]	157	160
of which:																										
European Commission grants	DLFH	134	90	42	73	41	27	47	45	60	53	45 [†]	42	DLFO	-	-	-	-	-	1	-	2	2	3	2	3
Other Overseas	DLFI	3,014	2,890	2,398	2,583	2,645	2,958	3,143	3,161	3,524	3,735 [†]	3,755	3,763	DLFP	551	568	518	928	576	651	531	250	203	149 [†]	155	157
Other UK Business	DLFJ	..	1,024	988	1,147	1,044	..	729	..	607	485	286 [†]	..	DLFQ	..	81	68	125	111	..	136	..	111	109	72	..
Own funds	DLFK	6,747	6,407	7,027	7,326	8,093	9,196	9,534	9,503	9,787	10,922 [†]	11,076	12,052	DLFR	306	278	325	449	572	763	552	545	341	361 [†]	304	317
Other	DLFL	..	3	6	2	2	..	7	..	3	78	62	..	DLFS	..	-	-	-	-	..	-	..	1	44	6 [†]	..
TOTAL	DLBV	10,839	10,800	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667	15,539	16,734	DLBW	1,645	1,706	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785 [†]	1,604	1,713

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 'Other' includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.

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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	18,448	16,838	309	1,784	644	1,369	1,697	4,071	1,317	4,195	1,452	369	798	443
Manufacturing: Total	12,820	11,717	207	1,570	448	1,173	1,395	2,915	231	2,778	1,001	298	467	338
Chemicals	4,698	4,485	89	921	164	106	..	1,583	122	1,432	58	..	137	35
Mechanical engineering	1,155	1,067	56	28	59	..	120	388	..	218	139	26	35	27
Electrical machinery	1,391	1,143	..	..	56	61	56	278	50	390	200	50	140	58
Transport equipment	2,353	2,311	16	241	..	332	..	444	6	161	45	30	4	..
Aerospace	1,656	1,380	..	..	..	..	96	23	..	220	440	..	3	..
Other manufacturing	1,567	1,332	34	243	122	132	96	198	32	357	118	44	148	44
Services	5,069	4,649	85	205	179	155	286	1,115	1,065	1,175	385	67	251	102
Other: Total	559	472	17	10	16	41	16	42	21	242	67	4	80	4
Agriculture, hunting & forestry; Fishing	124	118	..	-	..	..	..	..	-	..	..	..	..	..
Extractive industries	225	188	..	..	..	..	..	..	..	..	..	-	36	..
Electricity, gas & water supply; Waste management	139	113	..	7	8	..	6	3	12	10	35	..	22	1
Construction	72	52	1	..	6	4	6	7	..	17	2	1	..	1

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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16 EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION: BROAD PRODUCT GROUPS, 2013

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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	178	159	5	13	9	15	16	33	14	39	16	4	10	5
Manufacturing: Total	108	97	3	10	6	13	11	20	3	22	10	3	5	3
Chemicals	30	28	1	4	2	2	-	9	..	8	1	..	1	..
Mechanical engineering	13	12	1	-	1	1	2	3	-	3	1	-	1	-
Electrical machinery	14	11	-	1	1	1	1	2	-	3	2	1	1	1
Transport equipment	17	16	-	1	..	..	6	4	-	2	-	-	-	-
Aerospace	15	13	..	1	..	..	1	-	..	2	4	..	-	..
Other manufacturing	20	17	..	3	..	2	1	2	-	4	2	1	1	1
Services	65	59	2	3	3	2	5	12	11	16	5	1	4	2
Other: Total	5	4	-	-	-	-	-	-	-	1	-	-	1	-
Agriculture, hunting & forestry; Fishing	1	1	..	-	..	..	..	..	-	..	-	..	..	..
Extractive industries	1	1	..	..	-	..	..	..	-	..	-	-	-	..
Electricity, gas & water supply; Waste management	1	1	..	..	..	..	-	-	-	-	-	-	-	-
Construction	1	1	-	-	-	-	-	-	-	-	-	-	-	-

Source: Office for National Statistics

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

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17 R&D PERFORMED IN UK BUSINESSES BY COUNTRY OR REGION:
EXPENDITURE AND EMPLOYMENT, 2002 TO 2013
CURRENT PRICES

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		Expenditure (£ million)												% of total		Employment (FTE in thousands)											
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
United Kingdom	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452 [†]	17,144	18,448	100	DLEI	158	155	150	146	147	158	151	151	154	159 [†]	161	178
England	DLKI	11,642	11,748	11,885	12,847	13,312	14,649	14,847	14,360	14,868	16,151 [†]	15,746	16,838	91.3	DLKJ	145	142	137	133	135	145	139	137	140	144 [†]	145	159
North East	DLJO	124	149	257	289	292	331	318	315	308	259	282	309	1.7	DLJZ	2	3	3	3	3	4	4	4	4	4	3	5
North West	DLJT	1,604	1,538	1,739	1,892	1,623	2,021	2,130	1,926	2,074	2,220	1,775	1,784	9.7	DLKE	18	17	16	15	16	17	16	14	14	13	13	13
Yorkshire and the Humber	DLJP	337	335	343	344	384	436	433	454	488	550	600	644	3.5	DLKA	6	6	6	6	6	7	7	7	7	8	8	9
East Midlands	DLJQ	974	862	936	1,006	985	1,062	976	992	1,137	1,146	1,242	1,369	7.4	DLKB	14	13	11	11	11	13	12	10	11	12	13	15
West Midlands	DLJN	774	794	758	721	915	995	886	847	886	1,281	1,462	1,697	9.2	DLJY	15	14	13	12	13	14	12	12	11	12	14	16
East of England	DLJR	2,650	2,915	2,672	3,718	3,650	3,992	4,182	3,812	3,846	3,639	3,443	4,071	22.1	DLKC	30	32	28	29	26	28	29	30	32	32	29	33
London	DLKL	865	669	759	552	882	1,067	1,109	907	877	1,118	1,462	1,317	7.1	DLKM	10	8	9	8	10	11	11	10	10	11	13	14
South East	DLJS	3,156	3,266	3,125	3,125	3,347	3,515	3,466	3,758	3,798	4,579	4,108	4,195	22.7	DLKD	37	37	37	36	37	37	35	36	36	37	37	39
South West	DLJM	1,158	1,221	1,296	1,201	1,232	1,229	1,345	1,349	1,454	1,359	1,372	1,452	7.9	DLJX	14	13	13	13	13	14	15	15	16	15	15	16
Wales	DLJU	187	200	226	232	216	308	243	243	234	252 [†]	269	369	2.0	DLKF	3	4	3	3	3	3	3	3	3	3 [†]	3	4
Scotland	DLJV	507	441	430	506	460	543	554	631	619	697 [†]	709	798	4.3	DLKG	7	6	6	7	6	7	7	7	7	8	8	10
Northern Ireland	DLJW	149	116	120	148	157	177	171	297	324	352	420	443	2.4	DLKH	3	3	3	3	3	3	2	3	4	4	5	5

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

2 FTE - Full Time Equivalents.

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

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	R&D Employment (Full time equivalents in thousands)	Total Expenditure (£ million)	Funded by UK Government (£ million)
TOTAL OF ALL ENTERPRISES	178	18,448	1,649
Enterprise groups with the largest expenditure on R&D			
Top 5	25	3,853	228
Top 10	34	5,119	683
Top 15	43	6,137	841
Top 20	46	6,989	888
Top 50	65	9,575	1,104
Top 100	81	11,610	1,278

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

Source: Office for National Statistics

		£ 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	18,448	2,111	3,235	3,582	6,094	1,225	1,604	596
Manufacturing: Total	12,820	846	2,151	2,580	4,755	929	..	..
Chemicals	4,698	199	790	982	2,669	..	-	..
Mechanical engineering	1,155	123	205	198	607	..	-	..
Electrical machinery	1,391	159	461	489	281	-	-	-
Transport equipment	2,353	48	198	287	501	..	..	-
Aerospace	1,656	6	53	215	300	460	..	..
Other manufacturing	1,567	311	444	410	398	..	-	..
Services	5,069	1,248	1,027	825	1,075	288	..	..
Other: Total	559	17	56	177	264	8	..	..
Agriculture, hunting & forestry; Fishing	124	1	9	..	-	..	-	..
Extractive industries	225	5	..	21	165	-	..	-
Electricity, gas & water supply; Waste management	139	2	5	..	66	7	..	-
Construction	72	9	..	22	33	..	-	..

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

	TOTAL ALL EMPLOYEES	Full time equivalent in thousands						
		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	178	35	37	31	45	12	..	..
Manufacturing: Total	108	12	24	21	31	8	..	..
Chemicals	30	..	6	7	15	..	-	..
Mechanical engineering	13	2	3	2	..	..	-	-
Electrical machinery	14	3	6	3	2	-	-	-
Transport equipment	17	1	2	3	3	..	..	-
Aerospace	15	..	1	2	2	3	..	-
Other manufacturing	20	4	8	4	..	..	-	-
Services	65	22	12	9	11	5	..	..
Other: Total	5	1	..	1	2	-	..	..
Agriculture, hunting & forestry; Fishing	1	-	-	..	-	..	-	-
Extractive industries	1	-	..	-	..	-	-	-
Electricity, gas & water supply; Waste management	1	-	-	..	..	-	..	-
Construction	1	-	-	-	..	..	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES BY EMPLOYMENT SIZE-BANDS AND BROAD PRODUCT GROUPS:
AS AN AVERAGE PER R&D EMPLOYEE, 2013

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		£ thousands						
	Average per Employee	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
AVERAGE	104	61	88	114	137	99	..	..
Manufacturing:	119	69	89	124	152	122	..	..
Chemicals	157	88	137	144	183	136	..	..
Mechanical engineering	87	58	72	96	104	..	-	..
Electrical machinery	103	57	83	151	143	..	-	..
Transport equipment	141	79	113	86	185	..	..	-
Aerospace	113	58	97	124	124	142	..	..
Other manufacturing	80	72	57	111	106	53	..	..
Services	77	57	85	91	94	61	..	..
Other:	..	..	85	131	142	..	..	..
Agriculture, hunting & forestry; Fishing	..	..	..	..	..	-	-	-
Extractive industries	..	32	..	..	..	-	-	-
Electricity, gas & water supply; Waste management	..	10	..	..	..	..	..	..
Construction	..	..	..	..	..	..	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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CURRENT PRICES		Expenditure (£ million)												Employment (FTE in thousands)														
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		
TOTAL	DLBX	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	†	17,144	18,448	DLEI	158	155	150	146	147	158	151	151	154	159	†	161	178
United Kingdom	GFWP	7,394	6,934	7,538	8,360	8,583	9,512	8,874	8,231	9,458	8,579	†	8,181	8,525	GFWO	100	96	95	91	89	94	83	82	94	88	†	88	96
United States	GFWR	2,864	3,102	2,719	2,570	2,781	3,122	3,366	3,402	3,103	4,003	†	3,684	4,020	GFWQ	30	33	29	27	31	33	34	32	29	33	33	36	
Germany	GFWT	197	217	235	243	218	353	394	363	359	444		450	528	GFWs	3	3	3	3	2	4	4	4	4	3	4	4	
France	GFWV	718	792	643	870	1,025	692	688	784	747	1,022	†	971	663	GFWU	10	7	6	8	9	6	6	6	6	7	7	5	
Other EU	GFWX	618	728	762	877	878	1,159	1,142	1,242	1,190	1,204	†	1,436	1,749	GFWW	7	8	8	8	9	11	11	13	12	12	12	15	
Japan	GFWZ	191	229	263	284	225	303	378	409	363	468		485	†	573	GFWY	2	3	3	3	3	3	4	4	3	3	4	4
Rest of the world	GFXB	502	503	503	529	435	536	972	1,100	826	1,732	†	1,936	2,388	GFXA	6	6	6	5	5	6	10	10	7	13	†	14	18

Source: Office for National Statistics

1 [†] crosses denote earliest data revision.

2 FTE - Full Time Equivalents.

	£ million		
	United Kingdom	Overseas	Total
TOTAL	8,525	9,922	18,448
Agriculture, hunting and forestry; Fishing	..	..	124
Extractive Industries	120	105	225
Food products and beverages; Tobacco products	182	242	425
Textiles, clothing and leather products	15	7	22
Pulp, paper and paper products; Printing; Wood and straw products	41	8	49
Refined petroleum products and coke oven products	67	3	69
Chemicals and chemical products	335	282	617
Pharmaceuticals	1,877	2,203	4,081
Rubber and plastic products	76	25	101
Other non-metallic mineral products	13	34	47
Casting of iron and steel	..	..	27
Non-ferrous metals	..	..	60
Fabricated metal products except machinery and equipment	45	71	116
Machinery and equipment	339	700	1,039
Computers and peripheral equipment	19	143	162
Electrical equipment	221	170	391
Consumer electronics and communication equipment	396	442	837
Precision instruments and optical products; photographic equipment	247	349	597
Motor vehicles and parts	192	1,868	2,060
Other transport equipment	29	31	60
Shipbuilding	232	1	233
Aerospace	893	763	1,656
Other manufactured goods	106	63	170
Sewerage, waste management, remediation activities	6	10	17
Electricity, gas and water supply	46	75	122
Construction	31	41	72
Wholesale and retail trade	130	37	167
Transport and storage, incl. postal and courier activities	18	17	35
Telecommunications	619	221	841
Miscellaneous business activities; Technical testing and analysis	581	391	972
Computer programming and information service activities	852	1,168	2,020
Research and development services	651	278	929
Public administration	81	25	106

Source: Office for National Statistics

1 .. denotes disclosive figures.

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CURRENT PRICES		R&D expenditure (£ million)												R&D as a percentage of sales																
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013					
Manufacturing: TOTAL	DLDF	9,692	9,636	10,058	10,560	10,555	11,612	11,672	11,230	11,585	12,462	†	12,318	12,820	DLIQ	3.1	3.1	3.2	3.4	3.3	3.5	3.3	3.7	3.3	3.6	3.4	3.5			
Food products and beverages; Tobacco products	DLCP	269	256	258	276	314	328	303	290	306	366	†	364	425	DLJF	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6			
Textiles, clothing and leather products	DLCQ	19	20	21	18	17	19	15	10	11	14		20	22	DLJG	0.2	0.2	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1			
Pulp, paper and paper products; Printing; Wood and straw products	DLCF	44	45	40	52	55	53	56	26	28	21		28	49	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	DLCF	247	258	234	245	279	274	94	95	73	72		76	69	LDOP	-	-	-	-	-	-	8.5	6.0	5.7	7.7	†	6.9			
Chemicals and chemical products	DLCF	599	614	625	637	684	668	630	610	666	523		592	†	617	DLIT	2.5	2.6	2.6	2.7	2.7	2.7	3.0	3.0	2.3	†	2.7	2.8		
Pharmaceuticals	DLCD	3,169	3,127	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914	†	4,197	4,081	DLIU	34.5	31.4	34.1	32.2	32.6	33.9	42.7	36.2	31.7	34.8	†	34.1	33.8		
Rubber and plastics	DLCR	60	65	63	55	90	79	78	62	80	97		105	†	101	DLJH	0.4	0.4	0.4	0.3	0.5	0.4	0.6	0.6	0.6	0.7	0.8	0.7		
Other non-metallic mineral products	DLCF	51	56	62	44	51	48	53	57	56	60		47	†	47	DLJI	0.5	0.6	0.6	0.4	0.5	0.4	0.5	0.6	0.6	0.6	0.5	†	0.5	
Casting of iron and steel	DLCJ	29	29	30	34	38	..	47	43	28	44		45	†	27	DLJZ	1.2	1.3	1.1	1.1	1.2	..	1.7	2.0	1.3	1.6	1.7	1.0		
Non-ferrous metals	DLCK	16	4	4	8	6	..	72	..	86	77		60	†	60	DLJA	0.4	0.1	0.1	0.2	0.1	..	1.3	..	1.8	1.5	†	1.4	1.5	
Fabricated metal products except machinery and equipment	DLCL	90	65	77	74	68	91	73	93	93	119		105	†	116	DLJB	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.5		
Machinery and equipment	DLCO	780	662	761	905	929	1,033	790	873	809	973		1,021	†	1,039	DLJE	3.0	2.8	2.8	3.6	3.6	3.7	2.5	3.6	2.9	3.6	3.2	3.3	3.4	
Computers and peripheral equipment	DLCN	87	55	53	92	67	83	123	151	157	180		187		162	DLJD	1.4	1.2	1.2	2.2	2.6	4.3	7.0	8.5	9.2	9.9	10.4	†	8.5	
Electrical equipment	DLCF	372	360	406	394	458	547	577	577	513	509		463	†	391	DLIR	3.9	4.0	4.2	4.1	4.5	5.3	4.5	5.3	4.2	3.9	3.6	†	3.1	
Consumer electronics and communication equipment	DLCB	890	871	763	788	748	667	700	547	474	511		689	†	837	DLIS	8.7	11.5	9.4	10.7	9.7	11.0	20.9	14.3	11.6	17.0	†	28.1	34.3	
Precision instruments and optical products; photographic equipment	DLCM	532	476	486	475	462	544	591	498	490	599	†	628		597	DLJC	6.0	5.6	5.6	5.1	4.8	5.6	5.9	5.1	4.7	5.6	†	5.7	5.6	
Motor vehicles and parts	DLOG	916	894	789	744	754	933	1,156	1,039	1,237	1,525		1,763	†	2,060	DLIW	2.9	2.6	2.3	2.1	2.2	2.6	3.2	3.9	3.4	4.0	4.5	†	4.6	4.5
Other transport equipment	DLCI	..	..	23	21	25	28	30	..	46	50		48		60	DLIY	..	..	0.9	1.1	1.4	0.7	0.6	..	1.1	1.1	1.1	1.2	1.2
Shipbuilding	DLCI	..	..	125	127	134	136	157	173	185	226		229		233	DLIX	..	..	5.7	10.3	10.3	9.1	4.5	4.8	4.6	5.6	4.7	4.7	4.7
Aerospace	DLCF	1,352	1,643	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438		1,518		1,656	DLIV	12.1	14.1	16.4	22.7	18.9	18.6	10.3	7.8	8.0	7.7	7.4	†	6.9	
Other manufactured goods	DLCU	35	35	33	26	24	27	36	98	136	146		133	†	170	DLJK	0.3	0.7	0.3	0.3	0.3	0.2	0.2	0.6	0.9	0.9	0.8	†	1.0	

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 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.

5 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.

	R&D Expenditure (£ million)	Expenditure standard errors (£ million)
TOTAL	18,448	
Agriculture, hunting and forestry; Fishing	124	11
Extractive Industries	225	12
Food products and beverages; Tobacco products	425	4
Textiles, clothing and leather products	22	-
Pulp, paper and paper products; Printing; Wood and straw products	49	1
Refined petroleum products and coke oven products	69	8
Chemicals and chemical products	617	7
Pharmaceuticals	4,081	85
Rubber and plastic products	101	1
Other non-metallic mineral products	47	2
Casting of iron and steel	27	2
Non-ferrous metals	60	5
Fabricated metal products except machinery and equipment	116	1
Machinery and equipment	1,039	7
Computers and peripheral equipment	162	8
Electrical equipment	391	3
Consumer electronics and communication equipment	837	8
Precision instruments and optical products; photographic equipment	597	3
Motor vehicles and parts	2,060	56
Other transport equipment	60	3
Shipbuilding	233	25
Aerospace	1,656	42
Other manufactured goods	170	1
Sewerage, waste management, remediation activities	17	1
Electricity, gas and water supply	122	7
Construction	72	1
Wholesale and retail trade	167	-
Transport and storage, incl. postal and courier activities	35	1
Telecommunications	841	36
Miscellaneous business activities; Technical testing and analysis	972	2
Computer programming and information service activities	2,020	4
Research and development services	929	1
Public administration	106	1

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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**EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
BY SMALL AND MEDIUM SIZE ENTERPRISES, 2002 TO 2013**

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CURRENT PRICES

£ million

	Total Expenditure	250 employees and over	0 to 249 employees	of which, SME
	DLBX	SFAA	SEZU	SEZY
2002	12,484	10,005	2,464	332
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	17,144	12,462	4,682	764
2013	18,448	14,213	4,234	663

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.

CURRENT PRICES

£ million

SIC	Industry description	2010	2011	2012	2013
01-03	Agriculture, forestry and fishing	14	12	14	10
05-09	Mining and quarrying	137	174	171	190
10	Manufacture of food products	136	212 [†]	197	231
11-12	Manufacture of beverages and tobacco products	95	80	84	96
13	Manufacture of textiles	9	24	27	17
14	Manufacture of wearing apparel	1	1	3	3
15	Manufacture of leather and related products	1	1	2	3
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
17	Manufacture of paper and paper products	9	9	7	11
18	Printing and reproduction of recorded media	5	5	11	19
19	Manufacture of coke and refined petroleum products	..	..	..	..
20	Manufacture of chemicals and chemical products	319	284	265 [†]	361
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	474	528	504	458
22	Manufacture of rubber and plastic products	68	81	100 [†]	95
23	Manufacture of other non-metallic mineral products	41	41	34 [†]	34
24	Manufacture of basic metals	49	88	63	44
25	Manufacture of fabricated metal products, except machinery and equipment	594	551	495	513
26	Manufacture of computer, electronic and optical products	835	982 [†]	987	1,021
27	Manufacture of electrical equipment	165	152	170	160
28	Manufacture of machinery and equipment n.e.c.	607	634	787 [†]	750
29	Manufacture of motor vehicles, trailers and semi-trailers	1,039	1,296	1,478	1,744
30	Manufacture of other transport equipment	1,158	1,198	1,407 [†]	1,454
31	Manufacture of furniture	33	50	36	51
32	Other manufacturing	143	117	104	126
33	Repair and installation of machinery and equipment	156	77	83	104
35	Electricity, gas, steam and air conditioning supply	13	21	60 [†]	85
36	Water collection, treatment and supply	9	6	10	13
37-39	Sewerage, waste management, remediation activities	7	7	11	15
41-43	Construction	45	46	60	70
45-47	Wholesale and retail trade; repair of motor vehicles and motorcycles	760	736 [†]	673	691
49	Land transport and transport via pipelines	2	6	..	2
50	Water transport	-	-	-	-
51	Air transport	-	.. [†]	-	..
52-53	Warehousing and support activities for transportation; postal and courier activities	27	24	..	14
55-56	Accommodation and food service activities	19	27 [†]	29	16
58	Publishing activities	44	61	52	88
59	Motion picture, video and television programme production, sound recording and music publishing activities	18	17	11 [†]	22
60	Programming and broadcasting activities	3	6	7	11
61	Telecommunications	826	719	701	732
62	Computer programming, consultancy and related activities	1,109	1,523 [†]	1,561	1,612
63	Information service activities	45	44	87	165
64-66	Financial and insurance activities	308	302	249 [†]	331
68	Real estate activities	10	10	12 [†]	17
69	Legal and accounting activities	19	12	15 [†]	28
70	Activities of head offices; management consultancy activities	54	51	69 [†]	87
71	Architectural and engineering activities	748	885 [†]	1,212	1,357
72	Scientific research and development	5,510	5,863 [†]	4,700	4,862
73	Advertising and market research	15	14	15	19
74	Other professional, scientific and technical activities	7	25	29	90
75	Veterinary activities	1	..	1	1
77	Rental and leasing activities	21	55	55 [†]	125
78	Employment activities	12	11	15	21
79	Travel agency, tour operator and other reservation service and related activities	7	6	8	14
80	Security and investigation activities	3	3	5	7
81	Services to buildings and landscape activities	7	11	11	12
82	Office administrative, office support and other business support activities	80	102	178 [†]	98
84-85	Public administration and defence; compulsory social security and education	..	..	19	33
86-88	Human health and social work activities	25	18	17	31
90-93	Arts, entertainment and recreation	152	192	181 [†]	211
94-99	Other service activities; Activities of households as employers and of extraterritorial organisations and bodies	27	25	25	32
TOTAL		16,045	17,452 [†]	17,144	18,448

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.[Return to Main Menu](#)

	R&D expenditure (£ million)				R&D as a percentage of turnover			
	2010	2011	2012	2013	2010	2011	2012	2013
Services: TOTAL	4,120	4,563[†]	4,306	5,069	0.2	0.2	0.1	0.2
Wholesale and retail trade	177	242 [†]	174	167	-	-	-	-
Transport and storage, incl. postal and courier activities	17	18	..	35	-	-	..	-
Telecommunications	1,129	1,037 [†]	875	841	1.7	1.6	1.4	1.4
Miscellaneous business activities; Technical testing and analysis	583	570 [†]	673	972	0.1	0.1	0.1	0.1
Computer programming and information service activities	1,526	1,847	1,886 [†]	2,020	2.2	2.5	2.4	2.3
Research and development services	618	783 [†]	606	929	3.8	4.9	3.8	6.0
Public administration	70	67	..	106	-	-	..	-

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 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 Annual Business Survey (ABS).

5 Total turnover is a wider measure than product sales as used in the estimates in table 24 (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;	A. Agriculture, hunting and forestry; Fishing
Extractive Industries	B. Extractive Industries
Electricity, gas and water supply;	X. Sewerage, waste management, remediation activities
Waste management	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