

Statistical bulletin

Business enterprise research and development, UK: 2015

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



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1 . Main points

In 2015, total expenditure on research and development (R&D) performed in UK businesses, in current prices, increased by 5% compared with 2014, to £20.9 billion.

Civil R&D expenditure increased by 6% in 2015 to £19.4 billion, while defence R&D expenditure decreased by 4% in 2015 to £1.5 billion.

In 2015, expenditure on R&D performed in UK foreign-owned businesses increased by 5% and accounted for 51% of total UK business expenditure on performing R&D.

The largest increase in R&D expenditure performed by UK businesses in 2015 was in the Motor vehicles and parts product group, which increased by £339 million (14%), in current prices.

The largest increase in regional R&D expenditure in percentage terms was in Northern Ireland, which increased by 40% (£143 million) to £501 million, in current prices compared with 2014.

In 2015, total business employment in R&D in the UK increased by 6% to 206,000 full-time equivalents (FTE).

2 . Overview

This release provides estimates of businesses' expenditure and employment relating to research and development (R&D) performed in the UK in 2015. These statistics are presented on a current price basis, which reports prices as they were at the time of measurement and not adjusted for inflation, and constant prices, which are prices adjusted for inflation between years using the gross domestic product (GDP) deflator¹. The latter is more appropriate when analysing changes in R&D expenditure over time.

R&D is defined as “creative and systematic work undertaken in order to increase the stock of knowledge, including knowledge of humankind, culture and society and to devise new applications of available knowledge”. These statistics are produced according to internationally agreed standards defined by the Organisation for Economic Co-operation and Development (OECD), as published in the “[Frascati Manual](#)”.

R&D statistics are collated annually using information from approximately 5,400 businesses² from across the UK. These data are used across government for policy and monitoring purposes on science and technology, of which R&D is an important part and are also used in academia and the private sector. From 2014, R&D contributes to the formation of UK assets and therefore feeds into main economic statistics such as GDP and the value of the UK's net worth.

In March 2017, we will publish UK gross domestic expenditure on research and development (GERD) for the year 2015. The [GERD statistical bulletin](#) will include estimates for R&D carried out by 4 sectors of the economy: namely business enterprise (BERD), higher education (HERD), government including research councils (GovERD) and private non-profit organisations (PNP). GERD is the preferred measure for use in international comparisons of overall R&D expenditure.

We also publish the [UK government expenditure on science, engineering and technology \(SET\) statistical bulletin](#) which contains broader measures of government R&D expenditure.

Notes for overview

1. The GDP measure used is non-seasonally adjusted money GDP from 1955-56 to 2015-16 (1955 to 2015) consistent with United Kingdom Economic Accounts Q1 2016 published on 30 September 2016.
2. Each year we select approximately 4,000 businesses selected for this survey from a continually updated register of known R&D performers in England, Scotland and Wales. In addition to this, approximately 1,400 businesses in Northern Ireland are surveyed by the [Department of Finance \(DoF\)](#) and their estimates added to those collected for Great Britain to form UK totals.

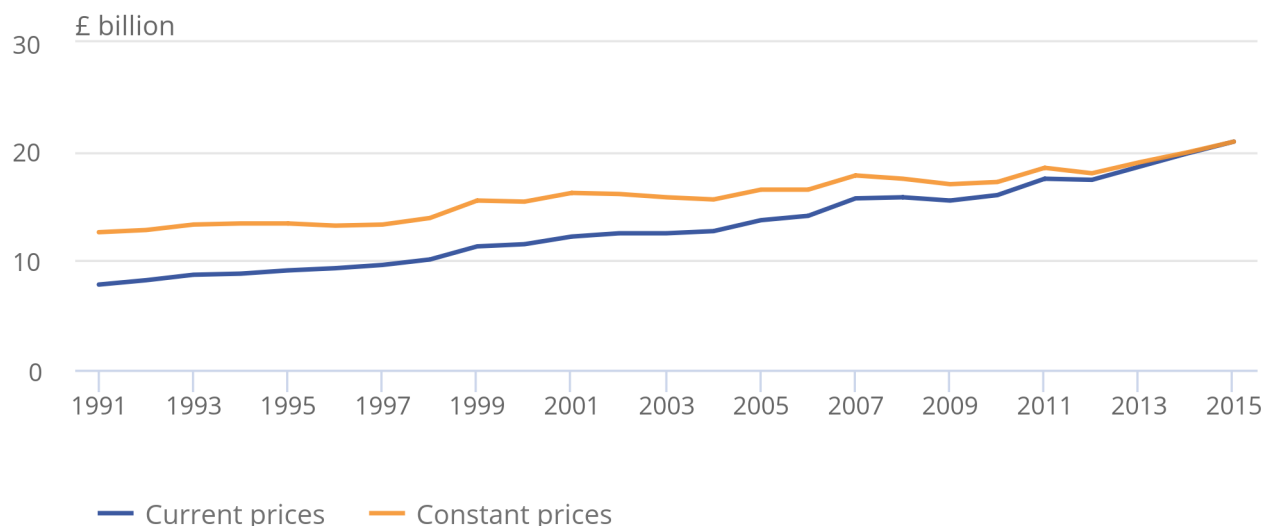
3 . R&D expenditure

Expenditure on R&D by UK businesses reached £20.9 billion in 2015 in current prices, up from £7.8 billion in 1991. The change in R&D expenditure reflected a steady increase over the period, with an average annual growth rate of 4.2%.

In constant price terms, the value of R&D expenditure in 2015 (£20.9 billion) reached its highest level on record, surpassing the 2014 high by £1.1 billion. A long-term upward trend is still evident when considering R&D expenditure in constant price terms, with an average annual growth rate of 2.1% since 1991 levels (£12.6 billion) (Figure 1).

Figure 1: Expenditure by UK businesses on performing R&D, 1991 to 2015

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Source: Office for National Statistics

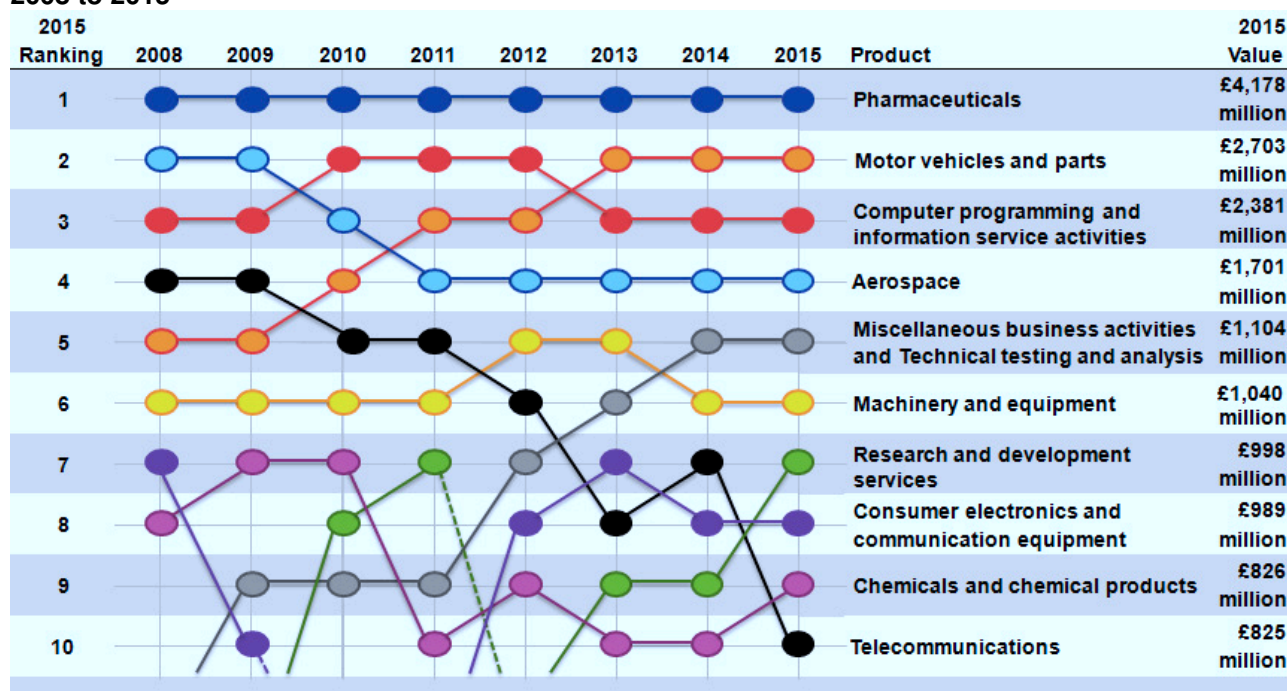
The total business R&D expenditure in 2015 represented 1.1% of GDP. This estimate has remained unchanged since 2013.

4 . R&D expenditure by product group

On an annual basis, the 400 largest R&D performers, which accounted for approximately 75% of the 2015 total R&D expenditure estimate, are asked to select the industry product groups that best describe the type of R&D activities that they undertake. For the 2015 survey, the largest 400 performers were those businesses previously reporting more than approximately £5.4 million expenditure on performing R&D. The concept of "product groups" is described in more detail in the [UK Business Enterprise Research and Development Quality and Methodology Information \(QMI\)](#) report.

In 2015, Pharmaceuticals continued to be the largest product group, with £4.2 billion expenditure. This product group accounted for 20% of total expenditure on R&D performed in UK businesses, experiencing an increase in 2015 following decreasing expenditure for 3 successive years (Figure 2).

Figure 2: Expenditure by UK businesses on performing R&D in current prices, by largest product groups, 2008 to 2015



Source: Office for National Statistics

Notes:

1. Dotted lines denote a product group ranked in the top 10 in 2015 that moved out of the top 10 ranking in previous years

The largest increase in an individual product group was in the Motor vehicles and parts group, which increased for the sixth year in succession, to £2.7 billion in 2015, an increase of £339 million (14%) from the estimate of £2.4 billion in 2014. This product group accounted for 13% of total expenditure on R&D performed in UK businesses in 2015.

More evidence of the growth in the motor industry can be viewed in our statistical bulletin [UK Manufacturers' Sales by Product \(PRODCOM\) for 2015](#).

Another notable increase was in the Computer programming and information services activities group, which increased by £152 million (6%) in current prices from an estimate of £2.2 billion in 2014 to £2.4 billion in 2015. In 2015, this group also accounted for 11% of total expenditure on R&D performed in UK businesses.

Other product groups reporting around £1.0 billion or more R&D expenditure in the UK in 2015 were:

- Aerospace, £1.7 billion (8% of total R&D expenditure)
- Miscellaneous business activities; Technical testing and analysis, £1.1 billion (5%)
- Machinery and equipment, £1.0 billion (5%)
- Research and development services, £998 million (5%)

These 7 product groups accounted for 68% of the total UK business R&D expenditure in 2015.

The product group with the largest decrease was Telecommunications which decreased by £134 million (14%) to £825 million in 2015.

Since 2014, 19 of the 33 product groups experienced an increase in levels of R&D expenditure by UK businesses in current prices, 12 product groups decreased and 2 remained unchanged. In terms of percentage growth, the largest increases were in the Sewerage, waste management, remediation activities (53%), Transport and storage, including postal and courier activities (29%) and Research and development services (22%) product groups. The largest decrease in percentage terms was the Casting of iron and steel product group which decreased by 24% (£12 million) to £39 million in 2015.

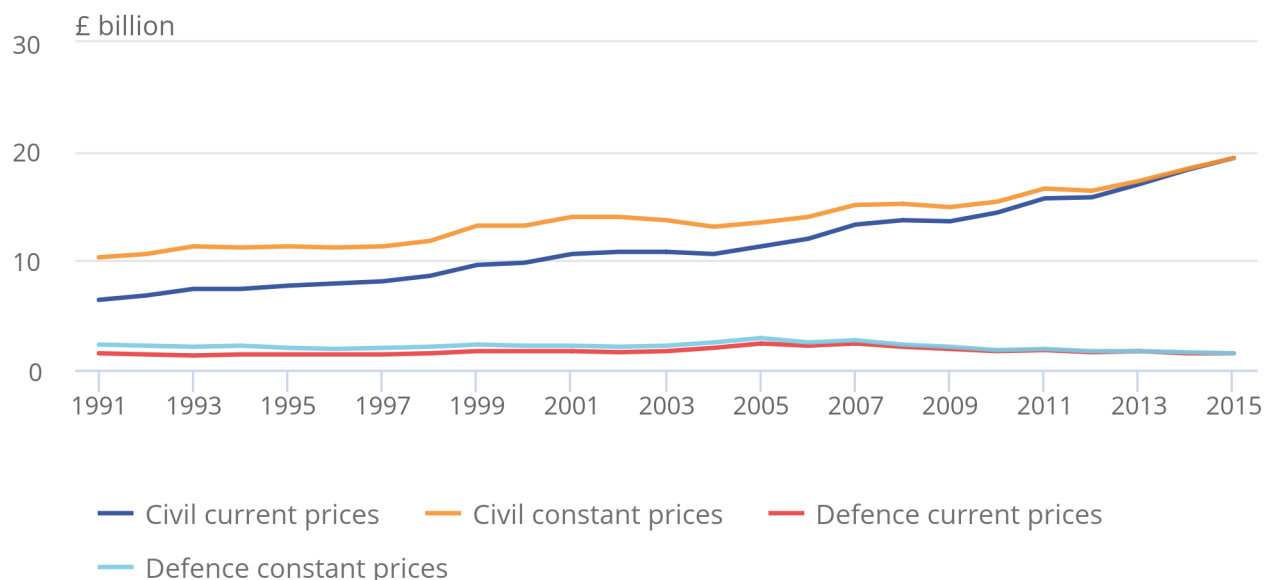
5 . Civil and defence R&D expenditure, by broad product group

R&D expenditure statistics can be split between the civil and defence sectors. Expenditure on R&D performed by UK businesses in the civil sector in 2015 (£19.4 billion) accounted for 93% of the total, with the remainder accounted for by defence (£1.5 billion). The value of R&D expenditure within the civil sector in 2015 reflected a 6% rise on the previous year, while expenditure on defence R&D experienced a decline of 4% over the same period.

Figure 3 presents civil and defence R&D expenditure since 1991. This highlights that, while R&D expenditure by businesses in the civil sector increased by an annual average growth rate of 2.7% in constant prices since 1991, expenditure in the defence sector decreased by an annual average of 1.8% per year over the same period.

Figure 3: Expenditure by UK businesses on performing civil and defence R&D, 1991 to 2015

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Source: Office for National Statistics

Civil R&D expenditure can be further split between the Manufacturing, Services and “Other” sectors (see Table 5 in the 2015 datasets). In 2015, expenditure in Manufacturing accounted for 68% of total civil expenditure on R&D performed in UK businesses, compared with 77% in 2004 (the first reference period in the associated [2015 datasets](#)). Manufacturing accounted for 89% of total defence expenditure on R&D performed in UK businesses in 2015, compared with 92% in 2004.

Mechanical engineering, part of the Manufacturing sector, was the largest contributor to defence expenditure on R&D performed in UK businesses (28% of total defence expenditure) in 2015, with Aerospace (26%) the second highest.

6 . R&D expenditure by industry

Estimates of R&D expenditure on an industry basis, according to the [Standard Industrial Classification 2007](#) (SIC), were first introduced in the 2011 BERD statistical bulletin to broaden the scope of the estimates (see Table 27 in the 2015 datasets).

It is important to note that estimates of R&D by industry are not directly comparable with the estimates of R&D expenditure by product group. This is because businesses may report significant R&D in product groups that are different to the main classification of their business according to the SIC. The concepts of product groups and SIC are described in more detail in the [UK Business Enterprise Research and Development Quality and Methodology Information \(QMI\)](#) report.

The highest level of business R&D expenditure in 2015 by SIC was performed by businesses that were classified to the Scientific research and development industry, at £5.3 billion, which represented 25% of total expenditure (Figure 4).

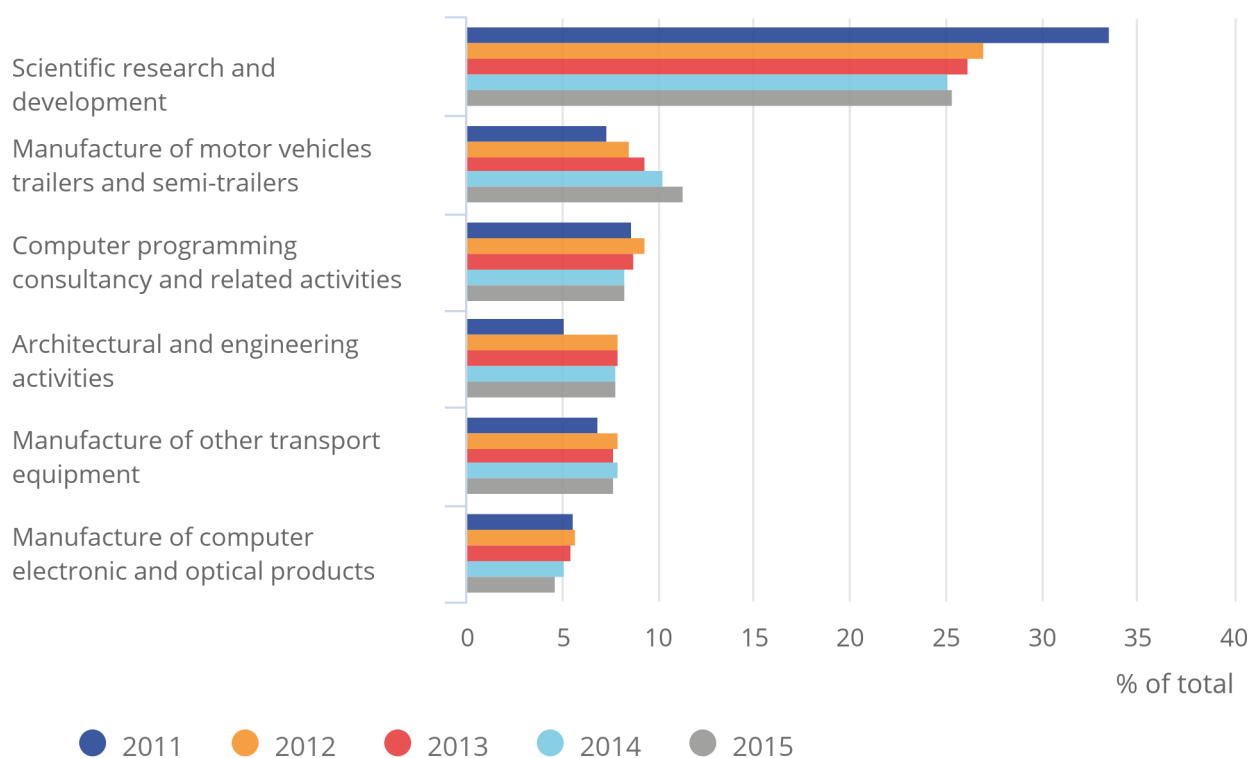
There are 5 other industries that had R&D expenditure of around £1.0 billion or more:

- Manufacture of motor vehicles and trailers, £2.4 billion (11%)
- Computer programming, consultancy and related activities, £1.7 billion (8%)
- Architectural and engineering activities, £1.6 billion (8%)
- Manufacture of other transport equipment, £1.6 billion (8%)
- Manufacture of computer, electronic and optical products, £985 million (5%)

These 6 industries accounted for 65% of the total UK business R&D expenditure in 2015.

Figure 4: Percentage share of total expenditure by UK businesses on performing R&D, by largest industries, 2011 to 2015

Figure 4: Percentage share of total expenditure by UK businesses on performing R&D, by largest industries, 2011 to 2015



Source: Office for National Statistics

7 . Employment in UK businesses on performing R&D

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

The lowest level of employment in R&D in the last decade occurred in 2005, when 146,000 FTE were employed, while the highest level (206,000) was reached in 2015 (Figure 5).

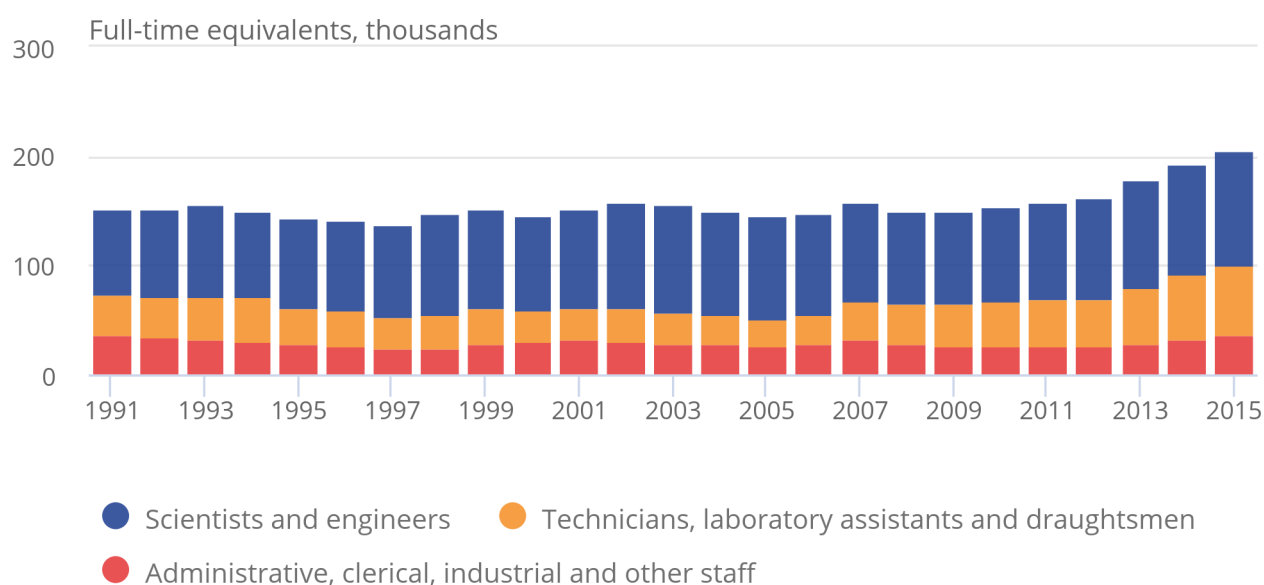
The number of FTE staff employed in R&D increased from 194,000 in 2014 to 206,000 in 2015, an increase of 6%. While there has been growth in recent years in the number of people working on R&D, this should be seen in the context of a growth in the total employment in the UK labour market. Therefore, part of the growth in employment on R&D may reflect the wider growth in total employment in the economy. See our [Labour market statistics](#) for more information on total employment levels.

The 2015 estimate comprised:

- 106,000 scientists and engineers (51%)
- 64,000 technicians (31%)
- 36,000 administrative staff (17%)

Figure 5: Employment in UK businesses on performing R&D, 1991 to 2015

Figure 5: Employment in UK businesses on performing R&D, 1991 to 2015



Source: Office for National Statistics

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

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

The South East and East of England continue to dominate where R&D expenditure takes place in the UK. These 2 regions combined accounted for 43% of UK business R&D expenditure in 2015. These regions combined also employed 79,000 full-time equivalent (FTE), which made up 38% of total R&D employment in 2015.

The regions or countries with the lowest levels of employment on performing R&D were the North East employing 4,000 FTE, with Wales and Northern Ireland employing 5,000 and 6,000 FTE R&D staff respectively. These regions or countries also had the lowest corresponding totals of expenditure on business R&D.

The majority (92%) of UK R&D expenditure was carried out in England in 2015. Businesses in England spent the equivalent of £350 per head of population on performing R&D, more than the other countries of the UK, with Northern Ireland spending £271, Scotland spending £162 and Wales spending £117.

The largest overall increase in expenditure by region since 2014 was in the West Midlands, which rose by £242 million (13%) in current prices from the 2014 estimate of £1.9 billion. London showed an increase in expenditure of 11% (£189 million) in current prices to £1.9 billion in 2015. Yorkshire and The Humber also increased by 11% (£79 million), to £779 million in 2015. The North West and North East also showed increases of 10% and 9% respectively in R&D expenditure in 2015 compared with 2014.

The largest increase in regional R&D expenditure in percentage terms was in Northern Ireland, which increased by 40% (£143 million) to £501 million, in current prices compared with 2014. The change in R&D expenditure in Northern Ireland is the result of several factors, including companies beginning new projects, resulting staff increases and spending on new equipment and materials. This can have a large impact on annual Northern Ireland R&D estimates, particularly where larger companies have commenced a significant R&D project.

The largest overall decrease in expenditure by region since 2014 was in the South West, which fell by £89 million (6%) in current prices from the 2014 estimate of £1.6 billion. Wales also experienced a decrease of £24 million (6%) in current prices from the 2014 estimate of £386 million. The only other country or region to show a slight decrease was Scotland, which fell by £3 million in current prices from the 2014 estimate of £874 million.

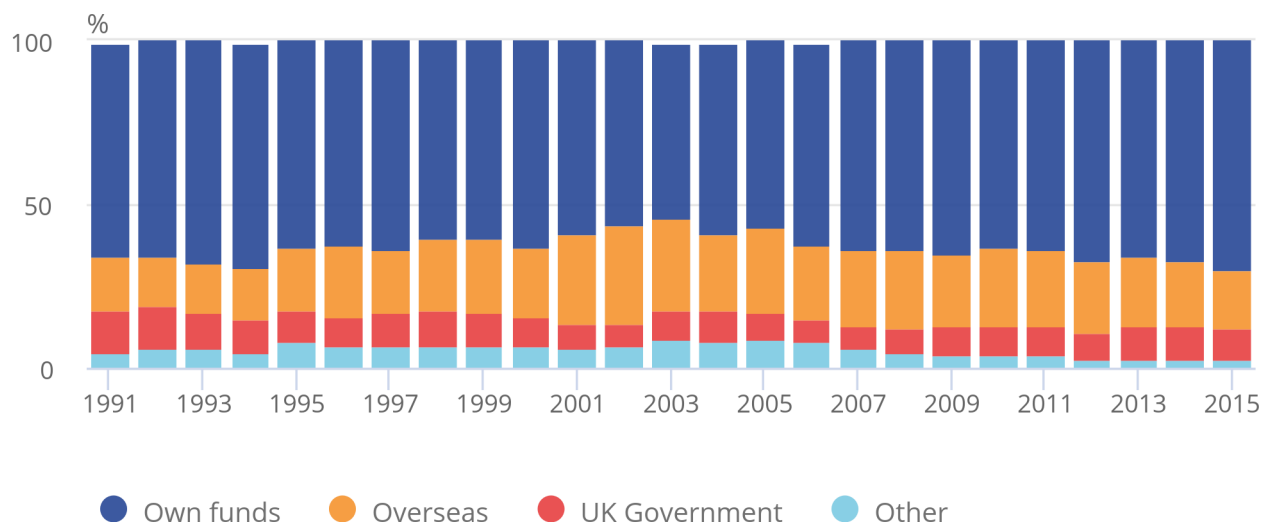
9 . Sources of funds for expenditure on R&D performed in UK businesses

The largest source of R&D funding in 2015 was businesses' own funds at £14.7 billion, which increased by £1.2 billion (9%) on the 2014 estimate of £13.4 billion. Businesses' own funds accounted for 70% of total business R&D expenditure in 2015 compared with the 2014 estimate of 68%.

Overseas funding of UK businesses' R&D was £3.8 billion in 2015, a decrease from £4.0 billion (5%) in 2014. This accounted for 18% of total expenditure by UK businesses on performing R&D in 2015, compared with the 2014 estimate of 20% (Figure 6).

Figure 6: Sources of funds for expenditure by UK businesses on performing R&D, 1991 to 2015

Figure 6: Sources of funds for expenditure by UK businesses on performing R&D, 1991 to 2015



Source: Office for National Statistics

Notes:

1. "Other" includes funds from UK Private Non-Profit organisations and Higher Education establishments, and from 2011, international organisations.
2. Percentages may not sum to 100 due to rounding.

The UK government's funding of businesses' R&D in 2015 was £1.8 billion, a decrease of £77 million (4%) in current prices from the 2014 estimate of £1.9 billion. This represented 9% of total business R&D expenditure. UK government funding was mostly in the defence sector (£1.0 billion), which made up 55% of government funding of business R&D expenditure. This includes government-awarded contracts to UK businesses to develop aircraft, naval ships, submarines and their systems and equipment.

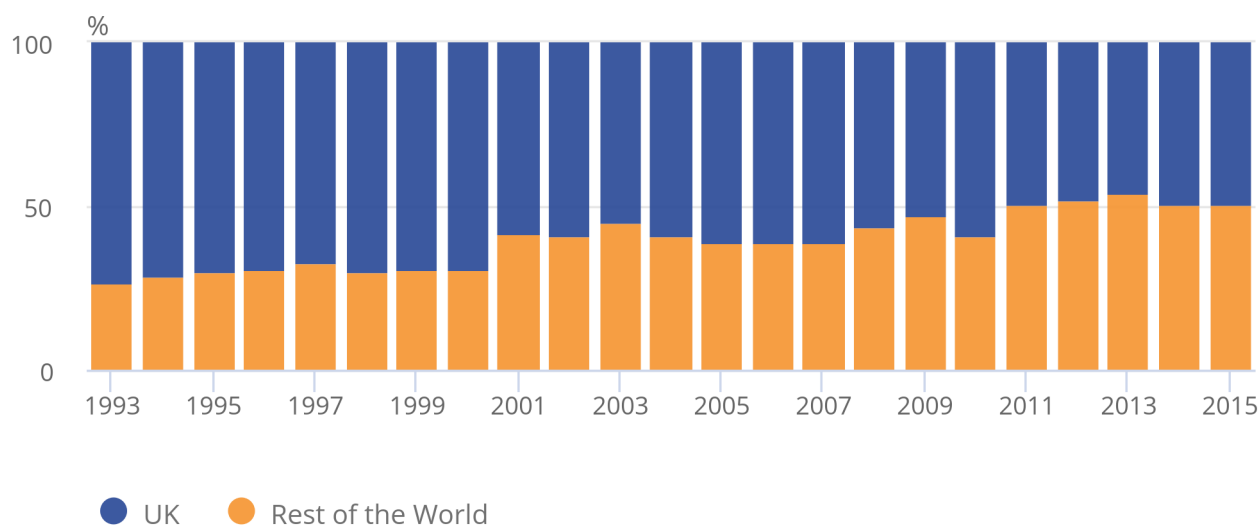
10 . Ownership of businesses performing R&D in the UK

In 1993, when the BERD survey began on an annual basis, 73% of UK business R&D expenditure was by UK-owned businesses and 27% by foreign-owned businesses. The majority of UK business R&D expenditure continued to be performed by UK-owned businesses until 2011, when for the first time, just over half (51%) of business R&D expenditure in the UK was by foreign-owned businesses. This pattern of ownership continued in 2012 and 2013 with 52% and 54% respectively. Expenditure on R&D in the UK by UK-owned and foreign-owned businesses increased in 2015 by 6% and 5% respectively. However, as a percentage of total UK R&D, foreign-owned businesses' expenditure has decreased from the high of 54% in 2013 to 51% in 2015. This indicates a slight recovery by UK-owned businesses, increasing from 46% in 2013 to 49% in 2015 (Figure 7).

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

Figure 7: Ownership of businesses who perform R&D in the UK, 1993 to 2015

Figure 7: Ownership of businesses who perform R&D in the UK, 1993 to 2015



Source: Office for National Statistics

Notes:

1. Percentages may not sum to 100 due to rounding.

11 . International comparison

When comparing total business R&D intensity across countries, it is important to take into account differences in industrial structure. The Organisation for Economic Co-operation and Development (OECD) produces a [Science, Technology and Industry Scoreboard](#) to facilitate these comparisons. International comparisons of R&D data can also be found on the [Eurostat](#) website.

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”.

12 . Quality and methodology

The [Business Enterprise Research and Development Quality and Methodology Information](#) document contains important information on:

- the strengths and limitations of the data and how it compares with related data
- users and uses of the data
- how the output was created
- the quality of the output including the accuracy of the data

13. Background notes

1. Main issues specific to this bulletin

This is the latest annual release about expenditure and employment in research and development (R&D) by UK businesses. The results in this release are in respect of 2015. We began publishing annual data on business expenditure and employment in R&D in 1993. The source of the information is the Business Enterprise Research and Development (BERD) survey.

2. General information

These points should be noted when examining the data tables:

- respondents were asked to make a return for the calendar year 2015 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
- there may be differences between totals and the sum of their independently rounded components
- 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
- it is sometimes necessary to suppress figures for certain items in order to avoid disclosing data from individual institutions – tables which contain data which are disclosive will contain a relevant footnote
- note that £1.0 billion = £1,000 million in this release
- the 2013 and 2014 estimates have been revised where necessary to take account of businesses misreporting and late returns

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.

Research and Development in UK Businesses, 2015 - Datasets

Please click on the links below to access the datasets:

UK Business Enterprise Research and Development 2015 - Time Series Datasets

- [1](#) Expenditure on R&D Performed in UK Businesses: Current and Constant Prices and as a Percentage of GDP, 2004 to 2015
- [2](#) Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2004 to 2015
- [3](#) Sources of Funds for R&D Performed in UK Businesses: 2004 to 2015
- [4](#) Employment in R&D Performed in UK Businesses: 2004 to 2015
- [5](#) Expenditure on Civil and Defence R&D Performed in UK Businesses: Broad Product Groups, 2004 to 2015
- [6](#) Sources of Funds for R&D Performed in UK Businesses: Civil and Defence, 2004 to 2015
- [7](#) Breakdown of R&D Performed in UK Businesses by Country or Region: Expenditure and Employment, 2004 to 2015

UK Business Enterprise Research and Development 2015 - Additional Datasets

Expenditure on Research and Development

- [8](#) Expenditure on R&D Performed in UK Businesses: Broad Product Groups, 2004 to 2015
- [9](#) Current and Capital Expenditure on R&D Performed in UK Businesses: 2004 to 2015
- [10](#) Current and Capital Expenditure on R&D Performed in UK Businesses: Detailed Product Groups, 2015
- [11](#) Current Expenditure on R&D Performed in UK Businesses: Detailed Product Groups and Type of Research, 2015
- [12](#) Extramural Expenditure on R&D by UK R&D Performing Businesses: Detailed Product Groups and Source of Funds, 2015

Sources of Funds for Research and Development

- [13](#) Sources of Funds for R&D Performed in UK Businesses: Detailed Product Groups, 2015

Employment on Research and Development

- [14](#) Employment in R&D Performed in UK Businesses: Detailed Product Groups, 2015
- [15](#) Employment in Civil and Defence R&D Performed in UK Businesses: 2004 to 2015

Civil and Defence Research and Development

- [16](#) Expenditure on Civil and Defence R&D Performed in UK Businesses: Detailed Products Groups, 2015
- [17](#) Current and Capital Expenditure on Civil and Defence R&D in UK Businesses: 2004 to 2015

Region

- [18](#) Expenditure on R&D Performed in UK Businesses by Country or Region: Broad Product Groups, 2015
- [19](#) Employment in R&D Performed in UK Businesses by Country or Region: Broad Product Groups, 2015

Business Size and Product

- [20](#) Expenditure and Employment on R&D Performed in UK Businesses: Top 100 Enterprise Groups, 2015
- [21](#) Expenditure on R&D Performed in UK Businesses by Total Company Employment Size-Bands: Broad Product Groups, 2015
- [22](#) R&D Employment in UK Businesses by Company Employment Size-Bands: Broad Product Groups, 2015

By Country of Ownership

- [23](#) Expenditure and Employment on R&D Performed in UK Businesses: By Country of Ownership of Business Performing R&D, 2004 to 2015
- [24](#) Expenditure on R&D Performed in UK Businesses, UK or Overseas Ownership: Detailed Product Groups, 2015

Intensity in Manufactured Products

- [25](#) R&D Intensity in Manufactured Products: Detailed Product Groups, 2004 to 2015

Small and Medium Size Enterprises

- [26](#) Expenditure on R&D Performed in UK Businesses: By Small and Medium Size Enterprises, 2004 to 2015

Standard Industry Classification (SIC) Division

- [27](#) Expenditure on R&D Performed in UK Businesses: Standard Industry Classification (SIC) Division, 2010 to 2015

Intensity in Services

- [28](#) R&D Intensity in Services: Detailed Product Groups, 2010 to 2015

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

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**1 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
CURRENT AND CONSTANT PRICES AND AS A PERCENTAGE OF GDP, 2004 TO 2015**

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CURRENT AND CONSTANT PRICES AND AS A PERCENTAGE OF GDP, 2004 TO 2015												£ million	
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Current prices	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885
Constant prices (2015)		15,603 [†]	16,484	16,477	17,829	17,511	16,965	17,210	18,463	18,039	18,978	19,906	20,885
Current prices													
GDP	DLHT	1,320,209 [†]	1,402,471	1,476,941	1,547,272	1,546,968	1,531,330	1,592,057	1,634,025	1,690,042	1,759,560	1,834,591	1,882,528
As a % of GDP		1.0 [†]	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1
2015 = 100												Source: Office for National Statistics	
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GDP deflator used to convert current prices to constant prices		81.151 [†]	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100

1 [†] denotes earliest data revision.

**EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
DETAILED PRODUCT GROUPS, 2004 TO 2015**
CURRENT PRICES

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														% of total
														£ million
														2015
TOTAL	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885	100
Agriculture, hunting and forestry; Fishing	DLBY	..	..	88	..	88	..	102	133	132	121	135 [†]	139	0.7
Extractive Industries	DLBZ	36	59	59	82	90	140	152	195	172	209 [†]	230	206	1.0
Food products and beverages; Tobacco products	DLCF	258	276	314	328	303	290	306	366	364	437	431 [†]	423	2.0
Textiles, clothing and leather products	DLCQ	21	18	17	19	15	10	11	14	20	22	22	19	0.1
Pulp, paper and paper products; Printing; Wood and straw products	DLCT	40	52	55	53	56	26	28	21	28	48	48	48	0.2
Refined petroleum products and coke oven products	DLCE	234	245	279	274	94	95	73	72	76	110 [†]	189	178	0.9
Chemicals and chemical products	DLCC	625	637	684	668	630	610	666	523	665	754 [†]	784	826	4.0
Pharmaceuticals	DLCD	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914	4,208	4,039 [†]	3,855	4,178	20.0
Rubber and plastic products	DLCR	63	55	90	79	78	62	80	97	105	99	127 [†]	137	0.7
Other non-metallic mineral products	D LCS	62	44	51	48	53	57	56	60	47	47	62 [†]	54	0.3
Casting of iron and steel	DLCJ	30	34	38	..	47	43	28	44	45	27	51	39	0.2
Non-ferrous metals	DLCK	4	8	6	..	72	..	86	77	56	56	76	62	0.3
Fabricated metal products except machinery and equipment	DLCL	77	74	68	91	73	93	93	119	105	113	110	122	0.6
Machinery and equipment	DLCO	761	905	929	1,033	790	873	809	973	997	1,043 [†]	1,011	1,040	5.0
Computers and peripheral equipment	DLCN	53	92	67	83	123	151	157	180	187	260 [†]	276	316	1.5
Electrical equipment	DLCA	406	394	458	547	577	577	513	509	463	398	461 [†]	475	2.3
Consumer electronics and communication equipment	DLCB	763	788	748	667	700	547	474	511	689	877 [†]	912	989	4.7
Precision instruments and optical products; photographic equipment	DLCM	486	475	462	544	591	498	490	599	644	617 [†]	670	656	3.1
Motor vehicles and parts	DLCG	789	744	754	933	1,156	1,039	1,237	1,525	1,763	2,101 [†]	2,364	2,703	12.9
Other transport equipment	DLCI	23	21	25	28	30	..	46	50	48	64 [†]	78	93	0.4
Shipbuilding	DLCH	125	127	134	136	157	173	185	226	229	233	265 [†]	300	1.4
Aerospace	DLCF	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511	1,639	1,666 [†]	1,701	8.1
Other manufactured goods	DLCU	33	26	24	27	36	98	136	146	133	175 [†]	183	191	0.9
Sewerage, waste management, remediation activities	DLCV	2	1	1	3	3	9	11	10	12	17	19 [†]	29	0.1
Electricity, gas and water supply	DLCW	21	15	21	35	40	66	60	58	106	123	148 [†]	155	0.7
Construction	DLCX	..	..	17	..	21	..	14	31	64	91	151 [†]	146	0.7
Wholesale and retail trade	DLDE	76	60	70	37	74	76	177	242	166	167	238 [†]	215	1.0
Transport and storage, incl. postal and courier activities	DLCY	12	8	16	21	12	24	17	18	..	35	38	49	0.2
Telecommunications	DLCZ	639	1,164	1,330	1,535	1,404	1,330	1,129	1,037	875	840 [†]	959	825	4.0
Miscellaneous business activities; Technical testing and analysis	DLDC	349	438	399	510	494	555	583	570	864	994 [†]	1,104	1,104	5.3
Computer programming and information service activities	DLDB	1,060	1,069	1,415	1,498	1,465	1,385	1,526	1,847	2,067	1,977 [†]	2,229	2,381	11.4
Research and development services	DLDA	211	179	122	156	384	507	618	783	482	772 [†]	817	998	4.8
Public administration	DLDD	31	32	52	103	71	73	70	67	..	113 [†]	108	87	0.4

Source: Office for National Statistics

1 .. denotes disclosive figures.

2 [†] denotes earliest data revision.

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

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

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**SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES:
2004 TO 2015
CURRENT PRICES**

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		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
£ million													
TOTAL	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885
UK Government	DLDO	1,290	1,101	1,060	1,072	1,135	1,324	1,407	1,513	1,430	1,848	1,895	1,818
Overseas total of which:	DLHK	2,958	3,584	3,262	3,636	3,721	3,458	3,789	3,939	3,850	3,891	3,991	3,790
European Commission grants	DLDQ	42	73	41	27	47	47	62	55	55	65	65	67
Other Overseas	DLDS	2,917	3,512	3,221	3,609	3,674	3,411	3,727	3,884	3,796	3,826	3,926	3,723
Other UK Business	DLDU	1,056	1,272	1,155	994	865	698	718	595	344	364	393	413
Own funds	DLDW	7,351	7,775	8,665	9,959	10,086	10,047	10,129	11,283	11,696	12,407	13,409	14,657
Other	DLDY	6	2	2	15	7	4	3	122	88	107	130	209
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Per cent													
TOTAL		100	100	100	100	100	100	100	100	100	100	100	100
UK Government		10	8	7	7	7	9	9	9	8	10	10	9
Overseas total of which:		23	26	23	23	24	22	24	23	22	21	20	18
European Commission grants		-	1	-	-	-	-	-	-	-	-	-	-
Other Overseas		23	26	23	23	23	22	23	22	22	21	20	18
Other UK Business		8	9	8	6	5	4	4	3	2	2	2	2
Own funds		58	57	61	64	64	65	63	65	67	67	68	70
Other		-	-	-	-	-	-	-	1	1	1	1	1

Source: Office for National Statistics

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

2 [†] denotes earliest data revision.

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

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

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

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EMPLOYMENT IN R&D PERFORMED IN UK BUSINESSES:
2004 TO 2015[Return to Main Menu](#)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Full time equivalent in thousands													
TOTAL	DLEI	150	146	147	158	151	151	154	159	162	179	194 [†]	206
Scientists and engineers	DLEJ	94	94	92	90	86	85	87	90	92	98 [†]	102	106
Technicians, laboratory assistants and draughtsmen	DLEK	27	25	27	35	37	40	41	42	43	53 [†]	60	64
Administrative, clerical, industrial and other staff	DLEL	29	26	28	33	28	26	27	27	27	28	32 [†]	36
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Per cent													
TOTAL		100	100	100	100	100	100	100	100	100	100	100	100
Scientists and engineers		63	64	63	57	57	56	56	57	57	55 [†]	53	51
Technicians, laboratory assistants and draughtsmen		18	17	18	22	25	26	27	26	27	30 [†]	31	31
Administrative, clerical, industrial and other staff		19	18	19	21	19	17	18	17	17	16	16 [†]	17

Source: Office for National Statistics

1 [†] denotes earliest data revision.

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

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

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5 EXPENDITURE ON CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES:
BROAD PRODUCT GROUPS, 2004 TO 2015

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BROAD PRODUCT GROUPS, 2004 TO 2015																											£ million	
		Civil													Defence													
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
CURRENT PRICES																												
TOTAL	DLBV	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667	15,808	16,966	†	18,272	19,394	DLBW	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785	1,601	1,651	†	1,547	1,491
Manufacturing: Total	DLEP	8,180	8,270	8,564	9,372	9,712	9,484	10,036	10,815	10,868	11,668	†	12,270	13,228	DLEX	1,878	2,290	1,991	2,239	1,960	1,746	1,549	1,647	1,515	1,491	†	1,372	1,322
Chemicals	DLEQ	..	..	..	..	..	..	..	..	..	..	..	..	..	DLEY	..	..	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	DLER	492	458	464	634	435	..	456	520	575	635	†	679	744	DLEZ	346	520	533	489	429	..	446	572	526	522	442	†	417
Electrical machinery	DLES	935	978	930	934	1,018	867	751	847	1,069	1,336	†	1,460	1,681	DLFA	287	296	343	362	381	408	393	353	270	199	189	100	..
Transport	DLET	..	..	..	..	..	..	..	..	..	..	..	..	..	DLFB	..	..	..	..	..	..	..	..	..	..	..	..	..
Aerospace	DLEU	939	902	908	902	836	905	1,018	1,036	1,162	1,229	1,309	†	1,315	DLFC	1,026	1,267	924	1,168	897	560	419	402	349	410	358	†	386
Other manufacturing	DLEV	1,123	1,146	1,266	1,321	1,226	1,136	1,168	1,398	1,388	1,522	†	1,754	1,713	DLFD	108	90	70	100	122	115	127	98	130	116	106	†	95
Services	DLEW	..	..	3,226	3,690	3,767	3,811	..	4,425	..	4,738	†	..	..	DLFE	..	..	178	169	137	140	..	138	..	161	†	..	..
Other: Total	LDIL	..	..	185	205	238	350	..	426	..	561	†	..	..	LDJJ	..	..	..	..	..	..	..	..	..	..	..	..	..
Agriculture, hunting & forestry; Fishing	LDIN	..	..	88	..	88	..	102	133	132	121	135	†	139	LDJL	..	..	..	..	..	..	..	..	..	..	..	..	..
Extractive industries	LDIS	36	59	59	82	90	140	152	195	172	209	†	230	206	LDKF	..	..	..	..	..	..	..	..	..	..	..	..	..
Electricity, gas & water supply; Waste management	LDJB	21	15	21	35	40	75	..	68	..	140	167	†	184	LDKG	..	..	..	..	..	..	..	..	..	..	..	..	..
Construction	LDJG	..	..	17	..	21	..	..	31	..	91	..	..	..	LDKS	..	..	..	..	..	..	..	..	..	..	..	..	..

BROAD PRODUCT GROUPS, 2004 TO 2015																											£ million	
		Civil													Defence													
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
CONSTANT PRICES (2015)																												
TOTAL	DLBA	13,090	†	13,548	13,950	15,091	15,189	14,905	15,437	16,575	16,380	17,295	18,353	19,394	DLBB	2,513	†	2,936	2,527	2,740	2,322	2,060	1,773	1,888	1,659	1,683	1,554	1,491
Manufacturing: Total	DLBD	10,080	†	9,926	9,976	10,659	10,754	10,359	10,765	11,442	11,261	11,894	12,324	13,228	DLBL	2,314	†	2,749	2,319	2,547	2,170	1,907	1,662	1,742	1,570	1,520	1,378	1,322
Chemicals	DLBE	..	..	..	..	..	..	..	..	..	..	..	..	..	DLBM	..	..	..	..	..	..	..	..	..	..	..	..	..
Mechanical engineering	DLBF	606	†	550	541	721	482	..	489	550	596	647	682	744	DLBN	426	†	624	621	556	475	..	478	605	545	532	444	417
Electrical machinery	DLBG	1,152	†	1,174	1,083	1,062	1,127	947	806	896	1,108	1,362	1,466	1,681	DLBO	354	†	355	400	412	422	446	422	373	280	203	190	100
Transport	DLBH	..	..	..	..	..	..	..	..	..	..	..	..	..	DLBP	..	..	..	..	..	..	..	..	..	..	..	..	..
Aerospace	DLBI	1,157	†	1,083	1,058	1,026	926	988	1,092	1,096	1,204	1,253	1,315	1,315	DLBQ	1,264	†	1,521	1,076	1,328	993	612	449	425	362	418	360	386
Other manufacturing	DLBJ	1,384	†	1,375	1,475	1,502	1,358	1,241	1,253	1,479	1,438	1,551	1,762	1,713	DLBR	133	†	108	82	114	135	126	136	104	135	118	106	95
Services	DLBK	..	..	3,758	4,197	4,171	4,163	..	4,681	..	4,830	..	..	..	DLBS	..	..	207	192	152	153	..	146	..	164	..	..	..
Other: Total	C3ZE	..	..	216	233	264	382	..	451	..	572	..	..	..	C3ZJ	..	..	..	..	..	..	..	..	..	..	..	..	..
Agriculture, hunting & forestry; Fishing	C3ZF	..	..	103	..	97	..	109	141	137	123	136	139	..	C3ZK	..	..	..	..	..	..	..	..	..	..	..	..	..
Extractive industries	C3ZG	44	†	71	69	93	100	153	163	206	178	213	231	206	C3ZL	..	..	..	..	..	..	..	..	..	..	..	..	..
Electricity, gas & water supply; Waste management	C3ZH	26	†	18	24	40	44	82	..	72	..	143	168	184	C3ZM	..	..	..	..	..	..	..	..	..	..	..	..	..
Construction	C3ZI	..	..	20	..	23	..	..	33	..	93	..	..	..	C3ZN	..	..	..	..	..	..	..	..	..	..	..	..	..

Source: Office for National Statistics

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
GDP deflator used to convert current prices to constant prices		81.151	†	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100	81.151	†	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100

Source: Office for National Statistics

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
GDP deflator used to convert current prices to constant prices	81.151 [†]	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100		81.151 [†]	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100	

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

2 - denotes disclosure figures.

3 [†] denotes earliest data revision.

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

5 [See list for detailed breakdown of broad product groups](#)

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**SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES:
CIVIL AND DEFENCE, 2004 TO 2015**
CURRENT PRICES

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CURRENT PRICES		2004-2015																								£ million	
		Civil													Defence												
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
UK Government	DLFG	162	156	150	183	258	350	410	394	366	767 [†]	848	821	DLFN	1,128	945	910	889	877	974	996	1,119	1,064	1,081 [†]	1,047	997	
Overseas total of which:	DLHS	2,440	2,656	2,686	2,985	3,189	3,206	3,584	3,788	3,691	3,732 [†]	3,844	3,639	DLIF	518	928	576	652	532	251	205	151	159	160	147 [†]	151	
European Commission grants	DLFH	42	73	41	27	47	45	60	53	52	64 [†]	64	65	DLFO	-	-	-	1	-	2	2	3	2	1	1	1	
Other Overseas	DLFI	2,398	2,583	2,645	2,958	3,143	3,161	3,524	3,735	3,639	3,668 [†]	3,780	3,574	DLFP	518	928	576	651	531	250	203	149	157	158	146 [†]	149	
Other UK Business	DLFJ	988	1,147	1,044	..	729	..	607	485	277	.. [†]	341	357	DLFQ	68	125	111	..	136	..	111	109	68	.. [†]	52	55	
Own	DLFK	7,027	7,326	8,093	9,196	9,534	9,503	9,787	10,922	11,392	12,096 [†]	13,119	14,376	DLFR	325	449	572	763	552	545	341	361	304	312	290 [†]	280	
Other	DLFL	6	2	2	..	7	..	3	78	82	.. [†]	119	201	DLFS	-	-	-	..	-	..	1	44	6	..	11	8	
TOTAL	DLBV	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667	15,808	16,966 [†]	18,272	19,394	DLBW	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785	1,601	1,651 [†]	1,547	1,491	

Source: Office for National Statistics

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

2 - denotes disclosive figures.

3 [†] denotes earliest data revision.

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

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

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		Expenditure £ million												% of total 2015	Employment full time equivalent in thousands											
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
United Kingdom	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885	100	150	146	147	158	151	151	154	159	162	179	194 [†]	206
England	DLKI	11,885	12,847	13,312	14,649	14,847	14,360	14,868	16,151	16,017	17,009 [†]	18,201	19,151	91.7	137	133	135	145	139	137	140	144	146	161 [†]	174	184
North East	DLJO	257	289	292	331	318	315	308	259	282	323	282 [†]	306	1.5	3	3	3	4	4	4	4	4	3	5	4	4
North West	DLJT	1,739	1,892	1,623	2,021	2,130	1,926	2,074	2,220	1,781	1,835 [†]	1,913	2,113	10.1	16	15	16	17	16	14	14	13	13	13	15	17
Yorkshire and the Humber	DLJP	343	344	384	436	433	454	488	550	600	660 [†]	700	779	3.7	6	6	6	7	7	7	7	8	8	9	10	11
East Midlands	DLJQ	936	1,006	985	1,062	976	992	1,137	1,146	1,218	1,340	1,473 [†]	1,515	7.3	11	11	11	13	12	10	11	12	13	15	16	16
West Midlands	DLJN	758	721	915	995	886	847	886	1,281	1,460	1,684 [†]	1,924	2,166	10.4	13	12	13	14	12	12	11	12	14	16	17 [†]	19
East of England	DLJR	2,672	3,718	3,650	3,992	4,182	3,812	3,846	3,639	3,606	4,137 [†]	4,071	4,178	20.0	28	29	26	28	29	30	32	32	30	33	34	35
London	DLKL	759	552	882	1,067	1,109	907	877	1,118	1,570	1,291 [†]	1,723	1,912	9.2	9	8	10	11	11	10	10	11	13	14	18	20
South East	DLJS	3,125	3,125	3,347	3,515	3,466	3,758	3,798	4,579	4,133	4,288 [†]	4,554	4,709	22.5	37	36	37	37	35	36	36	37	37	39	42 [†]	44
South West	DLJM	1,296	1,201	1,232	1,229	1,345	1,349	1,454	1,359	1,367	1,450 [†]	1,561	1,472	7.0	13	13	13	14	15	15	16	15	15	16	16	17
Wales	DLJU	226	232	216	308	243	243	234	252	268	367 [†]	386	362	1.7	3	3	3	3	3	3	3	3	3	4	5	5
Scotland	DLJV	430	506	460	543	554	631	619	697	709	801 [†]	874	871	4.2	6	7	6	7	7	7	7	8	8	10	10	11
Northern Ireland	DLJW	120	148	157	177	171	297	324	352	415	441 [†]	358	501	2.4	3	3	3	3	2	3	4	4	5	5	5	6

Source: Office for National Statistics

1 [†] denotes earliest data revision.

2 FTE - Full time equivalent.

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

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

BROAD PRODUCT GROUPS, 2004 TO 2015													£ million
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CURRENT PRICES													
TOTAL	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885
Manufacturing: Total	DLDF	10,058	10,560	10,555	11,612	11,672	11,230	11,585	12,462	12,383	13,158 [†]	13,642	14,550
Chemicals	DLDG	3,864	4,011	4,205	4,602	4,985	5,034	5,339	5,437	4,873	4,793 [†]	4,639	5,004
Mechanical engineering	DLDH	838	978	997	1,124	864	..	902	1,091	1,102	1,156 [†]	1,121	1,161
Electrical machinery	DLDI	1,222	1,274	1,273	1,297	1,400	1,275	1,144	1,200	1,339	1,535 [†]	1,649	1,780
Transport	DLDJ	937	892	913	1,097	1,344	..	1,468	1,800	2,040	2,398 [†]	2,706	3,096
Aerospace	DLDK	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511	1,639	1,666 [†]	1,701
Other manufacturing	DLDL	1,231	1,236	1,336	1,422	1,348	1,251	1,295	1,495	1,518	1,638 [†]	1,860	1,808
Services	DLDM	2,378	2,949	3,404	3,860	3,904	3,952	4,120	4,563	4,539	4,898 [†]	5,494	5,660
Other: Total	LABA	226	225	185	205	238	350	340	426	487	561 [†]	683	675
Agriculture, hunting & forestry; Fishing	LADE	..	..	88	..	88	..	102	133	132	121	135 [†]	139
Extractive industries	LADM	36	59	59	82	90	140	152	195	172	209 [†]	230	206
Electricity, gas & water supply; Waste management	LAEB	21	15	21	35	40	75	72	68	118	140	167 [†]	184
Construction	LAEM	..	..	17	..	21	..	14	31	64	91	151 [†]	146

	£ million												
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
CONSTANT PRICES (2015)													
TOTAL	15,603	†	16,484	16,477	17,829	17,511	16,965	17,210	18,463	18,039	18,978	19,906	20,885
Manufacturing: Total	12,394	†	12,674	12,296	13,207	12,924	12,266	12,427	13,184	12,831	13,413	13,702	14,550
Chemicals	4,761	†	4,814	4,898	5,234	5,520	5,498	5,727	5,752	5,049	4,886	4,659	5,004
Mechanical engineering	1,033	†	1,174	1,161	1,278	957	..	968	1,154	1,142	1,178	1,126	1,161
Electrical machinery	1,506	†	1,529	1,483	1,475	1,550	1,393	1,227	1,270	1,387	1,565	1,656	1,780
Transport	1,155	†	1,071	1,064	1,248	1,488	..	1,575	1,904	2,114	2,444	2,718	3,096
Aerospace	2,421	†	2,603	2,134	2,354	1,918	1,601	1,541	1,521	1,566	1,671	1,673	1,701
Other manufacturing	1,517	†	1,483	1,556	1,617	1,493	1,366	1,389	1,582	1,573	1,670	1,868	1,808
Services	2,930	†	3,539	3,965	4,390	4,323	4,317	4,419	4,827	4,703	4,993	5,518	5,660
Other: Total	278	†	270	216	233	264	382	365	451	505	572	686	675
Agriculture, hunting & forestry; Fishing	..	†	..	103	..	97	..	109	141	137	123	136	139
Extractive industries	44	†	71	69	93	100	153	163	206	178	213	231	206
Electricity, gas & water supply; Waste management	26	†	18	24	40	44	82	77	72	122	143	168	184
Construction	..	†	..	20	..	23	..	15	33	66	93	152	146

Source: Office for National Statistics

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GDP deflator used to convert current prices to constant prices	81.151	83.317	85.843	87.922	90.311	91.554	93.228	94.523	96.508	98.099	99.561	100

1 .. denotes disclosive figures.

2 [†] denotes earliest data revision.

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

4 [See list for detailed breakdown of broad product groups](#)

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CURRENT AND CAPITAL EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:

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2004 TO 2015

CURRENT PRICES

£ million

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
TOTAL	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 [†]	19,819	20,885
Capital total	DLEA	1,184	1,168	956	1,070	865	928	927	1,051	1,132	1,034 [†]	1,614	1,691
of which:													
Land and buildings	DLHO	251	204	154	201	185	221	143	126	111	161 [†]	454	484
Plant and machinery	DLHQ	933	964	802	869	680	706	784	925	1,021	873 [†]	1,160	1,207
Current total	DLEC	11,477	12,566	13,188	14,606	14,950	14,604	15,118	16,401	16,276	17,584 [†]	18,205	19,194
of which:													
Salaries and wages	DLEE	5,977	6,354	6,782	7,697	7,539	7,723	7,937	8,109	8,475	9,281 [†]	9,623	10,238
Other	DLEG	5,501	6,212	6,407	6,908	7,410	6,881	7,181	8,292	7,801	8,302 [†]	8,582	8,956

Source: Office for National Statistics

1 [†] denotes earliest data revision.

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

£ million

	Total	Capital Total	Current Total	Salaries and wages	Other current
TOTAL	20,885	1,691	19,194	10,238	8,956
Agriculture, hunting and forestry; Fishing	139	12	127	45	82
Extractive Industries	206	24	182	108	75
Food products and beverages; Tobacco products	423	31	392	220	172
Textiles, clothing and leather products	19	-	19	14	5
Pulp, paper and paper products; Printing; Wood and straw products	48	6	42	25	17
Refined petroleum products and coke oven products	178	7	171	53	118
Chemicals and chemical products	826	75	751	401	349
Pharmaceuticals	4,178	271	3,907	1,796	2,111
Rubber and plastic products	137	27	110	64	46
Other non-metallic mineral products	54	13	42	28	14
Casting of iron and steel	39	-	38	12	26
Non-ferrous metals	62	11	51	37	13
Fabricated metal products except machinery and equipment	122	12	110	62	48
Machinery and equipment	1,040	74	966	548	418
Computers and peripheral equipment	316	10	306	191	115
Electrical equipment	475	98	377	206	171
Consumer electronics and communication equipment	989	94	895	500	395
Precision instruments and optical products; photographic equipment	656	37	619	330	289
Motor vehicles and parts	2,703	213	2,490	970	1,520
Other transport equipment	93	8	85	41	44
Shipbuilding	300	-	300	148	152
Aerospace	1,701	79	1,622	809	813
Other manufactured goods	191	4	186	132	55
Sewerage, waste management, remediation activities	29	2	28	25	3
Electricity, gas and water supply	155	20	135	69	66
Construction	146	1	145	112	34
Wholesale and retail trade	215	9	207	112	95
Transport and storage, incl. postal and courier activities	49	1	48	40	8
Telecommunications	825	20	805	481	324
Miscellaneous business activities; Technical testing and analysis	1,104	33	1,071	694	377
Computer programming and information service activities	2,381	391	1,991	1,369	621
Research and development services	998	107	891	538	353
Public administration	87	1	86	56	30

Source: Office for National Statistics

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

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

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	£ million			
	Total current	Basic	Applied	Experimental Development
TOTAL	19,194	1,276	7,996	9,922
Agriculture, hunting and forestry; Fishing	127	-	89	38
Extractive Industries	182	7	142	34
Food products and beverages; Tobacco products	392	86	151	155
Textiles, clothing and leather products	19	-	11	8
Pulp, paper and paper products; Printing; Wood and straw products	42	-	10	33
Refined petroleum products and coke oven products	171	..	..	112
Chemicals and chemical products	751	17	347	386
Pharmaceuticals	3,907	156	1,494	2,257
Rubber and plastic products	110	17	77	15
Other non-metallic mineral products	42	7	14	20
Casting of iron and steel	38	-	-	38
Non-ferrous metals	51	-	25	26
Fabricated metal products except machinery and equipment	110	1	61	49
Machinery and equipment	966	37	438	491
Computers and peripheral equipment	306	..	205	..
Electrical equipment	377	15	120	242
Consumer electronics and communication equipment	895	26	386	483
Precision instruments and optical products; photographic equipment	619	6	330	282
Motor vehicles and parts	2,490	16	437	2,038
Other transport equipment	85	-	45	40
Shipbuilding	300	4	..	..
Aerospace	1,622	228	954	440
Other manufactured goods	186	3	59	124
Sewerage, waste management, remediation activities	28	-	25	3
Electricity, gas and water supply	135	29	49	57
Construction	145	23	47	75
Wholesale and retail trade	207	3	128	76
Transport and storage, incl. postal and courier activities	48	3	22	23
Telecommunications	805	1	194	611
Miscellaneous business activities; Technical testing and analysis	1,071	40	748	283
Computer programming and information service activities	1,991	205	813	972
Research and development services	891	280	433	178
Public administration	86	18	16	53

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

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£ million

	Total	United Kingdom	Overseas Government Funded	Overseas Other funds
TOTAL	8,992	1,569	38	7,385
Agriculture, hunting and forestry; Fishing	56	35	-	21
Extractive Industries	30	4	-	26
Food products and beverages; Tobacco products	44	23	-	21
Textiles, clothing and leather products	2	2	-	-
Pulp, paper and paper products; Printing; Wood and straw products	2	1	-	1
Refined petroleum products and coke oven products	51	..	..	14
Chemicals and chemical products	138	42	-	95
Pharmaceuticals	6,491	707	..	..
Rubber and plastic products	10	9	-	1
Other non-metallic mineral products	3	2	-	1
Casting of iron and steel	..	..	-	..
Non-ferrous metals	1	-	-	1
Fabricated metal products except machinery and equipment	4	2	-	2
Machinery and equipment	19	7	-	12
Computers and peripheral equipment	..	13	-	..
Electrical equipment	18	8	-	10
Consumer electronics and communication equipment	230	..	..	223
Precision instruments and optical products; photographic equipment	146	32	-	114
Motor vehicles and parts	827	320	-	507
Other transport equipment	2	-	-	2
Shipbuilding	4	3	-	1
Aerospace	188	100	4	84
Other manufactured goods	7	4	-	3
Sewerage, waste management, remediation activities	3	-	-	2
Electricity, gas and water supply	56	16	-	40
Construction	16	16	-	-
Wholesale and retail trade	14	10	..	..
Transport and storage, incl. postal and courier activities	8	8	-	-
Telecommunications	18	-	-	17
Miscellaneous business activities; Technical testing and analysis	116	29	-	86
Computer programming and information service activities	106	14	-	93
Research and development services	158	145	-	13
Public administration	3	3	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

4 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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£ million

	Total Expenditure	UK Government	Overseas	Own Funds	Other
TOTAL	20,885	1,818	3,790	14,657	622
Agriculture, hunting and forestry; Fishing	139	3	19	110	7
Extractive Industries	206	1	71	134	-
Food products and beverages; Tobacco products	423	2	148	270	3
Textiles, clothing and leather products	19	-	-	19	-
Pulp, paper and paper products; Printing; Wood and straw products	48	1	-	47	-
Refined petroleum products and coke oven products	178	..	..	172	..
Chemicals and chemical products	826	12	108	704	2
Pharmaceuticals	4,178	5	1,243	2,856	73
Rubber and plastic products	137	2	-	135	-
Other non-metallic mineral products	54	1	2	52	-
Casting of iron and steel	39	3	-	36	-
Non-ferrous metals	62	3	1	12	46
Fabricated metal products except machinery and equipment	122	4	60	58	-
Machinery and equipment	1,040	375	109	526	30
Computers and peripheral equipment	316	..	65	241	..
Electrical equipment	475	41	37	376	21
Consumer electronics and communication equipment	989	64	435	482	9
Precision instruments and optical products; photographic equipment	656	71	18	559	8
Motor vehicles and parts	2,703	30	357	2,292	24
Other transport equipment	93	22	..	59	..
Shipbuilding	300	267	1	32	-
Aerospace	1,701	242	167	1,192	99
Other manufactured goods	191	3	20	166	1
Sewerage, waste management, remediation activities	29	-	-	28	2
Electricity, gas and water supply	155	1	24	124	7
Construction	146	1	1	141	3
Wholesale and retail trade	215	11	43	161	-
Transport and storage, incl. postal and courier activities	49	1	13	28	8
Telecommunications	825	7	121	695	2
Miscellaneous business activities; Technical testing and analysis	1,104	202	131	710	61
Computer programming and information service activities	2,381	46	471	1,855	9
Research and development services	998	371	101	335	191
Public administration	87	11	23	53	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

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

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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	206	106	64	36
Agriculture, hunting and forestry; Fishing	1	-	-	-
Extractive Industries	1	1	-	-
Food products and beverages; Tobacco products	4	2	1	1
Textiles, clothing and leather products	1	-	-	-
Pulp, paper and paper products; Printing; Wood and straw products	1	-	1	-
Refined petroleum products and coke oven products	-	-	-	-
Chemicals and chemical products	8	4	3	1
Pharmaceuticals	24	10	5	8
Rubber and plastic products	2	1	1	-
Other non-metallic mineral products	1	-	-	-
Casting of iron and steel	-	-	-	-
Non-ferrous metals	-	-	-	-
Fabricated metal products except machinery and equipment	2	1	-	1
Machinery and equipment	13	6	4	2
Computers and peripheral equipment	3	3	-	-
Electrical equipment	6	4	1	1
Consumer electronics and communication equipment	8	5	2	-
Precision instruments and optical products; photographic equipment	8	5	2	1
Motor vehicles and parts	17	8	5	4
Other transport equipment	1	-	-	-
Shipbuilding	3	1	1	-
Aerospace	14	9	4	1
Other manufactured goods	3	2	1	-
Sewerage, waste management, remediation activities	-	-	-	-
Electricity, gas and water supply	1	-	-	-
Construction	5	3	-	2
Wholesale and retail trade	4	1	1	2
Transport and storage, incl. postal and courier activities	1	1	-	-
Telecommunications	10	6	3	1
Miscellaneous business activities; Technical testing and analysis	19	7	10	2
Computer programming and information service activities	31	15	12	4
Research and development services	11	7	1	3
Public administration	1	-	1	-

Source: Office for National Statistics

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

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

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15 EMPLOYMENT IN CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: 2004 TO 2015

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		Civil												Defence												Full time equivalent in thousands	
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Scientist and engineers	DLHD	78	77	76	76	74	74	77	81	83	89 [†]	93	97	DLHH	17	17	16	14	12	11	10	9	9	9	9	9	
Technicians laboratory assistants & draughtmen	DLHE	24	23	25	31	33	36	37	38	39	49 [†]	54	58	DLHI	2	2	2	3	4	4	4	4	4	5	5	6	
Admin. clerical industrial & other staff	DLHF	25	23	24	29	25	24	25	25	24	26 [†]	31	34	DLHJ	4	4	4	4	3	2	2	2	2	2	2	2	
TOTAL	DLHC	126	123	125	136	132	134	138	144	146	163	178 [†]	189	DLHG	23	23	22	22	19	18	16	15	16	16	16	17	

¹ [†] denotes earliest data revision.

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

Source: Office for National Statistics

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	£ million		
	Total	Civil	Defence
TOTAL	20,885	19,394	1,491
Agriculture, hunting and forestry; Fishing	139	139	-
Extractive Industries	206	206	-
Food products and beverages; Tobacco products	423	423	-
Textiles, clothing and leather products	19	19	1
Pulp, paper and paper products; Printing; Wood and straw products	48	48	-
Refined petroleum products and coke oven products	178	178	-
Chemicals and chemical products	826	..	..
Pharmaceuticals	4,178	4,178	-
Rubber and plastic products	137	..	..
Other non-metallic mineral products	54	54	-
Casting of iron and steel	39	38	1
Non-ferrous metals	62	62	-
Fabricated metal products except machinery and equipment	122	119	2
Machinery and equipment	1,040	625	415
Computers and peripheral equipment	316	312	4
Electrical equipment	475	401	74
Consumer electronics and communication equipment	989	967	22
Precision instruments and optical products; photographic equipment	656	563	94
Motor vehicles and parts	2,703	..	..
Other transport equipment	93	..	..
Shipbuilding	300	..	..
Aerospace	1,701	1,315	386
Other manufactured goods	191	..	..
Sewerage, waste management, remediation activities	29	29	-
Electricity, gas and water supply	155	155	-
Construction	146	..	..
Wholesale and retail trade	215	..	..
Transport and storage, incl. postal and courier activities	49	49	-
Telecommunications	825	808	17
Miscellaneous business activities; Technical testing and analysis	1,104	..	..
Computer programming and information service activities	2,381	2,356	25
Research and development services	998	985	13
Public administration	87	..	..

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

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CURRENT AND CAPITAL EXPENDITURE ON CIVIL AND DEFENCE R&D IN UK BUSINESSES:

2004 TO 2015

CURRENT PRICES

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		Civil												Defence												£ million
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Capital total	DLGJ	1,127	932	731	834	824	891	907	1,024	1,101	1,000 [†]	1,585	1,660	DLGT	57	236	225	236	41	36	20	27	32	34	29 [†]	31
of which:																										
Land & buildings	DLIH	237	184	..	..	185	220	142	124	109	151 [†]	453	480	DLIL	13	20	..	..	-	1	2	2	2	9	-	4
Plant & machinery	DLIJ	890	747	..	..	639	671	766	900	991	849 [†]	1,132	1,180	DLIN	43	217	..	..	41	35	18	25	30	24	28 [†]	27
Current total	DLGP	9,496	10,356	11,244	12,434	12,894	12,755	13,485	14,643	14,707	15,966 [†]	16,686	17,734	DLGZ	1,982	2,210	1,944	2,172	2,056	1,850	1,633	1,758	1,569	1,618 [†]	1,519	1,460
of which:																										
Salaries & Wages	DLGL	5,080	5,451	5,767	6,508	6,488	6,783	7,095	7,223	7,611	8,433 [†]	8,802	9,419	DLGV	897	903	1,015	1,190	1,052	941	842	886	864	848 [†]	821	818
Other	DLGN	4,416	4,905	5,477	5,926	6,406	5,972	6,390	7,420	7,096	7,533 [†]	7,884	8,315	DLGX	1,085	1,307	929	982	1,004	909	791	872	705	769 [†]	698	642
TOTAL	DLBV	10,623	11,288	11,975	13,268	13,717	13,646	14,392	15,667	15,808	16,966 [†]	18,272	19,394	DLBW	2,039	2,446	2,169	2,409	2,097	1,886	1,653	1,785	1,601	1,651 [†]	1,547	1,491

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

3 [†] denotes earliest data revision.

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

£ 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	20,885	19,150	306	2,113	779	1,515	2,166	4,178	1,912	4,709	1,472	362	871	501
Manufacturing: Total	14,550	13,435	214	1,784	536	1,314	1,866	3,075	415	3,156	1,075	278	514	322
Chemicals	5,004	4,750	119	836	216	131	21	1,492	275	1,609	51	51	167	34
Mechanical engineering	1,161	1,047	30	37	53	39	147	400	5	241	95	31	47	37
Electrical machinery	1,780	1,520	..	54	69	..	63	433	75	447	306	42	154	65
Transport	3,096	3,052	22	414	..	339	1,435	500	..	237	53	31	..	..
Aerospace	1,701	1,511	..	101	..	..	94	21	..	216	454	61	..	..
Other manufacturing	1,808	1,556	26	343	148	135	107	228	47	405	117	62	134	56
Services	5,660	5,131	87	286	212	174	271	1,047	1,460	1,248	346	80	279	171
Other: Total	675	585	5	43	31	27	29	57	38	304	51	4	77	8
Agriculture, hunting & forestry; Fishing	139	132	..	..	..	..	..	..	-	..	..	..	7	..
Extractive industries	206	165	-	..	..	..	..	..	..	106	..	..	38	..
Electricity, gas & water supply; Waste management	184	160	..	32	23	..	22	5	..	..	25	3	20	2
Construction	146	131	1	8	8	4	5	22	18	62	3	2	12	2

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

4 [See list for detailed breakdown of broad product groups](#)

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	206	183	4	17	11	16	19	35	20	44	17	5	11	6
Manufacturing: Total	119	108	3	12	7	13	14	21	4	23	11	3	5	3
Chemicals	33	29	1	4	2	2	-	8	2	9	1	1	2	1
Mechanical engineering	14	12	-	1	1	1	2	3	-	3	1	-	1	-
Electrical machinery	16	15	-	1	1	1	1	3	1	4	3	..	1	..
Transport	21	21	-	2	1	3	8	4	-	2	1	-	-	-
Aerospace	14	14	..	1	..	..	1	-	-	2	4	..	-	..
Other manufacturing	21	18	..	3	..	..	2	2	1	4	2	1	2	1
Services	78	67	1	5	3	3	4	13	16	17	5	1	5	3
Other: Total	9	7	..	1	-	-	..	1	1	3	1	-	1	-
Agriculture, hunting & forestry; Fishing	1	0	..	..	..	..	-	-	-	..	-	..	-	..
Extractive industries	1	0	-	-	..	..	..	..	..	..	..	..	-	..
Electricity, gas & water supply; Waste management	1	0	-	-	-	..	-	-	-	-	..	..	-	-
Construction	5	4	-	..	-	-	-	..	..	1	-	-	1	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

4 [See list for detailed breakdown of broad product groups](#)

	R&D Employment (Full time equivalent in thousands)	Total Expenditure (£ million)	Funded by UK Government (£ million)
TOTAL OF ALL ENTERPRISES	206	20,885	1,818
Enterprise groups with the largest expenditure on R&D			
Top 5	25	4,118	..
Top 10	34	5,441	390
Top 15	43	6,434	808
Top 20	49	7,250	822
Top 50	70	10,099	1,062
Top 100	89	12,496	1,172

Source: Office for National Statistics

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

		£ 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	20,885	2,644	3,551	3,759	6,705	1,563	846	1,817
Manufacturing: Total	14,550	896	2,445	2,855	5,452	932	..	..
Chemicals	5,004	282	887	1,068	2,718	..	-	..
Mechanical engineering	1,161	165	236	212	414	135	-	-
Electrical machinery	1,780	180	486	488	619	..	..	-
Transport	3,096	40	207	311	819	453	..	..
Aerospace	1,701	2	44	245	460	258	..	..
Other manufacturing	1,808	226	586	532	423	..	..	-
Services	5,660	1,729	1,017	684	1,039	535	118	538
Other: Total	675	19	89	221	214	96	37	-
Agriculture, hunting & forestry; Fishing	139	3	10	..	-	..	-	-
Extractive industries	206	1	47	29	130	-	-	-
Electricity, gas & water supply; Waste management	184	4	21	38	46	39	37	-
Construction	146	12	10	..	39	..	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

4 [See list for detailed breakdown of broad product groups](#)

	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	206	45	42	32	47	19	8	13
Manufacturing: Total	119	14	25	22	35	10	..	..
Chemicals	33	2	7	8	15	..	-	..
Mechanical engineering	14	3	3	2	3	..	-	..
Electrical machinery	16	3	5	3	5	..	-	..
Transport	21	1	2	3	4	4	-	..
Aerospace	14	-	1	2	3	3	..	..
Other manufacturing	21	5	7	4	4	..	..	-
Services	78	30	14	8	11	7	1	..
Other: Total	9	-	4	2	2	1	-	-
Agriculture, hunting & forestry; Fishing	1	-	-	..	-	-	..	-
Extractive industries	1	-	-	-	1	-	-	-
Electricity, gas & water supply; Waste management	1	-	-	-	-	-	-	-
Construction	5	-	3	..	-	1	..	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

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

4 [See list for detailed breakdown of broad product groups](#)

**EXPENDITURE AND EMPLOYMENT ON R&D PERFORMED IN UK BUSINESSES:
BY COUNTRY OF OWNERSHIP OF BUSINESSES PERFORMING R&D, 2004 TO 2015**
CURRENT PRICES

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		Expenditure £ million												Employment full time equivalent in thousands													
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
TOTAL	DLBX	12,662	13,734	14,144	15,676	15,814	15,532	16,045	17,452	17,409	18,617 †	19,819	20,885	DLEI	150	146	147	158	151	151	154	159	162	179	194 †	206	
United Kingdom	GFWP	7,538	8,360	8,583	9,512	8,874	8,231	9,458	8,579	8,332	8,640 †	9,654	10,241	GFWO	95	91	89	94	83	82	94	88	88	97	110 †	119	
United States	GFWR	2,719	2,570	2,781	3,122	3,366	3,402	3,103	4,003	3,818	4,116 †	3,928	4,203	GFWQ	29	27	31	33	34	32	29	33	33	37	38 †	38	
Germany	GFWT	235	243	218	353	394	363	359	444	450	527 †	586	641	GFWs	3	3	2	4	4	4	4	3	4	4	4	5	
France	GFWV	643	870	1,025	692	688	784	747	1,022	971	645	663	652	GFWU	6	8	9	6	6	6	6	7	7	5	5	5	
Other EU	GFWX	762	877	878	1,159	1,142	1,242	1,190	1,204	1,438	1,773 †	2,067	2,106	GFWW	8	8	9	11	11	13	12	12	13	15	16	17	
Japan	GFWZ	263	284	225	303	378	409	363	468	470	581 †	531 †	599	GFWY	3	3	3	3	4	4	3	3	3	4	4	4	
Rest of the world	GFXB	503	529	435	536	972	1,100	826	1,732	1,929	2,334 †	2,390	2,442	GFXA	6	5	5	6	10	10	7	13	14	18	17 †	18	

Source: Office for National Statistics

1 [†] denotes earliest data revision.

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

3 FTE - Full time equivalent.

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£ million

	United Kingdom	Overseas	Total
TOTAL	10,241	10,645	20,885
Agriculture, hunting and forestry; Fishing	139
Extractive Industries	97	109	206
Food products and beverages; Tobacco products	194	228	423
Textiles, clothing and leather products	13	6	19
Pulp, paper and paper products; Printing; Wood and straw products	41	7	48
Refined petroleum products and coke oven products	147	32	178
Chemicals and chemical products	454	372	826
Pharmaceuticals	2,023	2,155	4,178
Rubber and plastic products	98	39	137
Other non-metallic mineral products	10	44	54
Casting of iron and steel	8	31	39
Non-ferrous metals	..	..	62
Fabricated metal products except machinery and equipment	74	47	122
Machinery and equipment	377	663	1,040
Computers and peripheral equipment	148	169	316
Electrical equipment	286	189	475
Consumer electronics and communication equipment	380	609	989
Precision instruments and optical products; photographic equipment	311	346	656
Motor vehicles and parts	326	2,377	2,703
Other transport equipment	31	62	93
Shipbuilding	298	2	300
Aerospace	1,012	689	1,701
Other manufactured goods	128	63	191
Sewerage, waste management, remediation activities	12	17	29
Electricity, gas and water supply	97	57	155
Construction	68	78	146
Wholesale and retail trade	166	50	215
Transport and storage, incl. postal and courier activities	41	8	49
Telecommunications	672	153	825
Miscellaneous business activities; Technical testing and analysis	753	352	1,104
Computer programming and information service activities	1,070	1,311	2,381
Research and development services	775	222	998
Public administration	61	27	87

Source: Office for National Statistics

1 .. denotes disclosive figures.

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

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		R&D expenditure (£ million)													R&D as a percentage of sales												
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Manufacturing: Total	DLDF	10,058	10,560	10,555	11,612	11,672	11,230	11,585	12,462	12,383	13,158 [†]	13,642	14,550	DLIQ	3.2	3.4	3.3	3.5	3.3	3.7	3.3	3.6	3.6	3.6	3.7 [†]	4.0	
Food products and beverages; Tobacco products	DLCP	258	276	314	328	303	290	306	366	364	437	431 [†]	423	DLJF	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.5	
Textiles, clothing and leather products	DLCQ	21	18	17	19	15	10	11	14	20	22	22	19	DLJG	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	
Pulp, paper and paper products; Printing; Wood and straw products	DLCT	40	52	55	53	56	26	28	21	28	48	48	48	DLJJ	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Refined petroleum products and coke oven products	DLCE	234	245	279	274	94	95	73	72	76	110 [†]	189	178	LDOP	-	-	-	-	-	8.5	6.0	5.7	7.9	11.1 [†]	23.5	23.9	
Chemicals and chemical products	DLCC	625	637	684	668	630	610	666	523	665	754 [†]	784	826	DLIT	2.6	2.7	2.7	2.7	2.7	3.0	3.0	2.3	3.0	3.4 [†]	3.6	3.9	
Pharmaceuticals	DLCD	3,239	3,374	3,521	3,935	4,354	4,424	4,673	4,914	4,208	4,039 [†]	3,855	4,178	DLIU	34.1	32.2	32.6	33.9	42.7	36.2	31.7	34.8	34.3	33.4 [†]	35.3	37.6	
Rubber and plastics	DLCR	63	55	90	79	78	62	80	97	105	99	127 [†]	137	DLJH	0.4	0.3	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.7	0.8	0.9	
Other non-metallic mineral products	DLCS	62	44	51	48	53	57	56	60	47	47	62 [†]	54	DLJI	0.6	0.4	0.5	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.4	
Casting of iron and steel	DL CJ	30	34	38	-	47	43	28	44	45	27	51	39	DLIZ	1.1	1.1	1.2	-	1.7	2.0	1.3	1.6	1.7	1.1	2.2	1.9	
Non-ferrous metals	DLCK	4	8	6	-	72	-	86	77	56	56	76	62	DLJA	0.1	0.2	0.1	-	1.3	-	1.8	1.5	1.3	1.3	1.9	1.6	
Fabricated metal products except machinery and equipment	DLCL	77	74	68	91	73	93	93	119	105	113	110	122	DLJB	0.4	0.4	0.3	0.4	0.3	0.5	0.4	0.5	0.5	0.5	0.4	0.5	
Machinery and equipment	DLCO	761	905	929	1,033	790	873	809	973	997	1,043 [†]	1,011	1,040	DLJE	2.8	3.6	3.6	3.7	2.5	3.6	2.9	3.2	3.2	3.4	3.2	3.7	
Computers and peripheral equipment	DLCN	53	92	67	83	123	151	157	180	187	260 [†]	276	316	DLJD	1.2	2.2	2.6	4.3	7.0	8.5	9.2	9.9	9.5	12.3 [†]	13.8	16.1	
Electrical equipment	DLCA	406	394	458	547	577	577	513	509	463	398	461 [†]	475	DLIR	4.2	4.1	4.5	5.3	4.5	5.3	4.2	3.9	3.7	3.3	3.8	4.0	
Consumer electronics and communication equipment	DLCB	763	788	748	667	700	547	474	511	689	877 [†]	912	989	DLIS	9.4	10.7	9.7	11.0	20.9	14.3	11.6	17.0	26.0	35.1 [†]	42.0	46.7	
Precision instruments and optical products; photographic equipment	DLCM	486	475	462	544	591	498	490	599	644	617 [†]	670	656	DLJC	5.6	5.1	4.8	5.6	5.9	5.1	4.7	5.6	5.9	5.4 [†]	5.7	5.6	
Motor vehicles and parts	DLCG	789	744	754	933	1,156	1,039	1,237	1,525	1,763	2,101 [†]	2,364	2,703	DLIW	2.3	2.1	2.2	2.6	3.2	3.9	3.4	4.0	4.5	4.7 [†]	5.0	5.6	
Other transport equipment	DL CI	23	21	25	28	30	-	46	50	48	64 [†]	78	93	DLIY	0.9	1.1	1.4	0.7	0.6	-	1.1	1.1	1.0	1.3	1.6	1.9	
Shipbuilding	DLCH	125	127	134	136	157	173	185	226	229	233	265 [†]	300	DLIX	5.7	10.3	10.3	9.1	4.5	4.8	4.6	5.6	4.6	4.0 [†]	5.3	5.5	
Aerospace	DLCF	1,965	2,169	1,832	2,070	1,732	1,466	1,437	1,438	1,511	1,639	1,666 [†]	1,701	DLIV	16.4	22.7	18.9	18.6	10.3	7.8	8.0	7.7	7.4	6.9	6.9	6.6	
Other manufactured goods	DLCU	33	26	24	27	36	98	136	146	133	175 [†]	183	191	DLJK	0.3	0.3	0.3	0.2	0.2	0.6	0.9	0.9	0.8	1.0	1.0	1.0	

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

3 [†] denotes earliest data revision.

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

5 R&D intensity in each product group is estimated by dividing the R&D expenditure of the product group by the sales of the associated manufactured products derived from the Products of the European Community (PRODCOM) Survey.

6 Total sales is a narrower measure than total turnover as used in the estimates in table 28 (R&D Intensity in services) so the two measures are not directly comparable.

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**EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES:
BY SMALL AND MEDIUM SIZE ENTERPRISES, 2004 TO 2015**

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CURRENT PRICES

£ million

	Total Expenditure	250 employees and over	0 to 249 employees	of which, SME
	DLBX	SFAA	SEZU	SEZY
2004	12,662	10,578	2,083	373
2005	13,734	11,515	2,220	456
2006	14,144	12,126	2,019	336
2007	15,676	12,626	3,050	405
2008	15,814	12,991	2,823	342
2009	15,532	12,569	2,962	543
2010	16,045	12,761	3,284	556
2011	17,452	13,656	3,797	620
2012	17,409	12,748	4,661	763
2013	18,617 [†]	14,366 [†]	4,251 [†]	656 [†]
2014	19,819	15,188	4,631	766
2015	20,885	16,090	4,795	976

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 [†] denotes earliest data revision.

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

SIC	Industry description	2010	2011	2012	2013	2014	2015
01-03	Agriculture, forestry and fishing	14	12	14	10	13	15
05-09	Mining and quarrying	137	174	143	183	183	159
10	Manufacture of food products	136	212	197	243	243	242
11-12	Manufacture of beverages and tobacco products	95	80	84	96	87	16
13	Manufacture of textiles	9	24	27	17	17	14
14	Manufacture of wearing apparel	1	1	3	3	3	3
15	Manufacture of leather and related products	1	1	2	3	2	2
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	3	1	4	7	7 [†]	6
17	Manufacture of paper and paper products	9	9	7	11	12	12
18	Printing and reproduction of recorded media	5	5	11	19	22	26
19	Manufacture of coke and refined petroleum products [†]	..	89
20	Manufacture of chemicals and chemical products	319	284	262	346	366	312
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	474	528	477	436	400	388
22	Manufacture of rubber and plastic products	68	81	100	95	109 [†]	134
23	Manufacture of other non-metallic mineral products	41	41	34	34	49 [†]	42
24	Manufacture of basic metals	49	88	63	44	71	59
25	Manufacture of fabricated metal products, except machinery and equipment	594	551	495	530 [†]	464	478
26	Manufacture of computer, electronic and optical products	835	982	987	1,022	1,002 [†]	985
27	Manufacture of electrical equipment	165	152	170	157	181	190
28	Manufacture of machinery and equipment n.e.c.	607	634	764	727	747	869
29	Manufacture of motor vehicles, trailers and semi-trailers	1,039	1,296	1,478	1,748 [†]	2,039	2,359
30	Manufacture of other transport equipment	1,158	1,198	1,397	1,439	1,558 [†]	1,604
31	Manufacture of furniture	33	50	36	51	38 [†]	40
32	Other manufacturing	143	117	104	126	123 [†]	173
33	Repair and installation of machinery and equipment	156	77	83	105	131 [†]	158
35	Electricity, gas, steam and air conditioning supply	13	21	60	85	82 [†]	91
36	Water collection, treatment and supply	9	6	10	13	30 [†]	31
37-39	Sewerage, waste management, remediation activities	7	7	11	15	12	17
41-43	Construction	45	46	60	95 [†]	103	89
45-47	Wholesale and retail trade; repair of motor vehicles and motorcycles	760	736	671	691	703 [†]	912
49	Land transport and transport via pipelines	2	6	..	2	3	8
50	Water transport	-	-	-	-	-	..
51	Air transport	-	..	-	..	..	..
52-53	Warehousing and support activities for transportation; postal and courier activities	27	24	..	14	20 [†]	24
55-56	Accommodation and food service activities	19	27	27	16	29	38
58	Publishing activities	44	61	52	88	84 [†]	82
59	Motion picture, video and television programme production, sound recording and music publishing activities	18	17	11	22	27	25
60	Programming and broadcasting activities	3	6	7	11	.. [†]	..
61	Telecommunications	826	719	701	729 [†]	798	713
62	Computer programming, consultancy and related activities	1,109	1,523	1,627	1,646 [†]	1,649	1,724
63	Information service activities	45	44	198	139 [†]	169	200
64-66	Financial and insurance activities	308	302	253	363 [†]	396	394
68	Real estate activities	10	10	12	17	22	20
69	Legal and accounting activities	19	12	15	28	31	39
70	Activities of head offices; management consultancy activities	54	51	69	86	112	139
71	Architectural and engineering activities	748	885	1,399	1,479 [†]	1,555	1,633
72	Scientific research and development	5,510	5,863	4,700	4,878 [†]	4,982	5,316
73	Advertising and market research	15	14	15	19	29	33
74	Other professional, scientific and technical activities	7	25	29	90	96 [†]	91
75	Veterinary activities	1	..	1	1	2	2
77	Rental and leasing activities	21	55	55	145 [†]	159	183
78	Employment activities	12	11	15	21	31	32
79	Travel agency, tour operator and other reservation service and related activities	7	6	8	17	28	13
80	Security and investigation activities	3	3	5	7	9	15
81	Services to buildings and landscape activities	7	11	11	12	18	23
82	Office administrative, office support and other business support activities	80	102	178	98	219	200
84-85	Public administration and defence; compulsory social security and education	..	..	11	13	16 [†]	10
86-88	Human health and social work activities	25	18	17	28 [†]	36	53
90-93	Arts, entertainment and recreation	152	192	181	190 [†]	175	161
94-99	Other service activities; Activities of households as employers and of extraterritorial organisations and bodies	27	25	25	35	27 [†]	29
TOTAL		16,045	17,452	17,409	18,617[†]	19,819	20,885

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

3 [†] denotes earliest data revision.

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

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	R&D expenditure (£ million)						R&D as a percentage of turnover					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Services: Total	4,120	4,563	4,539	4,898 [†]	5,494	5,660	0.2	0.2	0.2	0.2	0.2	0.2
Wholesale and retail trade	177	242	166	167	238 [†]	215	-	-	-	-	-	-
Transport and storage, incl. postal and courier activities	17	18	..	35	38	49	-	-	..	-	-	-
Telecommunications	1,129	1,037	875	840 [†]	959	825	1.7	1.6	1.4	1.3	1.5	1.3
Miscellaneous business activities; Technical testing and analysis	583	570	864	994 [†]	1,104	1,104	0.1	0.1	0.1	0.2 [†]	0.2	0.2
Computer programming and information service activities	1,526	1,847	2,067	1,977 [†]	2,229	2,381	2.2	2.5	2.6	2.3 [†]	2.4	2.4
Research and development services	618	783	482	772 [†]	817	998	3.8	4.9	3.0	5.0 [†]	5.3	6.1
Public administration	70	67	..	113 [†]	108	87	-	-	..	-	-	-

Source: Office for National Statistics

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

2 .. denotes disclosive figures.

3 [†] denotes earliest data revision.

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

5 R&D intensity in each product group is estimated by dividing the R&D expenditure of the product group by the turnover of the associated industries, derived from the Annual Business Survey (ABS).

6 Total turnover is a wider measure than product sales as used in the estimates in table 25 (R&D Intensity in manufactured products) so the two measures are not directly comparable.

CONSTRUCTION OF BROAD PRODUCT GROUPS

Broad Product Group	Product Group Code and Title
Manufacturing: Total	
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 manufacturing	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	
Agriculture, hunting and forestry; Fishing	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