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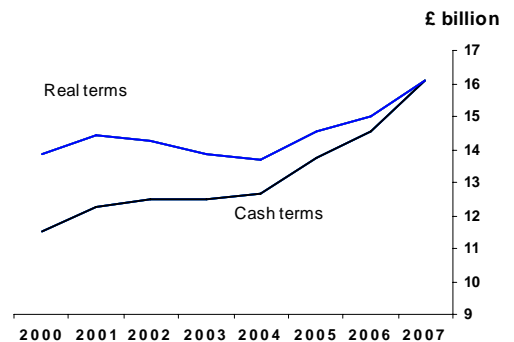


# UK Business Enterprise Research and Development 2007

In 2007, in cash terms and compared with 2006:

- Total R&D expenditure increased by 11 per cent to £16.1 billion
- Civil R&D expenditure increased by 11 per cent to £13.7 billion
- Defence R&D expenditure increased by 10 per cent to £2.4 billion

R&D expenditure 2000 - 2007



In 2007, in real terms (2007 prices) and compared with 2006:

- Total expenditure increased by 7 per cent from £15 billion
- Civil expenditure increased by 7 per cent from £12.8 billion

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**Next publication date**  
To be announced

## Expenditure on R&D performed in UK businesses in cash and real terms, 2003 to 2007

	<i>£ billion</i>					<i>percentage change</i>
	2003r	2004r	2005r	2006r	2007	2006-2007
<b>In cash terms</b>						
Civil	10.8	10.6	11.3	12.4	13.7	+11
Defence	1.7	2.0	2.4	2.2	2.4	+10
Total	12.5	12.7	13.7	14.6	16.1	+11
<b>In real terms (2007 prices)</b>						
Civil	12	11.5	11.9	12.8	13.7	+7
Defence	1.9	2.2	2.6	2.2	2.4	+7
Total	13.9	13.7	14.5	15	16.1	+7

r denotes revised figures

## UK Business Enterprise R&D 2007

### Expenditure on R&D performed in UK businesses (Table 1)

In 2007, £16.1 billion was spent on R&D performed within UK businesses – a rise of 11 per cent at cash (current) prices compared with the 2006 total. Total R&D expenditure in 2007 represented 1.1 per cent of GDP, in line with recent years.

### Product groups (Table 2)

The product group with the largest R&D expenditure was pharmaceuticals with expenditure in 2007 at £4.5 billion, 28 per cent of all spending. Other product groups reporting significant R&D expenditure were aerospace, which accounted for £2.1 billion (13 per cent) and post and telecommunications, which reported £1.6 billion (10 per cent).

### Sources of funds for R&D (Table 3 and Table 6)

Funding of R&D from businesses' own funds was £10.2 billion in 2007 (64 per cent of the total). Funding of R&D in UK businesses from abroad was £3.7 billion in 2007 (23 per cent of the total). Funding of R&D in UK businesses by the UK Government was £1.1 billion in 2007, 7 per cent of the total and predominantly in defence. The distribution of the sources of funds for business R&D in 2007 is shown in Chart 1. Table 6 shows the sources of funds broken down by civil and defence. The distribution of the source of funds for civil and defence R&D in 2007 is shown in Chart 4.

### Employment on R&D (Table 4)

The number of full time equivalent staff employed on R&D increased by 15,000, or 10 per cent, between 2006 and 2007. The number of scientists and engineers remained constant at 92,000 and accounted for 56 per cent of all the staff employed on R&D in 2007. The number of technicians increased by 9,000 while administrative staff increased by 7,000 between 2006 and 2007. This distribution is shown in Chart 2.

### **Civil and defence expenditure, by broad product group (Table 5)**

In real terms, both civil and defence R&D increased by 7 per cent from 2006. Within civil R&D expenditure, the manufacturing broad product group accounted for 72 per cent of the total and the services broad product group accounted for 26 per cent. Defence R&D continued to be dominated by the aerospace product group, followed by mechanical engineering and electrical machinery. The distribution of civil and defence R&D expenditure by broad product groups for 2007 is shown in Chart 3.

### **Expenditure on R&D by regional breakdown (Table 7)**

In 2007, 94 per cent of business R&D expenditure was carried out in England, a similar level to previous years. The UK regions with the largest R&D expenditure were all in England: the East of England accounted for 27 per cent of the total expenditure; South East accounted for 22 per cent and the North West accounted for 13 per cent. The regional breakdown for business R&D in 2007 is shown in Chart 5.

### **Additional information about this release**

This is the first year that a single release has been published, rather than an early First Release followed by the bulk of the analyses, covered by the title MA14 Business Monitor. The format is largely unchanged to preserve familiarity and make comparison easier.

Below is a link to the full set of data tables. A selection of key tables discussed in this release has been included from page 12.

**[http://www.statistics.gov.uk/downloads/theme\\_commerce/2007-BERD-datasets.pdf](http://www.statistics.gov.uk/downloads/theme_commerce/2007-BERD-datasets.pdf)**

## BACKGROUND NOTES

### Basic quality information

#### Key issues specific to this release

1. The R&D Survey is an annual sample survey based on a continually updated register of R&D performers.

The survey of Business Enterprise Research and Development is conducted by the Office for National Statistics (ONS). Approximately 4,750 questionnaires were sent to businesses known to perform R&D; this included around 450 of the largest R&D spenders, which accounted for 84 per cent of the 2007 total R&D expenditure figure. Smaller R&D performers and others believed to be performing R&D were selected using various sampling fractions. Industry product group and company employment were the stratification variables. Completed questionnaires were returned by 4,325 businesses, representing a response rate of 91 per cent.

#### Link to Summary Quality Report

2. A Summary Quality Report for this publication is available at:  
<http://www.ons.gov.uk/about-statistics/methodology-and-quality/quality/qual-info-economic-social-and-bus-stats/index.html>  
This report describes, in detail, the intended uses of the statistics presented in this publication, their general quality and the methods used to produce them.

#### Common pitfalls in interpreting this series

#### Related information

3. This First Release now includes links to the tables previously included in a separate publication called the MA14 Business Monitor:  
[http://www.statistics.gov.uk/downloads/theme\\_commerce/2007-BERD-datasets.pdf](http://www.statistics.gov.uk/downloads/theme_commerce/2007-BERD-datasets.pdf)

#### Definition of R&D

4. R&D and related concepts follow internationally agreed standards defined by the Organisation for Economic Cooperation and Development (OECD), published 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".

### Notes on tables

5. 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. On tables where disclosure occurs footnotes have been added.

### Coverage

6. The results from the Business Enterprise Research and Development survey are based on the whole UK economy. This survey excludes R&D funded by UK businesses that is performed overseas or in other sectors of the UK economy (such as higher education; government departments, agencies and non-departmental public bodies; local authorities; and private non-profit organisations). Public corporations are counted as business enterprises.

### Product groups

7. For the smaller R&D performers no product group data are collected. However, the businesses' SIC codes are known from the Inter-departmental Business Register (IDBR) and the assumption is made that the R&D expenditure is for the product group corresponding to that SIC. This approach must be regarded as approximate since in practice an individual business can perform R&D for a range of product groups.
8. 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. Services includes R&D consultancy and other services in support of the manufacturing industry.

### Employment

9. Employment is calculated by respondents on the basis of 'full-time equivalent' staff averaged over the year. The categories of employment used are:
  - Researchers – 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 – support staff including skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects.

## Sample design and estimation

### Overview

10. The sample and survey results only cover 'business enterprises' as defined in the 'Frascati' Manual. This excludes government organisations, higher education establishments and charities.

R&D surveys pose special problems of survey design and estimation. R&D takes place in only a small proportion of businesses but a comprehensive list of who these businesses are does not exist. A simple random sample of the business population would not be suitable for an R&D survey because many of the sample businesses would not undertake R&D, and many significant R&D performers would be missed in such a sample.

The solution is to implement a stratified sample design. The stratification variable is the known level of R&D performance of the businesses. This information is gained from the previous year's survey and extra information from various sources, for example, the Department for Business, Enterprise and Regulatory Reform (BERR) and filter questions on other ONS surveys. Two different types of questionnaires are used. A 'long form', requesting a full detailed breakdown of R&D activity, is despatched to those business enterprises who in the previous survey had returned or estimated an R&D expenditure figure of greater than £3m, together with businesses newly identified as very large R&D spenders. Businesses identified as smaller R&D performers are sampled using various sampling fractions. The selected businesses are sent a shorter version of the R&D questionnaire which requests just the R&D expenditure and employment totals. The detailed information for these businesses is estimated by using the data received on the long forms. The totals of the unsampled businesses are estimated using ratio estimation with business employment as the auxiliary variable, a variable held on the ONS business IDBR.

### Sample information

11. The 2007 survey used individual businesses as reporting units. For the purpose of the survey, businesses were grouped into three strata:

**(1)**

- Businesses responding to the 2006 Business Enterprise R&D survey who returned or had estimated a total R&D expenditure value of greater than £3m.
- Businesses newly identified as large R&D spenders

**(2)**

- Businesses reporting less than £3m R&D expenditure in the 2006 survey, or 2005 survey if they were not selected last year.
- Businesses reporting positively to R&D filter questions in other ONS surveys.
- Other identified potential R&D performers.

**(3)**

- The remainder of the UK businesses.

The businesses making up strata (1) and (2) formed a register of R&D performers. Strata (3) were not included as they were assumed to have zero R&D expenditure. The sample for the 2007 survey was then derived from the R&D performers register.

The businesses in stratum (1) were all selected and therefore all received a long form. There were approximately 450 long forms despatched.

Businesses in stratum (2) were sampled using a stratified sampling scheme where the stratification variables were industry product group and size band. Three size bands were defined using business employment as it appears on the IDBR, and each business was assigned to one of 33 distinct product groups. Businesses with employment greater than 399 were all selected and classed as size band 1. The second size band contained those businesses with employment between 100 and 399. The sampling ratio for this size band was approximately 1 in 3. The third size band contained those businesses with employment of less than 100. These were sampled with a 1 in 4 sampling ratio, although conditional on a minimum sample size of ten in each industry group/size band 'cell'. With three size bands and 33 industry groups, 99 'cells' were created in all. Approximately 4,300 selected businesses in this stratum were sent a short form.

## Estimation

12. Estimation is required in two areas:

### *Long form non-responders*

Long form businesses who did not respond, had estimates constructed using information from all those responders in the same product group who returned forms for the current year and previous year. The ratio of this year's results to last year's results was calculated for these businesses and then applied to the non-responders' 2006 figure. This gave a 2007 estimate for the non-responder.

### *Non-responding and unsampled short form businesses*

In stratum (2), non-responding businesses were treated the same as unsampled businesses. The R&D expenditure total was estimated separately for each cell using ratio estimation with company employment as the auxiliary variable. This involved calculating the ratio of the 2007 responders total in-house expenditure to the responders total employment and applying it to the sum of the non-responders/unsampled total employment figures.

The long form detail for the businesses in stratum (2) was estimated using the 2007 long form detail returned from the large R&D spenders. This was done by calculating the long form detailed variable breakdowns as proportions of the totals and applying these proportions to the totals estimated for the businesses in stratum (2). This methodology means that it has not been necessary to go back to past data when estimating this year's results.

## Revisions to past data

13. The 2001 to 2006 data have been revised where necessary to take account of company misreporting.

One indication of the reliability of the key indicators in this release can be obtained by monitoring the size of revisions. The table overleaf 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).

The revisions table covers estimates of the UK's business enterprise expenditure on R&D first published from November 2001 (for 2000) to November 2005 (for 2004).

	Value in latest period	Average over the last 5 years (mean revision)	Revisions between first publication and estimates three years later Average over the last 5 years without regard to sign (average absolute revision)
<i>£ million</i>			
Expenditure on R&D performed by UK (businesses)	16,111	-568	568

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.

#### Time period to which the results relate

- Respondents were asked to make a return for the calendar year 2007 or the nearest 12 month period for which figures were available. Data for all years published in this First Release were collected on the same basis.

#### Discontinuities in data

- On 1 July 2001, the government research agency, the Defence Evaluation and Research Agency (DERA) was disestablished and two new organisations were created. Around a quarter of DERA remained within the Ministry of Defence (MOD) as a government agency whilst the remaining three-quarters became a private limited company (PLC). As a PLC, its R&D activities from 2001 are classified and included within the Business Enterprise sector.

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

#### Analysis of R&D Expenditure by SMEs (Small and medium size enterprises)

- A table giving estimates of R&D expenditure by SMEs has been included (Table 26). The SME definition used is that under the European Commission Recommendation (96/280/EC) of 3 April 1996, 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 ONS IDBR. Caution should therefore be used in making comparisons over time.

### Regional data

17. The businesses receiving the long form (stratum (1)) account for approximately 84 per cent of the total expenditure. Each business is asked to name all the sites at which the business performed R&D, and to allocate the total expenditure figure of the business to the sites on a percentage breakdown basis. Regional data for the businesses within stratum (2), which account for the remaining 16 per cent of total expenditure, all have a value estimated by grossing up over all three size bands using county region codes from the business register of R&D performers. Aggregating is done at broad product group and county level. This procedure is used to produce Government Office Regions (GOR) regional estimates.

### Standard errors

18. It is possible to calculate the standard error for each detailed product group, as a measure of sampling error. To illustrate this, the total expenditure for product group H (Pharmaceuticals) is £4,465m. The calculated standard error, as shown in Table 25, is £36m. The standard error is then used to interpret the level estimate of £4,465m, for example as follows:

(a) There are approximately two chances in three that the real value falls within the range £4,429m to £4,501m i.e. (£4,465 +/- one standard error)

(b) There are approximately nineteen chances in twenty that the real value lies within the range £4,393m to £4,537m i.e. (£4,465m +/- two standard errors)

The estimates in this publication are based on a stratified sample drawn from the population of businesses known to be actual or likely R&D performers. As with any sample survey, the R&D inquiry 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 in ensuring that businesses adhere to Frascati R&D definitions, non-sampling errors could be sizeable for the R&D inquiry.

### **Symbols used in the tables**

19. ‘..’ denotes disclosive figures  
‘-’ denotes value too small to display  
‘r’ revised figures

### **Publication Policy**

20. Details of the policy governing the release of new estimates are available from the press office. Also available is a list of the names of those given pre-publication access to the contents of this release.
21. **National Statistics** are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference. © Crown Copyright 2009.

# 1 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: CASH AND REAL TERMS AND AS A PERCENTAGE OF GDP, 2000 TO 2007

		£million							
		2000	2001	2002	2003	2004	2005	2006	2007
In cash terms	<b>DLBX</b>	11 510	12 239	12 484	12 505	12 662	13 734	14 561	16 111
In real terms (2007 prices)		13 859	14 415	14 245	13 873	13 675	14 536	15 007	16 111
Current prices GDP	<b>DLHT</b>	989 552	1 031 458	1 092 056	1 156 815	1 211 978	1 268 395	1 344 308	1 420 607
As a % of GDP		1.2	1.2	1.1	1.1	1.0	1.1	1.1	1.1

2007 = 100

Source: National Statistics

	2000	2001	2002	2003	2004	2005	2006	2007
GDP deflator used to convert cash terms to real terms	83.1	84.9	87.6	90.1	92.6	94.5	97.0	100.0

## 2 EXPENDITURE ON R&D PERFORMED IN UK BUSINESSES: DETAILED PRODUCT GROUPS, 2000 TO 2007

		£million								% of total
		2000	2001	2002	2003	2004	2005	2006	2007	2007
<b>TOTAL</b>	<b>DLBX</b>	11 510	12 239	12 484	12 505	12 662	13 734	14 561	16 111	100
Agriculture, hunting and forestry; Fishing	DLBY	135	122	147	136	..	..	88	..	..
Extractive Industries	DLBZ	46	39	45	41	36	59	59	77	0.5
Food products and beverages; Tobacco products	DLCP	264	285	269	256	258	276	314	350	2.2
Textiles, clothing and leather products	DLCQ	29	22	19	20	21	18	17	25	0.2
Pulp, paper and paper products; Printing and publishing; Wood and straw products	DLCT	38	38	44	45	40	52	55	63	0.4
Refined petroleum products and coke oven products; Processing of nuclear fuel	DLCE	182	239	247	258	234	245	279	313	1.9
Chemicals, man-made fibres	DLCC	682	620	599	614	625	637	684	660	4.1
Pharmaceuticals, medical chemicals and botanical products	DLCD	2 846	3 079	3 169	3 127	3 239	3 374	3 893	4 465	27.7
Rubber and plastic products	DLCR	54	49	60	65	63	55	90	63	0.4
Other non-metallic mineral products	D LCS	..	45	51	56	62	44	51	54	0.3
Casting of iron and steel	DLCJ	..	28	29	29	30	34	38	..	..
Non-ferrous metals	DLCCK	21	26	16	4	4	8	6	8	-
Fabricated metal products	DLCCL	73	68	90	65	77	74	68	84	0.5
Machinery and equipment	DLCO	703	742	780	662	761	905	929	1 017	6.3
Office machinery and computers	DLCN	113	95	87	55	53	92	67	79	0.5
Electrical machinery and apparatus	DLC A	422	354	372	360	406	394	458	512	3.2
Radio, television and communication equipment	DLCB	1 024	1 069	890	871	763	788	748	654	4.1
Precision instruments	DLCM	480	587	532	476	486	475	462	514	3.2
Motor vehicles and parts	DLCG	864	898	916	894	789	744	754	945	5.9
Other transport equipment	DLCI	158	42	29	22	23	21	25	29	0.2
Shipbuilding and repairs	DLC H	72	..	..	..	125	127	134	..	..
Aerospace	DLCF	1 091	1 311	1 352	1 643	1 965	2 169	1 832	2 070	12.8
Furniture; Other manufactured goods	DLCU	27	40	35	35	33	26	24	27	0.2
Recycling	DLCV	1	..	3	2	2	1	1	3	-
Electricity, gas and water supply	DLCW	160	41	46	36	21	15	21	35	0.2
Construction	DLCX	34	30	35	27	..	..	36	41	0.3
Wholesale and retail trade	DLDE	..	55	74	53	76	60	70	42	0.3
Transport and storage	DLCY	..	12	..	..	12	8	16	..	..
Post and telecommunications	DLCZ	674	751	726	637	639	1 164	1 346	1 550	9.6
Miscellaneous business activities; Technical testing and analysis	DLDC	131	303	363	308	349	438	399	520	3.2
Computer and related activities	DLDB	611	709	866	1 207	1 060	1 069	1 425	1 466	9.1
Research and development services	DLDA	428	441	446	404	211	179	122	125	0.8
Public administration	DLDD	12	17	34	11	31	32	52	..	..

Source: National Statistics

1 .. denotes disclosive figures.

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

### 3 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES: 2000 TO 2007

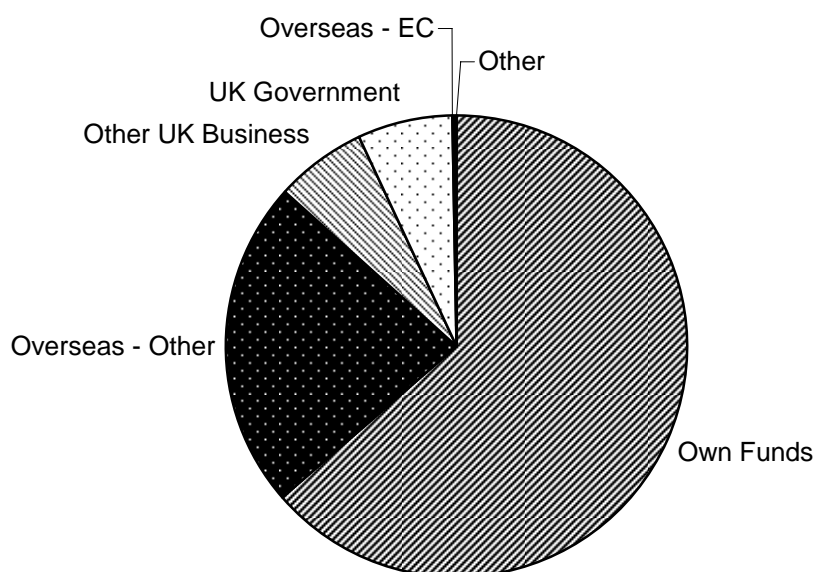
		2000	2001	2002	2003	2004	2005	2006	2007
<b>£ MILLION</b>									
<b>TOTAL</b>	<b>DLBX</b>	11 510	12 239	12 484	12 505	12 662	13 734	14 561	16 111
UK Government	<b>DLDO</b>	1 013	946	881	1 165	1 290	1 101	1 071	1 058
<b>Overseas total</b>	<b>DLHK</b>	2 470	3 311	3 699	3 548	2 958	3 584	3 269	3 738
of which:									
EC Programmes	<b>DLDQ</b>	101	80	134	90	42	73	55	37
All other funding from abroad	<b>DLDS</b>	2 369	3 231	3 565	3 459	2 917	3 512	3 215	3 701
Other UK Business	<b>DLDU</b>	779	749	848	1 105	1 056	1 272	1 166	1 049
Own funds	<b>DLDW</b>	7 244	7 228	7 053	6 685	7 351	7 775	9 053	10 249
Other	<b>DLDY</b>	3	4	4	3	6	2	2	16
<b>PERCENT</b>									
<b>TOTAL</b>		100	100	100	100	100	100	100	100
UK Government		9	8	7	9	10	8	7	7
<b>Overseas total</b>		21	27	30	28	23	26	22	23
of which:									
EC Programmes		1	1	1	1	–	1	–	–
All other funding from abroad		21	26	29	28	23	26	22	23
Other UK Business		7	6	7	9	8	9	8	7
Own funds		63	59	56	53	58	57	62	64
Other		–	–	–	–	–	–	–	–

Source: National Statistics

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

2 'Other' includes funds from Private Non-Profit organisations and Higher Education establishments

**Chart 1 - Sources of funds for R&D performed in UK businesses, 2007**



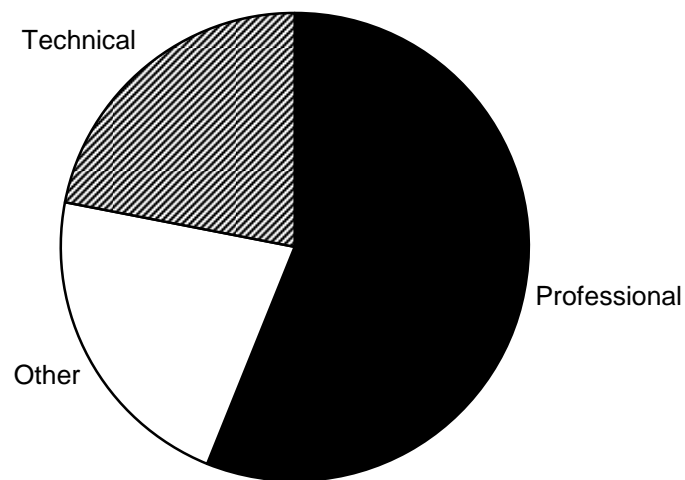
# 4 EMPLOYMENT ON R&D PERFORMED IN UK BUSINESSES: 2000 TO 2007

Full time equivalent in thousands

		2000	2001	2002	2003	2004	2005	2006	2007
<b>TOTAL</b>	<b>DLEI</b>	145	154	158	155	150	146	148	163
Scientists and engineers	<b>DLEJ</b>	86	91	96	99	94	94	92	92
Technicians, laboratory assistants and draughtsmen	<b>DLEK</b>	30	30	31	28	27	25	27	36
Administrative, clerical, industrial and other staff	<b>DLEL</b>	30	32	31	29	29	26	28	35
<b>As % of total employment</b>									
Scientists and engineers		59	59	61	64	63	64	62	56
Technicians, laboratory assistants and draughtsmen		21	19	20	18	18	17	18	22
Administrative, clerical, industrial and other staff		21	21	20	19	19	18	19	21

Source: National Statistics

**Chart 2 - Employment on R&D performed in UK businesses, 2007**



- Professional = Scientists and engineers
- Other = Admin, clerical, industrial and other staff
- ▨ Technical = Technicians, lab assistants and draughtsmen

# 5 EXPENDITURE ON CIVIL AND DEFENCE R&D PERFORMED IN UK BUSINESSES: BROAD PRODUCT GROUPS, 2002 TO 2007

£million

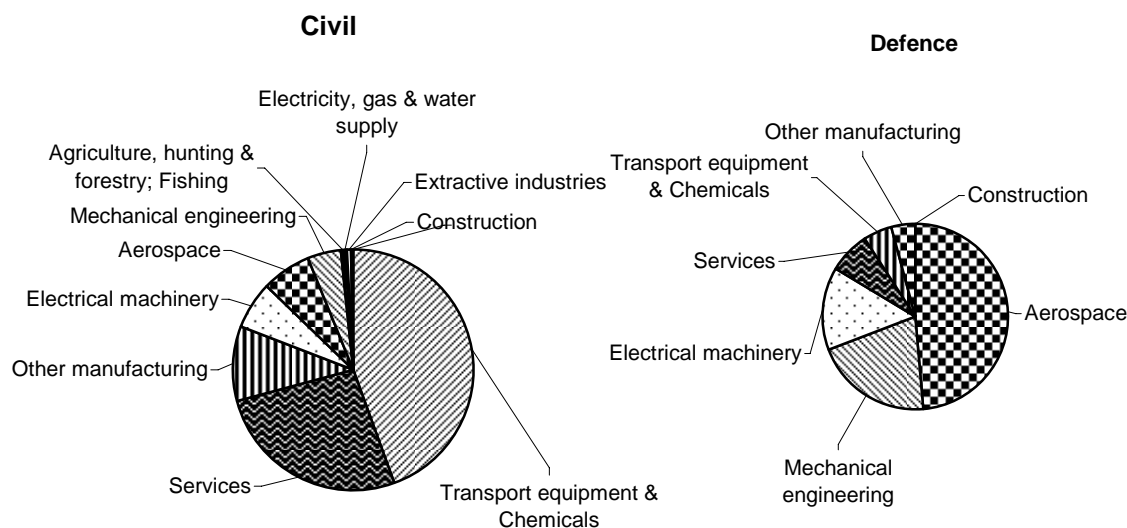
		Civil						Defence						
		2002	2003	2004	2005	2006	2007	2002	2003	2004	2005	2006	2007	
In cash terms														
<b>TOTAL</b>	<b>DLBV</b>	10 839	10 800	10 623	11 288	12 392	13 726	<b>DLBW</b>	1 645	1 706	2 039	2 446	2 169	2 385
<b>Manufacturing</b>	<b>DLEP</b>	8 173	8 098	8 180	8 270	8 935	9 893	<b>DLEX</b>	1 519	1 538	1 878	2 290	1 991	2 216
Chemicals	DLEQ	3 767	3 741	3 864	4 009	4 573	5 120	DLEY	..	..	..	..	..	..
Mechanical engineering	DLER	552	402	492	458	464	609	DLEZ	319	326	346	520	533	491
Electrical machinery	DLES	1 044	1 029	935	978	930	897	DLFA	305	258	287	296	343	348
Transport equipment	DLET	945	916	826	778	795	996	DLFB	..	..	..	..	..	..
Aerospace	DLEU	659	871	939	902	908	914	DLFC	693	772	1 026	1 267	924	1 156
Other manufacturing	DLEV	1 207	1 140	1 123	1 146	1 266	1 358	DLFD	97	105	108	90	70	100
<b>Services</b>	<b>DLEW</b>	2 393	2 461	2 217	2 792	3 252	3 605	<b>DLFE</b>	125	..	..	157	178	169
<b>Other: Total</b>	<b>LDIL</b>	273	240	226	225	205	227	<b>LDJJ</b>	1	..	..	-	-	-
Agriculture, hunting & forestry; Fishing	LDIN	147	136	..	..	88	74	LDJL	-	-	-	-	-	-
Extractive industries	LDIS	45	41	36	59	59	77	LDKF	-	-	-	-	-	-
Electricity, gas & water supply	LDJB	46	36	21	15	21	35	LDKG	-	-	-	-	-	-
Construction	LDJG	35	27	..	..	36	41	LDKS	1	..	..	-	-	-

		Civil						Defence						
		2002	2003	2004	2005	2006	2007	2002	2003	2004	2005	2006	2007	
In real terms (2007 prices)														
<b>TOTAL</b>		12 368	11 982	11 473	11 947	12 771	13 726		1 877	1 893	2 202	2 589	2 235	2 385
<b>Manufacturing</b>		9 326	8 984	8 835	8 753	9 208	9 893		1 733	1 706	2 028	2 424	2 052	2 216
Chemicals		4 298	4 150	4 173	4 243	4 713	5 120		..	..	..	..	..	..
Mechanical engineering		630	446	531	485	478	609		364	362	374	550	549	491
Electrical machinery		1 191	1 142	1 010	1 035	958	897		348	286	310	313	353	348
Transport equipment		1 078	1 016	892	823	819	996		..	..	..	..	..	..
Aerospace		752	966	1 014	955	936	914		791	856	1 108	1 341	952	1 156
Other manufacturing		1 377	1 265	1 213	1 213	1 305	1 358		111	116	117	95	72	100
<b>Services</b>		2 730	2 730	2 394	2 955	3 352	3 605		143	..	..	166	183	169
<b>Other: Total</b>		312	266	244	238	211	227		1	..	..	-	-	-
Agriculture, hunting & forestry; Fishing		168	151	..	..	91	74		-	-	-	-	-	-
Extractive industries		51	45	39	62	61	77		-	-	-	-	-	-
Electricity, gas & water supply		52	40	23	16	22	35		-	-	-	-	-	-
Construction		40	30	..	..	37	41		1	..	..	-	-	-

Source: National Statistics

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

**Chart 3 - Expenditure on civil and defence R&D performed in UK businesses, by broad product groups, 2007**



Note - Transport equipment & Chemicals have been combined to prevent disclosive data.

# 6 SOURCES OF FUNDS FOR R&D PERFORMED IN UK BUSINESSES: CIVIL AND DEFENCE, 2002 TO 2007

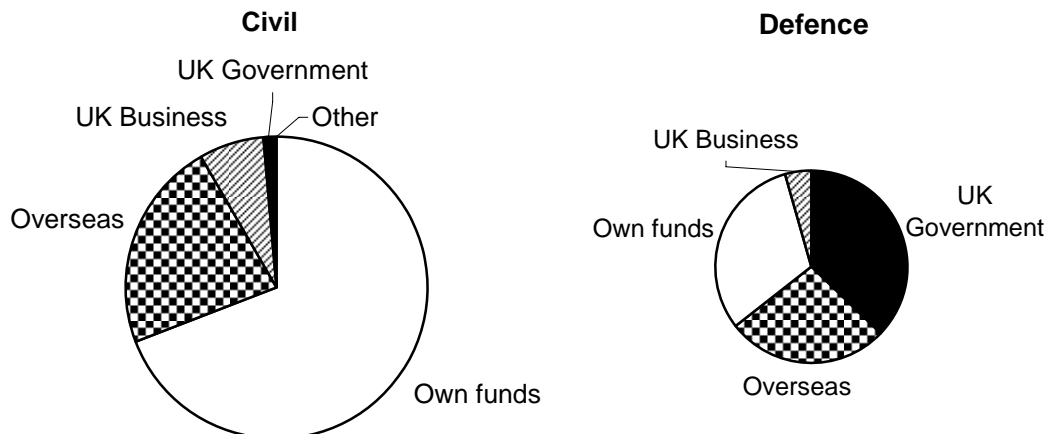
£million

		Civil						Defence						
		2002	2003	2004	2005	2006	2007	2002	2003	2004	2005	2006	2007	
UK Government	DLFG	188	386	162	156	161	168	DLFN	693	778	1 128	945	910	890
<b>Overseas total</b>	<b>DLHS</b>	<b>3 148</b>	<b>2 980</b>	<b>2 440</b>	<b>2 656</b>	<b>2 693</b>	<b>3 090</b>	<b>DLIF</b>	<b>551</b>	<b>568</b>	<b>518</b>	<b>928</b>	<b>576</b>	<b>648</b>
of which:														
EC Programmes	DLFH	134	90	42	73	55	36	DLFO	-	-	-	-	-	1
All other funding from abroad	DLFI	3 014	2 890	2 398	2 583	2 639	3 054	DLFP	551	568	518	928	576	647
Other UK Business	DLFJ	752	1 024	988	1 147	1 055	945	DLFQ	..	81	68	125	111	..
Own	DLFK	6 747	6 407	7 027	7 326	8 481	9 508	DLFR	306	278	325	449	572	741
Other	DLFL	4	3	6	2	2	15	DLFS	..	-	-	-	-	..
<b>TOTAL</b>	<b>DLEV</b>	<b>10 839</b>	<b>10 800</b>	<b>10 623</b>	<b>11 288</b>	<b>12 392</b>	<b>13 726</b>	<b>DLEW</b>	<b>1 645</b>	<b>1 706</b>	<b>2 039</b>	<b>2 446</b>	<b>2 169</b>	<b>2 385</b>

Source: National Statistics

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

**Chart 4 - Source of funds for R&D performed  
in UK businesses, civil and defence, 2007**



# 7 BREAKDOWN OF R&D PERFORMED IN UK BUSINESSES BY GOVERNMENT OFFICE REGION: EXPENDITURE AND EMPLOYMENT, 2005 TO 2007

		Expenditure £million			% of total	Employment FTE in thousands			
		2005	2006	2007	2007	2005	2006	2007	
<b>United Kingdom</b>	DLBX	13 734	14 561	16 111	100	DLEI	146	148	163
<b>England</b>	DLKI	12 847	13 728	15 194	94.3	DLKJ	133	136	150
North East	DLJO	289	292	310	1.9	DLJZ	3	3	4
North West	DLJT	1 892	1 623	2 150	13.3	DLKE	15	16	19
Yorkshire and the Humber	DLJP	344	384	417	2.6	DLKA	6	6	7
East Midlands	DLJQ	1 006	985	1 053	6.5	DLKB	11	11	13
West Midlands	DLJN	721	931	975	6.1	DLJY	12	13	14
East of England	DLJR	3 718	3 948	4 350	27.0	DLKC	29	26	31
London	DLKL	552	962	1 093	6.8	DLKM	8	10	10
South East	DLJS	3 125	3 369	3 582	22.2	DLKD	36	37	38
South West	DLJM	1 201	1 232	1 262	7.8	DLJX	13	13	14
<b>Wales</b>	DLJU	232	216	227	1.4	DLKF	3	3	3
<b>Scotland</b>	DLJV	506	461	513	3.2	DLKG	7	6	7
<b>Northern Ireland</b>	DLJW	148	157	177	1.1	DLKH	3	3	3

Source: National Statistics

1 FTE - Full Time Equivalents

**Chart 5 - Breakdown of R&D performed in UK businesses by Government Office region, 2007**

