

Gross Expenditure on Research and Development Scotland 2010



A National Statistics Publication For Scotland

28 March 2012

This annual publication presents information on research and development (R&D) undertaken by the business, higher education and government sectors in Scotland in 2010 as well as revisions to previously published data for earlier years. The majority of data in this publication come from surveys conducted by the Office for National Statistics (ONS).

Further information on Scottish R&D activity and the full set of tables are available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Business/RD>

Information from the Gross Expenditure on R&D (GERD) publication is used by the Scottish Government to monitor performance and inform policies. Some of the external users of R&D statistics published by the Scottish Government include the Enterprise Networks and Local Authorities.

This publication provides information on the National Indicator to Increase R&D Spending in the Scottish Government's National Performance Framework¹. The indicator compares Scotland's GERD as a percentage of GDP with the equivalent average figure for the EU 27.

GROSS EXPENDITURE ON RESEARCH AND DEVELOPMENT

Gross Expenditure on R&D (GERD) comprises that undertaken by the Business (BERD), Higher Education (HERD) and Government (GoveRD) sectors.

KEY POINTS

- **GERD** in Scotland decreased between 2009 and 2010. Scottish GERD was £1,890 million in 2010, a decrease in real terms of 3.9% (£76 million) since 2009.
- The decrease in GERD over the latest year is a result of reduced expenditure across all three sectors:
 - **BERD**: £622 million in 2010, a 3.9% (£25 million) decrease in real terms since 2009.
 - **HERD**: £968 million in 2010, a 4.0% (£41 million) decrease in real terms since 2009.
 - **GoveRD**: £300 million in 2010, a 3.3% (£10 million) decrease in real terms since 2009.
- The gap between Scottish R&D spending and EU R&D spending widened over the latest year. In 2010, Scottish GERD was 1.58% of GDP; compared to 1.91% for the EU. The gap in 2010 was 0.34 percentage points², compared to a gap of 0.25 percentage points in 2009.
- In line with the long term trends, Scotland continues to perform well on HERD but less so on BERD. In 2010, in terms of HERD expenditure as a percentage of GDP, Scotland came top of the UK countries/regions and came third highest internationally. Whereas, Scotland's BERD as a percentage of GDP ranked in the bottom quartile of OECD countries that reported in 2010.

¹ Information on the range of targets and indicators which comprise the National Performance Framework can be found on the Scotland Performs website: <http://www.scotland.gov.uk/About/scotPerforms>

² Note that the gap is calculated on unrounded data.

Background

During the summer of 2008 and into 2009, the global economy experienced two powerful shocks: the emergence of an international financial crisis and a severe commodity-price spike. Scotland, like most other developed economies, was not immune to the impacts of the global downturn. The Scottish economy entered recession in mid-2008 before returning to growth in late 2009. The Government Economic Strategy³ sets out the measures that the Scottish Government is taking to accelerate Scotland's economic recovery and support jobs.

The Government Economic Strategy underlines the importance of innovation, commercialisation and R&D as key drivers in Scotland's transition towards a low carbon economy, and in delivering faster sustainable economic growth.

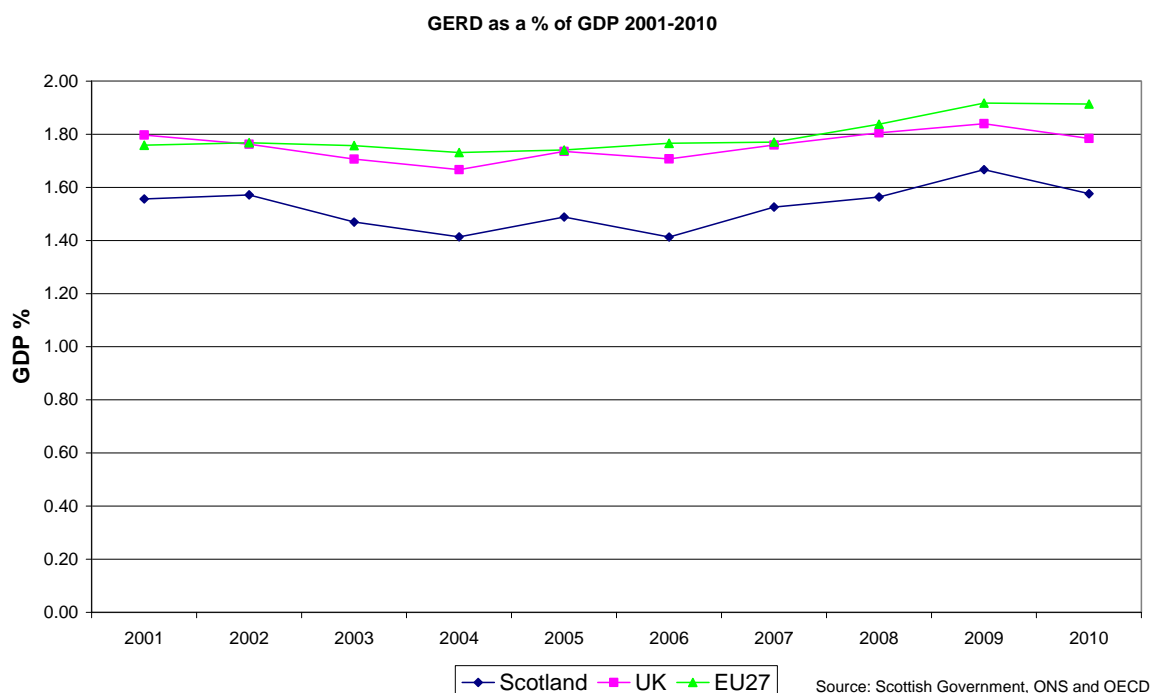
Scotland's National Indicator on R&D

The Scottish Government has set out 50 National Indicators to track progress towards the achievement of a more successful and prosperous Scotland.

One of the set of National Indicators is to Increase Research and Development Spending in Scotland. This indicator compares Scotland's Gross Expenditure on Research and Development (GERD) as a percentage of GDP with the equivalent average figure for the EU 27. In 2010, Scottish GERD was 1.58% of GDP; compared to 1.78% for the UK and 1.91% for the EU. The gap between Scotland and the EU in 2010 was 0.34 percentage points⁴, compared to a gap of 0.25 percentage points in 2009 (Table 1). The gap between Scotland and the EU has increased by 0.09 percentage points over the latest year and is now 0.01 percentage points lower than it was in 2006, which is the baseline year for the national indicator.

Europe's Target on R&D

Europe 2020, a strategy for jobs and smart, sustainable and inclusive growth, is based on five EU headline targets including a target that 3% of the EU's GDP should be invested in R&D as measured by GERD as a percentage of GDP⁵.



³ The Government Economic Strategy: <http://www.scotland.gov.uk/Resource/Doc/357756/0120893.pdf>

⁴ Note that the gap is calculated on unrounded data.

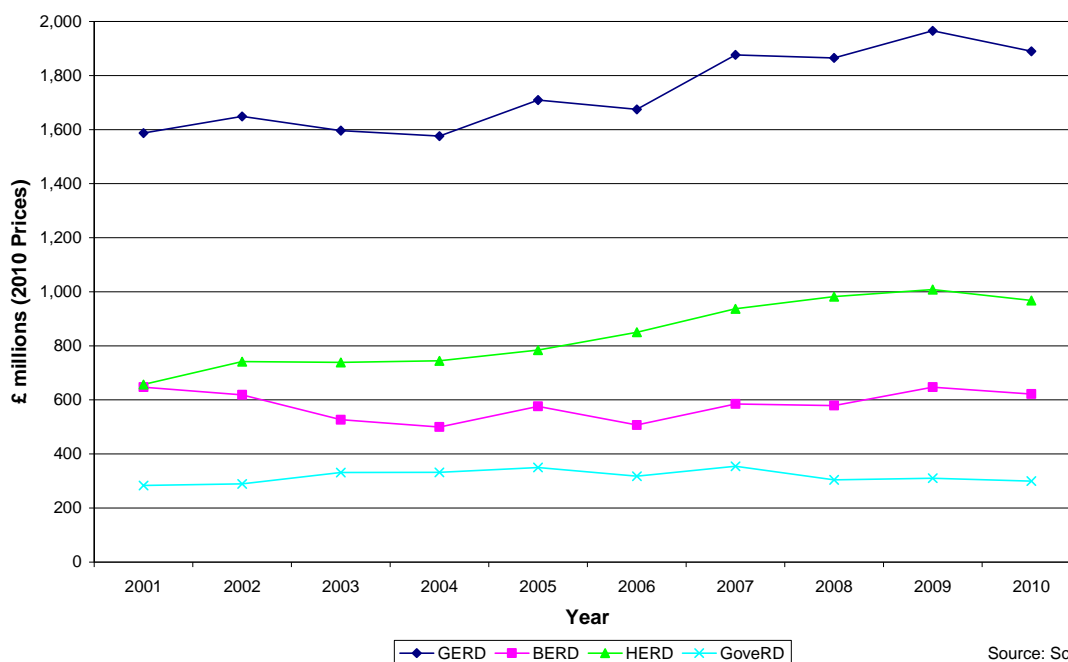
⁵ Europe 2020 targets: http://ec.europa.eu/europe2020/reaching-the-goals/targets/index_en.htm

Expenditure and components of GERD

In 2010 Scottish GERD was £1,890 million, 7.2% of the UK total. GERD has decreased by £76 million, in real terms, since 2009. This is a real terms decrease of 3.9% since 2009.

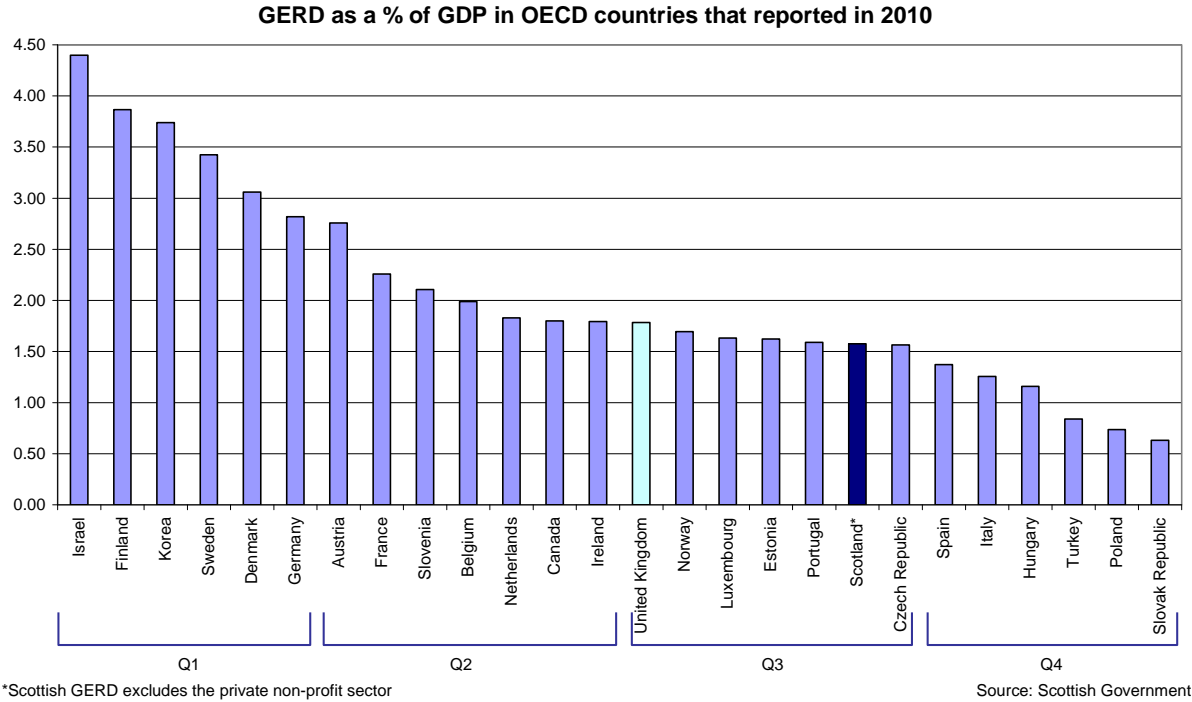
GERD expenditure is made up of HERD (£968 million), BERD (£622 million) and GoveRD (£300 million). Since 2001, GERD has increased by 19.1% in real terms. When GERD is broken down into the three sectors that undertake R&D expenditure, it shows that HERD has increased by 47.3% in real terms since 2001, GoveRD has increased by 6.1% and BERD has decreased by 3.9%. In the short term, HERD has decreased by 4.0% (£41 million) in real terms between 2009 and 2010, GoveRD has decreased by 3.3% (£10 million) and BERD has decreased by 3.9% (£25 million).

Expenditure on R&D performed in Scotland in real terms, 2001 to 2010

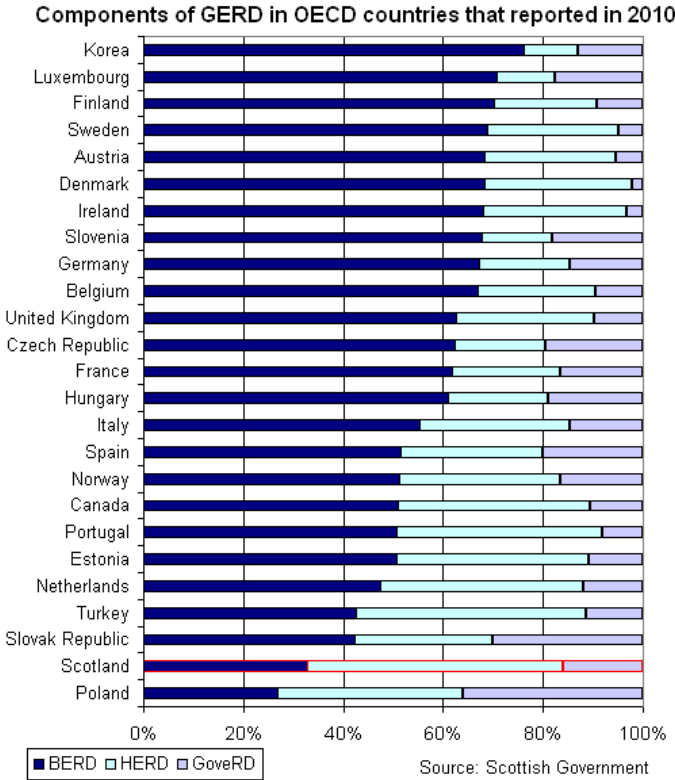


Source: Scottish Government

In 2010, the average GERD spend per head of population was £362 in Scotland compared to £423 per head of population in the UK (Table 2). In comparison to the other eleven countries/regions within the UK, Scotland ranks sixth in terms of GERD as a percentage of GDP in 2010. This is a decline of one rank compared to Scotland's position last year (Table 3A). Scotland's GERD as a percentage of GDP ranks in the third quartile of OECD countries that reported in 2010.

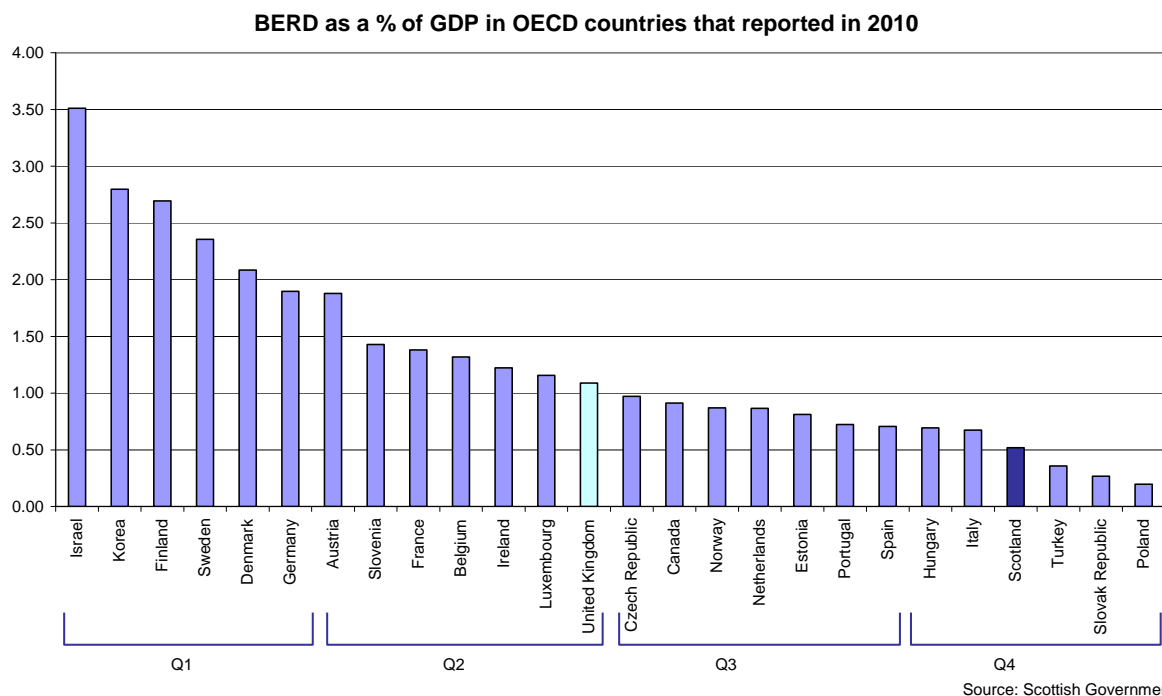


Scotland's relative performance, regionally and internationally, differs considerably across the business, higher education and government sectors. The relatively low contribution of business R&D, alongside a high contribution of higher education R&D, is clear when comparing Scotland to other countries.



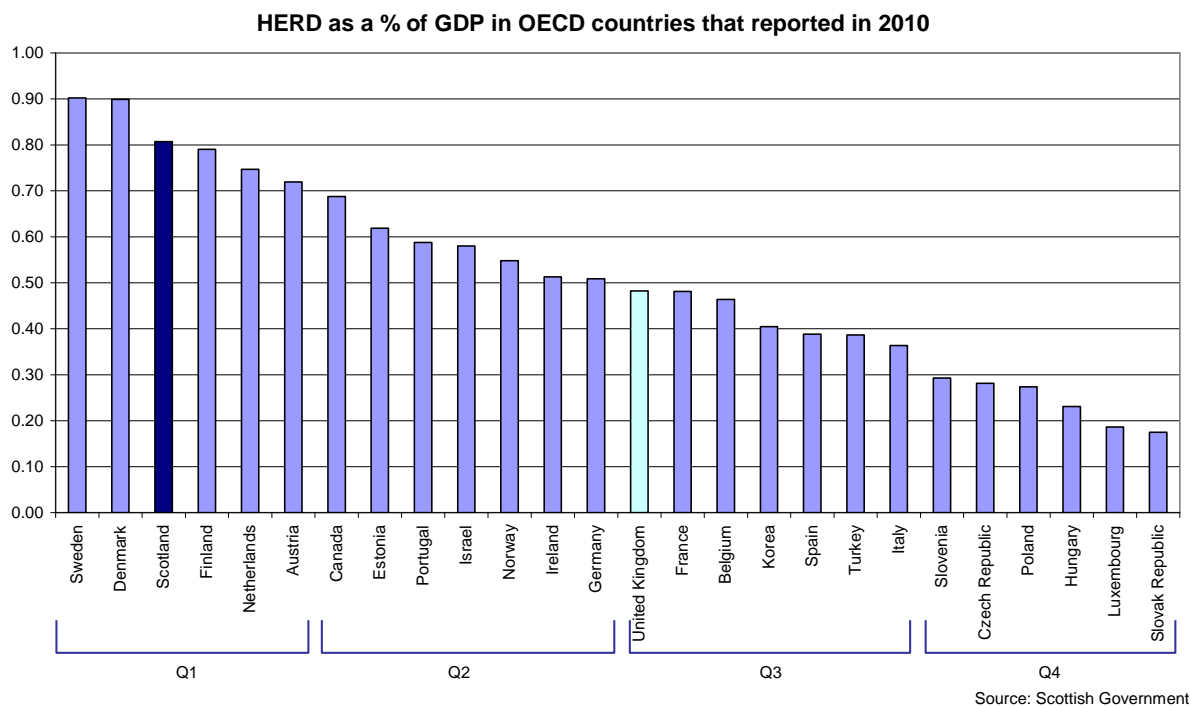
Business Enterprise Research and Development (BERD)

In 2010, Business Enterprise Research and Development (BERD) expenditure was £622 million, 3.9% of the UK total and 0.52% of Scottish GDP. In comparison to the other eleven countries/regions within the UK, Scotland ranks ninth in terms of BERD expenditure as a percentage of GDP (Table 3B). Scotland's BERD as a percentage of GDP ranks in the fourth quartile of OECD countries that reported in 2010.



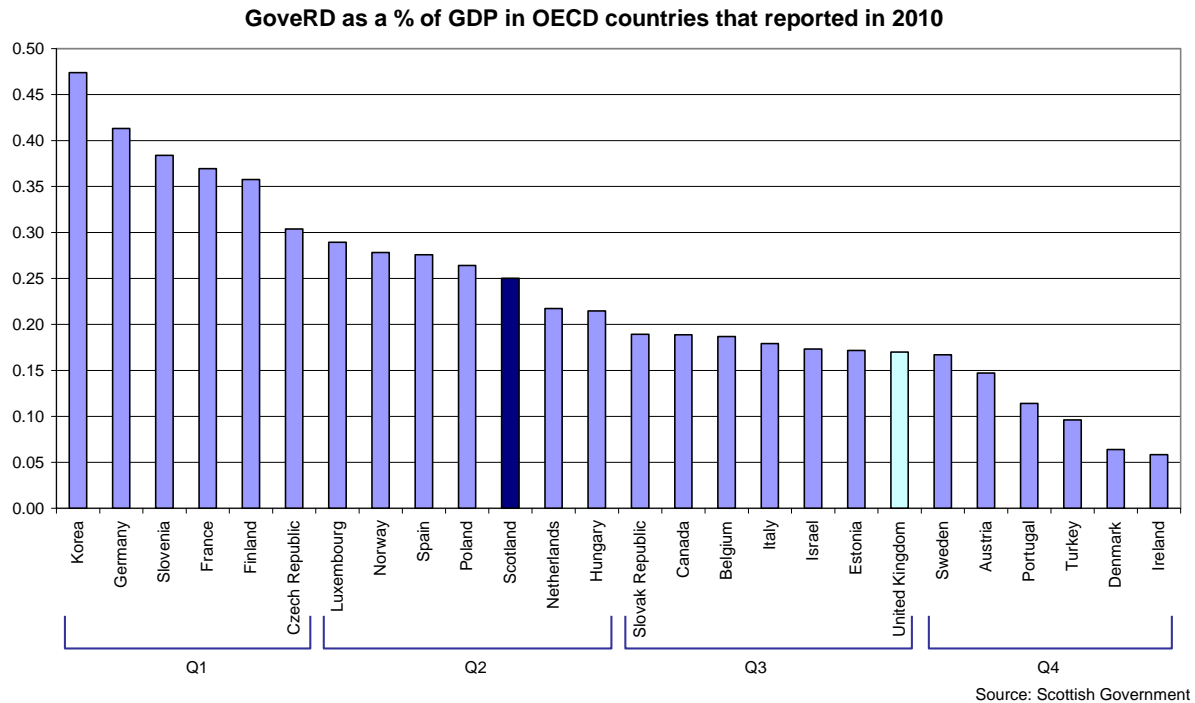
Higher Education Research and Development (HERD)

In 2010, Higher Education R&D (HERD) was £968 million in Scotland, 13.6% of the UK total and 0.81% of GDP. In comparison to the other eleven countries/regions within the UK, Scotland ranks first in terms of HERD as a percentage of GDP (Table 3C). Scotland's HERD as a percentage of GDP is third highest among the OECD countries that reported in 2010.



Government Research and Development (GoveRD)

In 2010, Government R&D (GoveRD) was £300 million, 11.9% of the UK total and 0.25% of GDP. In comparison to the other eleven countries/regions within the UK, Scotland ranks fourth in terms of government R&D expenditure as a percentage of GDP (Table 3D). Scotland's GoveRD as a percentage of GDP ranks in the second quartile of OECD countries that reported in 2010.



Further details on Government expenditure on Research and Development can be found in the Department for Business Innovation & Skills (BIS) publication [SET Statistic – Science, engineering and technology indicators](#). This publication contains historic expenditure on research and development by the Scottish Government from the annual ONS Government Research and Development Survey.

The SET statistics for the Scottish Government differ from the Scottish GoveRD figures published in this report as the Scottish GoveRD figures include all forms of Government performed R&D undertaken in Scotland and not just that funded by the Scottish Government.

TECHNICAL NOTES

Sampling and Regional Estimates

1. This release presents estimates of Gross Expenditure on Research and Development (GERD) in Scotland in 2010. The majority of the data presented in this release come from Research and Development (R&D) surveys conducted by the Office for National Statistics (ONS). The release includes the estimates for R&D in 2010 carried out by the following sectors of the economy in Scotland.

- Business Enterprise
- Higher Education
- Government, which includes Research Councils

More detailed information on Scottish Business Enterprise R&D specifically is available at:

<http://www.scotland.gov.uk/Topics/Statistics/Browse/Business/RD/BERDreport10>

The ONS 2010 GERD Statistical Bulletin is available at:

<http://www.ons.gov.uk/ons/rel/rdit1/gross-domestic-expenditure-on-research-and-development/2010/stb-gerd-2010.html>

The Northern Ireland Research and Development Statistics bulletin is available at:

http://www.detini.gov.uk/r_d_2010_december_2011.pdf

2. GERD is the measure most commonly used for international comparisons. It covers all R&D performed in the country concerned, irrespective of who pays for it, including funding from abroad. However, it excludes R&D performed abroad even if it is funded from the UK. The components of GERD relate to R&D performed in four sectors of the economy:

- Business Enterprise Research and Development (BERD) is derived from the results of the ONS's annual business R&D survey. In 2010, approximately 5,000 questionnaires were sent to businesses in the UK known to perform R&D; this included around 400 of the largest R&D spenders. Smaller R&D performers and others believed to be performing R&D are sampled.
- Higher Education Research and Development (HERD) is estimated by the Higher Education Funding Councils for England, Scotland, Wales and the Department for Education in Northern Ireland.
- Government Research and Development (GoveRD) is based on an annual survey of in-house R&D from most government departments, with the addition of ONS estimates for two other components: R&D performed by local authorities, and some R&D within central government not available from the survey.
- Private Non-Profit (PNP) sector. Due to a planned review of the methodology used for the compilation of the R&D spend by the PNP sector, estimates are currently based on a number of sources. These include the total reported as the GoveRD 'other' spend by government, including Research Councils. The PNP sector is not available on a regional basis. As a result it is not included in the Scottish GERD figures but is included in the UK GERD figures.

3. A summary quality report for the ONS BERD Survey is available at:

<http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/business-statistics/index.html>

This report describes, in detail, the intended uses of the statistics presented in this publication, their quality and the methods used to produce them.

4. The Scottish Government conducted a user consultation seeking users' views on the format and content of the BERD and GERD publications in Autumn 2010. The results of this consultation can be viewed here:

<http://www.scotland.gov.uk/Topics/Statistics/Browse/Business/scotstat/RDFindingsReport>

Discontinuities in the data

5. Between the release of the 2007 and 2008 GoveRD figures, a large R&D employer in Scotland was reclassified from the government sector to the higher education sector. This reclassification resulted in a considerable decrease in GoveRD expenditure between 2007 and 2008.

Definition of R&D

6. The ONS R&D surveys follow the definition of research and development proposed by the Organisation for Economic Cooperation and Development (OECD) and published in the 'Frascati' Manual. According to the 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 the stock of knowledge to devise new applications."

7. The definition therefore excludes activities such as market research, most software development, routine testing and quality control and artistic design work.

Real Terms

8. The cash values are converted to real terms using Treasury GDP deflators at market prices; 2010=100. The deflators are available at:

http://www.hm-treasury.gov.uk/data_gdp_index.htm

Time period for which the results relate to

9. Respondents to the ONS BERD survey were asked to make a return for the calendar year 2010 or the nearest 12 month period for which figures were available. The HERD and GoveRD figures relate to the financial year 2010/2011.

Revisions

10. Revisions have been made to the Business Enterprise estimates for 2008 and 2009, the Government estimates for 2007, 2008 and 2009 and the Higher Education estimates for 2009. This is due to some company misreporting and late receipt of data.
11. Note that all series expressed as real terms or expressed as a proportion of GDP are revised back to 2001 due to underlying revisions to deflators and GDP.

Table 1
Expenditure on R&D performed within Scotland:
Current prices, real terms & as a percentage of GDP, 2001 to 2010

	£ millions									
Current Prices	2001	2002	2003	2004	2005	2006	2007r	2008r	2009r	2010
BERD	517	507	441	430	506	460	543	554	630	622
HERD	525	608	618	641	689	772	870	939	982	968
GoveRD ¹	226	237	277	286	307	288	329	291	302	300
GERD	1,268	1,352	1,336	1,357	1,502	1,520	1,742	1,784	1,914	1,890

	£ millions									
Real Terms (2010 prices²)	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010
BERD	647	618	527	499	576	507	585	579	647	622
HERD	657	742	738	744	784	851	937	982	1,009	968
GoveRD ¹	283	289	331	332	349	317	354	304	310	300
GERD	1,587	1,649	1,596	1,576	1,710	1,675	1,876	1,865	1,966	1,890

	Percentage of GDP ³									
	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010
BERD	0.63	0.59	0.49	0.45	0.50	0.43	0.48	0.49	0.55	0.52
HERD	0.64	0.71	0.68	0.67	0.68	0.72	0.76	0.82	0.86	0.81
GoveRD ¹	0.28	0.28	0.30	0.30	0.30	0.27	0.29	0.26	0.26	0.25
GERD	1.56	1.57	1.47	1.41	1.49	1.41	1.53	1.56	1.67	1.58
EU 27 GERD	1.76	1.77	1.76	1.73	1.74	1.77	1.77	1.84	1.92	1.91
Gap in GERD Percentage of GDP between Scotland and EU 27	0.20	0.20	0.29	0.32	0.25	0.35	0.24	0.27	0.25	0.34

Source: OECD MSTI 2011/2, ONS and Scottish Government

Notes:

1. There is a discontinuity between the data for 2008 onwards with earlier years due to a reclassification within the government sector. See Note 5 of the background notes for details.
2. HM Treasury GDP deflators are used to convert the data to 2010 prices.
3. Market price GDP estimated for Scotland based on the UK GVA to GDP ratio.
4. Scottish GERD excludes the private non-profit sector.
5. r denotes revised figures.
6. The EU expanded from 25 to 27 nations in 2007. All these figures are for the 27 nations.
7. Totals may not sum due to rounding.

Table 2
Gross Expenditure on R&D by Government Office Region:
Per head of population, 2010

	GERD (£ millions)	GERD per head of population £	GERD as a percentage of GDP ¹	Percentage of UK GERD
East of England	4,987	855	3.96	18.9
South East	5,574	654	2.63	21.1
South West	2,113	401	1.89	8.0
North West	2,730	394	1.99	10.4
London	2,957	378	0.95	11.2
Scotland	1,890	362	1.58	7.2
East Midlands	1,589	355	1.73	6.0
Northern Ireland	502	279	1.57	1.9
West Midlands	1,251	229	1.18	4.7
North East	536	206	1.15	2.0
Yorkshire and the Humber	1,053	199	1.03	4.0
Wales	527	175	1.02	2.0
UK	26,362	423	1.78	100.0

Source: ONS and Scottish Government

Notes:

1. Market price GDP estimated for the regions based on the UK GVA to GDP ratio.
2. Private non-profit sector included in the UK total only.
3. The percentage of UK GERD for the Government Office Regions does not sum to 100 due to the inclusion of private non-profit sector in the UK total.
4. Ranked by GERD per head of population.

Table 3A
Gross Expenditure on R&D by Government Office Region:
Current prices & as a percentage of GDP, 2006 to 2010

	Gross Expenditure on R&D (£million)					% of total 2010	% of GDP ¹				
	2006	2007r	2008r	2009r	2010		2006r	2007r	2008r	2009r	2010
East of England	4,537	4,945	5,166	4,938	4,987	18.9	3.85	3.98	4.24	4.13	3.96
South East	4,803	5,153	5,185	5,509	5,574	21.1	2.51	2.53	2.57	2.74	2.63
North West	2,240	2,672	2,782	2,607	2,730	10.4	1.75	1.99	2.11	2.00	1.99
South West	1,901	1,836	2,017	2,022	2,113	8.0	1.86	1.69	1.88	1.90	1.89
East Midlands	1,358	1,458	1,381	1,454	1,589	6.0	1.61	1.64	1.57	1.67	1.73
Scotland	1,520	1,742	1,784	1,914	1,890	7.2	1.41	1.53	1.56	1.67	1.58
Northern Ireland	317	336	337	478	502	1.9	1.04	1.05	1.08	1.57	1.57
West Midlands	1,252	1,340	1,223	1,210	1,251	4.7	1.25	1.28	1.19	1.20	1.18
North East	501	554	551	550	536	2.0	1.16	1.22	1.24	1.24	1.15
Yorkshire and the Humber	900	981	991	1,039	1,053	4.0	0.95	0.98	1.01	1.07	1.03
Wales	493	606	525	530	527	2.0	1.02	1.19	1.05	1.08	1.02
London	2,659	2,914	3,049	2,962	2,957	11.2	0.98	1.00	1.03	0.98	0.95
UK	22,993	25,085	25,585	25,880	26,362	100.0	1.71	1.76	1.80	1.84	1.78

Source: ONS and Scottish Government

Notes:

1. Market price GDP estimated for the regions based on the UK GVA to GDP ratio.
2. Private non-profit sector included in UK total only.
3. The percentage of UK GERD for the Government Office Regions does not sum to 100 due to the inclusion of private non-profit sector in the UK total.
4. r denotes revised figures.
5. Ranked by percentage of GDP 2010.

Table 3B
Expenditure on R&D performed in Businesses by Government Office Region:
Current prices & as a percentage of GDP, 2001 to 2010

	Business R&D Expenditure (£million)										% of total 2010	% of GDP ¹									
	2001	2002	2003	2004	2005	2006	2007	2008r	2009r	2010		2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010
East of England	2,798	2,650	2,915	2,672	3,718	3,650	3,992	4,182	3,930	3,986	24.8	3.15	2.81	2.90	2.50	3.32	3.10	3.21	3.43	3.29	3.17
South East	3,212	3,156	3,266	3,125	3,125	3,347	3,515	3,466	3,698	3,758	23.4	2.18	2.02	1.97	1.80	1.72	1.75	1.72	1.72	1.84	1.77
North West	1,582	1,604	1,538	1,739	1,892	1,623	2,021	2,130	1,907	2,047	12.7	1.55	1.50	1.37	1.48	1.55	1.27	1.51	1.62	1.46	1.49
East Midlands	909	974	862	936	1,006	985	1,062	976	998	1,143	7.1	1.40	1.42	1.18	1.22	1.25	1.17	1.19	1.11	1.14	1.24
South West	1,006	1,158	1,221	1,296	1,201	1,232	1,229	1,345	1,277	1,362	8.5	1.29	1.40	1.38	1.39	1.24	1.20	1.13	1.26	1.20	1.22
Northern Ireland	150	149	116	120	148	157	177	171	297	324	2.0	0.65	0.61	0.45	0.44	0.52	0.52	0.55	0.55	0.97	1.01
West Midlands	760	774	794	758	721	915	995	886	847	892	5.6	0.94	0.91	0.89	0.82	0.75	0.92	0.95	0.87	0.84	0.84
North East	125	124	149	257	289	292	331	318	308	297	1.8	0.37	0.35	0.40	0.65	0.70	0.67	0.73	0.71	0.70	0.64
Scotland	517	507	441	430	506	460	543	554	630	622	3.9	0.63	0.59	0.49	0.45	0.50	0.43	0.48	0.49	0.55	0.52
Yorkshire and the Humber	319	337	335	343	344	384	436	433	452	491	3.1	0.43	0.43	0.40	0.39	0.38	0.40	0.44	0.44	0.47	0.48
Wales	161	187	200	226	232	216	308	243	243	244	1.5	0.42	0.47	0.47	0.51	0.50	0.45	0.60	0.49	0.49	0.47
London	700	865	669	759	552	882	1,067	1,109	909	902	5.6	0.35	0.40	0.29	0.32	0.22	0.32	0.37	0.37	0.30	0.29
UK	12,239	12,484	12,505	12,662	13,734	14,144	15,676	15,814	15,497	16,067	100.0	1.19	1.14	1.08	1.04	1.08	1.05	1.10	1.12	1.10	1.09

Source: ONS and Scottish Government

Notes:

1. Market price GDP estimated for the regions based on the UK GVA to GDP ratio.
2. r denotes revised figures.
3. Ranked by percentage of GDP 2010.
4. Totals may not sum due to rounding.

Table 3C

Expenditure on R&D performed in Higher Education by Government Office Region:
Current prices & as a percentage of GDP, 2001 to 2010

	Higher Education R&D Expenditure (£million)										% of total 2010	% of GDP ¹									
	2001	2002	2003	2004	2005	2006	2007r	2008r	2009r	2010		2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010
Scotland	525	608	618	641	689	772	870	939	982	968	13.6	0.64	0.71	0.68	0.67	0.68	0.72	0.76	0.82	0.86	0.81
London	1,007	1,108	1,148	1,188	1,356	1,458	1,549	1,634	1,729	1,716	24.1	0.51	0.52	0.50	0.49	0.53	0.54	0.55	0.57	0.55	
North East	146	166	170	176	189	206	222	231	241	239	3.4	0.43	0.47	0.45	0.45	0.46	0.48	0.49	0.52	0.54	0.51
Wales	159	188	188	198	221	235	254	261	263	262	3.7	0.42	0.47	0.44	0.45	0.48	0.48	0.50	0.52	0.53	0.51
Yorkshire and the Humber	326	356	373	388	419	457	493	501	526	508	7.1	0.44	0.45	0.45	0.44	0.46	0.48	0.49	0.51	0.54	0.50
Northern Ireland	75	88	107	124	134	139	139	146	162	159	2.2	0.32	0.36	0.41	0.45	0.47	0.46	0.43	0.47	0.53	0.50
East of England	376	421	442	464	506	520	580	590	616	625	8.8	0.42	0.45	0.44	0.43	0.45	0.44	0.47	0.48	0.51	0.50
South East	578	636	659	678	772	836	912	955	1,014	1,005	14.1	0.39	0.41	0.40	0.39	0.42	0.44	0.45	0.47	0.51	0.47
North West	331	370	390	416	475	531	560	569	609	592	8.3	0.32	0.35	0.35	0.35	0.39	0.42	0.42	0.43	0.47	0.43
East Midlands	230	246	239	244	271	289	307	311	361	348	4.9	0.35	0.36	0.33	0.32	0.34	0.34	0.34	0.35	0.41	0.38
West Midlands	213	231	245	269	293	303	322	334	360	358	5.0	0.26	0.27	0.28	0.29	0.31	0.30	0.31	0.33	0.36	0.34
South West	183	200	206	218	255	278	300	315	349	350	4.9	0.23	0.24	0.23	0.23	0.26	0.27	0.28	0.29	0.33	0.31
UK	4,149	4,618	4,785	5,004	5,580	6,022	6,507	6,785	7,212	7,130	100.0	0.40	0.42	0.41	0.41	0.44	0.45	0.46	0.48	0.51	0.48

Source: ONS and Scottish Government

Notes:

1. Market price GDP estimated for the regions based on the UK GVA to GDP ratio.
2. r denotes revised figures.
3. Ranked by percentage of GDP 2010.
4. Totals may not sum due to rounding.

Table 3D

Expenditure on R&D performed in Government by Government Office Region:
Current prices & as a percentage of GDP, 2001 to 2010

	Government R&D Expenditure ¹ (£million)										% of total 2010	% of GDP ²									
	2001	2002	2003	2004	2005	2006	2007r	2008r	2009r	2010		2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010
South East	515	473	518	543	559	620	726	764	797	811	32.3	0.35	0.30	0.31	0.31	0.31	0.32	0.36	0.38	0.40	0.38
South West	254	228	296	329	362	391	307	357	396	401	16.0	0.33	0.27	0.34	0.35	0.37	0.38	0.28	0.33	0.37	0.36
East of England	282	285	345	378	381	367	373	394	392	376	15.0	0.32	0.30	0.34	0.35	0.34	0.31	0.30	0.32	0.33	0.30
Scotland	226	237	277	286	307	288	329	291	302	300	11.9	0.28	0.28	0.30	0.30	0.30	0.27	0.29	0.26	0.26	0.25
London	238	238	293	299	329	319	298	306	324	339	13.5	0.12	0.11	0.13	0.12	0.13	0.12	0.10	0.10	0.11	0.11
East Midlands	68	65	79	80	88	84	89	94	95	98	3.9	0.10	0.09	0.11	0.10	0.11	0.10	0.10	0.11	0.11	0.11
North West	66	67	75	84	85	86	91	83	91	91	3.6	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07
Northern Ireland	16	15	17	21	20	21	20	20	19	19	0.8	0.07	0.06	0.07	0.08	0.07	0.07	0.06	0.06	0.06	0.06
Yorkshire and the Humber	50	62	50	50	50	59	52	57	61	54	2.1	0.07	0.08	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05
Wales	49	41	57	51	56	42	44	21	24	21	0.8	0.13	0.10	0.13	0.11	0.12	0.09	0.09	0.04	0.05	0.04
West Midlands	65	50	58	46	48	34	23	3	3	1	0.0	0.08	0.06	0.07	0.05	0.05	0.03	0.02	0.00	0.00	0.00
North East	4	6	2	2	2	3	1	2	1	-	0.0	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.00	0.00	-
UK	1,834	1,766	2,068	2,170	2,289	2,313	2,354	2,389	2,503	2,512	100.0	0.18	0.16	0.18	0.18	0.18	0.17	0.17	0.17	0.18	0.17

Source: ONS and Scottish Government

Notes:

1. Includes R&D performed in Research Councils.
2. Market price GDP estimated for the regions based on the UK GVA to GDP ratio.
3. There is a discontinuity between the data for 2008 onwards with earlier years due to a reclassification within the government sector.
See Note 5 of the background notes for details.
4. r denotes revised figures.
5. Ranked by percentage of GDP 2010.
6. - denotes nil or figure too small to display.
7. Totals may not sum due to rounding.

Table 4A
Gross Expenditure on R&D performed in selected OECD countries:
As a percentage of GDP, 2001 to 2010

											Percentage
	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010	2001-2010 Change
Scotland	1.56	1.57	1.47	1.41	1.49	1.41	1.53	1.56	1.67	1.58	0.02
UK	1.80	1.76	1.71	1.67	1.74	1.71	1.76	1.80	1.84	1.78	-0.01
Germany	2.47	2.50	2.54	2.50	2.51	2.54	2.53	2.69	2.82	2.82	0.34
France	2.20	2.24	2.18	2.16	2.11	2.11	2.08	2.12	2.26	2.26	0.06
Italy	1.08	1.12	1.10	1.09	1.09	1.13	1.17	1.21	1.26	1.26	0.17
Japan	3.12	3.17	3.20	3.17	3.32	3.40	3.44	3.45	3.36	..	..
Canada	2.09	2.04	2.04	2.07	2.04	2.00	1.96	1.86	1.92	1.80	-0.29
USA	2.72	2.62	2.61	2.55	2.59	2.64	2.70	2.84	2.90	..	..
Denmark	2.39	2.51	2.58	2.48	2.46	2.48	2.58	2.85	3.06	3.06	0.67
Iceland	2.95	2.95	2.82	..	2.77	2.99	2.68	2.64	..	..	..
Ireland	1.09	1.09	1.16	1.22	1.24	1.24	1.28	1.45	1.74	1.79	0.71
Norway	1.59	1.66	1.71	1.57	1.51	1.48	1.59	1.58	1.78	1.69	0.10
Finland	3.32	3.36	3.44	3.45	3.48	3.48	3.47	3.70	3.92	3.87	0.55
Sweden	4.13	..	3.80	3.58	3.56	3.68	3.40	3.70	3.61	3.43	-0.70
EU 27	1.76	1.77	1.76	1.73	1.74	1.77	1.77	1.84	1.92	1.91	0.15
OECD	2.24	2.21	2.21	2.18	2.22	2.25	2.28	2.35	2.40	..	..

Source: OECD MSTI 2011/2, ONS and Scottish Government

Notes:

1. r denotes revised figures.
2. .. Data not available.
3. The EU expanded from 25 to 27 nations in 2007. All these figures are for the 27 nations.
4. Scottish GERD excludes the private non-profit sector.
5. Totals may not sum due to rounding.

Table 4B
Expenditure on R&D performed in Businesses in selected OECD countries:
As a percentage of GDP, 2001 to 2010

											Percentage
	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010	2001-2010 Change
Scotland	0.63	0.59	0.49	0.45	0.50	0.43	0.48	0.49	0.55	0.52	-0.12
UK	1.19	1.14	1.08	1.04	1.08	1.05	1.10	1.12	1.10	1.09	-0.10
Germany	1.73	1.73	1.77	1.75	1.74	1.78	1.77	1.86	1.91	1.90	0.17
France	1.39	1.42	1.36	1.36	1.31	1.33	1.31	1.33	1.39	1.38	-0.01
Italy	0.53	0.54	0.52	0.52	0.55	0.55	0.61	0.65	0.67	0.67	0.14
Japan	2.30	2.36	2.40	2.38	2.54	2.63	2.68	2.70	2.54	..	..
Canada	1.29	1.17	1.16	1.17	1.14	1.14	1.09	0.98	0.99	0.91	-0.38
USA	1.97	1.83	1.81	1.77	1.80	1.86	1.93	2.04	2.04	..	..
Denmark	1.64	1.73	1.78	1.69	1.68	1.66	1.80	1.99	2.08	2.08	0.45
Iceland	1.74	1.69	1.46	..	1.43	1.59	1.46	1.44	..	..	..
Ireland	0.76	0.75	0.78	0.80	0.81	0.82	0.84	0.94	1.16	1.22	0.46
Norway	0.95	0.95	0.98	0.86	0.81	0.79	0.84	0.84	0.92	0.87	-0.08
Finland	2.36	2.35	2.42	2.42	2.46	2.48	2.51	2.75	2.80	2.69	0.34
Sweden	3.20	..	2.83	2.63	2.59	2.75	2.47	2.74	2.54	2.35	-0.84
EU 27	1.12	1.11	1.10	1.09	1.09	1.11	1.12	1.15	1.17	1.16	0.04
OECD	1.55	1.50	1.49	1.48	1.51	1.55	1.58	1.63	1.62	..	..

Source: OECD MSTI 2011/2, ONS and Scottish Government

Notes:

1. r denotes revised figures.
2. .. Data not available.
3. The EU expanded from 25 to 27 nations in 2007. All these figures are for the 27 nations.
4. Totals may not sum due to rounding.

Table 4C
Expenditure on R&D performed in Higher Education in selected OECD countries:
As a percentage of GDP, 2001 to 2010

											Percentage
	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010	2001-2010 Change
Scotland	0.64	0.71	0.68	0.67	0.68	0.72	0.76	0.82	0.86	0.81	0.16
UK	0.40	0.42	0.41	0.41	0.44	0.45	0.46	0.48	0.51	0.48	0.08
Germany	0.41	0.43	0.43	0.41	0.41	0.41	0.41	0.45	0.50	0.51	0.10
France	0.42	0.42	0.42	0.40	0.40	0.40	0.41	0.43	0.47	0.48	0.07
Italy	0.35	0.37	0.37	0.36	0.33	0.34	0.35	0.37	0.38	0.36	0.01
Japan	0.45	0.44	0.44	0.43	0.45	0.43	0.43	0.40	0.45	..	..
Canada	0.58	0.65	0.67	0.70	0.69	0.66	0.67	0.68	0.72	0.69	0.11
USA	0.33	0.35	0.36	0.37	0.36	0.35	0.35	0.36	0.39	..	..
Denmark	0.45	0.58	0.60	0.61	0.60	0.64	0.68	0.77	0.90	0.90	0.45
Iceland	0.55	0.47	0.60	..	0.61	0.71	0.67	0.66	..	..	..
Ireland	0.24	0.25	0.29	0.33	0.34	0.34	0.35	0.42	0.52	0.51	0.28
Norway	0.41	0.44	0.47	0.47	0.46	0.45	0.51	0.51	0.57	0.55	0.14
Finland	0.60	0.64	0.66	0.68	0.66	0.65	0.65	0.64	0.74	0.79	0.19
Sweden	0.81	..	0.83	0.82	0.78	0.76	0.75	0.79	0.91	0.90	0.09
EU 27	0.38	0.40	0.40	0.39	0.39	0.40	0.40	0.43	0.47	0.47	0.08
OECD	0.37	0.39	0.39	0.39	0.39	0.39	0.39	0.40	0.44	..	..

Source: OECD MSTI 2011/2, ONS and Scottish Government

Notes:

1. r denotes revised figures.
2. .. Data not available.
3. The EU expanded from 25 to 27 nations in 2007. All these figures are for the 27 nations.
4. Totals may not sum due to rounding.

Table 4D
Expenditure on R&D performed in Government in selected OECD countries:
As a percentage of GDP, 2001 to 2010

											Percentage
	2001r	2002r	2003r	2004r	2005r	2006r	2007r	2008r	2009r	2010	2001-2010 Change
Scotland¹	0.28	0.28	0.30	0.30	0.30	0.27	0.29	0.26	0.26	0.25	-0.03
UK	0.18	0.16	0.18	0.18	0.18	0.17	0.17	0.17	0.18	0.17	-0.01
Germany	0.34	0.34	0.34	0.34	0.35	0.35	0.35	0.38	0.42	0.41	0.07
France	0.36	0.37	0.36	0.37	0.37	0.35	0.34	0.34	0.37	0.37	0.01
Italy	0.20	0.20	0.19	0.19	0.19	0.19	0.17	0.15	0.17	0.18	-0.02
Japan	0.30	0.30	0.30	0.30	0.28	0.28	0.27	0.29	0.31	..	..
Canada	0.21	0.21	0.19	0.18	0.20	0.20	0.19	0.19	0.19	0.19	-0.03
USA	0.31	0.32	0.32	0.31	0.32	0.32	0.32	0.32	0.34	..	..
Denmark	0.28	0.18	0.18	0.17	0.16	0.16	0.08	0.07	0.06	0.06	-0.22
Iceland	0.59	0.72	0.70	..	0.65	0.61	0.48	0.47	..	..	..
Ireland	0.09	0.10	0.09	0.09	0.09	0.08	0.09	0.10	0.06	0.06	-0.03
Norway	0.23	0.26	0.26	0.25	0.24	0.24	0.25	0.23	0.29	0.28	0.05
Finland	0.34	0.35	0.33	0.33	0.33	0.32	0.29	0.30	0.36	0.36	0.02
Sweden	0.12	..	0.13	0.11	0.18	0.17	0.17	0.16	0.16	0.17	0.05
EU 27	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.24	0.26	0.26	0.02
OECD	0.26	0.27	0.27	0.26	0.27	0.26	0.26	0.26	0.29	..	..

Source: OECD MSTI 2011/2, ONS & Scottish Government

Notes:

1. There is a discontinuity between the data for 2008 onwards with earlier years due to a reclassification within the government sector.
See Note 5 of the background notes for details.
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