

R & D expenditure in the European Union

Sweden and Finland ahead of the other Member States for the EU 2010 R&D targets

Statistics in focus

SCIENCE AND TECHNOLOGY

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R&D Statistics

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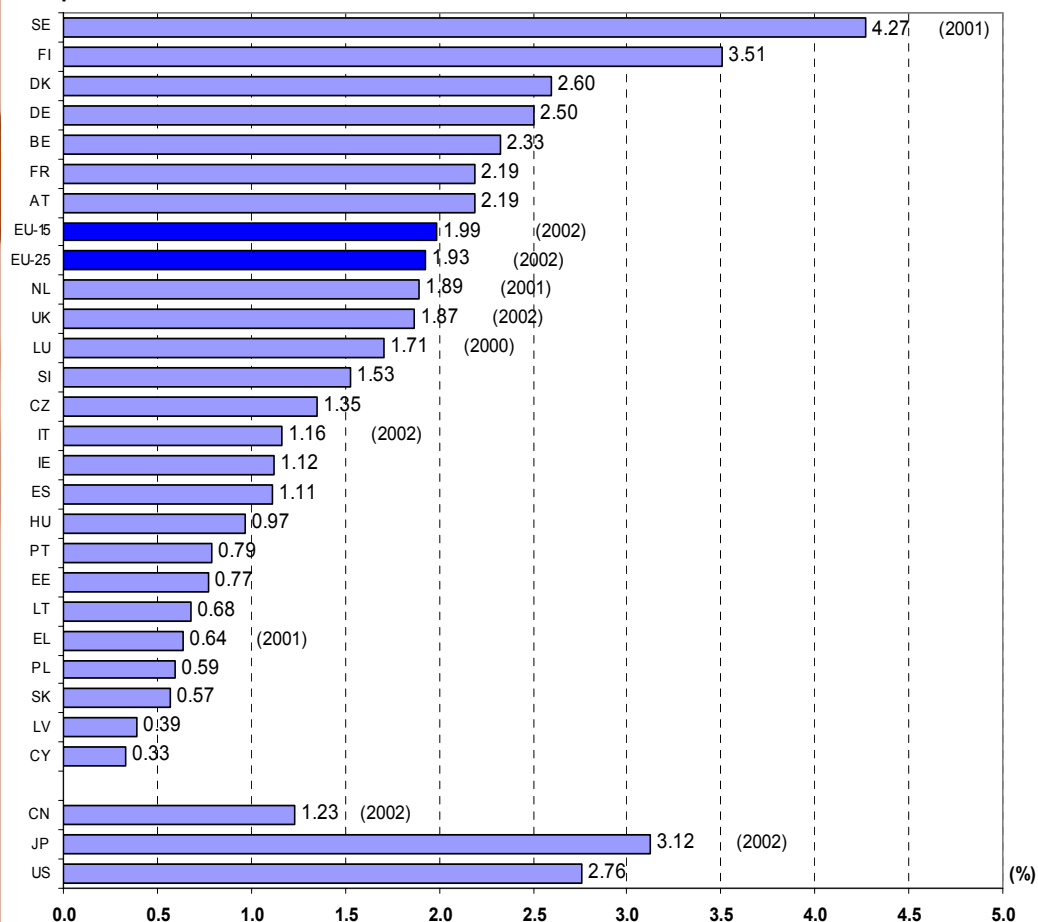
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Graph 1: R&D intensity (R&D expenditure as a percentage of GDP) in the EU-25, China, Japan and the United States in 2003



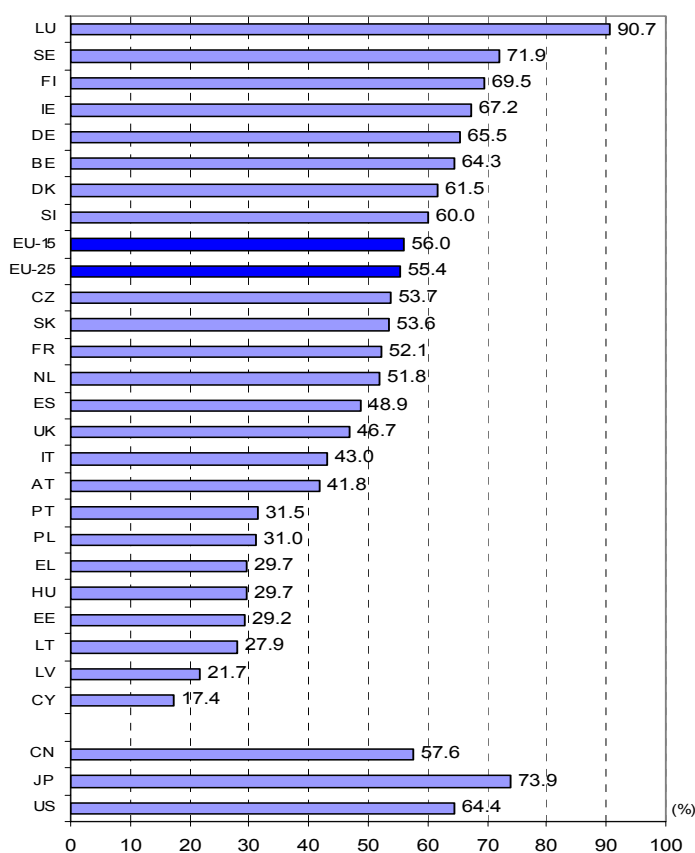
MT: n.a. EU-25, EU-15, DE, EL, SI: estimates. BE, DK, EE, IE, CY, LT, PT, FI, US: provisional.

- Sweden and Finland are ahead of most Member States in R&D expenditure with respectively 4.27% and 3.51% of R&D intensity, with more than two thirds of it being financed by the Business Enterprise Sector.
- The US (2.76%) and Japan (3.12%) still have higher R&D intensities than the EU-25 (1.93%) and China (1.23%).
- In the five years to 2002, the EU's R&D expenditure grew 6.47% a year on average in million current EUR, the US's by 5.83%, Japan's by 6.19%, and China's by more than 18.51%.
- The majority of EU-25 Member States' R&D expenditure underwent sustained growth in the years to 2002, the fastest growth rates being registered by Estonia, Cyprus and Hungary, with more than 11% annual average growth in real terms.



Sweden and Finland are ahead of the EU 2010 R&D targets

Graph 2: Percentage of R&D expenditure financed by the Business Enterprise Sector in the EU-25, China, Japan and the United States in 2002



EU-25, EU-15: 2001, estimate, PT: estimates. MT n.a.
 BE, DK, EL, PT, NL, PT, SE: 2001. LU, IE, CN: 2000. IT: 1996
 US: 2001, excludes most or all capital expenditure; provisional.

Sweden and Finland are the only EU-25 countries whose R&D intensity (R&D expenditure as a percentage of GDP) in 2002 exceeded the 3 % level as set by the Lisbon strategy (see graph 1). Sweden's 4.27 %, albeit a figure for 2001, and Finland's 3.51 % of R&D intensity put these countries ahead of the US and Japan for this benchmark. Both the US and Japan display fairly high R&D intensities of close to or above 3 %, still higher than that of the EU-25, which stood at 1.93 % in 2002, or China's 1.23 %. The EU-15's average R&D intensity reached almost 2 % in the same year, but nevertheless remained lower than the US or Japan's. Apart from Sweden and Finland, other EU Member States whose R&D intensity is higher than the EU-25's average are Denmark, Germany, Belgium, France and Austria. Slovenia, the Czech Republic and Hungary had the highest R&D intensities among the new Member States in 2003. Another Nordic country

whose R&D intensity is very high is Iceland, with 3.09 % in 2002, while its EEA partner Norway reached 1.67 % in the same year.

The EU's 2010 goals in R&D, as set by the Lisbon summit strategy and endorsed by European Heads of State and Government in Barcelona in 2002, is to achieve an R&D intensity of 3% for the EU as a whole as well as having two thirds of R&D expenditure financed by the Business Enterprise Sector (BES). In 2001, 55% of the EU-25's R&D expenditure was financed by the BES, still lower than the 67%-goal. Sweden and Finland were again very well-positioned for this benchmark, since more than 69% of these countries' R&D expenditure was financed by the BES in 2002 (2001 data for Sweden). Ireland's R&D expenditure BES financing was right on target in 2000, at 67.2%. Interestingly, more than 90% of Luxembourg's R&D expenditure was financed by its Business Enterprise Sector in 2000, making this country the leading Member State in the proportion of BES-financed R&D efforts. Germany, Belgium (2001), Denmark (2001) and Slovenia's BES-financing of R&D expenditure came close to the 67% target in 2002, the latter country being the only new Member State with a percentage of BES-financed R&D expenditure higher than the EU average. Japan, the US and China all display higher percentages of R&D expenditure financed by the BES than the European Union average (graph 2).

R&D financing by the Business Enterprise Sector (BES) at EU-25 level was stagnant between 1998 and 2001, as it rose by less than one percent on an annual average basis. This was also true for the EU-15.

Only in Estonia, Greece, Cyprus and Portugal did the BES proportion of financing of R&D expenditure progress appreciably in the four years to 2002, although starting from a low initial percentage. Conversely, in Lithuania, Hungary, Poland and the Czech Republic, there seemed to be a clearly downward trend in BES-financed R&D expenditure over these years. Sweden and Finland, whose shares of BES-funded R&D expenditure was among the highest in the EU (bar Luxembourg), still experienced steady growth of between 2% and 3% on an annual average basis between 1998 and 2002 (Sweden: 1999-2001).

The EU's R&D intensity grew in real terms by an annual 1.48 % in the five years to 2002...

The EU's R&D intensity has grown by about 1.48% on average per year in the five years to 2002. In the EU-15, this ratio has even grown by an annual average of 1.70% during the same period. A number of Member States have achieved impressive increases in their R&D intensities between 1998 and 2003. Cyprus and Hungary's R&D intensity have jumped by more than 7% on average, and Estonia, Denmark, Spain, Lithuania, Austria and Belgium also experienced steady increases in their R&D intensity. Sweden and Finland, though already the top Member States in R&D expenditure as a percentage of GDP, still managed to increase this ratio by more than 4 % annually between 1998 and 2003 (1998-2001 for Sweden), while EEA partner country Iceland's R&D intensity gained more than 10 % a year. In contrast to the EU as a whole, Ireland, Poland and the Slovakia

have seen their R&D intensity shrink annually by 2.17%, 2.80% and 6.32% respectively in the same period. Other Member States whose R&D intensities were on a declining trend in that period were Latvia and the Netherlands. Candidate Countries Bulgaria and Romania also saw their R&D intensity decrease substantially in the years to 2003 whereas Turkey recorded a 7% annual rise between 1998 and 2002. China was able to boost its R&D intensity from 0.70% in 1998 to 1.23% in 2002, thanks to a 10.91% annual increase during three years. This compares to the aforementioned more modest 1.48% for the EU-25 and 1.28% and 1.41% annual average increases by respectively the US and Japan over the same period. The two latter countries have already high R&D intensities compared to the EU-25 though and boast more than double the Chinese R&D intensity.

Table 1: R&D expenditure financed by the Business Enterprise Sector 1998 to 2002 and R&D intensity (R&D expenditure as a percentage of GDP) from 1998 to 2003 in the EU-25 Member States, EEA countries, Switzerland, Candidate Countries, China, Japan and the United States

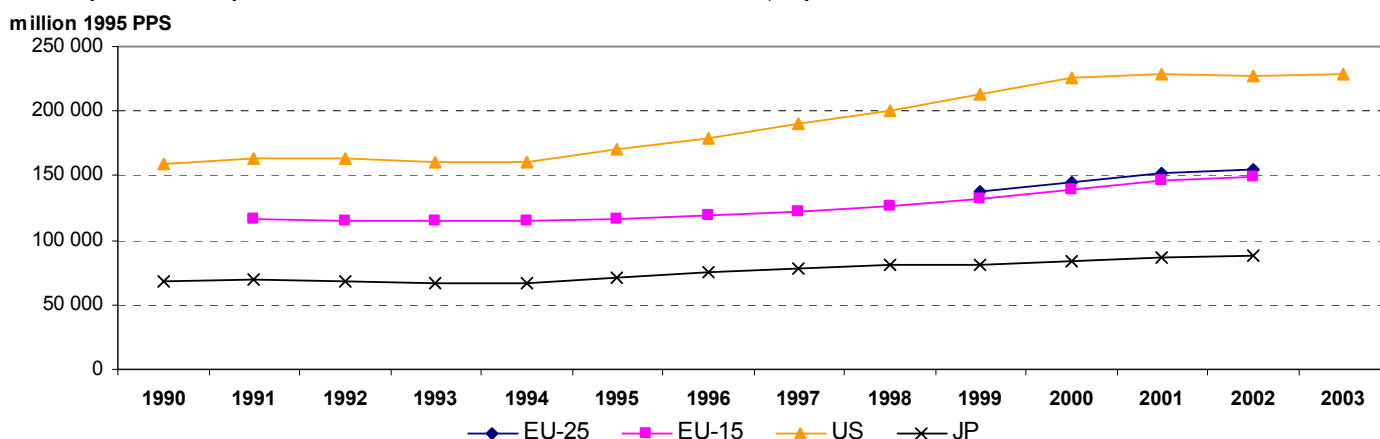
	Percentage of R&D expenditure financed by business and annual average growth rate from 1998 to 2002*						R&D intensity and annual average growth rate from 1998 to 2003*						
	1998	1999	2000	2001	2002	AAGR	1998	1999	2000	2001	2002	2003	AAGR
EU-25	54.0 e	55.2 e	55.6 e	55.4 e	:	0.87	1.82 s	1.86 s	1.88 s	1.92 s	1.93 s	:	1.48
EU-15	54.3 e	55.6 e	56.2 e	56.0 e	:	1.00	1.86 s	1.90 s	1.93 s	1.98 s	1.99 s	:	1.70
BE	65.7	66.2	63.0	64.3	:	-0.70	1.90	1.96	2.04	2.17	2.24 p	2.33 p	4.16
CZ	60.2	52.6	51.2	52.5	53.7	-2.80	1.16	1.16	1.23	1.22	1.35	1.35	3.08
DK	:	59.0	:	61.5	:	2.15	2.06 e	2.10 r	2.27 er	2.40	2.52	2.60 p	4.77
DE	62.4 e	65.4	66.0 e	65.7	65.5	1.23	2.31 e	2.44	2.49 e	2.51	2.53	2.50 e	1.59
EE	23.2	24.2	24.2	32.9	29.2	5.86	0.58	0.70	0.62	0.73	0.75	0.77 bp	5.83
EL	:	24.2	:	29.7 e	:	10.86	:	0.67 e	:	0.64 e	:	:	-2.26
ES	49.8 e	48.9	49.7	47.2	48.9	-0.48	0.89 e	0.88	0.94 er	0.95 r	1.03	1.11	4.52
FR	53.5	54.1	52.5 e	54.2	52.1	-0.64	2.17	2.18	2.18 b	2.23	2.26	2.19	0.18
IE	65.4 e	64.4	67.2	:	:	:	1.25 e	1.19	1.15	1.15	1.09	1.12 p	-2.17
IT	:	:	:	:	:	:	1.07	1.04	1.07	1.11	1.16	:	2.04
CY	13.7	17.4	17.5	15.3	17.4	6.13	0.23	0.25	0.25	0.27	0.32	0.33 p	7.49
LV	22.2 r	22.2 r	29.5	18.3	21.7	-0.56	0.41	0.37	0.45	0.41	0.42	0.39	-1.00
LT	:	:	31.6	37.1	27.9	-6.06	0.55	0.51	0.59	0.68	0.67	0.68 p	4.33
LU	:	:	90.7	:	:	:	:	:	1.71	:	:	:	:
HU	36.1	38.5	37.8	34.8	29.7	-4.79	0.68	0.69	0.80	0.95	1.02	0.97	7.36
NL	48.6	49.7	51.2	51.8	:	2.14	1.94	2.02 r	1.90 r	1.89 r	:	:	-0.87
AT	41.7	41.1	41.8	41.8	41.8	0.02	1.78	1.91	1.95	2.07	2.19	2.19	4.23
PL	37.8	38.1	32.6	30.8	31.0	-4.87	0.68	0.70	0.66	0.64	0.59	0.59	-2.80
PT	21.3 e	21.3	27.1 e	31.5	:	14.02	:	0.75	:	0.85	0.80 p	0.79 p	1.31
SI	52.6	56.9	53.3	54.7	60.0	3.38	1.39	1.42	1.44	1.56	1.53	1.53 e	1.94
SK	51.8	49.9	54.4	56.1	53.6	0.84	0.79	0.66	0.65	0.64	0.58	0.57	-6.32
FI	63.9 e	67.0	70.3	70.8	69.5	2.14	2.88	3.23	3.40	3.41	3.46	3.51 p	4.04
SE	:	67.8	:	71.9	:	3.00	3.62 e	3.65	:	4.27	:	:	5.66
UK	47.6	48.5	49.3	47.3	46.7	-0.48	1.81	1.85	1.85 r	1.89 r	1.87	:	0.82
IS	37.7 e	43.4	:	46.2	:	6.95	2.07	2.38	2.75 e	3.06	3.09 f	:	10.53
NO	:	49.5	:	51.7	:	2.12	:	1.65	:	1.60	1.67	1.89 p	3.45
CH	:	:	69.1	:	:	:	:	:	2.57	:	:	:	:
BG	23.6	22.8	24.4	27.1	24.8	1.27	0.57	0.57 b	0.52	0.47	0.49	0.50	-2.59
HR	:	:	:	:	45.7	:	:	:	:	:	1.12 p	:	:
RO	42.4	50.2	49.0	47.6	41.6	-0.46	0.49	0.40	0.37	0.39	0.38	0.40	-3.98
TR	41.8	43.3	42.9	44.9	41.3	-0.29	0.50	0.63	0.64	0.72	0.66	:	7.19
CN	:	:	57.6	:	:	:	0.70	0.83	1.00 b	1.07	1.23	:	10.91
JP	72.6	72.2	72.4	73.0	73.9	0.44	2.95	2.96	2.99	3.07	3.12	:	1.41
US	65.2 e	66.9	69.3	67.3	:	1.06	2.59 b	2.63	2.70	2.71	2.64 p	2.76 p	1.28

* from 1998 to 2002 when 2003 is not available or from 1998 to 2001 when 2002 is not available or 1999 to 2001 when neither 1998 nor 2002 are available CN: 2000-2002. DE: intramural R&D expenditure by source of funds estimated on basis of source of funds of (intramural plus extramural) R&D expenditure according to information from R&D performing enterprises and cooperative research institutes. US, JP, CN, EU-25 funding data, EU-15 funding data: OECD data
 US: The intramural R&D expenditure of the United States is slightly underestimated in comparison to the corresponding figures for other countries as the US methodology is slightly different from the international recommendations. CN: underestimated or based on underestimated data.

Graph 3 shows the evolution of R&D expenditure (all sectors) of the European Union, Japan and the US in constant 1995 PPS prices between 1990 and 2003. In all three cases, real R&D expenditure has increased more than twofold in the ten years to 2002. Bearing in mind the EU's enlargement to 25 Member States only took place in 2004, the inclusion of the 10 new Member States would have already added about 4 % of additional R&D expenditure to the EU-15 total

R&D expenditure in million 1995 PPS between 1999 and 2002. In 2002, the EU-25's R&D expenditure was about 1.75 times that of Japan's and about two thirds that of the US's in absolute terms and expressed in 1995 PPS. Such comparison needs to be put into perspective using for instance the three entities' respective population sizes or GDP (as in the R&D intensity benchmark elaborated on in the previous paragraphs).

Graph 3: R&D expenditure in million constant 1995 PPS in the EU-25, Japan and the United States from 1990 to 2002



In the ten years to 2002, the US's R&D expenditure grew by 138% to a sheer 227 billion PPS at 1995 prices. The EU-15 and Japan's amount of R&D likewise more than doubled in one decade, growing

by about 128%. In the last four years to 2002, the EU's R&D expenditure rose by 3.98% a year on average (see table 2).

...while its R&D expenditure grew at almost 4 % in real terms during the same period

Overall, European countries' R&D expenditure rose at a sustained pace between 1998 and 2002. Real R&D expenditure increased by almost 4% a year at EU-level when expressed in PPS at constant 1995 prices. Although the fastest growing countries in terms of real R&D expenditure were new Member States such as Estonia, Cyprus and Hungary (each achieving annual average growth rates of more than 11%) and Lithuania (9%), Poland and Slovakia's R&D efforts stagnated or even dwindled in real terms. North European countries' R&D expenditure rose fast, Iceland's growing as much as 14% per annum in constant PPS and Sweden's by 9%. Denmark and Finland's R&D expenditure still grew at more than 6% in real terms per year on average, around the same rate as in Belgium, the Czech Republic, and Austria. Also noteworthy was Spain's and Turkey's annual average growth rate of R&D expenditure of 8%. In the United States, Japan and the EU-25, the bulk

of the R&D efforts is performed by the Business Enterprise Sector. The US's BES R&D expenditure (BERD) on its own is almost as big as the entire EU-25's R&D expenditure (i.e. all institutional sectors of performance combined), while the EU-25's BERD is bigger than all of Japan's (see graph 4). The EU Government Sector R&D expenditure (GOVERD) was bigger than the US's and more than double that of Japan's. The EU-25 Higher Education Sector's R&D expenditure (HERD) was about the size of the US's and three times the size of Japan's. The Private Non-Profit Sector's (PNP) R&D efforts, although dwarfed by the BES, GOV and HES's, were proportionally more significant in the US than in either Japan or the EU-25. This latter institutional sector's share of R&D was the smallest in the EU-25 compared to the US or Japan.

Table 2: R&D expenditure for the EU-25, EEA countries, Switzerland, the Candidate Countries, China, Japan and the United States from 1998 to 2003

	in million current EUR and annual average growth rate from 1998 to 2003*							in million constant 1995 PPS and annual average growth rate from 1998 to 2003*						
	1998	1999	2000	2001	2002	2003	AAGR	1998	1999	2000	2001	2002	2003	AAGR
EU-25	144,763 s	155,586 s	168,230 s	178,708 s	186,035 s	:	6.47	:	137,820	144,922	152,162	154,941	:	3.98
EU-15	142,301 s	153,021 s	165,294 s	175,354 s	182,488 s	:	6.42	126,062	132,631	139,446	146,470	149,231	:	4.31
BE	4,246	4,618	5,046	5,515	5,814 p	6,236 p	7.99	3,945	4,201	4,534	4,869	5,045	5,319 p	6.16
CZ	630	641	744	832	959	1,019	10.10	:	1,350	1,483	1,512	1,534	1,730	6.40
DK	3,173 e	3,406 r	3,892 er	4,265	4,617	4,899 p	9.08	2,323	2,428	2,701	2,900	3,080	3,201 p	6.62
DE	44,348 e	48,191	50,619 e	52,002	53,363	53,200 e	3.71	37,536	40,318	42,431	43,048	43,507	42,889 e	2.70
EE	29	37	37	49	56	62 p	16.55	58	71	68	85	93	101 p	11.64
EL	:	795 e	:	841 e	:	:	2.87	:	937	:	969	:	:	1.70
ES	4,692 e	4,995	5,719 er	6,227 r	7,194	8,213	11.85	5,443	5,612	6,209	6,489	7,178	7,865	7.64
FR	28,139	29,529	30,954 b	32,887	34,527	34,122	3.93	24,026	24,918	25,870	27,009	27,727	26,992	2.36
IE	973 e	1,068	1,183	1,315 f	1,414	1,481 p	8.76	934	989	1,051	1,111	1,133	1,180 p	4.79
IT	11,401 r	11,524 r	12,460	13,572	14,600	:	6.38	11,821	11,719	12,400	13,158	13,733	:	3.82
CY	19	21	25	27	34	38 p	15.02	22	24	27	29	35	38 p	11.64
LV	24	25	38	38	42	39	9.87	62	57	74	73	81	78	4.89
LT	55	52	73	91	100	110 p	15.05	135	123	149	181	190	212 p	9.36
LU	:	:	364	:	:	:	:	:	:	281	:	:	:	:
HU	285	309	405	548	706	708	19.96	619	651	798	981	1,098	1,044 i	11.02
NL	6,819	7,563 r	7,655 r	8,090 r	:	:	5.86	6,427	6,969	6,786	6,805	:	:	1.92
AT	3,377	3,762	4,029	4,393	4,788	4,902	7.74	3,091	3,396	3,586	3,832	4,120	4,137	6.01
PL	1,022	1,086	1,197	1,323	1,188	1,091	1.30	2,119	2,284	2,236	2,177	2,027	2,006	-1.09
PT	:	815 r	:	1,038	1,036 ep	1,033 p	6.11	:	1,032	:	1,217	1,160	1,132 p	2.34
SI	258	284	297	341	360	375 e	7.75	339	368	388	431	437	450 e	5.79
SK	156	126	143	149	148	164	1.04	347	294	298	304	285	303	-2.72
FI	3,334	3,879	4,423	4,619	4,830	5,007 p	8.47	2,753	3,189	3,522	3,573	3,703	3,836 p	6.86
SE	8,003 e	8,608	:	10,459	:	:	9.33	6,488	6,845	:	8,431	:	:	9.13
UK	23,034	25,300	28,788 r	30,255 r	31,116	:	7.81	20,299	21,232	22,056	23,133	23,314	:	3.52
IS	148	188	251 e	261	280 f	:	17.30	132	161	198	226	227	:	14.46
NO	:	2,445	:	3,037	3,388	3,684 p	10.79	:	1,765	:	1,812	1,917	1,977 p	2.89
CH	:	:	6,852	:	:	:	:	:	:	4,929	:	:	:	:
BG	65	69 b	71	71	81	88	6.24	212	216	209	195	215	230	1.64
HR	:	:	:	:	271 p	:	:	:	:	:	:	:	:	:
RO	184	134	149	177	184	204	2.12	:	479	449	506	513	571	3.55
TR	887	1,094	1,389	1,172	1,280	:	9.62	1,756	2,121	2,309	2,414	2,389	:	8.00
CN	5,934	7,695	11,714 b	14,061	16,452	:	18.51	:	:	:	:	:	:	:
JP	103,604	123,912	153,852	143,012	131,722	:	6.19	80,712	81,128	84,315	86,896	87,968	:	2.18
US	202,274 b	228,963	287,127	306,776	293,049 p	268,552 p	5.83	200,462	212,631	226,161	228,816	227,030	228,968 p	2.69

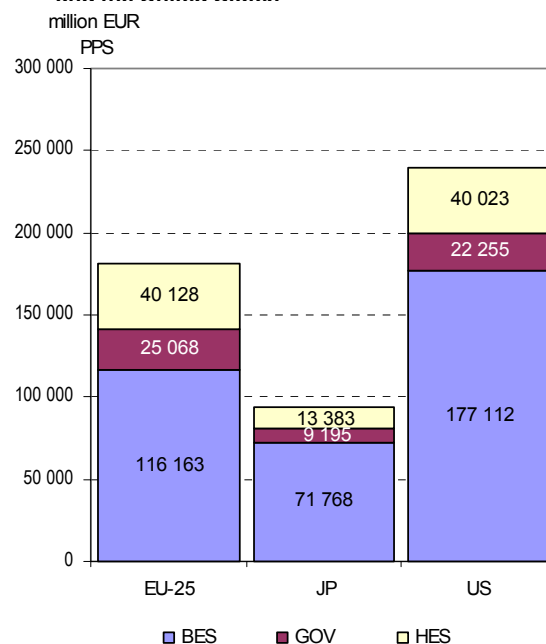
* from 1998 to 2002 when 2003 is not available or from 1998 to 2001 when 2002 is not available or 1999 to 2001 when neither 1998 nor 2002 are available. **CN: 2000-2002.** US: the intramural R&D expenditure of the United States is slightly underestimated in comparison to the corresponding figures for other countries as the US methodology is slightly different from the international recommendations. CN: underestimated or based on underestimated data.

The above pattern of R&D expenditure by institutional sector of performance is also reflected at Member State level. In most EU-25 countries, the Business Enterprise Sector (BES) is the largest R&D performer with a share of 60% or more of domestic R&D expenditure. Only in Estonia, Greece, Cyprus, Latvia Lithuania, Hungary, Poland and Portugal does the BES's share of total country-wide R&D expenditure represent less than 40% (see graph 5).

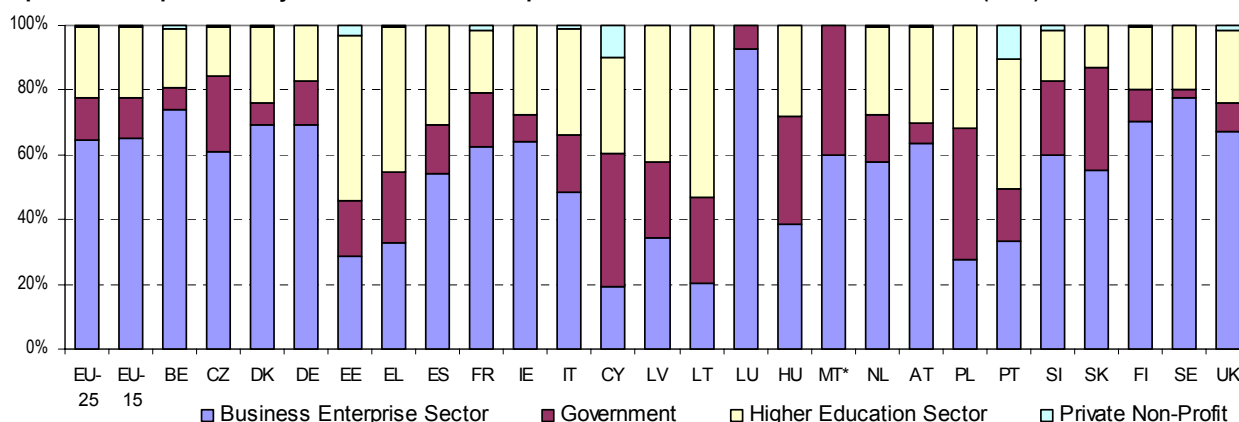
Interestingly, the Private non-profit R&D expenditure is proportionally the largest in Cyprus and Portugal, and to a lesser extent in Estonia, while these three countries' BES share of R&D expenditure is among the lowest of the Union. The countries with the highest share of R&D expenditure performed in the Higher Education Sector are Lithuania (52.9 %), Estonia (50.8 %), Greece (45.5 % in 2001), Latvia (42.3 %), and Portugal (40.1 %).

As noted earlier, more than 90% of Luxembourg's total R&D expenditure is financed by its BES, which is also the biggest R&D performing institutional sector. Government Sector financing comes second after the BES in a majority of EU Member States (see graph 6). In those countries where the BES R&D efforts are less important proportionally though, the Government Sector becomes the biggest provider of funds for R&D. Funding from abroad is the third most important source of R&D funding in the EU-25. Latvia has the highest percentage of R&D financing coming from abroad (over 35%), where this source of funds is only slightly less important than the Government Sector's and comes ahead of the BES. Foreign R&D funding is also very important in Austria, Greece and in the UK (more than 20%). 'Other national sources' of R&D financing encompass the Higher Education and the Private Non-Profit sectors and are negligible as funding institutions of domestic R&D. The HES's small share of R&D funding as compared to its share of actual R&D expenditure suggests it mainly relies on the government and other sources of financing in the EU.

Graph 4. R&D expenditure in million PPS by institutional sector of performance in 2002 in the EU-25, Japan and the United States

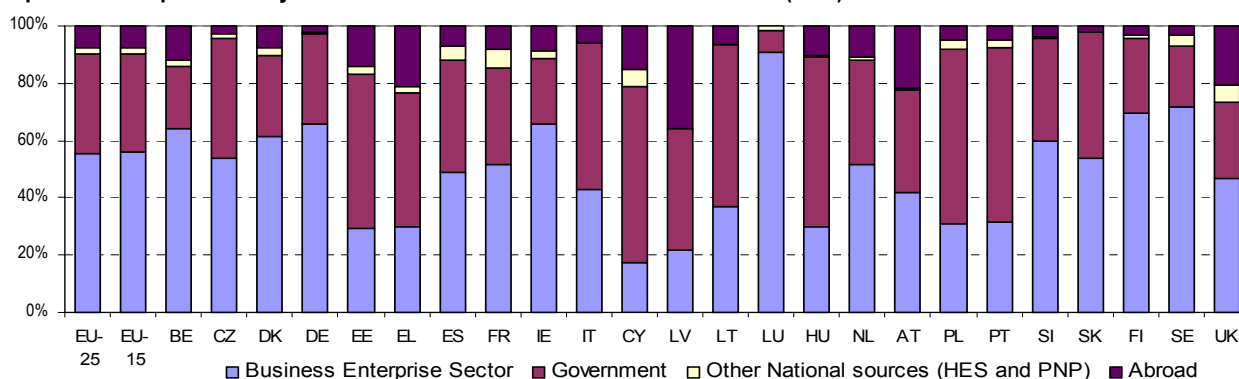


Graph 5. R&D expenditure by institutional sector of performance in the EU-25 countries in 2003 (in %)



EL, NL, SE: 2001. LU: 2000. AT: 1998. EU-25 and EU15: estimates. MT: breakdown only includes BES and GOV.

Graph 6. R&D expenditure by source of funds in the EU-25 countries in 2002 (in %)



DK, HU: The sum of the breakdown does not add to the total. EU-25, EU-15, BE, DK, EL, LT, NL, PT, SE: 2001. IE, LU: 2000. IT: 1996. EU-25, EU-15: estimates. MT: n.a.

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

Research and experimental development — R&D

Research and experimental development — R&D — activities comprise 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.

Institutional classifications

R&D expenditure is broken down into four institutional sectors of performance in which R&D takes place.

◆ The business enterprise sector — BES

With regard to R&D, the business enterprise sector includes: all firms, organizations and institutions whose primary activity is the market production of goods or services (other than higher education) for sale to the general public at an economically significant price and the private non-profit institutions mainly serving them — *Frascati Manual*, §163.

◆ The government sector — GOV

In the field of R&D, the government sector includes: all departments, offices and other bodies which furnish but normally do not sell to the community those common services, other than higher education, which cannot otherwise be conveniently and economically provided, and administer the state and the economic and social policy of the community (public enterprises are included in the business enterprise sector) as well as PNPs controlled and mainly financed by government — *Frascati Manual*, § 184.

◆ The higher education sector — HES

This sector comprises: all universities, colleges of technology and other institutes of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education establishments — *Frascati Manual*, § 206

◆ The private non-profit sector — PNP

This sector covers: non-market, private non-profit institutions serving households (i.e. the general public) and private individuals or households — *Frascati Manual*, § 194.

R&D expenditure is subdivided into five **sources of funds**: Business Enterprise, Government, Higher Education, Private non-profit and Abroad.

R&D indicators: R&D expenditure

◆ Current EUR

Current EUR values are obtained for the Eurozone by recalculating former national currency values on the basis of the fixed exchange rate and then applying the average exchange rate for the year in question. As a result, the values for countries appearing in tables quoted in national currencies differ from those quoted in current EUR for years before 1999, except in the case of Greece (2001). Current EUR values for non-Eurozone countries are obtained by directly applying the average exchange rate for the year in question.

◆ Purchasing power standards - PPS

Purchasing power parities are based on comparisons of the prices of representative and comparable goods or services recorded in the national currency of the country in question on a specific date. As a result, financial aggregates can be expressed in purchasing power standards—PPS—rather than EUR based on exchange rates.

◆ Current PPS

Data quoted in current PPS are obtained by applying the average exchange rate of the year in question to the national currency value.

◆ Constant 1995 PPS

Data presented in this SIF under 'constant PPS' refers to 1995 constant PPS at 1995 prices. Data measured in constant 1995 PPS are first corrected for inflation using the GDP deflator — a Paasche index based on 1995=100 — of the country in question before applying the 1995 PPS exchange rate. The GDP deflator broadly correlates with the 1995 European System of Accounts (ESA 95) available on NewCronos, Theme 2. The adjusted GDP deflator provided for by ESA 79 was used in the case of incomplete series.

◆ R&D intensity

R&D intensity represents the R&D expenditure as a percentage of GDP. It is calculated by relating R&D expenditure in current EUR for the sectors and years in question to GDP.

European aggregates

For R&D expenditure, EU totals are calculated as the sum of the national data by sector. If data are missing, estimates are first made for the country in question, reference period, institutional sector or relevant R&D variable, as appropriate.

EU-15 aggregate: until 1999: excluding Luxembourg; EU-25 aggregate: excluding Luxembourg (until 1999) and Malta (until 2001 for HES and TOTAL)

Sources

United States, Japan and China: OECD, *Main Science and Technology indicators* – MSTI 2004/1.

Data on R&D funding until 2001 for EU-15 countries, Iceland and Norway - source of data is OECD.

General abbreviations

p provisional value
e estimated value
s Eurostat estimate
r revised value
f forecast
b break in series
: not available

Reference manual

Standard method proposed for research and experimental development surveys — *Frascati Manual*, OECD, 2002.

The data presented in this Statistics in Focus reflect the data availability in Eurostat's reference database as of December 2004.

Further information:

➤ **Databases**

[EUROSTAT Website/Science and technology/Research and development/Statistics on research and development/R&D expenditure/National R&D expenditure](#)

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