Research and development C 2

R&D intensity in Germany fell in 2013, accounting for 2.85 percent of the gross domestic product (C 2-1). The decline was due partly to a loss of momentum in the private sector, but mainly to statistical effects, which are described in detail in section A 2.

This decline did not lead to any changes in the general ranking of countries. In Asia, R&D intensity was highest in Korea and Japan; in Europe, Sweden and Switzerland were still in the lead. The level was lower in Germany and the United States. Overall, European countries reported stagnating or declining R&D intensities in 2013. China made up ground with high growth rates and almost reached the level of R&D intensity in France.

Government budget appropriations or outlays on civil R&D (C 2-2) rose again in Sweden and Germany in 2013, albeit much more slowly in Germany. In France and the UK, the government budget outlays were virtually unchanged from the previous year. The 2013 budget outlays declined in the United States and Japan.

Between 2003 and 2013, the distribution of gross domestic expenditure on R&D by performing sector (C 2-3) developed in different ways. Whereas the importance of the private sector in performing R&D grew (in some cases significantly) in the Asian countries, the USA, France and the UK, private-sector performance declined in Germany, Sweden and Switzerland. In Germany, it fell from 69.7 percent in 2003 to 66.9 percent in 2013. In Germany, but particularly in Sweden and Switzerland, the universities greatly increased their share of total R&D expenditure: Sweden from 21.8 percent in 2003 to 27.8 percent in 2013, Switzerland from 22.9 percent to 28.1 percent.

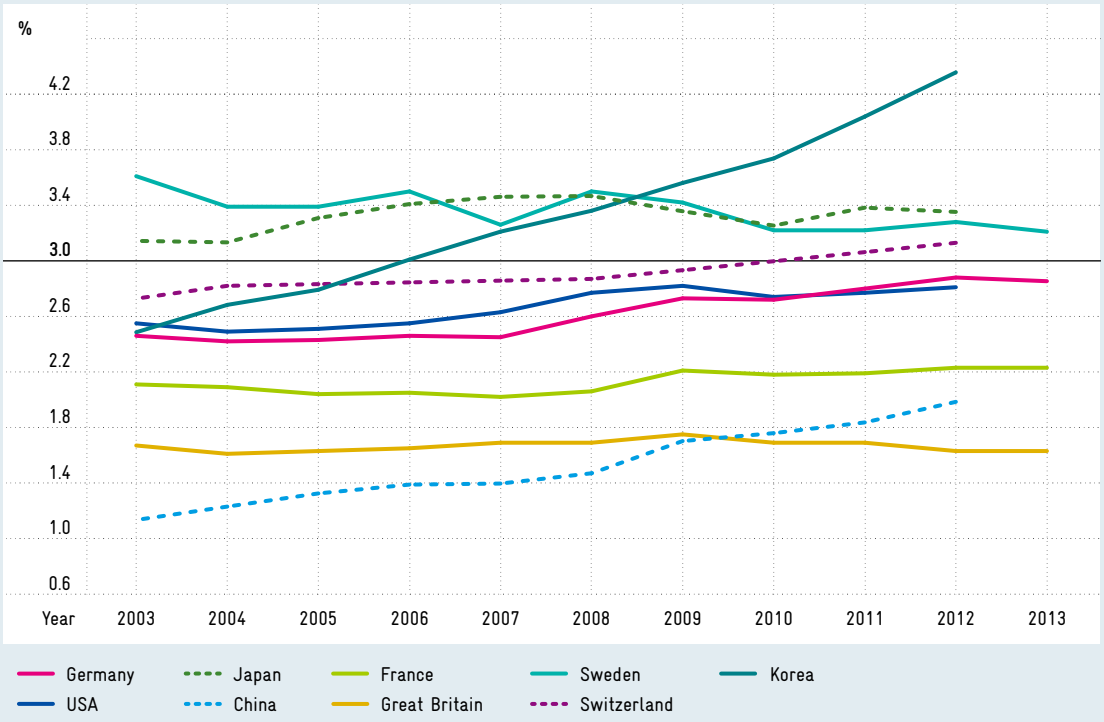
No new data were available for the indicators for the R&D intensity of Germany's Länder (C 2-4) or for the R&D expenditure of companies (C 2-5). The tables were taken over from last year. No commentary is made here for this reason.

The last table presents sectoral data on R&D intensities, i.e. internal R&D expenditure as a percentage of revenue from the company's own products (C 2-6). The R&D intensity of German air- and spacecraft manufacturing fell markedly from 12 percent in the previous year to 9 percent in 2013. The slight downturn already observed in 2012 continued in the pharmaceutical industry. Nevertheless, its R&D intensity remained at a comparatively high level – at 12.7 percent. Only the producers of IT equipment, electrical engineering and optics continued to show a consistently higher R&D intensity, spending 13 percent of their revenue on internal R&D. However, only the manufacturers of electrical equipment reported a clear increase in R&D intensity – from 1.8 percent in 2012 to 2.1 percent in 2013.[321]

C 2-1
Data
Download

R&D intensity in selected OECD countries and China, 2003 to 2013 (figures in percent)

R&D intensity: Percentage of an economy's gross domestic product (GDP) spent on research and development. R&D intensity reported for the first time on the basis of the new national accounts (NA), where R&D expenditure is posted as investment in GDP.



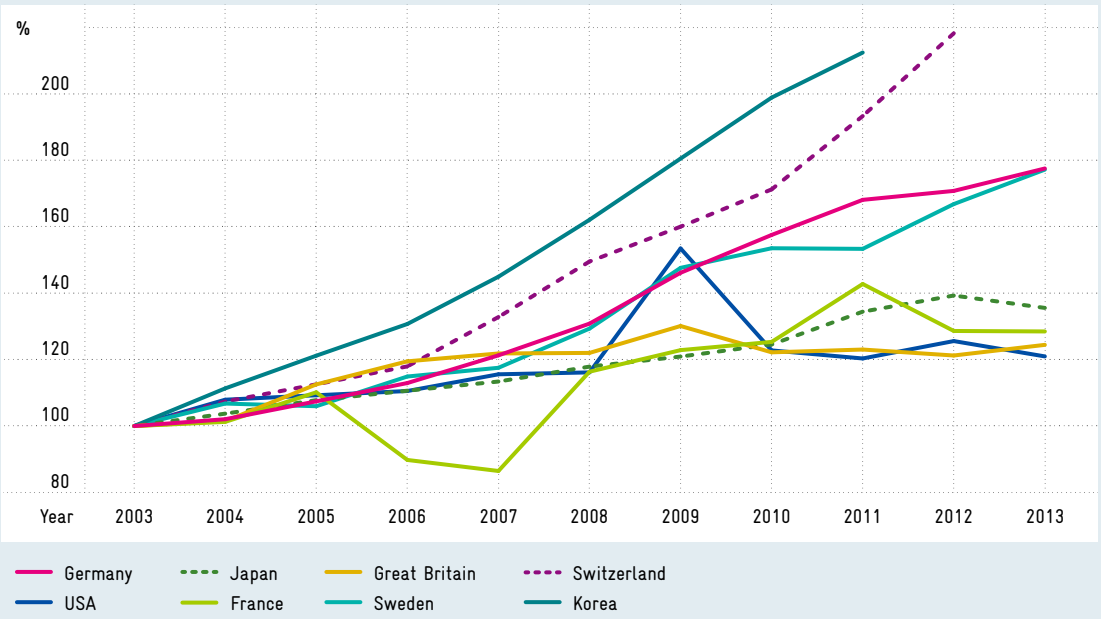
Source: OECD, EUROSTAT. Calculations and estimates by NIW in Schasse et al. (2015).

C

State budget estimates for civil R&D

C 2-2
Data
Download

R&D budget estimates: the chart shows the amounts set aside in the budget to finance R&D.



Index: 2003 = 100, some data are estimated.
Source: OECD, EUROSTAT. Calculations and estimates by NIW in Schasse et al. (2015).

Distribution of gross domestic expenditure on R&D (GERD) by performing sector, 2003 and 2013

C 2-3
Data
Download

Gross domestic expenditure on research and development (GERD) in industry, tertiary education institutions and government.

	2003					2013[1]				
		of which by ... (in percent)					of which by ... (in percent)			
	GERD in USD m[2]	private sector	higher education sector	public sector	non-profit sector	GERD in USD m[2]	private sector	higher education sector	public sector	non-profit sector
France	36,870	62.6	19.4	16.7	1.3	56,092	64.8	20.7	13.1	1.3
Germany	**59,457**	**69.7**	**16.9**	**13,4**	**-**	**102,612**	**66.9**	**18.0**	**15.1**	**-**
Great Britain	31,057	63.7	24.0	10.4	1.9	40,146	64.5	26.3	7.3	1.9
Japan[3]	112,205	75.0	13.7	9.3	2.1	148,389	77.0	13.2	8.4	1.5
Korea[3]	24,016	76.1	10.1	12.6	1.2	58,380	76.5	10.1	11.7	1.6
Sweden	10,369	74.4	21.8	3.5	0.4	14,019	68.2	27.8	3.8	0.2
Switzerland[4]	5,773	73.9	22.9	1.3	1.9	13,303	69.3	28.1	0.8	1.8
United States	293,852	68.3	14.3	12.9	4.5	453,544	69.8	13.8	12.3	4.0
China[5]	56,463	62.4	10.5	27.1	-	293,550	76.2	7.6	16.3	-

[1] Provisional. Germany acc. to WiStat 12/2014. [2] GERD in US dollars by purchasing power parity
[3] 2011 instead of 2013. [4] 2000 instead of 2003, and 2012 instead 2013. [5] 2012 instead of 2013.
Private non-profit organisations: in some countries included under "public sector" (e.g. Germany).
Source: OECD, EUROSTAT (data from 27 Nov. 2014). Calculations by NIW in Schasse et al. (2015).

C 2-4

Data
Download

R&D intensity of Germany's Länder, 2001 and 2011 (figures in percent)

R&D intensity: Länder expenditure on research and development as a percentage of their gross domestic product, broken down by sectors.

	2001				2011			
Länder	Total	private sector	public sector	higher education sector	Total	private sector	public sector	higher education sector
Baden-Württemberg	3.86	3.05	0.40	0.41	5.08	4.10	0.43	0.55
Bavaria	3.07	2.46	0.24	0.37	3.15	2.41	0.30	0.44
Berlin	3.94	2.15	1.01	0.78	3.55	1.39	1.24	0.92
Brandenburg	1.47	0.54	0.65	0.28	1.68	0.54	0.78	0.36
Bremen	2.14	1.05	0.56	0.53	2.78	1.00	1.00	0.78
Hamburg	1.40	0.72	0.33	0.34	2.24	1.26	0.47	0.51
Hesse	2.37	1.92	0.15	0.30	3.01	2.35	0.23	0.44
Mecklenburg-Vorpommern	1.17	0.18	0.48	0.51	2.09	0.68	0.73	0.67
Lower Saxony	2.49	1.79	0.31	0.39	2.88	1.97	0.40	0.51
North Rhine-Westphalia	1.74	1.09	0.28	0.38	2.01	1.21	0.31	0.49
Rhineland-Palatinate	1.96	1.48	0.14	0.34	2.07	1.46	0.18	0.44
Saarland	1.02	0.38	0.22	0.42	1.49	0.54	0.43	0.52
Saxony	2.44	1.22	0.60	0.61	2.91	1.26	0.88	0.77
Saxony-Anhalt	1.28	0.34	0.40	0.54	1.49	0.43	0.57	0.49
Schleswig-Holstein	1.15	0.53	0.31	0.32	1.43	0.69	0.36	0.37
Thuringia	2.11	1.13	0.44	0.53	2.22	1.03	0.54	0.65
Germany	**2.47**	**1.73**	**0.34**	**0.41**	**2.89**	**1.96**	**0.42**	**0.51**

Source: SV Wissenschaftsstatistik, Federal Statistical Office. Calculations by NIW in Schasse et al. (2014).

C 2-5
Data Download

Internal R&D spending by companies: origin of funds, economic sector, company size and technology category, 2011

Internal R&D: R&D carried out within a company either for its own purposes or on behalf of others

	Internal R&D expenditure				
	Total	of which financed by			
		Industry	Government	other Länder	other countries
	in Euros	in percent			
All researching companies	**50,804,210**	**91.7**	**4.0**	**0.3**	**4.0**
Manufacturing	43,733,376	93.1	3.2	0.2	3.6
Chemical industry	3,296,674	95.3	2.0	0	2.7
Pharmaceutical industry	4,069,729	97.9	0.4	0	1.6
Plastics, glass and ceramics	1,224,873	93.3	2.5	0.5	3.8
Metal production/metalworking	1,242,073	80.5	7.4	0	12.1
Electrical/electronic engineering	8,165,077	94.8	3.2	0.1	1.9
Mechanical engineering	4,902,500	94.8	1.9	0	3.2
Vehicle manufacturing	18,914,281	91.5	4.0	0.3	4.3
Other manufacturing	1,918,170	91.2	3.3	0	5.5
Other industries	7,070,835	83.3	9.3	0.8	6.6
fewer than 100 employees	2,864,072	81.0	14.9	0.5	3.6
100–499 employees	5,147,816	89.3	5.3	0.4	5.0
500–999 employees	3,027,362	87.5	7.1	0.1	5.3
1,000 or more employees	39,764,960	93.1	2.8	0.2	3.8
Technology classes in industry					
Cutting-edge technology (R&D expenditure › 7 percent of turnover)	13,092,505	90.6	6.9	0	2.5
High-value technology (R&D expenditure 2.5–7 percent of turnover)	25,497,475	95.0	1.3	0.2	3.6

Source: SV Wissenschaftsstatistik. In: Schasse et al. (2014).

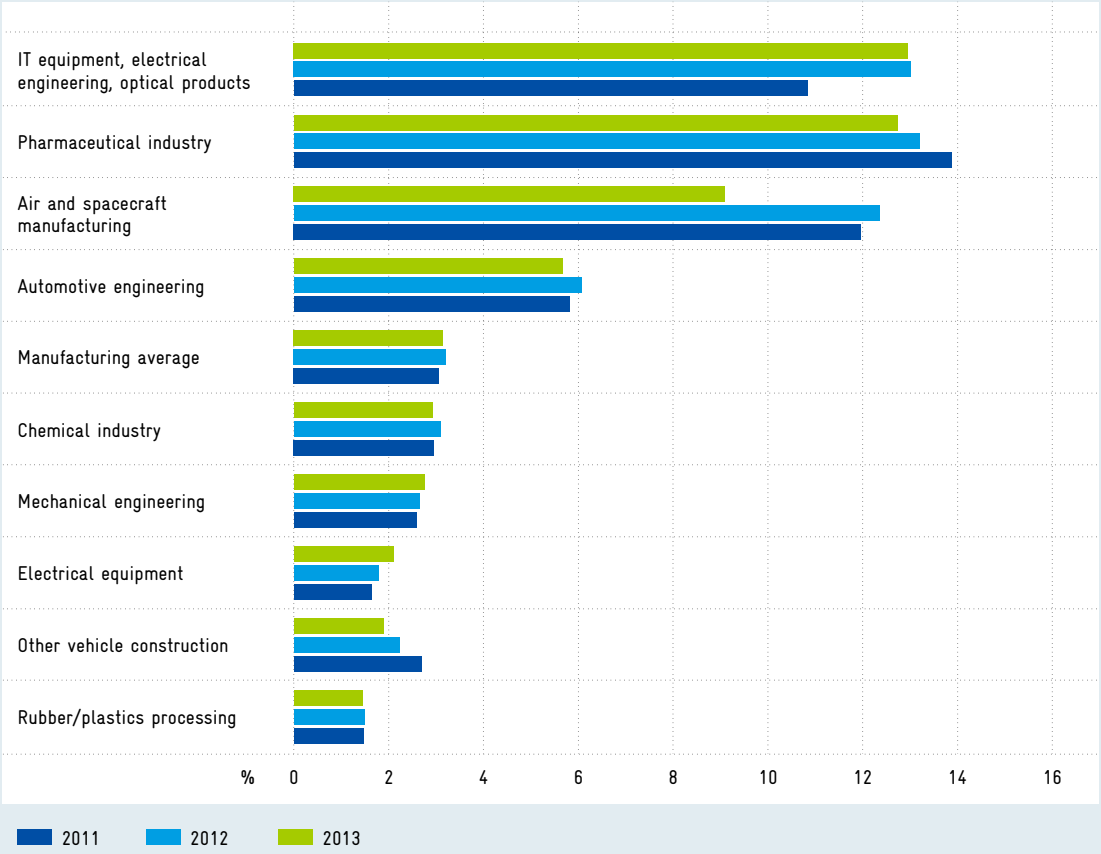
C

C 2-6

Data
Download

Internal corporate R&D expenditure as a percentage of turnover from the company's own products, 2011, 2012 and 2013

Internal R&D: R&D carried out within a company either for its own purposes or on behalf of others



Figures without tax. 2013: break in series.
Source: SV Wissenschaftsstatistik, Federal Statistical Office, corporate results for Germany.
Calculations by NIW in Schasse et al. (2015).

C