

APPENDIX TABLE 4-12 
Gross expenditures on R&D and expenditures for R&D as a share of gross domestic product, for selected countries or regions: 1981–2015

(PPP in billions and in constant 2005 billions of dollars, GERD-to-GDP ratio, and annual growth rates)

Year	United States	EU ^a	France	Germany	United Kingdom	China	Japan	South Korea	India
GERD (PPP \$billions)									
1981	72.7	na	11.0	18.9	11.6	NA	23.7	NA	NA
1982	81.2	na	12.5	20.5	NA	NA	27.1	NA	NA
1983	90.4	na	13.4	21.8	12.5	NA	30.8	NA	NA
1984	102.9	na	14.8	23.2	NA	NA	34.5	NA	NA
1985	115.2	na	15.9	26.2	14.4	NA	40.0	NA	NA
1986	120.6	na	16.5	27.7	15.3	NA	41.5	NA	NA
1987	126.7	na	17.7	30.0	15.9	NA	45.6	NA	NA
1988	134.2	na	19.1	32.0	16.9	NA	50.9	NA	NA
1989	142.2	na	21.1	34.4	17.9	NA	57.7	NA	NA
1990	152.4	na	23.4	36.0	18.7	NA	64.9	NA	NA
1991	161.4	na	24.4	40.1	18.3	9.1	68.8	7.0	NA
1992	165.8	na	25.4	39.9	18.5	10.7	69.7	8.0	NA
1993	166.1	na	26.3	39.1	19.7	12.0	69.6	9.5	NA
1994	169.6	na	26.9	39.4	20.5	12.5	70.4	11.6	NA
1995	184.1	137.3	27.7	41.0	19.6	12.8	76.6	13.2	NA
1996	197.8	142.7	28.3	42.2	20.1	14.2	83.1	14.9	9.9
1997	212.5	149.4	28.6	44.0	20.7	17.9	87.8	16.3	11.3
1998	226.2	157.1	29.4	46.0	21.4	19.7	91.0	14.6	12.4
1999	245.0	169.0	31.0	50.5	23.3	25.0	92.8	15.8	14.1
2000	268.6	183.1	33.2	53.6	25.1	33.0	98.8	18.5	15.7
2001	279.1	195.3	36.2	56.1	26.4	38.5	103.8	21.3	16.3
2002	278.4	205.7	38.3	58.4	27.9	48.1	108.2	22.5	17.0
2003	292.2	210.1	37.1	60.8	28.6	57.1	112.2	24.1	18.5

Year	United States	EU ^a	France	Germany	United Kingdom	China	Japan	South Korea	India
2004	303.8	218.0	38.2	62.8	29.4	70.1	117.6	27.9	21.6
2005	326.2	226.8	39.5	63.9	30.6	86.8	128.7	30.6	26.5
2006	351.7	249.6	42.3	69.3	33.3	105.6	138.6	35.4	29.4
2007	378.5	266.6	44.2	73.3	35.2	124.2	147.6	40.6	33.5
2008	405.4	290.7	46.6	81.1	36.5	146.1	148.7	43.9	37.8
2009	404.2	297.4	49.7	82.8	36.5	185.3	137.0	46.0	40.2
2010	408.5	308.3	51.0	87.1	37.6	213.5	140.6	52.2	43.7
2011	427.1	328.5	53.6	95.8	38.8	247.8	148.4	58.4	48.1
2012	434.3	341.4	55.1	100.5	38.5	292.2	152.3	64.9	NA
2013	454.8	355.8	58.4	102.9	41.5	334.1	164.7	68.2	NA
2014	476.5	372.3	59.5	109.8	44.2	370.1	170.5	73.2	NA
2015	496.6	386.5	60.8	114.8	46.3	408.8	170.0	74.1	50.3
GERD (2009 constant PPP \$billions)									
1981	149.9	na	22.8	38.9	23.9	NA	48.9	NA	NA
1982	157.5	na	24.3	39.9	NA	NA	52.7	NA	NA
1983	168.8	na	25.1	40.6	23.4	NA	57.4	NA	NA
1984	185.5	na	26.6	41.8	NA	NA	62.3	NA	NA
1985	201.3	na	27.8	45.8	25.2	NA	69.9	NA	NA
1986	206.5	na	28.3	47.4	26.2	NA	71.0	NA	NA
1987	211.5	na	29.6	50.1	26.6	NA	76.1	NA	NA
1988	216.5	na	30.8	51.7	27.2	NA	82.2	NA	NA
1989	220.9	na	32.8	53.4	27.8	NA	89.7	NA	NA
1990	228.2	na	35.0	54.0	28.0	NA	97.2	NA	NA
1991	233.9	na	35.4	58.2	26.6	13.3	99.7	10.2	NA
1992	235.0	na	36.0	56.5	26.2	15.2	98.7	11.4	NA
1993	230.0	na	36.4	54.2	27.2	16.5	96.3	13.2	NA
1994	229.9	na	36.4	53.4	27.8	16.9	95.4	15.7	NA

Year	United States	EU ^a	France	Germany	United Kingdom	China	Japan	South Korea	India
1995	244.4	182.2	36.7	54.4	26.1	17.0	101.7	17.5	NA
1996	257.9	186.0	36.9	55.0	26.2	18.5	108.3	19.4	12.9
1997	272.4	191.5	36.7	56.4	26.5	22.9	112.5	20.8	14.5
1998	286.9	199.3	37.3	58.4	27.2	25.0	115.4	18.5	15.7
1999	306.0	211.0	38.7	63.1	29.1	31.2	115.9	19.7	17.6
2000	328.0	223.5	40.6	65.5	30.7	40.4	120.6	22.6	19.1
2001	333.2	233.2	43.2	66.9	31.5	46.0	124.0	25.4	19.5
2002	327.4	241.9	45.1	68.7	32.8	56.5	127.2	26.5	20.0
2003	336.8	242.2	42.8	70.1	32.9	65.9	129.4	27.8	21.3
2004	340.9	244.6	42.8	70.5	33.0	78.7	132.0	31.4	24.2
2005	354.6	246.5	43.0	69.4	33.3	94.4	139.9	33.3	28.8
2006	370.9	263.2	44.7	73.1	35.1	111.4	146.1	37.4	31.0
2007	388.9	273.9	45.4	75.3	36.2	127.6	151.6	41.8	34.4
2008	408.5	292.9	46.9	81.7	36.8	147.2	149.8	44.2	38.1
2009	404.2	297.4	49.7	82.8	36.5	185.3	137.0	46.0	40.2
2010	403.5	304.6	50.3	86.1	37.2	210.9	138.9	51.5	43.1
2011	413.4	317.9	51.9	92.7	37.5	239.9	143.6	56.5	46.5
2012	412.8	324.4	52.4	95.5	36.6	277.7	144.8	61.6	NA
2013	425.4	332.8	54.6	96.3	38.8	312.5	154.0	63.8	NA
2014	437.8	342.1	54.7	100.9	40.6	340.1	156.7	67.3	NA
2015	451.4	351.3	55.3	104.3	42.0	371.6	154.5	67.3	45.7
GERD/GDP (%)									
1981	2.27	NA	1.86	2.35	2.24	NA	2.05	NA	NA
1982	2.43	NA	1.94	2.42	NA	NA	2.14	NA	NA
1983	2.48	NA	1.98	2.43	2.06	NA	2.26	NA	NA
1984	2.55	NA	2.07	2.43	NA	NA	2.35	NA	NA
1985	2.65	NA	2.12	2.60	2.09	NA	2.48	NA	NA



Year	United States	EU ^a	France	Germany	United Kingdom	China	Japan	South Korea	India
1986	2.63	NA	2.11	2.63	2.10	NA	2.45	NA	NA
1987	2.60	NA	2.15	2.74	2.02	NA	2.52	NA	NA
1988	2.55	NA	2.14	2.73	1.96	NA	2.54	NA	NA
1989	2.51	NA	2.18	2.71	1.95	NA	2.63	NA	NA
1990	2.55	NA	2.26	2.61	1.95	NA	2.70	NA	NA
1991	2.61	NA	2.27	2.40	1.87	0.72	2.68	1.74	NA
1992	2.54	NA	2.27	2.28	1.84	0.73	2.63	1.83	NA
1993	2.42	NA	2.31	2.21	1.86	0.70	2.56	1.98	NA
1994	2.32	NA	2.26	2.13	1.84	0.63	2.52	2.16	NA
1995	2.40	1.59	2.23	2.13	1.68	0.57	2.61	2.20	NA
1996	2.44	1.58	2.21	2.14	1.61	0.56	2.69	2.26	0.63
1997	2.47	1.59	2.14	2.18	1.56	0.64	2.77	2.30	0.67
1998	2.49	1.60	2.08	2.21	1.58	0.65	2.87	2.16	0.69
1999	2.54	1.65	2.10	2.33	1.66	0.75	2.89	2.07	0.71
2000	2.61	1.67	2.08	2.39	1.64	0.89	2.91	2.18	0.74
2001	2.63	1.69	2.13	2.39	1.63	0.94	2.97	2.34	0.72
2002	2.54	1.70	2.17	2.42	1.64	1.06	3.01	2.27	0.71
2003	2.54	1.69	2.11	2.46	1.60	1.12	3.04	2.35	0.71
2004	2.48	1.66	2.09	2.42	1.55	1.21	3.03	2.53	0.74
2005	2.49	1.66	2.04	2.42	1.57	1.31	3.18	2.63	0.81
2006	2.54	1.68	2.05	2.46	1.59	1.37	3.28	2.83	0.80
2007	2.61	1.69	2.02	2.45	1.63	1.37	3.34	3.00	0.81
2008	2.75	1.76	2.06	2.60	1.64	1.44	3.34	3.12	0.87
2009	2.80	1.84	2.21	2.73	1.70	1.66	3.23	3.29	0.84
2010	2.73	1.84	2.18	2.71	1.68	1.71	3.14	3.47	0.82
2011	2.75	1.88	2.19	2.80	1.68	1.78	3.24	3.74	0.83
2012	2.69	1.92	2.23	2.87	1.61	1.91	3.21	4.03	NA

Year	United States	EU ^a	France	Germany	United Kingdom	China	Japan	South Korea	India
2013	2.72	1.93	2.24	2.82	1.66	1.99	3.31	4.15	NA
2014	2.73	1.95	2.23	2.88	1.68	2.02	3.40	4.29	NA
2015	2.74	1.96	2.22	2.93	1.70	2.07	3.29	4.23	0.63
GERD, annual growth rates, recent years, current and constant dollars (%)									
Current PPP\$									
CAGR 2000–10	4.3	5.4	4.4	5.0	4.1	20.5	3.6	10.9	10.8
CAGR 2010–15	4.0	4.6	3.6	5.7	4.2	13.9	3.9	7.3	2.9
Constant 2009 PPP\$									
CAGR 2000–10	2.1	3.1	2.2	2.8	1.9	18.0	1.4	8.6	8.5
CAGR 2010–15	2.3	2.9	1.9	3.9	2.5	12.0	2.2	5.5	1.2
GDP, annual growth rates, recent years, current and constant dollars (%)									
Current PPP\$									
CAGR 2000–10	3.8	4.4	3.9	3.7	3.9	12.9	2.8	5.9	9.7
CAGR 2010–15	3.9	3.3	3.2	4.1	3.9	9.6	2.9	3.1	8.4
Constant 2009 PPP\$									
CAGR 2000–10	1.6	2.2	1.7	1.5	1.7	10.6	0.6	3.7	7.4
CAGR 2010–15	2.2	1.6	1.5	2.4	2.2	7.8	1.2	1.4	6.6

NA = not available.

CAGR = compound average annual growth rate; EU = European Union; GDP = gross domestic product; GERD = gross domestic expenditures on R&D; PPP = purchasing power parity.

^a Data include the 28 EU member countries.



Note(s)

Top 8 R&D performing countries in 2015. Conversions of foreign currencies to U.S. dollars are calculated with each country's GDP implicit price deflator and with Organisation for Economic Co-operation and Development (OECD) PPP exchange rates. Data for the United States in this table reflect international standards for calculating GERD, which vary slightly from the National Science Foundation's protocol for tallying U.S. total R&D. Data for Japan for 1996 onward may not be consistent with earlier data because of changes in methodology. Data for Germany for 1981–90 are for West Germany.

Source(s)

National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series); OECD, *Main Science and Technology Indicators* (2017/1); United Nations Educational, Scientific and Cultural Organization Institute for Statistics Data Centre, <http://data.uis.unesco.org/>, accessed 13 October 2017.

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