

TABLE S4-1

Gross expenditures on R&D and expenditures for R&D as a share of gross domestic product, for selected countries or regions: 1981–2017

(PPP in billions and in constant 2012 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	24.0	NA	NA	
1982	81.2	na	12.5	20.5	NA	NA	27.4	NA	NA	
1983	90.4	na	13.4	21.6	12.5	NA	31.1	NA	NA	
1984	102.9	na	14.7	23.2	NA	NA	35.0	NA	NA	
1985	115.2	na	15.9	26.0	14.4	NA	40.4	NA	NA	
1986	120.6	na	16.5	27.7	15.3	NA	42.0	NA	NA	
1987	126.7	na	17.7	29.8	15.9	NA	46.1	NA	NA	
1988	134.2	na	19.1	32.0	16.8	NA	51.4	NA	NA	
1989	142.2	na	21.1	34.3	17.9	NA	58.4	NA	NA	
1990	152.4	na	23.3	36.0	18.6	NA	65.4	NA	NA	
1991	161.4	na	24.4	40.2	18.3	9.2	69.2	7.0	NA	
1992	165.8	na	25.4	39.9	18.5	10.8	70.0	8.0	NA	
1993	166.1	na	26.3	39.1	19.6	12.0	69.8	9.5	NA	
1994	169.6	na	26.9	39.4	20.5	12.5	70.5	11.6	NA	
1995	184.1	137.3	27.7	41.0	19.7	12.8	76.6	13.2	NA	
1996	197.8	142.7	28.3	42.2	20.1	14.2	83.0	14.9	9.9	
1997	212.5	149.6	28.6	44.1	20.7	17.9	87.8	16.3	11.3	
1998	226.2	157.3	29.5	46.1	21.4	19.8	91.1	14.6	12.4	
1999	245.0	169.1	31.0	50.7	23.3	25.0	92.8	15.8	14.1	
2000	268.6	183.4	33.3	53.9	25.1	33.1	98.9	18.5	15.7	
2001	279.1	195.1	36.1	56.2	26.3	38.6	103.8	21.3	16.3	
2002	278.4	205.9	38.3	58.6	27.9	48.1	108.2	22.5	17.0	
2003	292.2	210.3	37.1	61.0	28.6	57.2	112.4	24.1	18.5	
2004	303.8	218.0	38.1	62.9	29.4	70.2	117.5	27.9	21.6	
2005	326.2	226.9	39.5	64.0	30.6	86.8	128.7	30.6	26.5	
2006	351.7	249.7	42.3	69.5	33.3	105.6	138.7	35.4	29.4	
2007	378.5	266.8	44.2	73.4	35.2	124.2	147.5	40.6	33.5	
2008	405.4	290.8	46.6	81.2	36.5	146.1	148.7	43.9	37.8	
2009	404.2	297.1	49.6	82.7	36.4	185.3	137.4	46.0	40.2	
2010	408.5	307.7	50.9	87.0	37.5	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	340.9	55.1	100.5	38.5	292.2	152.3	64.9	NA	
2013	454.8	355.3	58.4	102.9	41.5	334.1	164.7	68.2	NA	
2014	476.5	371.2	60.6	109.6	43.8	370.6	169.6	73.1	NA	
2015	495.1	386.0	61.6	114.1	45.7	407.5	168.5	76.9	49.7	
2016	516.6	399.1	62.3	119.9	47.4	451.4	164.8	80.5	NA	
2017	549.0	430.1	64.7	132.0	49.3	496.0	170.9	91.0	NA	
GERD (2012 constant PPP \$billions)										
1981	157.2	na	23.8	40.8	25.0	NA	52.0	NA	NA	
1982	165.2	na	25.5	41.8	NA	NA	55.8	NA	NA	
1983	177.1	na	26.3	42.3	24.5	NA	60.9	NA	NA	
1984	194.5	na	27.9	43.8	NA	NA	66.2	NA	NA	
1985	211.1	na	29.1	47.7	26.4	NA	74.0	NA	NA	
1986	216.6	na	29.6	49.7	27.4	NA	75.4	NA	NA	
1987	222.0	na	31.0	52.2	27.8	NA	80.8	NA	NA	
1988	227.2	na	32.3	54.2	28.5	NA	87.1	NA	NA	
1989	231.7	na	34.4	55.9	29.1	NA	95.1	NA	NA	
1990	239.3	na	36.7	56.6	29.2	NA	102.7	NA	NA	

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1991	245.2	na	37.1	61.0	27.8	13.9	105.1	10.7	NA
1992	246.3	na	37.8	59.2	27.4	16.0	104.0	11.9	NA
1993	241.1	na	38.1	56.8	28.5	17.4	101.3	13.8	NA
1994	241.0	na	38.2	56.0	29.2	17.8	100.1	16.4	NA
1995	256.1	191.1	38.5	57.1	27.3	17.8	106.6	18.4	NA
1996	270.3	195.0	38.7	57.7	27.4	19.4	113.4	20.3	13.6
1997	285.4	200.9	38.5	59.2	27.8	24.0	117.9	21.9	15.1
1998	300.5	208.9	39.1	61.2	28.5	26.2	121.0	19.4	16.5
1999	320.8	221.5	40.6	66.4	30.5	32.8	121.5	20.7	18.5
2000	344.0	234.9	42.6	69.0	32.2	42.4	126.7	23.7	20.1
2001	349.7	244.6	45.2	70.4	33.0	48.4	130.1	26.6	20.5
2002	343.5	254.0	47.3	72.3	34.4	59.4	133.5	27.8	20.9
2003	353.9	254.7	45.0	73.9	34.6	69.3	136.2	29.2	22.4
2004	358.4	257.1	45.0	74.2	34.7	82.8	138.6	32.9	25.5
2005	373.2	259.6	45.2	73.2	35.0	99.3	147.2	35.0	30.3
2006	390.5	277.2	47.0	77.2	37.0	117.2	154.0	39.3	32.6
2007	409.3	288.4	47.8	79.3	38.1	134.3	159.5	43.9	36.3
2008	430.0	308.4	49.4	86.1	38.8	155.0	157.7	46.6	40.1
2009	425.5	312.7	52.3	87.1	38.3	195.0	144.6	48.4	42.3
2010	425.0	320.2	52.9	90.5	39.1	222.1	146.3	54.3	45.4
2011	435.3	334.8	54.6	97.6	39.5	252.6	151.2	59.5	49.0
2012	434.3	340.9	55.1	100.5	38.5	292.2	152.3	64.9	NA
2013	447.0	349.1	57.3	101.1	40.8	328.4	161.8	67.1	NA
2014	459.7	358.2	58.5	105.7	42.3	357.6	163.6	70.5	NA
2015	472.8	368.6	58.9	109.0	43.6	389.1	161.0	73.5	47.5
2016	488.3	377.2	58.9	113.3	44.8	426.7	155.7	76.1	NA
2017	509.3	399.0	60.0	122.5	45.8	460.1	158.5	84.4	NA
GERD-to-GDP ratio (%)									
1981	2.27	na	1.87	2.35	2.24	NA	2.05	NA	NA
1982	2.43	na	1.95	2.42	NA	NA	2.13	NA	NA
1983	2.48	na	1.98	2.41	2.06	NA	2.24	NA	NA
1984	2.55	na	2.07	2.43	NA	NA	2.33	NA	NA
1985	2.65	na	2.13	2.59	2.09	NA	2.48	NA	NA
1986	2.63	na	2.12	2.63	2.10	NA	2.44	NA	NA
1987	2.60	na	2.16	2.73	2.02	NA	2.50	NA	NA
1988	2.55	na	2.15	2.73	1.96	NA	2.52	NA	NA
1989	2.51	na	2.19	2.71	1.95	NA	2.63	NA	NA
1990	2.55	na	2.27	2.61	1.95	NA	2.71	NA	NA
1991	2.61	na	2.28	2.40	1.87	0.72	2.68	1.74	NA
1992	2.54	na	2.28	2.28	1.84	0.73	2.63	1.83	NA
1993	2.42	na	2.32	2.21	1.86	0.70	2.57	1.98	NA
1994	2.32	na	2.27	2.13	1.84	0.63	2.52	2.16	NA
1995	2.40	1.58	2.24	2.13	1.66	0.57	2.61	2.20	NA
1996	2.44	1.58	2.22	2.14	1.59	0.56	2.69	2.26	0.63
1997	2.48	1.59	2.15	2.18	1.54	0.64	2.77	2.30	0.67
1998	2.50	1.60	2.09	2.21	1.56	0.65	2.87	2.16	0.69
1999	2.54	1.65	2.11	2.34	1.64	0.75	2.89	2.07	0.71
2000	2.62	1.67	2.09	2.40	1.63	0.89	2.91	2.18	0.74
2001	2.64	1.69	2.14	2.40	1.62	0.94	2.97	2.34	0.72

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2002	2.55	1.70	2.17	2.42	1.63	1.06	3.01	2.27	0.71
2003	2.55	1.69	2.12	2.47	1.59	1.12	3.04	2.35	0.71
2004	2.49	1.66	2.09	2.43	1.54	1.21	3.03	2.53	0.74
2005	2.50	1.66	2.05	2.43	1.56	1.31	3.18	2.63	0.81
2006	2.55	1.68	2.05	2.46	1.58	1.37	3.28	2.83	0.80
2007	2.62	1.69	2.02	2.45	1.62	1.37	3.34	3.00	0.81
2008	2.76	1.76	2.06	2.60	1.62	1.45	3.34	3.12	0.87
2009	2.80	1.83	2.21	2.73	1.68	1.66	3.23	3.29	0.84
2010	2.72	1.83	2.18	2.71	1.66	1.71	3.14	3.47	0.82
2011	2.75	1.87	2.19	2.80	1.66	1.78	3.24	3.74	0.83
2012	2.68	1.91	2.23	2.87	1.59	1.91	3.21	4.03	NA
2013	2.71	1.92	2.24	2.82	1.64	2.00	3.31	4.15	NA
2014	2.72	1.94	2.28	2.87	1.66	2.03	3.40	4.29	NA
2015	2.72	1.96	2.27	2.91	1.67	2.07	3.28	4.22	0.62
2016	2.76	1.94	2.22	2.92	1.68	2.12	3.16	4.23	NA
2017	2.81	1.97	2.19	3.04	1.66	2.15	3.21	4.55	NA
GERD, annual growth rates, recent years, current and constant dollars (%)									
Current PPP\$									
CAGR 2000–10	4.3	5.3	4.3	4.9	4.1	20.5	3.6	10.9	10.8
CAGR 2010–17	4.3	4.9	3.5	6.1	4.0	12.8	2.8	8.3	2.6
Constant 2012 PPP\$									
CAGR 2000–10	2.1	3.1	2.2	2.7	1.9	18.0	1.4	8.6	8.5
CAGR 2010–17	2.6	3.2	1.8	4.4	2.3	11.0	1.2	6.5	0.9
GDP, annual growth rates, recent years, current and constant dollars (%)									
Current PPP\$									
CAGR 2000–10	3.9	4.3	3.9	3.6	3.9	12.9	2.8	5.9	9.7
CAGR 2010–17	3.8	3.8	3.4	4.4	4.0	9.2	2.5	4.1	8.5
Constant 2012 PPP\$									
CAGR 2000–10	1.7	2.2	1.8	1.5	1.7	10.6	0.7	3.7	7.5
CAGR 2010–17	2.2	2.1	1.8	2.7	2.3	7.5	0.8	2.4	6.7

na = not applicable; NA = not available.

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

^a Data for the EU include the 28 EU member countries.

Note(s)

Top eight R&D-performing countries in 2017. 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 Center for Science and Engineering Statistics, National Science Foundation, National Patterns of R&D Resources (annual series); Organisation for Economic Co-operation and Development, *Main Science and Technology Indicators* (2019/1); United Nations Educational, Scientific and Cultural Organization Institute for Statistics Data Centre.

Science and Engineering Indicators