

# DATA BRIEF

## U.S. Industrial R&D Performers Report Increased R&D in 1998

by Raymond M.  
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*Company funding of industrial R&D increased, as it has each year since 1953, to \$169.2 billion in 1998.*

The National Science Foundation's (NSF's) 1998 Survey of Industrial Research and Development shows that companies<sup>1</sup> spent \$169.2 billion on research and development (R&D) that they performed in the United States, 7 percent more than the amount spent during 1997. Company funding<sup>2</sup> continued to increase, as it has each year since 1953, rising from \$133.6 billion in 1997 to \$145.0 billion in 1998, a 9-percent increase. Federal funding of industrial R&D in 1998 was \$24.2 billion—basically unchanged from the 1997 total of \$23.9 billion. After adjusting for inflation, total R&D rose 6 percent, company-funded industrial R&D rose 7 percent, and federally funded industrial R&D stayed level. Summary statistics from the 1997 and 1998 surveys are compared in table 1.

### Sales of R&D-Performing Industries

Domestic net sales<sup>3</sup> of companies that performed R&D in the United States were

<sup>1</sup>In this Data Brief, and in NSF industrial R&D statistics, "company" is defined as a business organization of one or more establishments under common ownership or control. "Industry" refers to the activity or group of activities included in the 2- or 3-digit Standard Industrial Classification (SIC) or group of SICs used to array statistics resulting from the Survey of Industrial Research and Development.

<sup>2</sup>Companies obtain funds for industrial R&D from various sources, which NSF categorizes as company funds and Federal funds. Company-funded R&D is used to refer to company and other non-Federal funding and includes funds for industrial R&D performed within the company's domestic facilities from all sources except the Federal Government. The funds are predominantly the company's own, but also include funds from such outside organizations as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments.

<sup>3</sup>This figure reflects dollar values for goods sold or services rendered by R&D-performing companies to customers outside the company, including the Federal Government, less such items as returns, allowances, freight, charges, and excise taxes. Domestic intracompany transfers and sales by foreign subsidiaries are excluded, but transfers to foreign subsidiaries and export sales to foreign companies are included.

essentially unchanged, \$4.6 trillion in 1997 and \$4.7 trillion in 1998. Similarly, manufacturers' sales were \$3.1 trillion and \$3.2 trillion; companies in nonmanufacturing industries reported sales of \$1.49 trillion and \$1.46 trillion, respectively. Indicated below are domestic sales figures for manufacturing industries that performed the most industrial R&D using company funds during 1998 (company-funded R&D amounts are indicated in parentheses).

- motor vehicles \$603.0 billion (\$13.5 billion);
- drugs and medicines \$118.4 billion (\$12.6 billion);
- communication equipment \$91.1 billion (\$10.2 billion);
- electronic components \$115.8 billion (\$9.8 billion);
- professional and scientific instruments \$121.0 billion (\$9.6 billion);
- office, computing, and accounting machines \$96.2 billion (\$8.9 billion).

Sales figures for top performing nonmanufacturing industries of company-funded R&D are indicated below (company-funded R&D amounts are indicated in parentheses).

- computer and data processing services \$114.9 billion (\$14.3 billion);
- trade \$313.8 billion (\$11.3 billion);
- research, development, and testing \$13.3 billion (\$6.8 billion);
- telephone communications \$193.6 billion (\$1.7 billion);
- finance, insurance, and real estate \$370.8 billion (\$1.6 billion);
- health services \$14.0 billion (\$1.2 billion).

The amount of company funds spent by manufacturing and nonmanufacturing industries on the performance of R&D expressed as a percent of net sales during 1995-98 is illustrated in figure 1.

### Electronic Dissemination

SRS data are available through the World Wide Web (<http://www.nsf.gov/sbe/srs/>). For more information about obtaining reports, contact [pubs@nsf.gov](mailto:pubs@nsf.gov) or call (301) 947-2722. For NSF's Telephonic Device for the Deaf, dial (703) 306-0090.

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**Table 1. Funds for industrial R&D, by source, industrial sector, character of work, and size of company, in current and constant dollars: 1997 and 1998**

Source of funds, industrial sector, character of work, size of company, and location	Current dollars		Percent change 1997-98	Constant 1992 dollars		Percent change 1997-98
	1997	1998		1997	1998	
	Millions of current dollars			Millions of constant (1992) dollars		
Total industrial R&D .....	157,539	169,180	7.4	141,202	150,115	6.3
By source and performing sector:						
Company and other non-Federal.....	133,611	145,016	8.5	119,755	128,674	7.4
Manufacturing industries.....	101,202	102,211	1.0	90,707	90,693	0.0
Nonmanufacturing industries.....	32,409	42,805	32.1	29,048	37,981	30.8
Federal.....	23,928	24,164	1.0	21,447	21,441	0.0
Manufacturing industries.....	19,823	18,189	-8.2	17,767	16,139	-9.2
Nonmanufacturing industries.....	4,105	5,975	45.6	3,679	5,302	44.1
By character of work:						
Basic research.....	10,419	13,595	30.5	9,339	12,063	29.2
Applied research.....	32,642	30,572	-6.3	29,257	27,127	-7.3
Development.....	114,478	125,013	9.2	102,606	110,925	8.1
By size of company:						
Fewer than 500 employees.....	24,063	30,175	25.4	21,568	26,775	24.1
500 to 999 employees.....	4,966	5,495	10.7	4,451	4,876	9.5
1,000 to 4,999 employees.....	19,590	21,525	9.9	17,558	19,099	8.8
5,000 to 9,999 employees.....	14,266	14,053	-1.5	12,787	12,469	-2.5
10,000 to 24,999 employees.....	21,510	24,876	15.6	19,279	22,073	14.5
25,000 or more employees.....	73,144	73,055	-0.1	65,559	64,823	-1.1
Company-funded R&D contracted to outside organizations <sup>1</sup> .....	6,000	6,710	11.8	5,378	5,954	10.7
Manufacturing industries.....	4,143	4,641	12.0	3,713	4,118	10.9
Nonmanufacturing industries.....	1,857	2,069	11.4	1,664	1,836	10.3
Company-funded R&D performed outside the United States <sup>2</sup> .....	13,107	16,008	22.1	11,748	14,204	20.9
Manufacturing industries.....	11,743	12,768	8.7	10,525	11,329	7.6
Nonmanufacturing industries.....	1,364	3,240	137.5	1,223	2,875	135.2

<sup>1</sup> Company and other non-Federal funding for industrial R&D performed by other organizations within the U.S.

<sup>2</sup> Company and other non-Federal funding for industrial R&D performed by foreign subsidiaries and other organizations outside of the U.S.

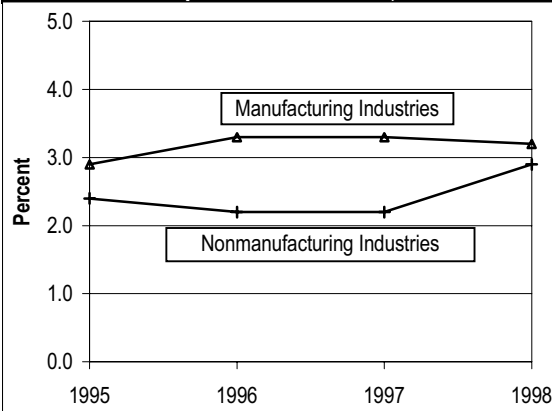
**NOTES:** Detail may not add to totals because of rounding. 1992 gross domestic product (GDP) implicit price deflators were used to convert current to constant dollars. The 1997 and 1998 samples were designed to produce coefficients of variation (CV) of 2 percent for industries in which there are a large amount of R&D expenditures and 5 percent for industries in which there are a moderate amount of R&D expenditures. For industries in which there are little expenditure for R&D, the CVs typically are larger. In addition to sampling error, year-to-year changes may be influenced by companies with large R&D expenditures that change industry classifications because of payroll composition, mergers, or acquisitions, or companies that change size classifications.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Industrial Research and Development.

*R&D-performing industries reported \$4.7 trillion in sales in 1998.*

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**Figure 1. Company and other non-Federal funds for R&D as a percent of net sales, 1995-98**



**NOTE:** Company and other non-Federal R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds are predominantly the company's own, but also include funds from such outside organizations as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments.

**SOURCE:** National Science Foundation/Division of Science Resources Studies, Survey of Industrial Research and Development

### Notes on Survey Methodology and Future Surveys

Statistics resulting from the 1998 survey benefit from recent efforts to strengthen statistics for industries that perform the greatest amounts of R&D while lessening coverage of industries that perform little or no R&D. Specifically, a new sampling approach was used for companies in industries that do not conduct significant amounts of R&D. These companies were sampled at much lower rates than in previous surveys. This has shifted more emphasis toward those industries crucial in developing strong, representative estimates of industrial R&D spending. This sampling approach and its effect on the resulting statistics are discussed in detail in the latest annual report, *Research and Development in Industry: 1997* (NSF 99-358) at <http://www.nsf.gov/sbe/srs/nsf99358/start.htm>, and in the forthcoming *Research and Development in Industry: 1998*.

Preparation is under way for conversion to the new North American Industrial Classification System (NAICS) from the Standard Industrial Classification (SIC) system currently used for many industry-related economic statistics produced by the Federal Government. Statistics in this Data Brief, as well as all of the statistics produced from the Survey of Industrial Research and Development, are classified using SIC codes. Plans are being made to publish survey statistics using NAICS beginning with the results from the 1999 survey. For that year, NSF intends to publish some statistics classified by both the SIC and NAICS industry codes. Beginning with the 2000 survey, statistics will be published only with NAICS classifications.

### Statistical Reports

This Data Brief provides statistics and information from the 1998 Survey of Industrial Research and Development. The annual report, *Research and Development in Industry: 1998*, will contain the full set of 56 tables available from the survey. The tables will present R&D statistics by industry, size of company, source of funds, character of R&D, R&D as a percentage of net sales, and R&D contracted to outside organizations and performed outside the United States. The report also will provide historical trends in R&D, sales and total employment of R&D-performing companies, employment of R&D scientists and engineers, statistics by state, and technical information on the survey sample and processing.

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