Division of Science Resources Studies

DATA BRIEF

Directorate for Social, Behavioral, and Economic Sciences

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Academic R&D Expenditures Maintain Steady Growth in FY 1996

by M. Marge Machen

Federal Government share of academic R&D expenditures holds firm at 60 percent for fourth consecutive year.

Total expenditures by universities and colleges for separately budgeted research and development (R&D) activities in science and engineering (S&E) increased 3.5 percent over the FY 1995 level, reaching nearly $23 billion in FY 1996. This amount had more than doubled the $10.9 billion reported for FY 1986, and more than 6 times the $3.7 billion spent just 2 decades ago. When adjusted for inflation, academic R&D increased 1.4 percent over the FY 1995 level, slower than the 4.6-percent constant dollar average annual growth rate maintained during the previous 20 years.

Sources of R&D Funding

Academic R&D expenditures financed by the Federal Government increased 3 percent (1 percent in constant dollars) in FY 1996, to $13.8 billion. This rate of growth was considerably below the nearly 9-percent average annual growth rate in academic spending from Federal sources that had been maintained over the last two decades (4 percent when adjusted for inflation). Nonetheless, the Federal share held firm in FY 1996 at 60 percent of the R&D dollars expended at universities and colleges—the same share it held during the previous three years.

Expenditures financed by all non-Federal sources combined grew nearly 4 percent in FY 1996 (close to 2 percent after accounting for inflation), rising to $9.2 billion. Spending from industry sources increased the fastest—6 percent in FY 1996, followed by the largest non-Federal source—institutional funds—with a 4-percent gain. State and local governments' R&D funding was up nearly 3 percent, and funds from all other non-Federal sources (including private foundations and voluntary sources) rose 2 percent (table 1).

Table 1. R&D expenditures at universities and colleges, by source of funds, in current and constant dollars: FYs 1976, 1986, and 1995-96

Source	Fiscal Years				Fiscal Years			
	1996	1995	1986	1976	1996	1995	1986	1976
	Millions of current dollars				Millions of constant 1992 dollars1/			
Total	22,995	22,207	10,928	3,729	20,924	20,638	13,567	8,533
Source of funds:								
Federal Government	13,810	13,356	6,712	2,512	12,566	12,413	8,333	5,748
State and Local governments	1,725	1,681	915	364	1,570	1,562	1,136	833
Industry	1,576	1,483	700	123	1,434	1,378	869	281
Institutional funds	4,232	4,072	1,869	446	3,851	3,784	2,320	1,021
All other sources	1,653	1,617	732	285	1,504	1,503	909	652
Character of work:								
Basic research	15,467	14,890	7,493	2,549	14,074	13,838	9,302	5,833
Applied research and development	7,528	7,317	3,435	1,180	6,850	6,800	4,265	2,700

1/Based on the gross domestic product implicit price deflator.

NOTE: Because of rounding, figures may not add to the total shown.

SOURCE: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, Fiscal Year 1996

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Out of 674 institutions, the leading 100 research schools account for 80 percent of all academic R&D expenditures.

Total basic research spending at academic institutions rose to $15.4 billion, up 4 percent over FY 1995, or a 2-percent increase after adjusting for inflation. The Federal Government continued to provide 64 percent of the basic research total in FY 1996, $9.9 billion, for a 4-percent increase (2 percent in constant dollars).

Higher education expenditures for applied research and development combined totaled $7.5 billion in 1996—an increase of 3 percent over the 1995 level. The Federal Government provided 52 percent of the applied R&D total in 1996.

Fields of Research

Academic R&D expenditures in engineering rose 5 percent in 1996, compared to a 3-percent gain for the sciences as a whole. Social sciences realized the fastest rate of growth—8 percent—among the major S&E fields for which data are collected. Other increases ranged from 4 percent in the life sciences to less than 1 percent in physical sciences (table 2). Although expenditures in all fields grew, the computer sciences, psychology, and the physical sciences grew slower than the 2-percent rate of inflation.

Federally financed spending followed a similar pattern with R&D funding, exceeding inflation in five of the eight major S&E fields (chart 1). Increases in federally funded expenditures were below the rate of inflation for the physical sciences, mathematical sciences, and psychology.

In terms of R&D expenditures in specific S&E subfields, three fell in nominal dollars: astronomy (down 9 percent), aeronautical & astronautical engineering (down 3 percent), and earth sciences (down 2 percent). Declining support from Federal sources accounted for much of the reduction in funding in these fields.

Academic R&D expenditures are concentrated in relatively few institutions. The 100 leading research institutions (out of the 674 institutions represented in this survey) accounted for 81 percent of Federally financed spending and 80 percent of all academic R&D expenditures. The leading 20 research institutions alone accounted for 34 percent of federally sponsored support and a 31-percent share of total academic R&D expenditures in FY 1996 (table 3).

Table 2. R&D expenditures at universities and colleges, by field of science and engineering

(Millions of Dollars)

Field	FY 1996	Current dollar percentage change FYs 1995-96	Constant 1992 dollar percentage change FYs 1995-96
Total	$ 22,996	3.5	1.4
Engineering	3,675	5.0	2.8
All Sciences	19,321	3.3	1.4
Physical sciences	2,260	0.4	(1.7)
Environmental sciences	1,478	2.3	0.2
Mathematical sciences	289	3.2	1.1
Computer sciences	702	2.2	0.1
Life sciences	12,697	3.8	1.7
Psychology	372	1.2	(1.0)
Social sciences	1,104	8.3	6.1
Other	419	(2.6)	(4.6)

NOTE: Because of rounding, figures may not add to the total shown.

SOURCE: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, Fiscal Year 1996

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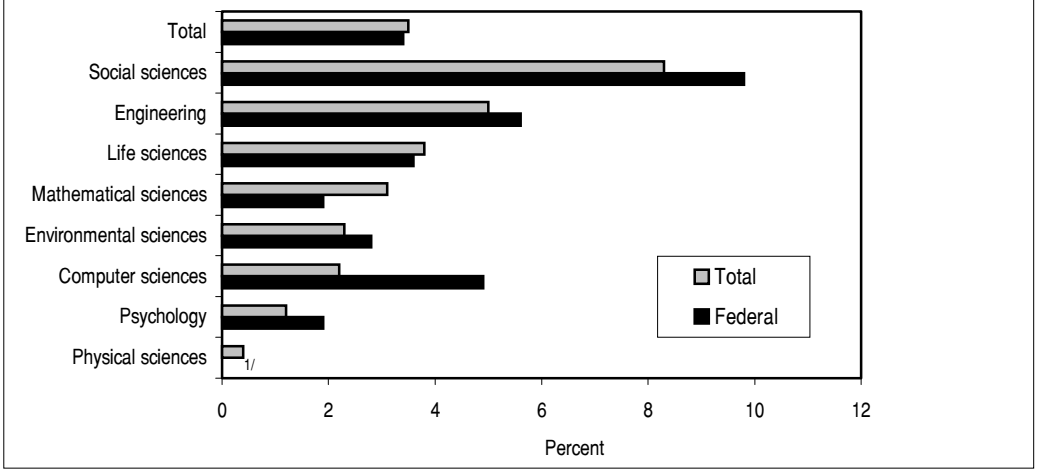
Chart 1. Percent change in R&D expenditures at universities and colleges, by field and Federal Support: FYs 1995-96



1/ Percentage change in Federal = 0.0

SOURCE: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, Fiscal Year 1996

Table 3. Twenty institutions reporting the largest academic R&D expenditures in the sciences and engineering: FYs 1995-96

(Millions of dollars)

Institution	Total		Federal	
	Fiscal years		Fiscal years	
	1996	1995	1996	1995
Total 1/	22,995	22,207	13,810	13,356
Total, Leading 20 institutions	7,175	6,948	4,718	4,601
1. Johns Hopkins U 2/	798	789	710	706
2. University of Michigan	469	443	281	276
3. U WI Madison	413	404	233	229
4. University of Washington	406	389	313	291
5. MA Institute of Tech	381	371	272	274
6. U CA San Diego	372	357	292	284
7. Texas A&M University	367	363	149	137
8. U CA Los Angeles	355	304	237	202
9. University of Minnesota	341	337	199	194
10. Cornell University	340	344	203	207
11. Pennsylvania State U	338	331	191	187
12. Stanford University	325	319	282	273
13. U CA San Francisco	321	330	222	224
14. U CA Berkeley	316	291	168	158
15. U of Pennsylvania	288	272	216	201
16. Harvard University	282	276	203	204
17. University of Arizona	280	292	154	169
18. U of Illinois Urbana	267	246	144	139
19. Ohio State University	262	246	119	123
20. U CA Davis	255	244	130	123
Total, all other institutions	15,820	15,260	8,903	8,572

1/Data do not include R&D performed by university-administered federally funded research and development centers.

2/Includes Applied Physics Laboratory with $435 million in total and $420 in federally-financed R&D expenditure for FY 1996 and $447 in total and $434 in federally-financed R&D expenditures for FY 1995.

NOTE: Because of rounding, figures may not add to the total shown.

SOURCE: National Science Foundation/SRS, Survey of Research and Development Expenditures at Universities and Colleges, Fiscal Year 1996

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