



**Congressional
Research Service**

Informing the legislative debate since 1914

U.S. Research and Development Funding and Performance: Fact Sheet

name redacted

Specialist in Science and Technology Policy

December 10, 2015

Congressional Research Service

7-....

www.crs.gov

R44307

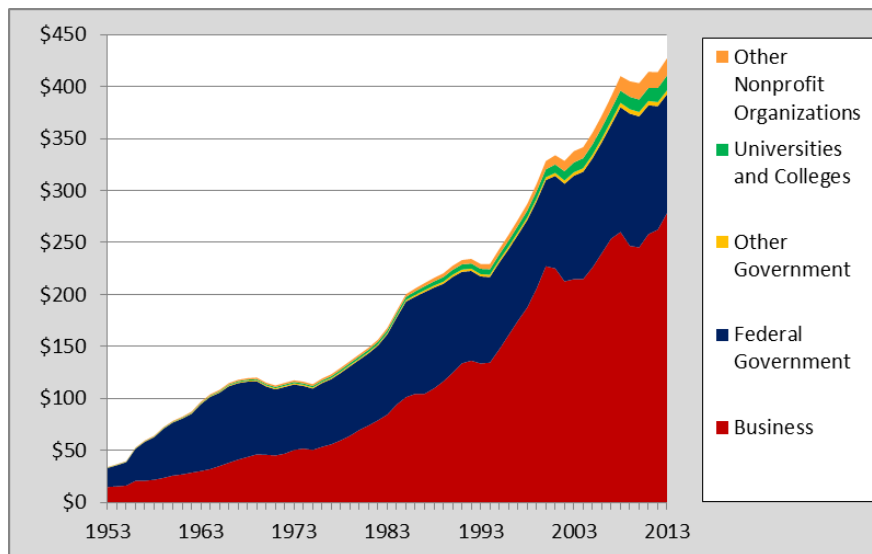
Research and development (R&D) in the United States is funded and performed by a number of sectors—including the federal government, state governments, businesses, academia, and nonprofit organizations—for a variety of purposes. This fact sheet begins by providing a profile of the U.S. R&D enterprise, including historical trends and current funding by sector and by whether the R&D is basic research, applied research, or development. The final section of this fact sheet includes data on R&D performance by sector.

Historical Trends in U.S. R&D Funding

The United States became a global leader in R&D in the 20th century, accounting for as much as 70% of annual global R&D in the period following World War II.¹ **Figure 1** shows the growth in total U.S. R&D expenditures from 1953 to 2013.² In current dollars, U.S. R&D in 2013 was 88 times higher than it was in 1953; it was more than 12 times higher in constant dollars.³ By sector, business-funded R&D grew the most during this period.

Figure 1. U.S. R&D Expenditures by Source of Funding, 1953-2013

Constant dollars, in billions



Source: CRS analysis of unpublished data provided to CRS by the National Science Foundation.

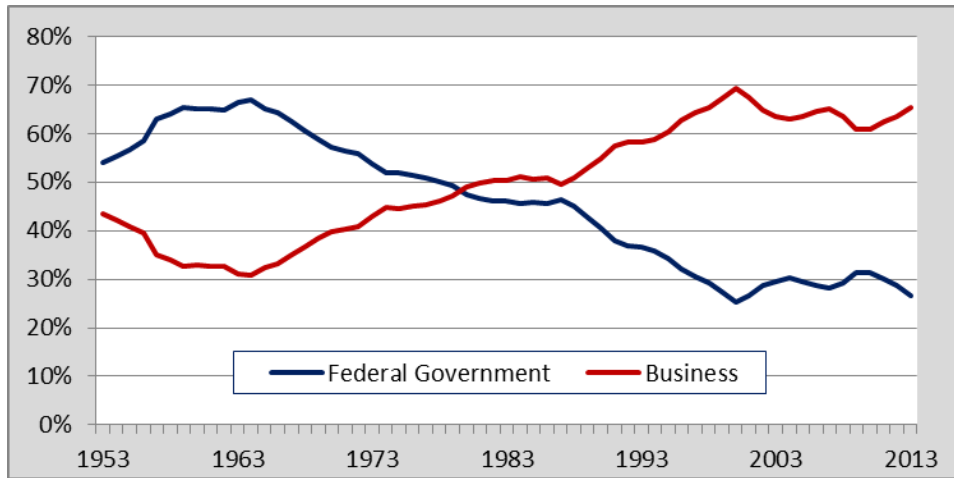
Two sectors—business and the federal government—have accounted for more than 90% of U.S. R&D funding since 1953. Federal R&D expenditures as a share of total U.S. R&D expenditures peaked in 1964 at 66.8%, the same year that business R&D expenditures reached a nadir of 30.8%. Between 1964 and 2000, the federal government’s share fell and business’s share rose. In 2000, business accounted for 69.2% of U.S. R&D expenditures and the federal government 25.2%. This shift in the composition of R&D funding resulted not from a reduction in federal government R&D expenditures, but rather from faster growth in business R&D expenditures. Since 1995, business has accounted for 60%-70% of total U.S. R&D each year while the federal government has accounted for 25%-32%. (See **Figure 2**.)

¹ Office of Technology Policy, U.S. Department of Commerce, *The Global Context for U.S. Technology Policy*, 1997.

² Data for all years in this report are for calendar years unless otherwise specified.

³ 2013 is the latest year for which total U.S. R&D data are available.

Figure 2. Federal and Business Shares of U.S. R&D Expenditures, 1953-2013



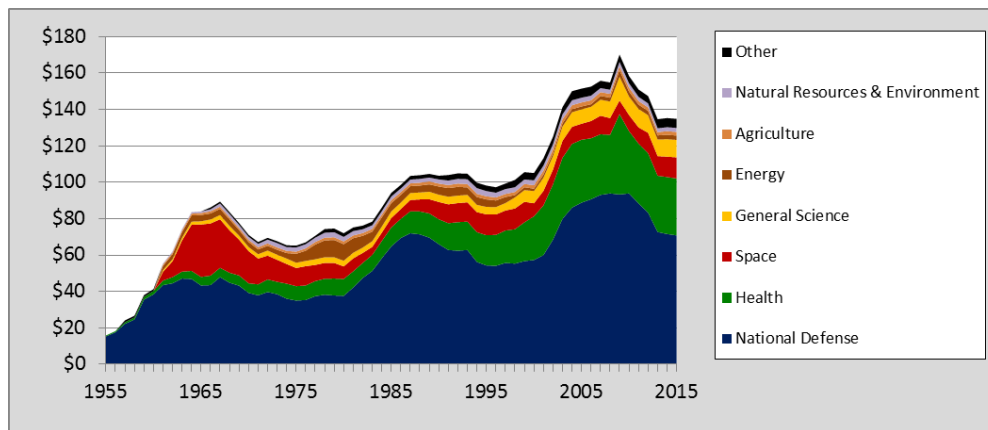
Source: CRS analysis of unpublished data provided to CRS by the National Science Foundation.

Trends in Federally Funded R&D

In current dollars, federal funding for R&D grew from \$2.8 billion in 1953 to \$121.8 billion in 2013, a compound annual growth rate (CAGR) of 6.5%. In constant dollars, federal R&D grew by a 3.1% CAGR during this period. Between 2009 and 2013, federal R&D fell by a 1.1% CAGR in current dollars and a 2.7% CAGR in constant dollars. In 2012 and 2013, federal R&D funding, as measured in current dollars, fell in consecutive years for the first time since 1953 (the earliest year for which data are available). The total decline in federal funding for these two years was 4.9% in current dollars. In constant dollars, federal R&D declined 10.3% from 2009 to 2013; an even deeper drop occurred from 1987 to 1994, when federal R&D fell by 15.8%.⁴ Figure 3 shows federal R&D funding by budget function in constant dollars from 1955 to 2015.

Figure 3. Federal R&D Funding by Budget Function

Constant 2015 dollars, in billions



Source: CRS analysis of data from National Science Foundation, *Federal R&D Funding, by Budget Function: Fiscal Years 2014–16* (NSF 16-303), Table 23, November 23, 2015.

⁴ CRS analysis of unpublished data provided to CRS by the National Science Foundation.

Notes: 2015 data are preliminary. Data for 1955–1977 are obligations; data for 1978–2016 are budget authority. All data are for fiscal years. Data for FY1955 to FY1994 are from agencies’ submissions to the Office of Management and Budget (OMB) and supplemental data obtained from agencies. Data for FY1995 to FY2015 are from agencies’ submissions to OMB per MAX Schedule C, budget justifications, and supplemental data obtained from agencies.

Trends in U.S. Business-Funded R&D

Business funding of R&D has grown nearly every year (in current dollars) since 1953. In current dollars, business-funded R&D grew from \$2.2 billion in 1953 to \$297.3 billion in 2013, a compound annual growth rate (CAGR) of 8.5%. In constant dollars, business-funded R&D grew by a 5.0% CAGR during this period. In recent years, business-funded R&D has grown at a slower pace. Between 2000 and 2013, business R&D grew by a 3.7% CAGR in current dollars, and by a 1.6% CAGR in constant dollars.⁵

Current Composition of U.S. R&D Funding

R&D funding can be categorized by the character of the work that it supports: basic research, applied research, and development. (See text box for definitions.) Total U.S. R&D expenditures in 2013 (the most recent year for which data are available) were \$456.1 billion. Of this amount, \$80.5 billion (17.6%) was for basic research, \$90.6 billion (19.9%) was for applied research, and \$285.0 billion (62.5%) was for development.⁶

Table 1 shows total U.S. R&D expenditures in 2013 by funding sector and character of work. **Figure 4** shows the same information graphically.

Table 1. U.S. R&D Funding by Sector and Character, 2013

Current dollars, in billions

Sector	Basic Research		Applied Research		Development		Total	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
Federal Government	\$37.8	47%	\$33.4	37%	\$50.6	18%	\$121.8	27
Nonfederal Government	2.3	3%	1.3	1%	0.5	<1%	4.1	1
Business	21.2	26%	46.3	51%	229.8	81%	297.3	65
Universities and Colleges	9.4	12%	4.8	5%	1.1	<1%	15.2	3
Other Nonprofit	9.7	12%	4.8	5%	3.1	1%	17.7	4
Total	\$80.5	100%	\$90.6	100%	\$285.0	100%	\$456.1	100%

Source: CRS analysis of unpublished data provided to CRS by the National Science Foundation.

Note: Rows and columns may not add to totals due to rounding.

⁵ Ibid.

⁶ Ibid.

Character of R&D: Definitions

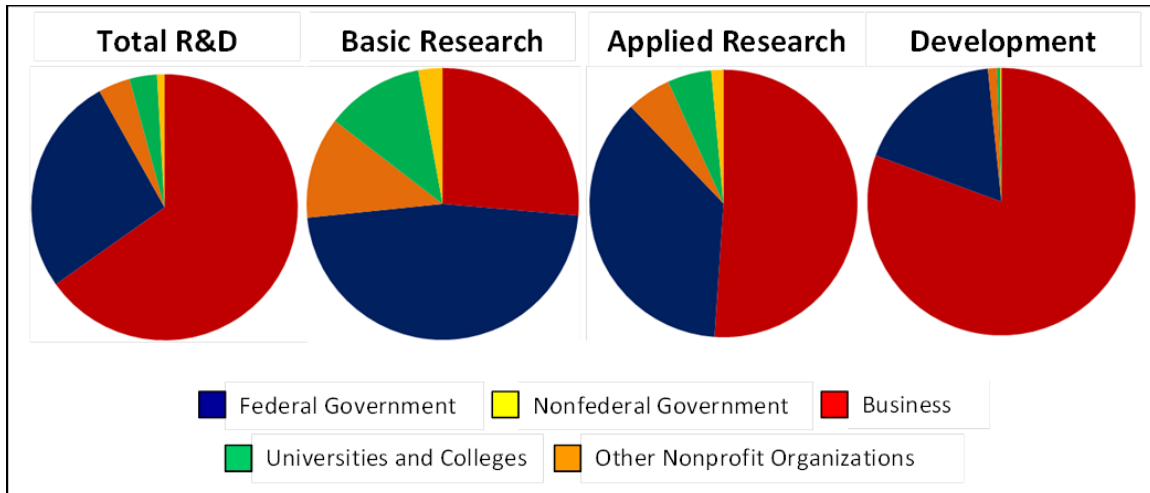
Basic research is conducted to gain more comprehensive knowledge or understanding of the subject under study without specific applications in mind.

Applied research is conducted to gain knowledge or understanding to meet a specific, recognized need.

Development is the systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes.

Source: National Science Board, *Science and Engineering Indicators 2014*.

Figure 4. U.S. R&D Funding by Character and Sector, 2013



Source: CRS analysis of unpublished data provided to CRS by the National Science Foundation.

Current Composition of U.S. R&D Performance

R&D is often performed by sectors other than the one funding the R&D. For example, the federal government performs some of the research it funds, but also funds research performed by business, universities and colleges, and other organizations. **Table 2** provides data on performance of U.S. R&D by sector and character of the work (basic research, applied research, and development).

Table 2. U.S. R&D Performance by Sector and Character, 2013

Current dollars, in billions

Sector	Basic Research		Applied Research		Development		Total	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
Federal Government	\$9.5	12%	\$15.1	17%	\$25.2	9%	\$49.9	11%
Nonfederal Government	NA	NA	NA	NA	NA	NA	0.5	<1%
Business	19.5	24%	51.0	56%	252.0	88%	322.5	71%
Universities and Colleges	41.3	51%	18.6	21%	4.8	2%	64.7	14%
Other Nonprofit	10.0	12%	5.7	6%	2.9	1%	18.6	4%
Total	\$80.5	100%	\$90.6	100%	\$285.0	100%	\$456.1	100%

Source: CRS analysis of unpublished data provided to CRS by the National Science Foundation.

Note: Rows and columns may not add to totals due to rounding.

Author Contact Information

(name redacted)
 Specialist in Science and Technology Policy
 -redacted-@crs.loc.gov-....

EveryCRSReport.com

The Congressional Research Service (CRS) is a federal legislative branch agency, housed inside the Library of Congress, charged with providing the United States Congress non-partisan advice on issues that may come before Congress.

EveryCRSReport.com republishes CRS reports that are available to all Congressional staff. The reports are not classified, and Members of Congress routinely make individual reports available to the public.

Prior to our republication, we redacted names, phone numbers and email addresses of analysts who produced the reports. We also added this page to the report. We have not intentionally made any other changes to any report published on EveryCRSReport.com.

CRS reports, as a work of the United States government, are not subject to copyright protection in the United States. Any CRS report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS report may include copyrighted images or material from a third party, you may need to obtain permission of the copyright holder if you wish to copy or otherwise use copyrighted material.

Information in a CRS report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to members of Congress in connection with CRS' institutional role.

EveryCRSReport.com is not a government website and is not affiliated with CRS. We do not claim copyright on any CRS report we have republished.