

Part 1 – Congressional Action

Highlights

On January 22, the 108th Congress approved the seven unfinished fiscal year (FY) 2004 appropriations bills in an omnibus package, bringing the FY 2004 budget process to a close nearly four months into the fiscal year. Continuing the trend of recent years, the FY 2004 budget provides record-breaking totals for federal R&D, including record investments in defense and nondefense R&D. But the increases go almost entirely to defense, health, and homeland security, leaving all other R&D missions with stagnant funding.

- **There will be a \$127 billion federal research and development (R&D) investment in FY 2004, a \$9.5 billion or 8.1 percent increase (see Figure 1 and Table 1).** Congress provided \$4.6 billion more than the Bush Administration request.

- **The Department of Defense (DOD), the Department of Homeland Security (DHS), and the National Institutes of Health (NIH) get 93 percent of the \$9.5 billion increase, leaving all other R&D funding agencies collectively with only a modest increase in funding.** 80 percent of the increase goes just to DOD's R&D, which hits another all-time high of \$66.3 billion, a boost of 13.0 percent or \$7.6 billion. DOD weapons systems development accounts for nearly all of the increase (up \$6.3 billion to \$53.7 billion), but Congress also rewarded DOD's "S&T" activities with a 12.0 percent increase to \$12.6 billion. The new DHS sees its R&D portfolio surge by 56.0 percent or \$375 million to \$1.0 billion.

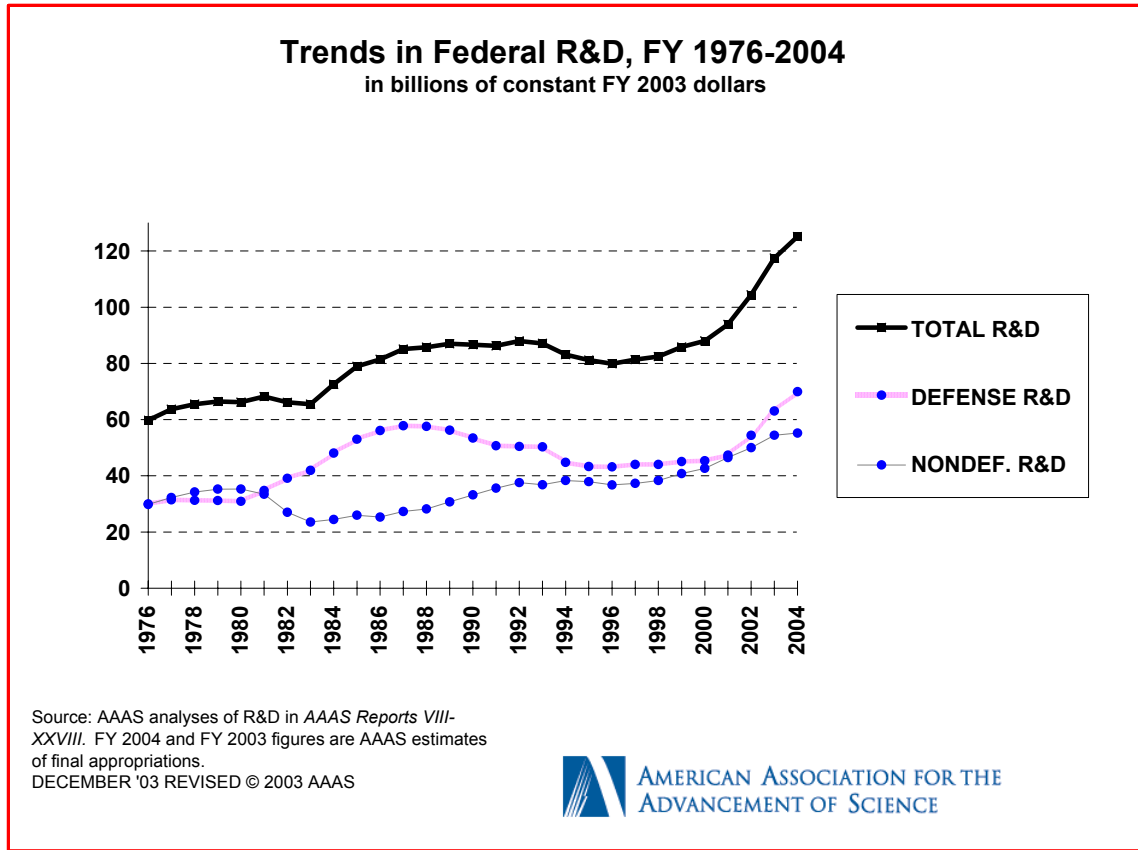


Figure 1.

- After five years of annual 15 percent increases, NIH budget growth slows down considerably in FY 2004. Most NIH institutes receive increases of about 3 percent. After adjusting for an across-the-board cut, the NIH R&D portfolio increases by 3.2 percent, a modest increase in percentage terms (see Figure 2). The FY 2004 budget boosts NIH R&D funding by \$847 million for a total of \$27.1 billion (see Table 1).

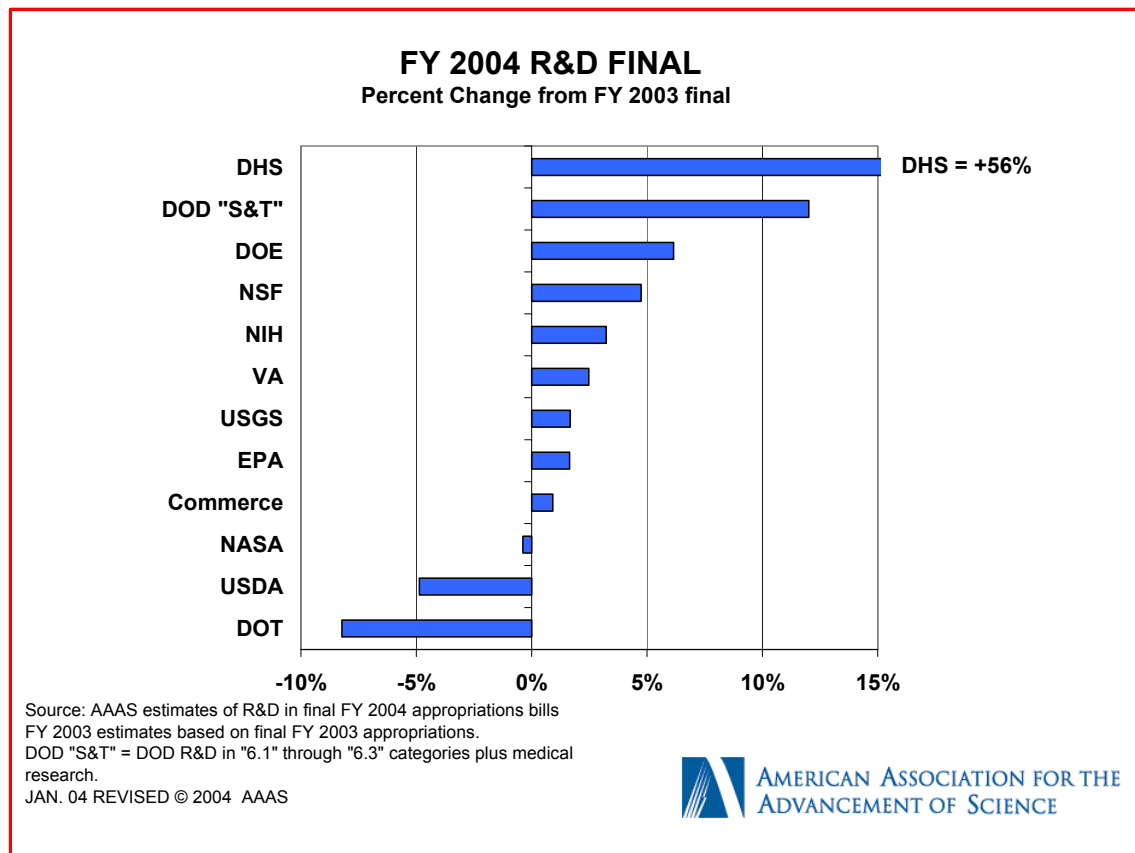


Figure 2.

- NIH and homeland security R&D are the primary growth areas in nondefense R&D, leaving all other domestic R&D priorities with flat funding overall. Nondefense R&D increases \$1.6 billion or 2.9 percent to \$56.0 billion (see Figure 1), but taking out the NIH increase leaves a smaller \$750 million or 2.7 percent increase to \$28.9 billion (see Table 1). Nearly all of that increase goes to nondefense R&D in DHS, and even at NIH much of the increase goes to biodefense research related to homeland security.

- The National Science Foundation (NSF) enjoys a budget increase, but falls well short of a five-year doubling plan signed into law last December. Congress provided \$4.1 billion for NSF's R&D activities (excluding education, training, and overhead), an increase of 4.7 percent (see Table 1 and Figure 2). The NSF research directorates receive increases between 3 and 7 percent. The total NSF budget of \$5.6 billion is \$1 billion short of the \$6.6 billion authorized for FY 2004 by an NSF authorization bill signed into law in December 2002 that would put the NSF budget on track to double between FY 2002 and FY 2007.

- The remaining agencies in the federal R&D portfolio receive some modest increases offset by cuts or flat funding in other areas (see Figure 2). The Department of Energy's (DOE) Office of Science received a modest boost to \$3.2 billion for its R&D programs, an increase of 3.8 percent. R&D in the U.S. Geological Survey (USGS) fails to keep pace with inflation with a 1.7 percent increase to \$579 million,

although Congress reversed the Administration’s proposed cuts. Congress rejected the Administration’s proposal to eliminate the Advanced Technology Program, but R&D in the National Institute of Standards and Technology (NIST) in Commerce still declines 3.9 percent. There are cuts in the R&D portfolios of other agencies: R&D in the U.S. Department of Agriculture (USDA, down 4.9 percent), the Department of Transportation (DOT, down 8.2 percent), and NASA (down 0.4 percent) all fall in FY 2004.

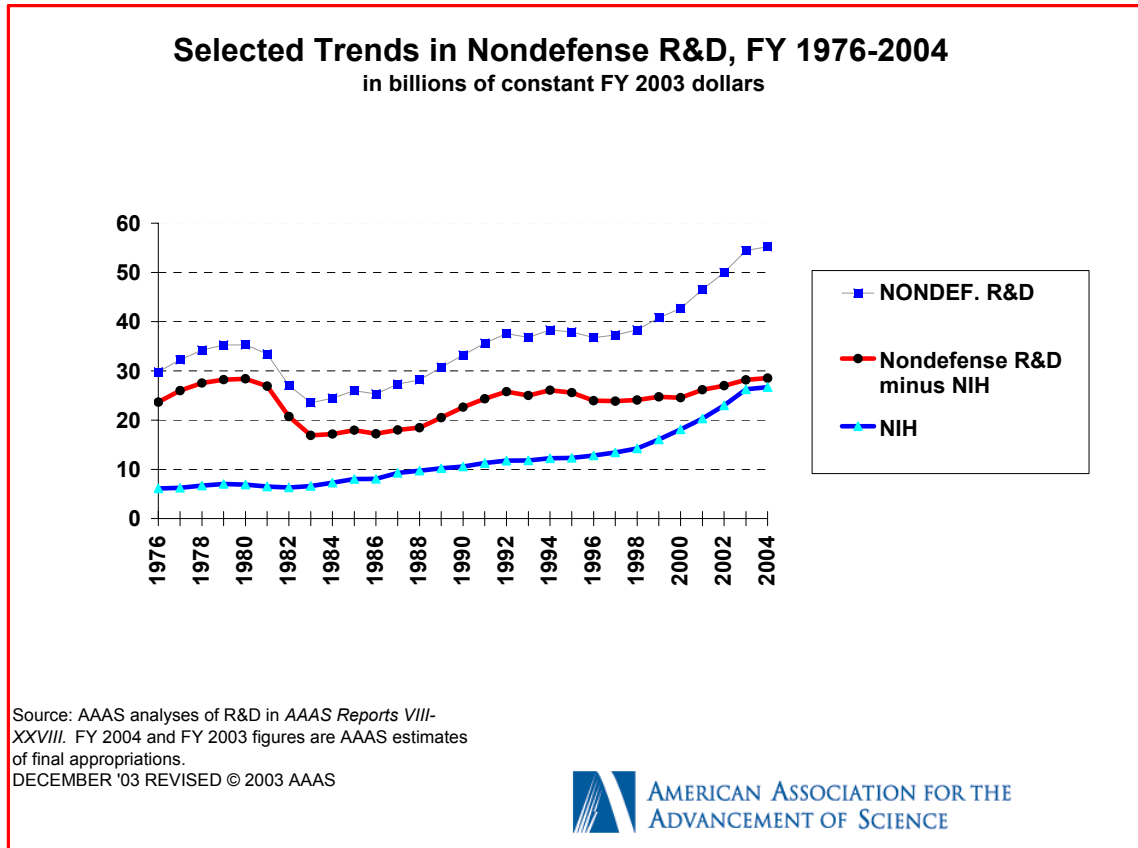


Figure 3.

- **The federal basic and applied research portfolio increases 5.7 percent in FY 2004.** The federal research portfolio (basic and applied research, including defense research) totals \$56.0 billion in FY 2004 (see Table 2). Many agencies’ research portfolios fare better than their overall R&D portfolios because R&D facilities funding falls sharply in agencies such as USDA, DOE, and NIH, allowing for larger increases in research. NIH’s research portfolio increases 7.0 percent or \$1.8 billion to \$26.9 billion, as one-time grants for biodefense research facilities construction in FY 2003 are replaced by biodefense research grants in FY 2004; similarly, DOE research funding jumps 8.7 percent to \$5.6 billion as facilities construction costs for the Spallation Neutron Source and the National Ignition Facility fall in FY 2004, allowing for research increases. NIH supports 48 percent of all federal research in FY 2004, a ratio that has been steadily increasing for decades.

- **The current focus on defense and homeland security results in large increases for defense and general science R&D, and modest increases or cuts for most of the other national missions** (see Table 3). Defense R&D (including DOD, the Department of Energy’s defense activities, and a large part of the DHS R&D portfolio) rises \$7.9 billion or 12.5 percent to \$70.9 billion, for a record total driven by substantial boosts to defense-related development activities in DOD and DHS. After several years of near-

parity between defense and nondefense R&D around the turn of the century, defense R&D pulls ahead to 55.9 percent of total federal R&D. Because of the tremendous growth in defense and health R&D over the past few years, R&D for all other national missions has steadily shrunk to less than a quarter of the federal R&D portfolio and totals just 21 percent in FY 2004.

The FY 2004 R&D Budget in Historical Context

The FY 2004 budget process leaves key R&D programs with flat budgets for the better part of the past decade. As Figure 3 and Figure 4 show, both the defense and nondefense R&D investments are at record highs in FY 2004, but these totals disguise flat or declining funding for many areas.

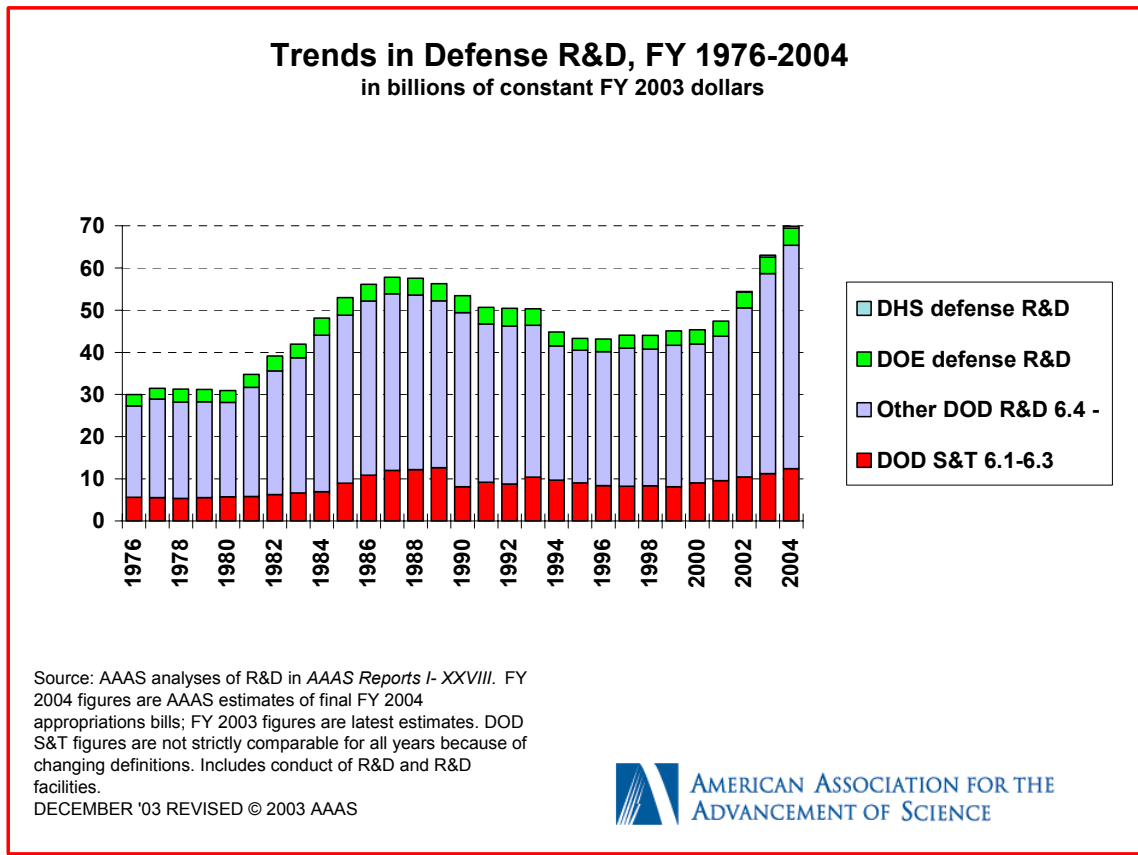


Figure 4.

For defense R&D, Figure 4 shows that nearly all of the increases in the past few years to defense R&D have been in weapons systems development, “6.4” or higher in the DOD classification system. DOD’s S&T investments (“6.1” through “6.3”), comprising basic and applied research and technology development, are still well below the funding levels of the late 1980s and have received relatively modest increases compared to weapons development. The S&T accounts fund all of DOD’s investments in research, including key federal contributions to the support of the physical sciences, engineering, and other research fields.

In nondefense R&D, record-setting funding levels are primarily a legacy of the recently completed campaign to double the NIH budget between 1998 and 2003, as shown in Figure 3. **All the other nondefense R&D funding agencies collectively have seen their budgets remain flat for more than a**

decade, even as the U.S. economy, the federal budget, and the U.S. population have all boomed during that time. Recent increases in nondefense R&D have served only to recover the lost ground of the mid-1990s when discretionary spending declined in the push to balance the federal budget. These non-NIH agencies, combined with DOD's research investments, fund nearly all of the federal investment in the non-biomedical sciences, including the physical sciences, non-medical life sciences, environmental sciences, engineering, mathematics, computer sciences, and social sciences. Because of stagnant funding for DOD research and non-NIH nondefense R&D, federal support for these disciplines has remained stagnant for more than a decade, and the FY 2004 budget does little to change the trend.

R&D Issues: Earmarks

Although Mitch Daniels, the former Director of the Office of Management and Budget (OMB), as well as the Bush Administration in general, made restraining congressional earmarks a high priority early on in the Bush Administration, this earmark-fighting zeal has waned considerably recently and dwindled to zero, especially with the departure of Daniels. President Bush has never used his veto power, and has signaled his willingness to accept whatever appropriations bills come his way as long as they meet his overall budget targets. And his budget targets have left plenty of room for earmarks. The President and the last two Congresses have presided over some of the largest increases in discretionary spending in history; for the last three years, discretionary spending has increased by more than 10 percent a year. By most accounts, total earmarks have surged dramatically during this time. Ironically, though discretionary spending in FY 2004 rises by only 3 percent to \$874 billion, funding for R&D earmarks hits a new record. It is still unclear what the trends will be for total earmarks in non-R&D areas, though at first glance both the number of earmarked projects and dollar amounts appear to climb in FY 2004. In the FY 2004 omnibus bill, there are pages and pages of earmarks for community development grants (950 projects in one Housing and Urban Development program), EPA water grants (more than 500 projects in just one EPA account), and health care facilities (more than 600 projects in one HRSA account), all in greater numbers than last year.

Earmarks for R&D projects continued to attract attention, interest, and controversy over the past year. After a pause in the FY 2003 budget, R&D earmarks soar in the final FY 2004 budget. This publication takes no position on the economic, political or scientific wisdom of R&D earmarks. However, because the topic is likely to remain of interest to policymakers and members of the research community who are concerned about the allocation of R&D resources, it does offer an analysis of R&D earmarks in the federal appropriations process. For the purposes of this analysis, R&D earmarks are defined as "congressionally designated performer-specific R&D projects not included in agency budget requests."

For R&D earmarks, the FY 2004 total sees a sharp increase after a leveling off in FY 2003. As Table A and Figure 5 show, R&D earmarks total \$1.9 billion in FY 2004, mostly in the FY 2004 omnibus appropriations bills and the FY 2004 Defense appropriations bills.

Although these projects amount to only 1.5 percent of total R&D, they are concentrated in a few key agencies and programs (see Table A). Four agencies (the U.S. Department of Agriculture (USDA; \$220 million), the National Aeronautics and Space Administration (NASA; \$194 million), the Department of Energy (DOE; \$284 million) and the Department of Defense (DOD; \$825 million) receive 80 percent of the total R&D earmarks. (For more details on R&D earmarks in FY 2004, please see the special R&D Earmarks in the FY 2004 Budget analysis on the AAAS R&D web site.)

FY 2004 earmarks are up sharply by 32 percent from the \$1.4 billion in R&D earmarks in FY 2003, in contrast to last year when they declined slightly from \$1.5 billion in FY 2002 (see Table A and Figure 5). Within a record R&D investment of \$127 billion in FY 2004, up 8.1 percent, R&D earmarks grow far faster than R&D spending as a whole. Nearly all of the increase is due to an explosion in R&D earmarks in the Department of Defense (DOD), which sees its earmarked projects nearly double from \$426 million last year to \$825 million in FY 2004. Earmarks in DOE R&D also double, to \$284 million in FY 2004.

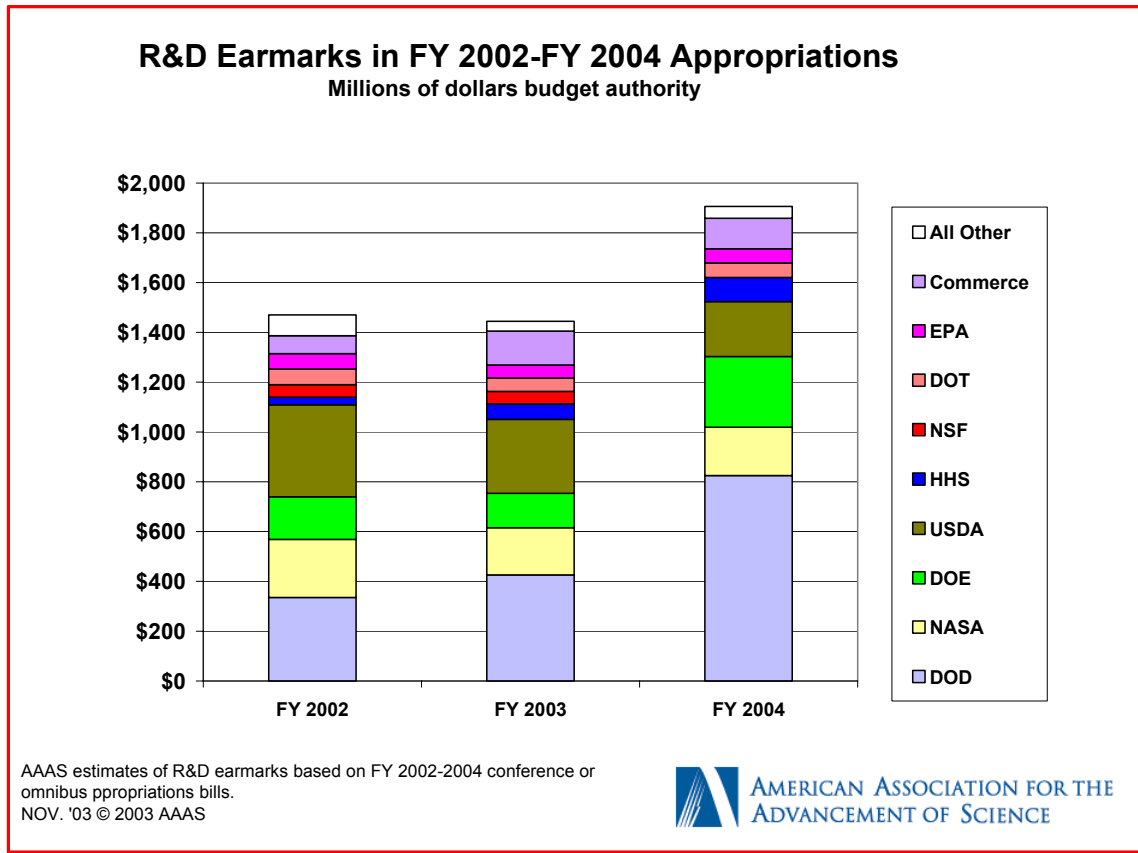


Figure 5.

The share of the R&D portfolio that is earmarked rises to 1.5 percent after dipping to 1.2 percent in FY 2003 from 1.4 percent in FY 2002. But because these earmarks are highly concentrated, earmarks make up 1 out of every 5 program dollars in some R&D programs.

Some agencies remain earmark-free, including the **National Science Foundation's** Major Research Equipment and Facilities Construction (MREFC) account, in contrast to the last two years. Similarly, the **National Institutes of Health** (NIH) budget remains free of performer-specific R&D earmarks, and the new **Department of Homeland Security (DHS)** is also free of R&D earmarks so far in its young history.

(For more agency details of R&D earmarks, please see the special R&D Earmarks in the FY 2004 Budget analysis on the AAAS R&D web site.)

Table A. Congressional Earmarks for FY 2004 R&D by Agency

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Congressional Action on R&D in the FY 2004 Budget
(budget authority in millions of dollars)

	FY 2002 Earmarks	FY 2003 Earmarks	FY 2004		
			FY 2004 Earmarks	FY 2004 R&D	Earmarks % of R&D
Defense (military)	336	426	825	66,323	1.2%
<i>(Army)</i>	120	152	318	10,310	3.1%
<i>(Navy)</i>	68	111	178	14,969	1.2%
<i>(Air Force)</i>	43	41	134	20,366	0.7%
<i>(Defense Agencies)</i>	90	71	127	18,961	0.7%
<i>(Other)</i>	13	52	69	1,718	4.0%
National Aeronautics & Space Admin.	233	190	194	10,958	1.8%
<i>(Space Science)</i>	30	8	25	3,973	0.6%
<i>(Earth Science)</i>	38	49	39	1,607	2.4%
<i>(Bio. And Phys. Res.)</i>	15	25	25	990	2.5%
<i>(Aero-Space Technology)</i>	83	60	50	1,085	4.6%
<i>(Academic Programs)</i>	67	47	55	227	24.0%
Energy	171	138	284	8,731	3.2%
<i>(Science programs)</i>	72	50	95	3,190	3.0%
<i>(Energy programs)</i>	65	36	114	1,414	8.1%
<i>(Defense programs)</i>	35	52	74	4,127	1.8%
Health and Human Services	31	62	97	28,473	0.3%
<i>(National Institutes of Health)</i>	0	0	0	27,093	0.0%
National Science Foundation	50	50	0	4,113	0.0%
<i>(Major Research Equipment)</i>	50	50	0	155	0.0%
Agriculture	369	297	220	2,166	10.2%
<i>(Agricultural Res. Service)</i>	257	166	86	1,169	7.3%
<i>(CSREES)</i>	107	129	125	604	20.7%
<i>(Forest Service)</i>	5	3	8	281	2.7%
Interior	14	18	23	676	3.5%
<i>(U.S. Geological Survey)</i>	14	11	20	579	3.4%
Transportation	63	54	59	644	9.1%
Environmental Protection Agency	62	53	56	654	8.6%
Commerce	72	136	122	1,260	9.7%
<i>(NOAA)</i>	31	107	97	724	13.4%
<i>(NIST)</i>	42	29	26	506	5.1%
Homeland Security	0	0	0	1,044	0.0%
Education	0	1	0	310	0.0%
Agency for Int'l Development	4	4	4	285	1.4%
Department of Veterans Affairs	0	0	0	820	0.0%
Housing and Urban Development	30	11	15	55	28.0%
Department of Justice	29	3	0	90	0.0%
All Other	5	2	5	368	1.4%
Total	1,470	1,444	1,906	126,968	1.5%

AAAS estimates of R&D in FY 2004 appropriations bills. Includes conduct of R&D and R&D facilities.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

"Earmarks" are AAAS interpretations of unrequested, congressionally designated, performer-specific R&D projects contained in legislative language or committee report language in appropriations bills.

Earmarks do not include non-R&D congressionally designated projects.

January 25, 2004 - AAAS estimates of final FY 2004 funding levels.