

Historical Trends in Federal R&D

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The FY 2006 budget would cut funding for key R&D programs and leave federal R&D investments in several areas with flat or declining funding for the last 15 years. As Figure 1 and Figure 2 show, both the defense and nondefense R&D investments are at or near record levels in 2005 (in inflation-adjusted terms), but both defense and nondefense would fall behind inflation in FY 2006. For many areas, however, budget cuts would follow cuts in previous years. (See Table I-11 for historical data. More historical data are available on the AAAS R&D web site.)

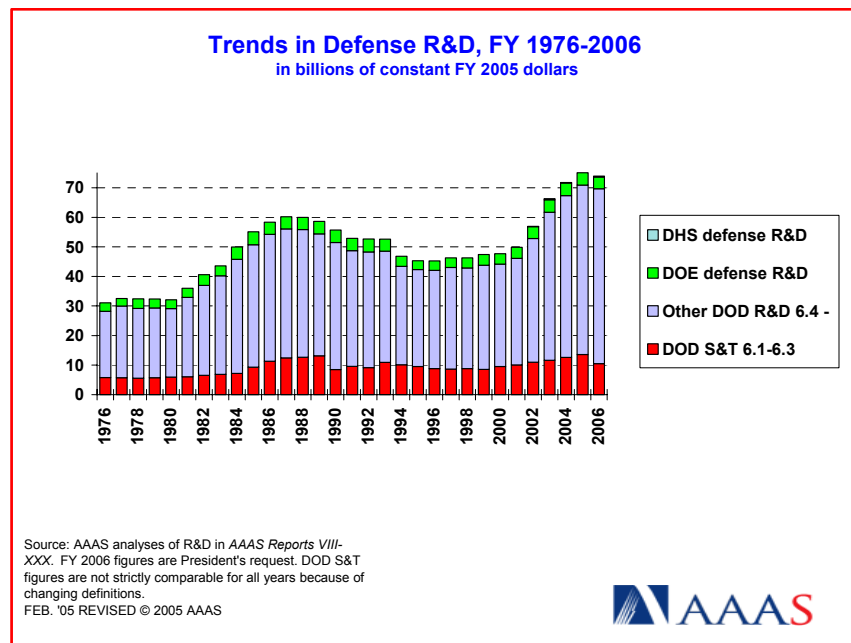


Figure 1.

For defense R&D, Figure 1 shows that nearly all of the increases in the past few years have been in weapons systems development, “6.4” or higher in the Department of Defense (DOD) classification system.

DOD’s S&T investments (“6.1” through “6.3”), comprising basic and applied research and technology development, barely hit a record high in 2005 after taking 16 years to return to Cold War funding levels. But the FY 2006 budget proposes to cut these S&T investments 21 percent in just one year, and reverse four years’ worth of increases. 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.

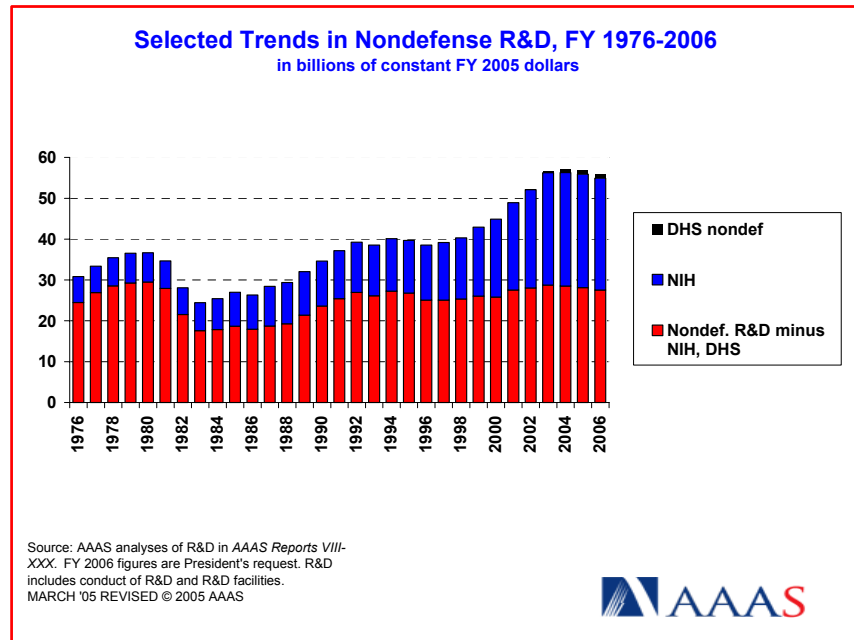


Figure 2.

In nondefense R&D, the record investments of 2004 and 2005 are primarily a legacy of the recently completed campaign to double the National Institutes of Health (NIH) budget between 1998 and 2003, as shown in Figure 2. Both NIH and non-NIH R&D funding have stagnated since then. The FY 2006 budget would be the first time in 24 years that NIH R&D funding would fail to keep pace with inflation. All the other nondefense R&D funding agencies collectively have seen their budgets remain flat over the past 15 years, after factoring out the recent creation of the Department of Homeland Security (DHS). For these nondefense agencies, the FY 2006 budget would be the third year in a row of real cuts.

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These non-NIH agencies, combined with DOD’s research, 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. Federal support for these disciplines has remained stagnant for 15 years, as shown in Figure 3, and would decline further in 2006. At the same time, support for the life sciences (mainly biomedical research) has grown in tandem with NIH budget growth, but even this growth would stop or even reverse in the FY 2006 budget proposal.

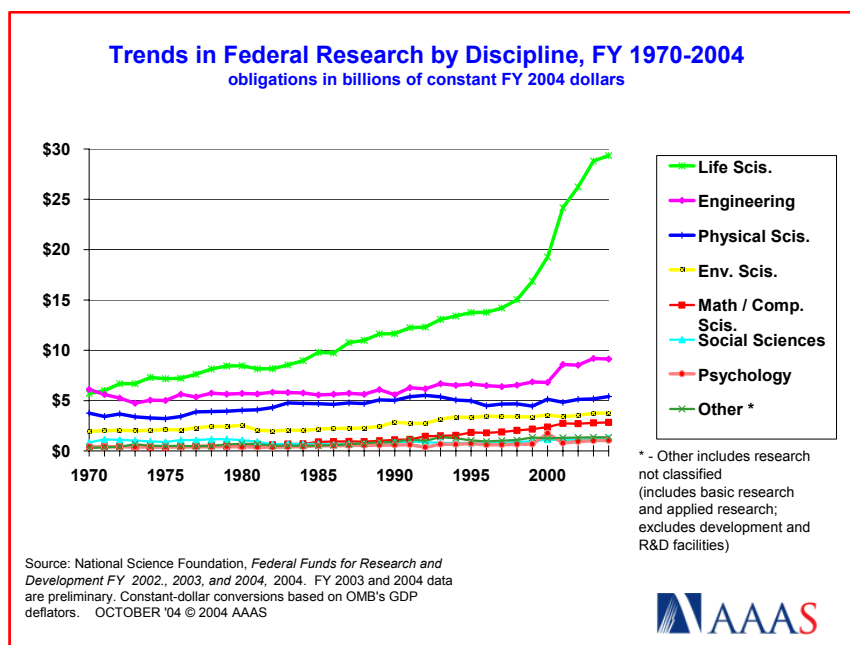


Figure 3.

Looking over the longer term, the mission-oriented U.S. R&D funding system means that federal R&D investments can shift dramatically to respond to changing national needs. Spending on defense R&D has exceeded all other R&D spending (grouped together as “nondefense R&D”) for most of the past four decades, although the relative size of the two sectors has varied considerably over the years. Figure 4 shows how priorities in nondefense R&D have shifted over the same period. Civilian R&D expenditures reached a high point in the mid-1960s, declining for several years thereafter. After several years of significant growth in the

late 1980s and the late 1990s, they have only recently returned to the levels of the 1960s in real (*i.e.*, inflation-adjusted) terms.

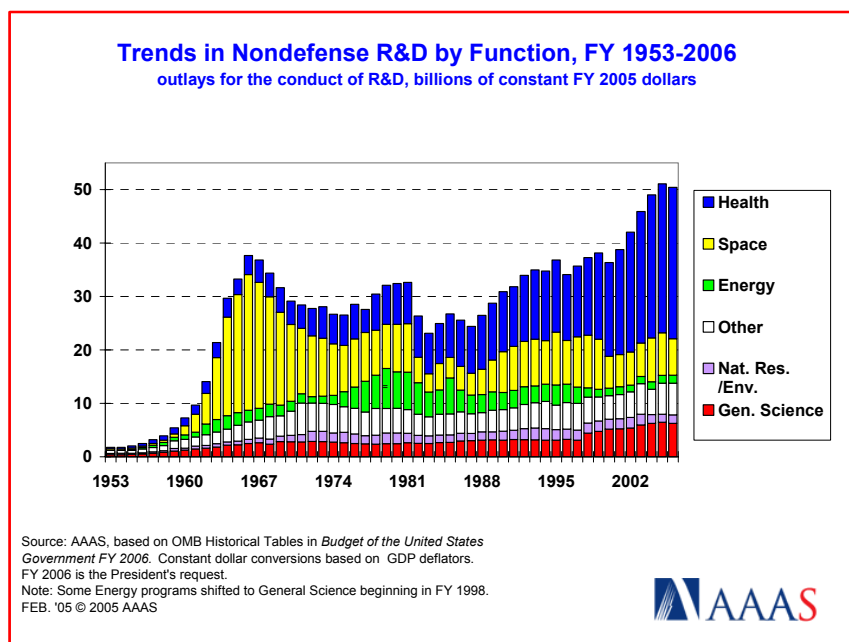


Figure 4.

Priorities, however, are different now than they were in the 1960s. Indeed, they changed significantly after September 11. Space exploration was the dominant function in the 1960s, driven mainly by the Apollo Program. It lost priority after we succeeded in landing on the moon in 1969, however, and has never regained its lead although the recent presidential announcement of plans for a human return to the Moon and then human space flight to Mars may promise future increases. Energy R&D gained priority following the oil shortages of the 1970s, then retreated as national attention turned elsewhere. Health R&D, meanwhile, has shown practically uninterrupted growth over these years and now represents the largest single share of the civilian R&D portfolio. Homeland security-related R&D has increased in importance since September 11 with the creation last year of a new cabinet-level department devoted to homeland security; its work is divided among several national priorities, including defense, transportation, and health. (See Chapter 1 and Table I-4 for details of national priorities in the FY 2006 budget.)