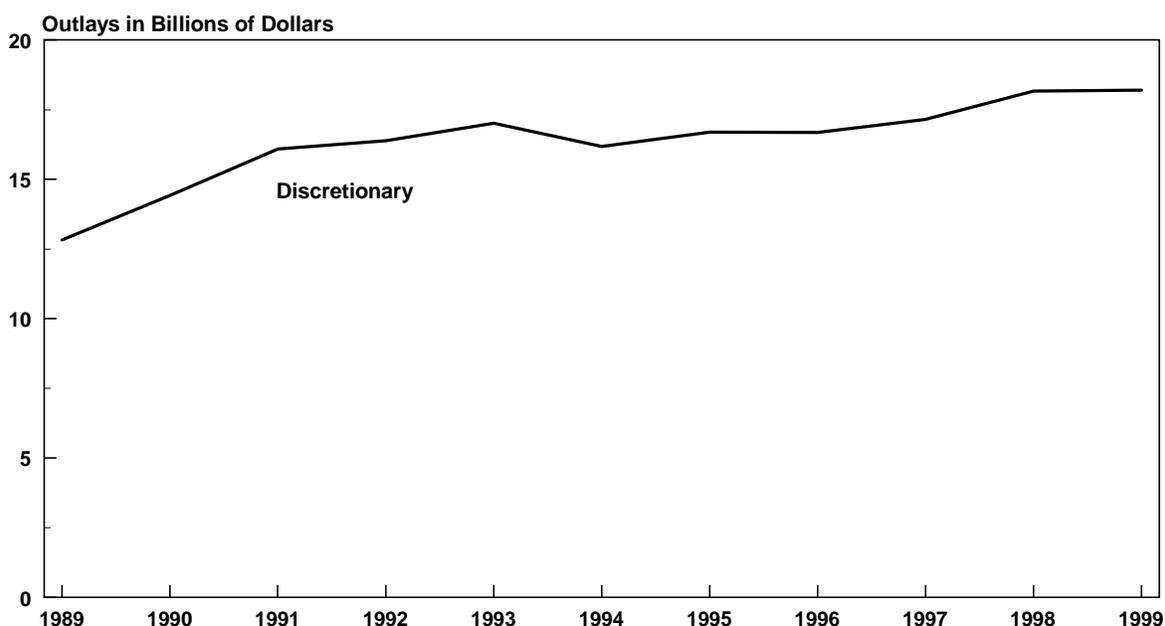


250

General Science, Space and Technology

Budget function 250 includes funding for the National Science Foundation, more than 90 percent of the spending of the National Aeronautics and Space Administration, and general science research by the Department of Energy. In 1999, CBO estimates, discretionary outlays for function 250 will total about \$18 billion. Discretionary budget authority provided for the function in 1999 is nearly \$19 billion. Mandatory spending for function 250 is estimated to be about \$30 million this year—too small an amount to be visible in the figure below. For the past 10 years, spending under this function has represented about 1 percent of federal outlays.



250-01 CANCEL THE INTERNATIONAL SPACE STATION PROGRAM

Savings
(Millions of dollars)
Budget
Authority Outlays

	Annual	
2000	1,305	900
2001	2,305	1,969
2002	2,305	2,285
2003	2,305	2,305
2004	2,305	2,305
2005	2,305	2,305
2006	2,305	2,305
2007	2,305	2,305
2008	2,305	2,305
2009	2,305	2,305
	Cumulative	
2000-2004	10,525	9,764
2000-2009	22,050	21,289

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

400-04

RELATED CBO PUBLICATION:

Reinventing NASA (Study), March 1994.

The first two elements of the international space station were launched and joined in late 1998. Under current plans, the facility will be completed in 2005. By that time, an estimated \$25 billion will have been spent to develop, build, and assemble the space station. The General Accounting Office (GAO) estimates that the life-cycle cost of the entire project, including operation, maintenance, and transportation to and from orbit, will be over \$95 billion. The Congress's yearly decision about whether to continue funding the program hinges not on the money already spent but on whether the program's benefits are sufficient to justify spending an additional \$70 billion through 2013.

People who would cancel the international space station program assert that its benefits are unlikely to justify additional spending and that costs are likely to increase above those estimated by GAO. To support their position, critics cite the general lack of enthusiasm for the space station among individual scientists and scientific societies. The program's opponents also note that the costs of the program have continually increased, although its capabilities and scope have decreased. Moreover, opponents hold that under current budgetary conditions, any cost overruns would be paid for through additional cuts in the National Aeronautics and Space Administration's (NASA's) science, technology, and aeronautical activities. Critics point to the uncertainty surrounding the costs of operating and supporting the facility once it has been developed and launched. Regarding that issue, opponents are skeptical of NASA's assurance that the station's operating costs will be low, noting that the agency made similar claims about the space shuttle that proved overly optimistic. Finally, Russia's failure to meet its obligation to provide parts of the space station will require that the United States pay those costs.

Advocates of continued spending for the space station reject critics' claim that the program's benefits do not sufficiently justify its costs. Supporters place a high value on the role of the station as a stepping stone to future human exploration of the solar system. They also contend that the program will deliver both scientific advances and perhaps even commercial benefits. Supporters also argue that Russia's participation has strengthened the foreign policy reason for continuing the program. They assert that drawing Russia, and particularly its aerospace industry, into a cooperative venture will help to stabilize the Russian economy and provide incentives for Russia to adhere to international agreements on the spread of missile technology. Advocates also point out that the project's cancellation would force the United States to renege on agreements signed with European nations, Japan, and Canada. That could hurt the prospects for future international cooperative agreements on space, science, and other areas of mutual interest.

250-02 ELIMINATE THE EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	90	23
2001	113	71
2002	113	98
2003	113	107
2004	113	111
2005	113	112
2006	113	113
2007	113	113
2008	113	113
2009	113	113

Cumulative

2000-2004	542	410
2000-2009	1,107	974

SPENDING CATEGORY:

Discretionary

The Experimental Program to Stimulate Competitive Research (EPSCoR), a partnership between states and several research-oriented federal agencies, was designed to encourage more investment by states in science and technology. EPSCoR was created in response to a concentrated distribution among the states of federal research and development (R&D) funding: a large number of states receive little funding. Currently, federal agencies spend about \$113 million on EPSCoR.

Eighteen states and the Commonwealth of Puerto Rico currently take part in EPSCoR. Between 1980 and 1998, the National Science Foundation provided roughly \$270 million to more than 60 colleges, universities, and laboratories that had not received significant federal R&D funding in the past. State governments, local industry, and other nonfederal sources provided an additional \$300 million to those institutions. The entire effort has supported 2,000 scientists and engineers.

Opponents of EPSCoR contend that the nation must make optimal use of its limited research dollars. That principle would argue for supporting researchers whose proposals are judged superior through a process of peer review, without regard to geographical distribution. Furthermore, critics doubt whether newcomers to the research enterprise can sustain a top-level effort, which requires substantial ongoing investments by the states and regional institutions. Even with matching funds from the states and other nonfederal organizations, novice research institutions might find it difficult to succeed.

Critics also argue that EPSCoR was supposed to be an experimental program, not a permanent source of R&D support for selected states. They note that after nearly 15 years of EPSCoR support, the program's recipients continue to attract only about 7 percent of the federal funding for academic R&D. Opponents point to the corresponding lack of improvement in state shares of such funding: participating states that began the 1980s in the bottom half of the national rankings were still in the bottom half in 1993.

Advocates maintain that EPSCoR promotes a more equitable geographic distribution of the nation's science and technology base. They assert that state policymakers invest more in R&D than they would without EPSCoR's incentives, and those investments promote equity in higher education by giving students in those states the research experience and training necessary for careers in scientific fields. Proponents also contend that the program fosters technology-related industries in the states by involving local firms in selecting research topics. Supporters note that 15 of the EPSCoR states experienced above-average growth in federal funding for academic R&D over the 1980-1993 period. They claim that the EPSCoR states have improved their rankings in their chosen "niche" fields, even if such changes are not apparent in the overall statistics. They argue as well that the quality of EPSCoR-funded research is equivalent to other federally funded R&D because awards are based on merit reviews.

250-03 REDUCE NSF FUNDING FOR SOCIAL, BEHAVIORAL, AND ECONOMIC SCIENCE RESEARCH

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	48	12
2001	60	38
2002	60	51
2003	60	55
2004	60	57
2005	60	57
2006	60	57
2007	60	57
2008	60	57
2009	60	57
Cumulative		
2000-2004	288	213
2000-2009	588	498

SPENDING CATEGORY:

Discretionary

Clarifying the mission of the National Science Foundation (NSF) is an important task, since the Congress is moving toward increasing research and development (R&D) spending in general. Otherwise, the federal government might be increasing the funding for a broader range of programs than it intends. To this end, the NSF could reduce its funding of social, behavioral, and economic science research. Currently, the NSF spends \$137 million per year on such research. Only 55 percent of the research at the NSF Division of Social, Behavioral, and Economic Research (SBER) is for archaeology, physical anthropology, primate studies, and the like; the rest is research on economics, management, and political science.

Critics of the NSF's spending on social and economic science research argue that such research does not belong in an agency devoted to funding and promoting an understanding of the physical sciences. Eliminating NSF research in social and economic sciences would leave NSF funding for simian studies and the like intact. It would also leave intact the Science Resources Studies program, which gathers and produces federal science statistics, including the widely used *Science and Engineering Indicators*.

Opponents of the spending believe that research in economic and related fields is more appropriately funded by the agencies devoted to studies of the economy—for example, the Federal Reserve Board, which has published working papers on the contribution of R&D to the economy. In addition, regulatory agencies with responsibility for financial markets might be more appropriate for studying issues of risk-taking behavior, which the NSF has funded. Furthermore, research agencies governmentwide regularly study economic and other social science phenomena to prove the worth of their individual programs. Reducing NSF's funding for such research would lessen duplication.

A recent study found that NSF funding of economists did little to increase the number of publications written by them. The study accounted for both the number of academic articles published and the reputation of the journals that featured the articles. Applicants who received NSF grants published no more new articles, taking into account the reputation of the journal, than their peers who did not receive NSF funding. (The major exception was investigators early in their careers, whose productivity seemed to increase with the receipt of an NSF grant.) The study suggests that most of the economic research funded by NSF would have been performed without NSF funding.

Supporters of NSF's research on social, behavioral, and economic science argue that the research has value in its own right. They cite as evidence the fact that at least one of the researchers funded by the programs has won a Nobel prize for his work. In addition, the focus and approach taken by NSF-funded research is designed to bring a scientific approach to topics, such as law and law-like systems, not usually considered from that perspective.