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Long-Term Economic Rx: Research

Research and development supported by both government and private sources transformed the United States into the dominant technological force in the world. But our commitment to maintain and extend the amount of research and development necessary to stay ahead in the technological race has slipped. Today, we are witnessing a wholesale retreat in the federal role in civilian research and development. This is manifest in the shrinking amount of research support for our universities, private nonprofit research laboratories, and national multi-program laboratories.

Over the past 15 years the proportion of the U.S. gross national product invested in research and development has steadily declined—dropping more than 20 percent since 1965. In the same period and by the same measure, the R & D investment in the Soviet Union climbed by 21 percent, in Japan by 27 percent, and in West Germany by 41 percent. In addition to this huge underinvestment in research and development, we are failing to produce the technically trained people that we need to sustain increases in productivity and to make advances in knowledge that will be the basis for our economic prosperity and national security in the coming decades. The intense demand for technically trained people has resulted in high salaries that are luring faculty and graduate students away from even our best universities. To complete this picture, there is mounting evidence that the research laboratories and instrumentation in American universities are rapidly becoming obsolete.

Let us examine the response of the Reagan Administration to this crisis in four specific areas: energy, space, science education, and the national laboratories.

Productive R & D efforts in industrial energy conservation, energy-efficient buildings, energy storage, and solar energy have been zeroed out in the President's fiscal 1983 budget, thus helping to ensure an unnecessarily prolonged U.S. dependence on oil from the Arabian Gulf. There is no evidence that any of these programs will be picked up by private industry.

Decisions on the space program are equally egregious. The Galileo Program is now the only remaining U.S. planetary program in development, and some of the older space probes may be turned off. Funds have been cut for a satellite to test new advances in communication. Aeronautics research has been cut at a time when the Europeans are challenging us with the development of the airbus and the Japanese are thinking of launching major forays into the international aircraft market.

In science education, the National Science Foundation's (NSF) request for extra funds to upgrade university laboratories has been zeroed out, and a 70 percent reduction has been forced on NSF in the science education budget. As for the national laboratories, Argonne National Laboratory officials say that 25 percent of their work force may be eliminated within the year. Brookhaven National Laboratory, Fermi National Accelerator Laboratory, NASA-Lewis Laboratory, and Jet Propulsion Laboratory have also suffered.

Several steps can be taken to meet the R & D crisis in America. We must provide stable, predictable funding for scientific and technological research; alleviate shortages of technical personnel; provide incentives for better university-industry collaboration; restore the science education program at NSF and improve science and mathematics education at the precollege level; and develop a coherent national science and technology policy that includes a larger role for the science and technology community in the making of such policy. If the Office of Science and Technology Policy cannot be sufficiently effective in this role, we should think seriously about creating a cabinet-level department of science and technology as a focal point for federal nondefense research activities. I urge the science community to help us get back on the right track.—JOHN H. GLENN, *U.S. Senator (D–Ohio), Washington, D.C. 20510*

From a speech before the IEEE Conference on Technology Policy, 24 February 1982, Washington, D.C.