17 September 1976, Volume 193, Number 4258

SCIENCE

Federal R & D and the Economy

Hearings cross the congressional firmament like shooting stars. Most are only a momentary glimmer. A few signal the existence of larger issues. The hearings held in April and May by the Thornton subcommittee of the House Committee on Science and Technology were of the latter type. The subject was "Federal R & D Expenditure and the National Economy."

The issue revolves around the unanswered question whether the federal government should assure stable, long-term support for commercially oriented R & D. Some think such intervention is essential to the health and international competitiveness of the national economy. Yet most of our understanding of the relationship between R & D and the economy, with the important exception of agriculture, comes from 35 years of experience with defense- and space-oriented projects—of which the Manhattan and Apollo projects were spectacular examples—in which the federal government was both the funder and principal consumer of the R & D output.

There were four persistent themes in these hearings. One was that government and business operate in a climate of distrust, if not of hostility. Another was that R & D expenditures seem a weak and imperfect tool in comparison with tax, subsidy, antitrust regulation, education, and procurement policies. A third theme was the perceived negative effect of federal organization and management of its own R & D enterprises on several dependent sectors of the economy. Finally, the need for federal support of fundamental research was a clear and consistent theme. Every witness, regardless of philosophy, expressed deep concern for the health of the fundamental research effort. Apparently the case still has not been made that investment in fundamental research is not a discretionary societal luxury but an essential component of continued economic viability.

The sense of these hearings was that specific government intervention through R & D expenditure to stimulate the private sector is liable to be of limited effectiveness. There is little understanding or guidance available regarding what to do to achieve a particular desired result. Some opportunities stood out for analysis and perhaps experiment:

- Firms that perform R & D exclusively appear to play a critical role in the process of innovation. Differences in performance between firms created through federally supported R & D need to be explored.
- Small, highly innovative firms are important contributors of new products and processes, but are also most subject to failure in the course of normal economic fluctuations. Some alternatives need to be considered to cushion this impact.
- Policies and programs of other industrial countries are admired, but none has been tested in this country. Some selective, controlled experiments ought to be possible, at least on a limited basis.
- Innovation in the private, profit-making sector is a reasonably well-understood process. Similarities and differences in public sector innovation are not nearly as well described or explained.

What seems to be foreshadowed by the kinds of questions raised in these hearings is the broad issue of a national technology policy. Given our penchant in the United States for pluralistic, decentralized approaches to complex and important policy issues, clear-cut institutional structures or guidelines to action are not likely to appear. The least we should expect, however, is that existing centers of authority and initiative begin to review and refine their objectives. This would include the Departments of Agriculture, Commerce, and Defense. The mission agencies—ERDA, NASA, and NIH—also are important constituents. Where these lead, others will follow.—T. DIXON LONG, *Provost, Western Reserve College, Case Western Reserve University, Cleveland, Ohio 44106*

This editorial has been abstracted from a review of the hearings prepared by a subcommittee of the AAAS Science and Public Policy Committee. In addition to Mr. Long, its chairman, the subcommittee included John M. Logsdon and Edward E. David, Jr.