Money Questions

The Financing of Biomedical Research. ELI GINZBERG and ANNA B. DUTKA. Johns Hopkins University Press. Baltimore, 1989. xii, 144 pp. $18.50.

This slim volume assays "the changing trends and patterns in the financing of biomedical research in the more than four decades since the end of World War II," an issue of continuing national policy and of intense interest to medical scientists. The authors devote three chapters to charting relations between supporters and performers of biomedical research, examining the "critical ratios" of such research to other activities such as federal research and development and national health expenditures and raising, if not answering, the question "How many dollars are enough?" Two chapters address the current and potential support of biomedical research by private philanthropy, a frequently neglected subject that is highlighted here, in part, because of the sponsorship of the book by the Lucille P. Markey Charitable Trust. Academic health centers, the primary performers of medical research regardless of sponsorship, receive explicit attention in one chapter. The book concludes by examining several "open issues" on the national biomedical research agenda, mainly as they relate to financing.

Ginzberg and Dutka pack a great deal of factual information into these few pages, a sufficient reason for many individuals to own the book. Not surprisingly, the National Institutes of Health (NIH) receive a good deal of attention as the primary source of federal government support for medical research. Other federal agencies that made important historical contributions to medical science, such as the Office of Naval Research, the National Science Foundation, and the Atomic Energy Commission (now part of the Department of Energy), receive scant attention.

About the NIH, however, Ginzberg and Dutka convey a useful, if sobering, perspective on the past and future. Financing, they argue, has moved through three stages: rapid growth (1950–65); slow growth (1966–82); and renewed growth (1983–87). Political support has flowed through the Congress from disease-oriented individuals and organizations. The internal architecture of allocating resources along the most promising scientific lines, however, was shaped mainly by James Shannon, director from 1955 to 1968.

Those seeking a presumably more rational basis of support than politics are forced by this analysis to confront several troubling realities. First, although economic theory provides a conceptual rationale for resource allocation—spend for medical research as long as the economic return on the marginal dollar exceeds that of alternative uses of the funds—it provides basically no practical guidance in determining what the budget level ought to be. Various "critical ratios" may suggest rules of thumb, but no more. Second, economic research by Mushkin on medical research and by Griliches and others (Mansfield might have been cited here) on scientific research in general strongly suggests that the social rate of return exceeds the private rate of return, thus justifying a continued and substantial public investment. Precisely what the optimal total national investment in medical research should be and what is the right balance of public and private shares remains unknown. Third, medical research benefited from the Reagan years in two ways—increased funding for science and the renewed emphasis on basic research. But fourth, the fiscal legacy of the Reagan years—substantial annual budget deficits, a massive increase in the national debt, and the consequent growth in federal debt service costs (currently over $240 billion annually)—now severely restricts the likelihood that any major increase of funds might flow from this source.

Does private philanthropy hold much promise as an offset to the federal fiscal fortunes of medical research? Not much. The authors examine the donors of private funds—individuals, bequests, foundations, and corporations—and conclude that medical research will benefit modestly, in part from donations that give institutions program flexibility and that help refurbish the research infrastructure. These benefits will increase, however, only as philanthropy increases overall. The authors identify just two institutions—the Howard Hughes Medical Institute (which is not a private foundation) and the Markey Charitable Trust (which must spend all of its assets by 1997)—as major private sources of medical research funds.

Ginzberg and Dutka review the central role of medical schools in biomedical research, the dependence of medical schools on research funds and their vulnerability to the vicissitudes of research funding, the offset provided by physician education support in the 1970s and the impact of its subsequent phase-out, the emergence of Medicare and Medicaid as a funding source for the combined functions of patient care, education, and research and the impact of cost containment in reducing cross subsidies, and the development of practice plans as a major source of income for the clinical faculty and source of research support. They find that the research-oriented academic health centers are becoming increasingly sophisticated in seeking private funds and, at the margin, will find such sources extremely useful for initiating new innovative programs and meeting new and existing capital needs.

Ginzberg and Dutka have written a book that is more descriptive than prescriptive, more historical than future-oriented, but one that will contribute strongly to both public and private responses to the issues they address.

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Responses to Climate Change

Greenhouse Warming. Abatement and Adaptation. NORMAN J. ROSENBERG, WILLIAM E. EASTERLING III, PIERRE R. CROSSON, and JOEL DARMSTADTER, Eds. Resources for the Future, Washington, DC, 1989. xiv, 182 pp., illus. Paper, $18.95. From a workshop, Washington, DC, June 1988.

This book, like the many overlapping volumes published recently on climate change, arises not from a great surge in understanding of the climate but from the need expressed by the press, the public, and the government to know more and perhaps "do something" about possible damaging shifts in our environment. The book thus needs to be judged less on its scientific content, which is bound to be largely repetitious of other recent publications, and more on the insights it provides for incorporating the present, slowly changing and far from complete, understanding of the science appropriately into the discussion of public policy. This focus on interaction with the policy process is signaled by the subtitle, which lists the two possible paths of living with a changing climate—abatement and adaptation.

The adaptation path is well represented in the book, with chapters on responses to rise in sea level, future agricultural adaptations, Third World agriculture, possibilities presented by currently unmanaged forests, and water resource management. The work of those identifying specific impacts of climate change on various sectors of the economy is hampered, except for studies of rising sea level, by the present inability of the climate modelers to say very much about what will be the local or regional manifestation of the climate warming. In this volume, the authors of the adaptation chapters plow ahead despite this difficulty either by assuming that the relevant feature of the global projection is applicable to the region under discussion or by considering a wide range of possible impacts. These chapters are informative, provocative, and well worth reading. Especially noteworthy is the chapter on sea level written, not surprisingly, by a scientist from the Environment Ministry of the Netherlands.

Although the adaptation discussions suggest that adaptive steps will be very difficult and very expensive unless the rate of climate change is slowed, abatement processes are much less well represented in the book. Climate scientists, here and elsewhere, do not report any estimates of how large a decrease in the emissions of infrared-trapping gases would be required in order to slow the climate heating rate by some amount, and perhaps this fact discourages abatement studies. Only one chapter in the book discusses details of an abatement strategy, that of planting new forests to sequester carbon dioxide and so reduce the annual atmospheric increase. The authors of this chapter estimate the area and resources needed to create enough forests to absorb all of the yearly increase of atmospheric carbon dioxide, and both are very large. These numbers do not, I think, completely eliminate afforestation as a component of an approach to slowing climate change, only warn that it alone cannot do the job.

Beyond the discussion of forests, the only consideration of abatement is in a chapter on the use of an economic model to project future carbon dioxide emissions. Four hundred separate runs of this model were made to investigate the sensitivity of the projected emissions to 79 parameters governing how the model treated population, economic growth, energy conservation, the resource base of fossil fuels, and so on. The authors display the statistics of the 400 calculations—what fraction of the runs produced how much emission for various dates in the future. But they do not reveal the most policy-relevant result: which of the policy-sensitive parameters in the model have the greatest effect on emissions. The discussion that follows the description of the model leaves the impression that this omission was not accidental, that the authors regard any policy action—a carbon tax, for example, or government encouragement of improved energy efficiency—as economically suspect and not to be considered. Their stance is softened, however, in the final paragraph, in which they concede that, for consideration of climate change, "standard economic models, rooted within contemporary cultural norms and employing standard economic constructs and relationships, may provide insufficient perspective."

This book has an excellent degree of coordination among chapters. Authors argue with statements made in other chapters, for example, and several chapters summarize the whole meeting. I learned numerous facts from reading this volume. In addition, I brought away (or had reinforced) the message that the problem the world faces with the climate is very large and that business-as-usual will not suffice to avoid its trauma.

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Health Differentials

Minorities and Cancer. LOVELL A. JONES, Ed. Springer-Verlag, New York, 1989. xviii, 334 pp., illus. $59. From a symposium, Houston, TX, April 1987.

Understanding the heterogeneity of risk among human populations is a fundamental exercise in cancer epidemiology. We seek to discern differences between men and women, old and young, black and white, Asian and Hispanic. Each of these demographic subgroups is understood as a discrete entity that differs from other subgroups with respect to cancer risk—differences in cancer rates between men and women, between older and younger people, and between blacks and whites have been studied. But though the distinction between such subgroups is considered essential in cancer research, rarely is a single subgroup treated as heterogeneous. A major theme of this report from the first Biennial Symposium on Minorities and Cancer is that heterogeneity within minority groups must be understood if progress is to be made in cancer prevention, treatment, and care. This work decries our inability to quantify cancer risk in nonblack minorities (Hispanics, Asian-Americans and Pacific islanders, Native Americans) because of the gaps in national and regional data about specific subgroups.

In the United States, many types of cancer occur more frequently in minority groups than in the white population. The question raised by these symposium papers is What are the reasons for the excess cancer incidence among minority groups? Issues that must be addressed to provide answers to this question are the focus of this book. They include the following: identification of cancers for which specific ethnic groups are at especially high risk; identification of excess risks that are due primarily to lower socioeconomic status; development of profiles of high- and low-risk groups within minority groups; and identification of cancers for which the risk can be reduced.

The National Cancer Institute has stated that its goal for the year 2000 is to reduce cancer mortality in the United States by 50%. Jones and his coauthors provide many examples in which specific minority groups have an incidence of cancer two to ten times greater than that of the general population. They ask whether the excess risk has been taken into account in programs being implemented to achieve the year 2000 goal. If cancer mortality is reduced overall by 50% without special attention to high-risk minority groups, then the current inequities of risk will not be eradicated. The authors urge the cancer research and care communities to design studies and programs that will reduce cancer mortality in a way that will result in an equalization of rates by the year 2000.

This volume is organized around several topics: cancer incidence in minority populations, prevention and detection programs, cancer research regarding minority issues, treatment needs of minority cancer populations, supportive care, and the roles of historically black colleges and universities, the federal government, and national voluntary health agencies. In each of these areas, a plea is made to involve more minority professionals in cancer prevention and care and to utilize their cultural sensitivity in the development of programs for defined subgroups of blacks, Hispanics, Native Americans, or Asian-Americans. The commitment of the U.S. Office of Minority Health, the National Cancer Institute, minority academic health centers, and the American Cancer Society to addressing the problems of excess cancer risk encountered by minority populations is highlighted.

This book clearly raises important issues regarding the sensitivity of cancer research in this country to social and cultural differences within our minority populations. Jerome Wilson and Suresh Mola point out that basic research could benefit through the investigation of oncogenes and other biomarkers among blacks, particularly for those cancers for which blacks are at exceptionally