BOOK REVIEWS

Resource Allocation in Agricultural Research

Edited by Walter L. Fishel, University of Minnesota Press, Minneapolis 55455. 391 pages. 1971. $14.

For the economist, the theoretical criterion for allocating resources to agricultural research is straightforward. But while he can outline the model for determining optimal resource allocation, it is impossible to empirically define and fit the model. How, then, should the resource allocation problem be conceptualized and addressed? This book focuses on that question.

The volume is based on papers presented at the Minnesota Symposium on Resource Allocation in Agricultural Research held in Minneapolis on February 23-25, 1969, and jointly sponsored by the Agricultural Experiment Station of the University of Minnesota and USDA's Cooperative State Research Service. The objective of the symposium was to identify the state of the arts in resource allocation. The symposium participants included many of the scientists and administrators who have been directly involved in studies investigating various aspects of returns to investments in agricultural research, both before and after its conduct, as well as experimenting in applying formal operational allocation procedures to existing decisionmaking processes in research.

The book is organized around five major topics. Part I presents an overview of the entire question of resource allocation for research, with material drawn from the remaining chapters and the symposium discussions. Tichenor and Ruttan outline a number of the principal problems and issues, while Tweeten, using what crude measures are available, demonstrates that the rate of return on investment in research appears to be substantially higher than in other sectors of the economy. He suggests that the impact of the knowledge industry on the distribution of income, on national and world unrest, and on other aspects of our value structure poses a major challenge to the thinking of sociologists, political scientists, and philosophers as well as economists.

Part II provides foundations for the later sections by considering the reasons for research, what research tries to accomplish, alternative bases for placing value on research results, and many environmental factors affecting or affected by allocation decisions. Kaldor pleads for legislative attention to the problem of formulating a rigorous and operationally useful social objective function. He suggests that investigation of many questions raised by the problem could have large social payoffs if they were to lead to a clearer indication of society's goals and valuations. Paulson discusses what may be called "pricing the research output," and argues that: It's done all the time; it is relevant since the outcome of research expenditures is not purely random and all information is not equal in value; pricing of research can be approached scientifically by creating or simulating the market; having legally constituted representatives of society price research output is probably less invidious than having fellow scientists provide the only indication of worth; and a larger absolute social return might result from indicators of social value which would lead to better allocation of research resources. Schultz discusses the economic attributes of research, and determinants of demand and supply that explain the behavior of nonprofit research agents; he advances a number of propositions and their implications. Heady centers his attention on welfare implications of agricultural research, and emphasizes the great need for a broad delineation of equity problems by agricultural research scientists and administrators as well as for the continued development of models of resource allocations to provide equitable distributions on the gains from farm technological advances.

Part III considers historical evidence of the productivity of agricultural research in the United States and the attempts to determine the factors associated with more productive as contrasted to less productive research activities. Peterson reviews recent empirical studies on the measurement of returns to investment in agricultural research, and observes a relatively small dispersion among the estimates. While the payoff is high, he feels two gaps need filling: What is the distribution effect of technological change, and what is the social cost of agricultural research above the value of resources used in the research process. Evenson concludes that (1) economies of scale exist in State agricultural experiment stations, (2) a strong graduate program improves the productivity of research, and (3) productivity is highest in the stations with highest faculty salaries. Welch

submits that technical change exerts pressure on labor to leave agriculture, and education has always been one of the more important vehicles of exit. Yet, because technical change increases production uncertainty, it creates a demand for discretionary capabilities associated with education, and therefore retards the exit of persons who otherwise would be the first to leave.

Part IV turns to the more pragmatic and less conceptual considerations of how, in fact, allocation decisions are currently made in the principal public organizations concerned with agricultural research. Hurter and Rubenstein judge that allocation models are of little value in the private sector, while McGregor, Office of Management and Budget, and Bayley, USDA, concur in their respective organizations.

Part V examines a number of attempts—some experimental, others not—to apply more formal procedures in the selection of research activities and the allocation of resources to research. These include the Planning-Programming-Budgeting System (PPB) and its application in the Agricultural Research Service, the joint study of research needs by the Department of Agriculture and State experiment stations, the California Academic Responsive Budget System, Iowa State University's long-range planning effort, and the Minnesota Agricultural Research Resource Allocation Information System.

The book could be subtitled "The Limitations of Economics," for probably no other allocation problem pulls together so many of the challenging areas of practicing economics (or perhaps more completely, practicing social sciences). For example, issues raised include: What is the social welfare function in the United States? What is the production function for research? How do you measure the benefits of research, and performance? And on and on.

As a proceedings, the volume is unique since it is well integrated, with authors referencing and reacting to each other's ideas. Consequently, they perform superbly in addressing the issues and providing differing perspectives.

Unfortunately the book ends rather than concludes. The reader must generate his own conclusions. While this offers some merit, the benefits would have been much greater had one or two of the more perceptive symposium participants captured the essence for the reader. Fishel's conclusion to his discussion of the Minnesota effort offers at least one view:

> The proper role of quantitative techniques in the decision-making process of agricultural research administration has by no means been finally determined . . . . Undoubtedly, it will evolve only from a gradual chipping away at our rather formless rock of unknowns through many individual efforts like those reported here. Although the composition of this rock, as so frequently suggested, may well be granite rather than limestone, even granite will eventually take form under a patient hand. It seems to me that a more difficult problem may be convincing enough scientists and administrators that the number, magnitude, and complexity of the problems encountered are indeed penetrable and that the outcome is well worth their support.

But even this subjective judgment offers little direction.

In spite of this shortcoming the book represents an outstanding effort. Scientists would do well to read it lest they forget what they're about. Politicians could gain considerable insight into the challenging problems of research direction, as could the director himself. All three groups should be familiar with the issues.

Attention must continually be directed toward improving the allocation of resources to agricultural research, if for no other reason, because those who control funds will increasingly ask why funds are wanted. They will compare and weigh one request against others. They will ask what was accomplished, and ask for explicit reasons for choices and the consequences thereof.

David M. Bell

The Overproduction Trap in U.S. Agriculture

Edited by Glenn L. Johnson and C. Leroy Quance. Published for Resources for the Future, Inc., by the Johns Hopkins University Press, Baltimore, Md., 21218. 211 pages. 1972. $10.

The eight contributors to this book present a cohesive approach to the "farm problem" rather than a series of individual articles. Even though the farm problem has been the subject of a large number of books and articles, most readers interested in the farm problem will find this book worthwhile.

Since the book is designed to appeal to economists and noneconomists alike, much of part I will be repetitious for most economists. The authors placed most of the mathematical notation in the appendix, making easier reading for those not mathematically inclined.

Part I is a review of the characteristics of agriculture which result in expansion of production until product prices fail to cover investments and expenditures in producing farm products. The results are relatively abundant supplies of low-priced food for consumers and either low returns and capital losses for producers or taxes to shift the burden of losses from individual farmers to the public.

A good theoretical review is presented in part I, including extensions of the underlying causes of the farm problem. The review discusses low income elasticities for most foods and fibers, risk and uncertainty in agricultural production, the fixity of resources when acquisition costs greatly exceed salvage values, and the importance of decision-making with imperfect knowledge.

This largely historical work treats of the origin and efficiency of both private and public mechanisms for allocating resources in American agriculture. Part II is a set of chapters dealing with the allocation of land, labor, and capital, with each chapter by a different author or authors. The chapter on labor, especially, describes the effect of Federal programs on the allocation of labor. The chapter on capital discusses land-saving and labor-saving capital and the impact of changing capital structure.

The good and the bad of U.S. agricultural policies with brief recommendations for future restructuring of policy are discussed in part III. The unfavorable appears to overwhelm the favorable. Resources are being used to encourage farm production which is less needed than schools, hospitals, armament, and other nonfarm priorities. Price supports have increased farmers' price expectations, stimulating overinvestment in productive capacity.

The reader, however, will not find a panacea for the farm problem. The recommendations of improved knowledge, reduction of differences between acquisition and salvage values, and better control of entry of men and resources are not new. The statement in the summary, "A need is likely to continue for government to operate price-support and production-control programs despite our rather unfortunate experiences with these institutions to date," sums up the frustration that faces policymakers on the farm problem.

Allen Smith

The Advance of American Cooperative Enterprise: 1920-1945

By Joseph G. Knapp. The Interstate Printers and Publishers, Inc., Danville, Ill., 61832. 646 pages. $9.95.

Cooperative enterprise has been in existence as long as the country has, but the associations have received substantial recognition only in the last 50 years.

This book is the second volume of an intended three-volume history of the cooperative enterprise in the Nation. Volume I examined the development of cooperative associations into a distinctive form of business organization from 1620 to 1920. The proposed volume III will detail the activities of cooperatives during the social and economic growth since 1940. This book covers the years 1920 to 1945 and deals with what the author calls the "take-off" period. This period relates the progress of cooperative enterprise to important economic, social, and political changes. Indeed the year 1920 ended the period of establishment and was the start of the modern period of development. Cooperatives lost much of their business inferiority complex because they realized that they operate as a big business for their own benefit.

The author, Joseph Knapp, is well qualified to write on the subject. He was the first administrator of the USDA Farmer Cooperative Service and is respected among cooperative officials throughout the world.

Cooperatives burgeoned after World War I because they performed services needed by farmers at reasonable cost. Initially, during the early years following the war, there was an agricultural prosperity. However, the years that followed witnessed a depression for the agriculture economy while there was a general business recovery. Consequently there was a strong demand for monopolistic commodity marketing cooperatives which could control farm product prices. At that time, the American Farm Bureau Federation was formed and encouraged to promote cooperatives as a means of putting agriculture on a secure footing. The Federation forced the Government to recognize the value of self-help cooperative enterprises. By the time of the New Deal, the cooperative had evolved as a form of business organization and won support from the agricultural community. The New Deal agencies had a great influence on the cooperative enterprise. The Agriculture Adjustment Act and agencies such as the Farm Credit Administration, Tennessee Valley Authority, and Farm Security Administration supported and utilized the cooperative enterprise in their endeavor to organize agriculture on a sound business base.

This is an informative book for anyone interested in the cooperative enterprise in the United States. It would provide him with the first comprehensive historical treatment of the cooperative enterprise movement during its most important years.

Jack Ben-Rubin

Agriculture and the Common Market

By Stanley Andrews. The Iowa State University Press, Ames 50010. 183 pages. 1973. $7.95.

Quick recognition is given by the author to the abundance of materials already available on the

European Common Market. Although the unique contributions one can expect from this new volume are not clearly set forth, the importance the author places on agriculture in the European Community is indicated by such statements as these: "Agriculture is a special subject of concern because of its central role in the formation of the Common Market . . ."; "agriculture . . . made the Common Market functional . . ."; and "agriculture . . . saved the Common Market from dissolution."

This largely historical work treats of the origin and structure of the European Common Market, the place of agriculture as seen in the Rome Treaty, and the basic outline, operation, and funding of the common agricultural policy. Relationships between the Common Market and the United States, Great Britain, and the associated countries are discussed. Attention is also given to nontariff trade barriers, new trade legislation, and future U.S. trade policy.

Some of the discussion in the treatise is clearly peripheral to Common Market agriculture but is presumably added because the author believed it to be highly important and informative. Some examples, included as separate chapters in the 19-chapter discussion, are "The European Free Trade Association" (ch. 5), "The Grand Design" (ch. 7), "Agricultural Changes in Eastern Europe" (ch. 12), and "United States and Eastern European Trade Policies" (ch. 13).

The author believes that only a "genuine worldwide coordinated attack on production and distribution problems can prevent disaster to producers in the developed areas from overproduction and in some of the developing countries from starvation." As regards future agricultural trade, "negotiators will have to consider nontariff barriers to trade if they are to make additional progress." The author comments that "the United States has been operating under a do-nothing trade policy since June 30, 1967, when the Trade Expansion Act of 1962 expired," but points out that "world trade goes on" and that all this "probably adds up to the fact that the status quo, in trade as well as in business, is sometimes fairly satisfactory."

Writings by the author are buttressed by extensive travel in Europe. He has put together a quite readable book which includes the observations and viewpoints of numerous high-level people on both sides of the Atlantic.

One small clarification. The projections relating to U.K. membership in the Common Market (p. 51) and attributed to the Economic Research Service were in fact made by Oxford University under contract with ERS.

Reed E. Friend

Applied Research and Its Impact on Economic Development: The East African Case

By Michael Bohnet and Hans Reichelt. Weltforum Verlag, Munich, Germany. 210 pages. 1972.

This work consists of three distinct essays. The first is directed to general readers interested in development, the second to East African specialists, and the third to development economists.

Bohnet's first essay is an interesting nontechnical discussion of the various theories of economic development. It provides a review of the subject and might be worthwhile to give to our spouses if they are interested in an explanation of what we are trying to do. He also brings out some topics for possible research: "The development of synthetic coffee is only a matter of years" (a topic of greater interest to Brazil, Colombia, and the Ivory Coast, but one that should be considered in any case). But most readers of this journal can probably skip this section.

Bohnet presents a comprehensive study of applied research in Kenya and Tanzania. Anyone with a particular interest in research underway in East Africa would find this section almost indispensable. The more important agricultural commodities are handled separately and in a precise, intelligible way.

Reichelt combines a complete review of applied research underway in Uganda with a critical discussion of the value of applied research in underdeveloped countries. He makes a strong point that applied research must yield economic gains—and that it usually does not. As a solution, he suggests that applied research can only be profitable to a country when combined with the study of economics and, particularly for agricultural products, marketing economics.

It is a pleasure to read a book so well bound and carefully printed. There are a few translation and printing errors, but these are remarkably few and should not bother the reader.

John D. McAlpine

Land Resource Economics: The Economics of Real Property

By Raleigh Barlowe. Prentice-Hall, Inc., Englewood Cliffs, N.J., 07632. 616 pages. 1972. $13.95.

The new edition of a widely used text on land economics is welcome. The footnotes and suggested readings are updated, while some of the concern for better land use and conservation is discussed.

U. S. GOVERNMENT PRINTING OFFICE : 1973 O - 525-014