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BOOK REVIEWS

Decision Analysis—Introductory Lectures on Choices Under Uncertainty, Howard Raiffa. Reading Mass.: Addison-Wesley, 1968. Pp. 309. Stg. 46s.

Seldom does a professional book appear which makes the reader feel more as though he is sharing an informal chat with the author than solidly concentrating to grind through a mass of new material. *Decision Analysis* is one such. Using the first person throughout, a rarely achieved clarity and conciseness of exposition results. This is so despite an absence of advanced mathematical manipulation, although the analysis is nonetheless rigorous and sophisticated.

Raiffa belongs to the subjectivist school, that is those who believe that decisions made in the absence of certainty about outcomes must incorporate the subjective preferences of the decision maker. This theme pervades the book, the author arguing that it is the only approach which at all comes to grips with the uncertainty problem. On a pedantic definitional point, some would prefer that "subjective risk" replace the word uncertainty, as the act of assigning subjective probabilities to unknown outcomes produces "risk" in the classic Knight sense.

Chapters 0 and 1 offer thumbnail sketches and outline the basic decision problem which is used throughout succeeding chapters to develop concepts and principles. In chapter 2 this problem is analysed from an expected value point of view. Chapter 3 introduces uncertain payoffs and biased measurements.

Chapter 4, "Utility Theory—Or What to do About Non-EMVers", adds more realism by recognizing that most decision makers are not indifferent to risk. The analysis proceeds via the certainty monetary equivalent concept and a system of reference lottery tickets. Finally in the chapter, sections on buying and selling prices, decreasing risk aversion and the portfolio problem are included for interest, though Dr Raiffa suggests they be skipped by the struggling reader.

The next three chapters elaborate at length subjective (or judgemental) probabilities, the graphical evaluation of possible strategies via efficient sets and indifference curves and the value of prior sampling to obtain more information and hence facilitate decision problems. Chapter 8, slightly more symbolic and abstract, discusses risk sharing and group decisions. One feels that here Raiffa only just holds back the desire to digress more fully into these side issues. Certainly the enthusiastic reader is tempted to explore further.

In chapter 9, Dr Raiffa admits that real world problems are typically not nearly as tractable as those described previously, and talks generally rather than specifically on the art of implementation. Finally in chapter 10 a brief history of subjective probability is given and impinging disciplines, such as game theory, operations research and systems simulation, are briefly mentioned.

Shortcomings are slight. The treatment of the Allais paradox in chapter 4 is perhaps too drawn out. From the viewpoint of an agricultural economist there are no examples specifically related to an agricultural setting. These, however, are more than offset by the style of presentation and continual stocktakings and re-emphasis of vital points.

Decision Analysis should find widespread space on the shelves of student, researcher, businessman and interested layman alike. As the complexities of decision problems increase, so also will the penalties associated with incorrect decisions. Recourse to the systematic treatment of uncertainty must pay dividends over a more ad hoc approach to decision making. This book is admirably suited to the purpose.

DAVID B. TREBECK

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Australia—wet or dry? The physical and economic limits to the expansion of irrigation, B. R. Davidson. Melbourne University Press, 1969. Pp. xiv, 264. \$7.00 (cloth). \$3.60 (paper).

The publication of Bruce Davidson's *Australia—wet or dry?* has made it much more difficult for protagonists of large scale irrigation development to have their proposals accepted uncritically. His book has aroused a storm of controversy in water conservation circles, and the impact which it has had is the main subject of this review.

Davidson obviously intended that his book would engage the attention of those concerned with policy making in the water resources development field. He can justly claim unprecedented success in achieving that objective.

His book has been the most effective challenge to date of the widely held view that water conservation is inherently essential to the economic development of Australian agriculture. Two of Davidson's main theses are, firstly, that in relation to the current stage of agricultural development, and the density of population, Australia is, by international standards, comparatively well endowed with water resources.

Davidson's second main area of attack concerns the economics of irrigation. As a result of a prodigious amount of detailed research, he has examined each of the major Australian irrigation schemes, including some of the currently proposed schemes, and has put forward the argument that most of these schemes have been an inefficient use of the nation's resources—that the public funds involved would have been more effectively utilized had they been directed to dryland agricultural and pastoral development.

Davidson refers to the fact that only recently have proposed Australian water resource development schemes been subjected to economic assessment before being proceeded with. Detailed benefit-cost calculations are now required for State Government submissions for Commonwealth financial assistance with these schemes. Previously projects were assessed largely on the basis of technical criteria, with, at the best, only limited economic data to guide the decisions made by State parliaments. It would be misinterpreting Davidson's attitude to conclude that he is unmindful of the significance of non-economic goals in governmental decisions involving the expenditure of public funds on development projects. Perhaps the greatest significance of this book, from the professional economist's point of view, is the emphasis on the fact that such decisions can only be rationally made on the basis of a properly calculated analysis of the likely economic impact of the project involved. Davidson is adamant also in insisting that any economic analyses, and the assumptions on which they are based, should be freely available to parliamentary members who are required to approve the enabling legislation for development schemes, and also, that in a democratic society this information should ideally be freely available to interested members of the public. He refers (p. 189) to the fact that even as a professional economist preparing a text on the subject of Australian irrigation development, he was unable to obtain the details of benefit-cost studies carried out for current New South Wales State irrigation projects. Davidson says that the public have a right to information on the likely economic return to irrigation projects because, according to his analyses, the Australian taxpayer has had to dig deeply into his pocket to subsidize irrigation farming and that individual irrigation farmers have earned large profits as a result of this transfer of income, via taxation, from the rest of the community.

The impact of this book can be measured by the extent to which it has stimulated, in little over a year, widespread public debate among policy makers and other individuals who are either professionally or emotionally involved with water resource development in Australia. Its publication has coincided with, and has provided substantial support to the current rational development of exposing the likely economic repercussions of proposed public investment decisions to public scrutiny.

GEORGE MASON

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The Industrialization of Australia, F. G. Davidson. 4th Edition. Melbourne: Melbourne University Press, 1969. Pp. 91. \$1.00.

This is the fourth edition of *The Industrialization of Australia* to appear, with earlier editions being published in 1957, 1960, and 1962.

This small book contains a considerable amount of factual information about the development of Australia as an industrialized nation. The fourth edition basically up-dates much of the information contained in earlier editions. However, the "Background" section of this edition is extended to discuss various aspects of factory employment and production, and the changes which have occurred during the years from the end of World War II through to 1967-68.

The description of the present structure of Australian industry is introduced with a short discussion of the importance and size of overseas equity in Australian industrial concerns. Professor Davidson states "that although in 1966-67 the United States share appeared still to be smaller than the British it has been growing more rapidly." Attention is also drawn to another noticeable feature of the Australian industrial scene—the continuing dominance of a relatively few firms in a considerable number of industries.

The activities of some of these firms are looked at in reference to particular industry sectors, for instance non-ferrous metals (Conzinc Rio Tinto), iron and steel (B.H.P.), glass (A.C.I.), as well as rubber, paper, motor vehicles, chemicals, plastics and others.

At this stage we are introduced to the activities of the Tariff Board and the activities of the government in areas such as raising the Australian content of motor vehicles (Plan A and Plan SV), and the setting of prices for Australian crude oil.

The final section "Hopes, Doubts and Hopes" discusses some of the reasons (and/or justifications) given over the years for Australian industrialization. This leads on to an appraisal of some of the problems experienced in the industrialization of a primary producing country. These include the tariff question and this area receives considerable attention.

This book provides useful background information for both the general reader and the student on the progress of industrial development in Australia in an easily read and absorbing fashion.

SALLY A. HODGKINSON

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Import Control and Industrialization. A study of the Australian experience, G. G. Moffatt. Melbourne University Press, 1970. \$6.00.

This book could be most readily described, as an historical description of Australia's licensing system and tariff policies from the year 1952

onwards. The value of the book to an economist would be purely as background material, or as a broad summation of licensing and tariff policies that have existed in Australia since that date. In this vein, a more apt title would be, "Import Control—a Survey of Australian Experience".

The book would be excellent for any person wanting to gain a broad picture of Australian experience with import controls before concentrating on more specific areas of thought or analysis.

One feels that to condense Australian import control and industrialization along with any critical economic analysis into 180 pages is perhaps spreading the subject too thinly.

The text is essentially a survey of the licensing experience in Australia from 1952 to 1960, with a description of the Australian tariff policies from 1960 to 1967. The reader receives an excellent insight into the administrative problems of import control and how the nebulous wording of the various policies (acts) were interpreted and implemented by the administrative personnel concerned. This Section of the book contains some excellent empirical data, although again the subject is so broad as to afford only a fleeting description.

To quote from the preface—"The recent controversy over tariff policy in Australia has its roots in the fact that licensing could be used to encourage production confidentially, but now all proposals must be discussed publicly before the Tariff Board, and the extent of the debate indicates the contentious nature of an important segment of the protection which had been given by licensing". The author although making this statement, tends to smooth over or dampen down the criticism or significance of these controversies.

Although it is a survey with little economic analysis, it is an easy to read, comprehensive version of a very tedious and confusing subject.

G. M. MOHR

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Elementary Linear Programming, C. D. Throsby. New York: Random House, 1970. Pp. xiv, 242. \$11.45 (cloth).

This book is the first in a series of volumes, Quantitative Techniques for Economists, under the editorial supervision of Dr E. J. Mishan. The series caters for "those economic journalists and practicing economists as well as those academic economists with otherwise sound professional training yet lacking in the mathematical sophistication necessary to keep abreast of the journal literature, even within their own field of competence." Editor Mishan claims that for a member of this large class of academic economists, the ordinary text is either unnecessary or does not go far enough, while obviously the specialized mathematical treatises are beyond his grasp. He has planned the series to meet these needs.

It is not intended, initially, to produce textbooks, but rather to provide an introduction, for the descriptive economist, to mathematical techniques. The scope of this first book in the series is confined to providing a thorough understanding of the basic principles of elementary linear programming. This is very competently done and all sections make very clear reading. This clarity is enhanced by the frequent use of simple and clear two—and sometimes three—dimensional diagrams, an extremely valuable feature of this book.

Two particular features (which are also promised for the remainder of the series) characterize this book. The first one is that exposition is simplified by beginning with simple instances and special cases and gradually works towards generalization. The other is that the development of each subject proceeds, from the start, through the medium of economic examples.

Elementary Linear Programming is written in three parts:

Part I: Setting up Simple Linear Programming Problems.

Part II: Setting up More Complex Linear Programming Problems.

Part III: Computational Aspects.

The author has chosen this sequence of contents for two reasons. "First, by building up in Parts I and II an understanding of the logic of the steps involved in the simplex method, this book meets the needs of those who will solve linear programming problems exclusively on electronic computers and who do not wish to worry about finer details of computational techniques. Second, it is expected that those who do wish to gain a fuller understanding of computational methods will find Part III very much easier, having been broken in gradually over Part I and II".

One criticism of the book is that solutions to exercises are not given. Also, there is very limited citing of literature, and while this is not essential to achieve the aims of the book, a list of further readings would be useful.

This book has certainly achieved the aims of the series, and must be recommended to economists unfamiliar with linear programming. It will also be very useful to those who require a quick and easy revision of this technique. While not intended as a textbook for students, because of its clarity it must be useful as a basic reference book.

The next in the series, by the same author, and titled *Introduction to Mathematical Programming*, should provide a useful complementary volume.

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