BOOK REVIEWS

The Environmental, Economic and Social Significance of Drought. Edited by J. V. LOVETT. (Sydney, Angus and Robertson, 1973). Pp. 318, $10.95, softcovers, $6.95, ISBN 0 207 12805 7

In the past decade there has been increasing interest in drought and its consequences in the Australian situation. Often these publications have been stimulated by political climate or situations at hand. The book takes a 'scientific' approach to the effects of drought, by employing the opinions of research scientists in the fields of meteorology, geomorphology, biology, ecology and economics, to demonstrate the environmental, physical and economic aspects of what has been described as 'the remarkable nature of Australia's climate'.

The book is divided into three parts, and the 18 chapters, each a separate paper written by a noted authority, explain and describe the effects of, and the research into, the phenomenon of drought. It must be remembered however, that this book is *not* a scientific study; its arguments are not supported by mathematical models or detailed empirical evidence. The book is aimed at scientists, economists and laymen alike. For those interested in carrying out further research, each chapter ends with an extensive bibliography of references in which, no doubt, further expert opinion can be found. In short, the book is a summary (but a comprehensive summary) of the 'why's' and 'how's' of drought.

Emphasis has been laid on the need for further research, and the book demonstrates clearly that 'drought' has not one definition, but many. Careful planning and forethought by the editor has made this message loud and clear. 'The interaction of their viewpoints is,' comments Dr. Lovett, 'perhaps potentially the most valuable contribution of the book.'

The book however also serves to emphasize the dire lack of data and analysis of the economics of drought. James' suggestion of an insurance scheme to prevent farm incomes from dropping to 'undesirable' levels seems bound for a similar fate to that of Drought Bonds. On the other hand Toft's thesis for a National Drought Reserve of grain, although intuitively desirable, is not a solution to the problems of drought but rather a side-stepping measure which will have benefits for the economy only when meat shortages exceed the importance attached to grain supply.

Clearly, a short review cannot do justice to so many topics and authors. Although the standard of contributions is not uniform throughout, and much of the discussion is at the general level, the bibliographies after each chapter help overcome these deficiencies. Overall the value of the book is clearly in the questions it raises, rather than the answers it provides.

L. J. BUTLER

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Livestock and Meat Marketing. By JOHN McCOY. (Westport, Conn., Avi Publishing Co., 1972) Pp. 465, $US 21.00, ISBN 0 87055 1205

The stated aim of the author is to provide an introduction for undergraduates to the livestock and meat marketing industry of the United States of America. He does so by giving an introduction to the principles of economics that underlie the marketing activity and by describing in detail the business activities of those engaged in marketing.

The book begins with an historical account of the livestock and meat industry and then introduces the reader to the particular areas of microeconomic theory the author considers relevant to marketing activity. Further chapters then discuss production of livestock, characteristics of supply, consumption of meat and related demand characteristics, livestock markets, and describe all the economic activity through the marketing chain including livestock marketing, meat processing, wholesale meat marketing and meat retailing. There are also substantial chapters on grades and grading, market intelligence, regulation of the meat industry, and futures markets. International trade in livestock, meat and wool are briefly covered and other chapters consider marketing costs, meat substitutes and synthetics as well as a view of the future.

McCoy's book is a comprehensive work that supplements earlier books on the U.S. meat and livestock industry. Unfortunately there are shortcomings in some of the micro economics given in the earlier chapters. It is for instance regrettable that misleading statements such as "the only demand curve with constant elasticity is the rectangular hyperbola", are made. McCoy also gives a confused discussion on cross elasticity where he confuses complementarity in consumption with complementarity in production. These shortcomings and the author's mingling of unsubstantiated statements with well researched evidence detract from the book's value as a text, particularly for the under-graduate who has a meagre understanding of economics.

The book is written in a readable style, except for a few sections which have been drawn almost directly from research reports, and despite its shortcomings should provide a useful book for under-graduates interested in the livestock and meat industry, students of marketing and producers of livestock who seek a clearer view of the 'off farm' aspects of their industry.

For undergraduates and other students of marketing the book provides a very comprehensive bibliography of research papers and reports that have been used in its preparation. Each chapter brings together the current state of knowledge on the topic and is followed by a list of relevant references. While the orientation to the industry of the U.S.A. limits the relevance of much of the descriptive material for those interested in marketing in other countries, McCoy's work and the studies he draws on could provide a useful guide for them. Similarly for livestock managers or producers outside the U.S.A. the book provides a guide to the complex of activities in the marketing sector of the industry. It may thereby be of assistance in improving their marketing activity, both in terms of better management of physical processes of livestock husbandry and in the monetary returns received for their product. The chapter on futures markets is very well presented for those unfamiliar with the potential benefits of futures contracts. McCoy gives several straightforward but not unrealistically over-simplified budgets of ways feedlot operators use futures contracts. This chapter may be of particular appeal to those who seek ways of offsetting inventory losses from cattle operations.

The book is recommended for the three groups of persons mentioned although they too may look forward to the time when a similar book can be produced from knowledge of the Australian livestock and meat industry.

PETER BIGGS *Bureau of Agricultural Economics Canberra*

Water Supplies and Economic Growth in an Arid Environment; An Arizona Case Study. By MAURICE M. KELSO, WILLIAM E. MARTIN and LAWRENCE E. MACK. (Tucson, Univ. of Arizona Press, 1973) Pp. 327, softcovers $US 8.50, ISBN 0 8165 0368 0.

In many parts of the arid southwest of the U.S.A. past economic development has relied heavily on underground water supplies with negligible natural recharge. The effect of depletion of such groundwater stocks on the future economic growth of these areas is an oft-debated and emotion-charged question, to which the current authors address themselves as it applies to Arizona. They discuss the nature of the problem and summarize the techniques and findings of a major research undertaking which took eight years, involved some fifteen research workers and produced a dozen Master's and Doctoral theses. No changes in the structure of water-related institutions were assumed in this study; a companion study is examining the existing institutional environment and possible changes.

Although nowhere stated, the book is obviously written for a wide readership, and to counter the popular image that Arizona's economy must shrink in the long run unless new water supplies are developed. For example, the second chapter carefully introduces the reader to a number of basic economic concepts as groundwork for later chapters. As a consequence, resource-use specialists will find the book rather repetitious and lacking in the pursuit of interesting details, although the approach may well be welcomed by non-specialists.

The main thrust of the study is the examination of alternative water-using ways of obtaining a given rate of growth for the Arizona economy. A target growth rate over the next 50 years—based on Arizona's recent historical share of projected recent U.S. trends—is taken as given. This implies a given pattern of domestic (Arizona) consumer demand, which in turn implies a given pattern of water use in total in a closed economy. However, the total consumption of Arizona's water can be modified by varying the composition of the State's imports and exports of goods and services. For example, imports of beef, requiring large amounts of water for production and processing per dollar of final demand, may be expanded and balanced by exports of, say, low-water-requirement machinery. Only the *value* of the state's imports and exports of goods and services must be equal on average over the long run. Thus, there are numerous ways of achieving the same growth-rate objective, each with different requirements for Arizona's water, by changing the trade pattern of the economy. An input-output model is used to determine alternative realistic patterns of sectoral growth and trade consistent with the projected rate of overall growth, and then projections made of the total quantities of water required by each alternative trade pattern. A discussion of four such alternative trade patterns is presented in the book, although more were examined.

The main distinguishing characteristics for each of the four trade patterns are: (1) each sector maintains its existing relative importance (a clearly unrealistic trade pattern; for illustration only), (2) water is plentiful and cheap, and each sector adjusts accordingly, (3) water transfers are modified to facilitate transfers among uses and locations of use with programs to encourage non-agricultural sectors, while agriculture adjusts to increasing pumping costs through time due to falling water levels, and (4), as in the third but with programs to cause further declines in agricultural water use. Representative-farm linear programming is used to determine on-farm adjustments to increasing pumping costs in the latter two trade patterns. Comparison of the resulting water usages with alternative water supply conditions revealed that (1) was infeasible in the year 1980, (2) was not viable beyond 2000, and the best policy appeared to be the use of 3) until approximately 2015 and then a change to (4).

Subject to some limitations discussed below, this major section should prove extremely interesting to anyone concerned with the economic development of an area which relies heavily on non-renewable groundwater. Thus, while it may be applicable to future developments in Australia, it would appear to be of limited relevance to currently developed areas, at least so far as groundwater is concerned. However, although the authors' claim in the preface that 'the analytical structure we have here developed could equally well be applied by other analysts . . . concerned with other resource problems' may prove extravagant, at least their work will become necessary background reading for any analyst interested in economic growth when some resource is particularly limiting.

This work will also be a particularly valuable reference in other fields. First, Chapter 3, 'Arizona Water Law and Its Socioeconomic Consequences', will be very useful for students of an introductory natural resources course concerned with the commonality problem, property rights, and so forth. Second, the lucid discussion of the use of representative-farm linear programming to derive demand functions for irrigation water in Chapter 4 will be a good reference for anyone wishing to estimate derived demand functions for agricultural inputs by this method, although no new ground is broken. Also, research workers interested in industry adjustment and regional growth will find Chapters 5 and 6, 'Costs of Agricultural Adjustment to the Arizona Economy and Its Individual Members' and 'Statewide Growth and Water Use in Arizona', particularly thought-provoking.

However, I feel that there are some significant limitations. First, although great emphasis is placed on substitutability between various interstate trade patterns to achieve a target economic growth, substitutability between inputs in the production process has been essentially, if not completely, ignored. For example, the authors' single-valued estimates of direct requirements per $1,000 of output and direct and indirect requirements per $1,000 of final demand for meat animals and products are 0·407 ac. ft. and 9·337 ac. ft. respectively, while for citrus fruits the corresponding estimates are 11·154 and 11·841 ac. ft. (Table 6-3). Similar estimates are made for each producing sector of the economy. These requirements, from which the estimates of total Arizona water use under various trade patterns are derived, are based on historical use patterns of 'cheap' water. Although the quantification problems are huge, the work would be more theoretically satisfying if the substitutability of land (where applicable), labour and capital for water, as private water costs rise to more accurately reflect social costs, had been discussed. More practically, one wonders how sensitive the final answers may be to relatively small substitutions. Some sensitivity analysis with 'ballpark' estimates would have been an advantage. Given the readership to which the book appears to be directed, explaining the concept of input substitutability in the face of increasing scarcity of one input is apparently valuable—although perhaps the authors believed that more than one 'dose of substitutability' would reduce the credibility of the work, given the difficulty many people have in accepting the concept of substitutability. Note, however, that the authors do not use only consumptive use estimates. Water use is assumed to fall as pumping lift increases in two counties, with a related decline in yield.

Another limitation of the book, at least as a reference for researchers, lies in the failure to emphasize the deterministic nature of the approach. Although current methodology is inadequate to handle random variables on such a broad scale, reference to recent work concerned with the conjunctive use of variable surface supplies and groundwater stocks, and discussion of the relevance of such work to the study, would have been useful.

Those interested in intertemporal resource-use theory will find the treatment of an acceptable rate of groundwater drawdown, and the conclusion that the net drawdown should probably be somewhere between zero and the average annual rate of the 1960s, quite inadequate. The authors say that 'the answer is not simple, and we do not attempt a full answer here' (p.220). As such an attempt would involve the discount rate controversy, the authors may have decided to leave that skeleton in the economists' closet, again given the apparent anticipated readership.

The study may be of less use in Australia than the title would imply due to the limited importance of groundwater for other than stock and domestic purposes, and the authors limited coverage of input substitutability and climatic variability. But the treatment of alternative resource-using ways of meeting a given growth rate should prove most interesting in relation to regional economic development problems.

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Dissent on Development: Studies and Debates in Development Economics. By P. T. BAUER. (London, Weidenfeld and Nicolson, 1971) Pp. 550, $15.30, ISBN 0 297 00282 1.

P. T. Bauer, a Professor of Economics at the London School of Economics, is a specialist in the study of the problems of the development of low income countries (a study now commonly described as

Development Economics). He has been a controversial figure in that area of study. He has disagreed in no uncertain manner with other eminent scholars and has been strongly critical of much of the 'conventional wisdom' of Development Economics. This is, indeed, suggested by the title of his new book: *Dissent on Development*. This book, containing over five hundred pages in twenty-two chapters divided into three parts (Ideology and Experience; Case Studies; Review Articles) consists, in general, of essays, some amended and expanded, previously published in various periodicals and symposia.

Books which republish earlier articles are frequently characterized by considerable repetition. Often this must be regarded as a serious weakness. This is not the case with Bauer's book: it rather helps to under-line many of the weaknesses of 'conventional wisdom' as he sees them.

I have to confess that, earlier in my own study of development in low income countries, I found it difficult to resist a feeling of considerable irritation at the writings of Professor Bauer. I was inclined to regard him as a very conservative writer. This seemed almost unforgiveable in the context of an awakened and idealistic general desire to do something towards lifting the standard of living of the poverty-stricken masses of the low income countries of Asia, Africa, and Latin America. I suspected his writings to be ideologically tainted. Since then I have been an 'expert' in two international agencies, I have seen how they operated, and I have suffered some disillusionment; I have myself lived for two years in a South-East Asian country; I have visited a number of other Asian countries and seen clearly the great differences between them; and I have been made aware of the problems facing development in some countries, while also aware that others have become success stories. Though I might still be tempted to think of Bauer as being on the conservative 'wing' of Development Economists—if such a label has much meaning these days—I am impressed on reading his new book, including the re-reading of essays first read years ago, that what could be read then as conservatism can now be seen as an earlier awareness of the obstacles to development, of the differences between countries, and how unsuitable policies were sometimes forged out of the supposed radicalism of the left.

It is difficult to summarize a large book consisting of more than twenty articles or addresses written at different times for different occasions. Bauer's *Dissent on Development* lends itself to summary more than most books of this type since the author is consistent in his purpose to question orthodox views. The summary which follows seeks to indicate the drift of Bauer's thought, but it does a great deal less than justice to it.

Bauer begins his collection with an article which examines the usefulness of the assumption of the 'vicious circle of poverty and stagnation' that has been basic to the views of many, if not most, writers on development. Bauer illustrates that 'the thesis is demonstrably invalid' in that 'it is conclusively refuted by obvious empirical evidence': the very existence of the advanced countries; the various stages at which developing countries can be found; the striking success stories to be found among developing countries. The assumption of a vicious circle is useful because it allows the particular theorist to build various models of a stagnant economy, each showing how a particular characteristic inhibits or prevents the commencement of development. There can be few teachers in economic development who have not experimented with models of this kind. The great danger is that strong cases may be misleading, may at times cause unnecessary pessimism, and may give misleading pointers to policy.

There is also the related idea of the demonstration effect derived from Nurkse and others, teaching that contacts with advanced countries may, by providing inappropriate examples and temptations, have harmful effects upon balance of payments, rates of saving and investment, etc. But these harmful effects may be the result of mistaken policies, e.g. controlled rather than free market prices and exchange rates or weak monetary and fiscal policies.[1] Moreover, there is the contrasting tradition going back to Hume, Smith, Malthus and Ricardo stressing the stimulating benefits of foreign trade: the gains from specialization based on comparative costs; the easier disposal of the output of surplus resources; the productivity effects of increased specialization to trade; the stimulus of new goods and new ideas.

Bauer has a long essay in which he is severely critical of the views of Prebisch, Singer, Myrdal and others and of international agencies (in particular, UNCTAD), relating to such matters as the assumed secular deterioration of the terms of trade of developing countries, the concentration on the terms of trade to the neglect of income and dynamic effects, the assumption that trade outlets are fixed for particular exports from particular developing countries, the neglect of the effects of costs, prices, and exchange rates on trade, the independent projection of export receipts and import costs to determine foreign exchange needs, and the neglect of evidence of what is actually happening in developing countries.

The assumption of vicious circles, the consequences of the demonstration effects, and the errors concerning the secular trend in terms of trade have combined easily with other views to form the belief, commonly held, that there is an increasing gap between the per capita levels of income (and welfare) of the advanced and low income countries. But the belief is tenuously based. International comparisons of per capita incomes are fraught with difficulties of both principle and technique. The relationship between income and welfare is unclear, if not ambiguous. A decreasing relative gap is consistent with an increasing absolute gap. The demarcation line between developed and developing countries is arbitrary, while there is a continuum from the poorest to the richest country. In any case while some developing countries appear to be close to stagnation (including unfortunately some of the larger countries), there are a number of developing countries which have had rates of economic progress comparing favourably with some of the better rates ever achieved by the advanced countries.

There is much in the conventional wisdom that is due to the treatment of developing countries as a group instead of recognizing the

[1] It is curious that the fear of the evil effects of one sort or another of foreign contacts goes back to such Church Fathers as St. Thomas Aquinas in the Middle Ages and further back to Aristotle and Plato. But their concern was rather with 'moral' effects, not unlike the 'cultural' effects which some developing countries fear today.

diversity that exists, to an ignorance of the importance of social and cultural factors, and to the neglect of empirical testing. There is sometimes a feeling of guilt, a remnant of colonial days, bolstered by the assumption that colonialism yielded few benefits to the colonies. Also, there is an intellectual climate, fostered by international agencies, the desire to be 'with-it', and Marxism-Leninism, which emphasizes the exploitation of the weak by the strong.

Bauer emphasizes two major policy axioms which he sees as the consequences of the conventional wisdom and of the intellectual climate which has fostered it. These are that comprehensive planning and foreign aid are indispensable for the economic advance of poor countries. He subjects each axiom to vigorous criticism.

Bauer's views are developed in Part I. They are utilized in his Case Studies and his Review Articles. His Case Studies are confined to Africa. His Review Articles glance critically at a number of well-known books and reports. These include four books by Myrdal. One chapter is devoted to a long review of Myrdal's *Asian Drama.* This particular review is, I fear, something of a caricature.

There is probably much in Bauer's book with which a reader will disagree. But it is a most stimulating book because of a searching examination of many of the assumptions we make. It is a valuable book for students for it is likely to encourage a more careful examination of their own views.

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The Theory of the Firm. Edited by G. C. ARCHIBALD. (Harmondsworth, Penguin, 1971) Pp. 463, $2.20.

The 21 readings brought together by Archibald in *The Theory of the Firm* provide us with another excellent book in the Penguin Modern Economics series. Problems associated with defining and classifying the theory of the firm are first explained by the editor. He sees the literature in the theory of the firm as being largely concerned with the extent to which allocational and distributional results of society are determined, as in the purely competitive model, by underlying forces (resources, technology, tastes), and to what extent these results are influenced by departures from perfect competition. As such, the theory can be regarded as dealing with production and costs, market structure, and entrepreneurial behaviour, set in a partial equilibrium framework.

The book is divided into seven parts. Part one, with contributions by Smith, Friedman and Bain, provides an empirical evaluation of economies of scale, through measurement of long-run cost curves. The central theme is that since the firm is described by the production function in general equilibrium theory, knowledge of the shape of the production function is critical.

Part two, on pricing and market structure, is concerned with oligopolistic interdependence and includes papers by Archibald on monopolistic competition, Hicks on conjectural variation, an extract from Cournot's paper on duopoly and Stigler's paper on kinky oligopoly demand curves.

The measurement and effects of monopoly forms Part three. Papers are included by Bain, Chamberlin and Harberger who give some insight into measurement of the degree of monopoly, the cost of monopoly misallocation and the importance of barriers to entry, rather than the slope of the demand curve, in explaining the persistence of pure profit.

Part three leads logically into Part four with a paper by Kalecki on monopoly power and the distribution of income. Part four is essentially concerned with the functional distribution of the national product between labour and capital, and also contains Solow's criticisms of the 'constancy of relative shares' hypothesis.

Parts five and six discuss the objective function of the firm in, respectively, a static and dynamic setting. Papers by Baumol on sales maximization, and Ames on the maximization of output in Soviet enterprises, are chosen in Part five to represent the static alternatives to profit maximization. Dynamic alternatives are discussed by Marris, Baumol, Williamson, Adelman and Hart in Part six, but with emphasis on the growth and size of firms.

Archibald stresses the importance of tools which allow empirical exploration of much of the theory. For this reason he includes a final section of linear programming with selections by Dorfman and Baumol and Quandt.

Given a limit on space, Archibald has managed to give a well rounded insight into what constitutes the theory of the firm. One would have preferred greater emphasis on the behavioural theories and an explicit discussion of the effect of uncertainty on the performance of the firm. However, adequate reasoning is given for these and other omissions and furthermore, reference to further readings in each section allows the reader to investigate relevant fields of interest. This book provides a valuable supplement to another Penguin on price theory[1].

O. T. KINGMA *La Trobe University.*

Making Decisions. By D. V. LINDLEY. (London, John Wiley, 1971) Pp. 195, $4.85, ISBN 0 471 53785 3.

The purpose of this book is to provide a self-contained treatment of decision theory, at an elementary level. The approach is normative, the concern being not to present a descriptive theory of actual behaviour, but rather to describe how an individual faced with a choice under uncertainty should act, consistent with personal judgements and preferences, and with given information. The process described is the integration of classical statistics and decision theory with 'modern' Bayesian concepts.

The reader is taken through a step-by-step development of the decision model, from selection of the 'best-bet' decision without sampling, to the analysis of decision trees and determination of the expected value of additional information. The first five chapters are devoted to a detailed discussion of the joint concepts of utility and subjective probability. Chapter one contains a thumbnail sketch of the components of the decision model, while Chapters two and three develop the concept of probability. Chapter two presents a persuasive argument

[1] Townsend, H. (Ed.), *Price Theory,* (Harmondsworth, Penguin, 1971.)

for the existence of probabilities and demonstrates, using games of chance, that there is only one form of uncertainty, that uncertainty can be described numerically as a probability and that the uncertainties can be compared. Chapter three develops the ideas of probability and describes and proves the three major laws of probability.

Methods for handling choice under uncertainty must incorporate personal strengths of belief, or probability, and a measure of personal valuation of consequences, or utility. Chapter four discusses the concept of utility and shows how utilities can be attached to the consequences of decision making. Properties of the utility function are discussed at length in Chapter five together with some of the results which follow from having a bounded, increasing, concave function for the utility of money. Ideas are illustrated using two empirical utility functions, detailed in an appendix. The main result is Bernoulli's Principle, that decisions should be made on the basis of maximizing expected utility.

If one ever had doubts about the coherence of the concepts of probability and utility these are surely quelled by the persuasive arguments given in Chapters 1-5. Emphasis in these and other chapters is on the structure of the inference and decision process as opposed to techniques whereby specialized problems may be solved. Illustrative examples are continually used and intuitive, though rigorous, reasoning replaces the mathematics usually found in texts on decision theory. In addition a set of questions follows each chapter and equally important, answers are provided to these questions.

Chapter six deals with the problem of Bayesian inference. Bayes' theorem is developed and used to show how beliefs should be modified, using additional information, to give new beliefs. Particular attention is given to the interpretation of the results of this process.

The broader question of the economics of sampling—whether information is worth purchasing and, if so, how much should be purchased—is explored in Chapter seven. A discussion of sequential decision procedures is taken up in Chapter eight.

The final chapter provides a brief but interesting appreciation of the value of the methods developed. The author deals with the merits and deficiencies of decision theory as it relates to real world behaviour, and concludes that the increased use of these principles would do much to improve decision making in modern society.

Since the aim of the book is to present a set of rules for decision making, the author regards citation of original sources of the work as inappropriate. However, without some background to the controversies in the literature, the uninitiated reader may question the relevance of many of the detailed arguments. Some reference to the pioneering work adds flavour to what may otherwise become a rather dry discussion and, in this regard, a few notes at the end of relevant chapters might perhaps be helpful. In addition, individual chapters contain very few sub-headings and frequently the reader loses perspective because of this. A more detailed sub-division within each chapter would, therefore, enhance reading.

By explicitly addressing the book to a wide audience, namely business executives, politicians, scientists and students, the author admirably conveys the message that decision theory is not a specialized topic of limited relevance in broader subjects. The book is appropriate for introductory courses in decision theory but needs to be supplemented where the aim is to provide more than the conceptual basis of Bayesian decision analysis.

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