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BOOK REVIEWS

Agricultural Marketing and Prices. By K. O. CAMPBELL. (Melbourne: Cheshire, 1973.) Pp. 148, \$3.95, ISBN 0 7015 1750 6; and
Agricultural Product Prices. By W. G. TOMEK and K. L. ROBINSON. (Ithaca: Cornell Univ. Press, 1972.) Pp. 378, \$US14.50, ISBN 0 8014 0748 6.

These two books are both concerned with price analysis aspects of marketing. This is an area in which there is only limited basic text material available for undergraduate courses at the university level. Professor Campbell's book is primarily oriented toward the Australian situation, while the book by Tomek and Robinson deals with agricultural product prices in the American context.

Professor Campbell has provided us with a very readable book based on his experience and knowledge of marketing, prices and agricultural policy in Australia. This book is written for a wide audience and, as Professor Campbell states in the preface, it '... may be of particular value to senior high school students as well as to university undergraduates. However, a substantial part of the contents could be readily absorbed by lay readers with an interest in agricultural affairs'. To meet the needs of such a wide audience is by no means an easy task. It requires a balanced synthesis of economic theory, tested hypotheses from agricultural economics research, and the application of both to a complex institutional framework.

The book is concerned with the determination of agricultural product prices and policy in the context of existing institutional marketing arrangements in Australia. Chapter 1 is a brief introduction on the role of agriculture in the Australian economy. Chapters 2 and 3 deal with factors affecting the demand for, and supply of, agricultural products. The chapter on demand for farm products moves quite quickly through demand theory without presenting a graphical analysis of the effects of prices, income and other factors on aggregate demand. Chapter 3, on the other hand, contains several pages of graphical analysis on the effect of input prices, related product prices and physical production relationships on the supply of agricultural commodities. The importance of conceptual elasticities of supply and demand is stressed throughout these two chapters. There is, however, little mention of the empirical problems of estimating elasticities which are important for policy purposes. In Chapter 4 the causes of farm price instability are discussed with particular reference to cyclical (cobweb pattern) and seasonal price movements for agricultural products.

Given the basis established in the first four chapters, agricultural policy in Australia is discussed in Chapters 5, 6 and 7. Chapter 5 presents the background of agricultural price policy. In Chapter 6 price and income stabilization methods are discussed. These include buffer funds, buffer stock schemes (and the associated arguments about hidden gains and losses), equalization schemes, and income stabilization schemes. Methods of supporting prices and incomes are discussed in Chapter 7, including supply management (by marketing quotas, input

restrictions, import regulation and mixing regulations), discriminative marketing, and such financial methods as subsidies, deficiency payments and exchange rate adjustments.

The important distinction made in Chapters 6 and 7 is between policies which support or maintain prices and incomes, and those which merely stabilize prices and incomes. Such a distinction is difficult to maintain in reality; for example, Professor Campbell discusses his proposed income stabilization scheme in Chapter 6, yet it is outlined as an income raising scheme (pp. 76-79), where the criteria for the scheme are based on falls in income only. This point emphasizes the political nature of price and income interference policies, and the practical problems of making the distinction between raising and stabilizing both prices and incomes.

The last three chapters deal with the institutional framework of agricultural product marketing in Australia. In Chapter 8 the role of federal and state marketing boards is discussed. Chapters 9 and 10 deal with the marketing of selected livestock and crop products. These two chapters are descriptive in content and there is little comment on the effects of existing institutional marketing arrangements on product prices. The institutional marketing framework does have important implications for the resource allocative function of prices, as well as for income and price stabilization and support policies.

This book can make an important contribution to the general level of understanding about agricultural marketing and prices, especially in view of the wide audience it should reach. As an undergraduate text, however, it would seem to have less impact for two reasons. First, there is no bibliography, which should link the undergraduate text book to existing literature and to principal research findings. Second, there is no comprehensive attempt to provide a theoretical or empirical basis for the analysis of agricultural product marketing and prices. Despite these comments I feel that the book would be a useful introduction for undergraduate courses in agricultural policy.

By way of contrast the book by Tomek and Robinson is written primarily as a text book for the undergraduate student in the area of applied price analysis and marketing. It could be used as the standard text book for an undergraduate course in this area in the Australian university context. Tomek and Robinson have produced a book which will be of great value to undergraduate training since there are few text books in price analysis which provide such a good balance between theoretical and empirical developments in price analysis. The book is divided into well-defined sections and within each there is a list of references at the end of each chapter. In addition there is a subject/author index at the end of the book so there is a well-documented framework for more detailed references on particular aspects of agricultural product price analysis. One general problem with the book from the Australian viewpoint is that it is heavily oriented toward U.S.A. problems and examples which are frequently of limited relevance to Australia.

The first section of the book, Chapters 1 through 5, presents the principles of price determination. The treatment presumes some knowledge of economic theory relating to demand and supply relationships for agricultural products. Chapter 3 provides an excellent review of

demand elasticities and the constraints which may be used in empirical estimation. The following chapter on supply relationships does not provide the same kind of overall review and does not include sections on cycles (see Chapter 9) or the use of linear programming, which might have been included. Chapter 5 brings together the elements of a theory of price determination under alternative market structures from pure competition to monopoly.

In the next section of the book, factors associated with price differences and variability are dealt with. There are chapters on marketing margins, grades of product, spatial price differences and temporal price differences. The final chapter of this section, Chapter 10, looks at the historic behaviour of aggregate farm prices for the U.S.A. in the context of the factors mentioned above. This section also contains three excellent appendices which deal with an introduction to spatial equilibrium models, cobweb models and finally construction and use of price indexes.

The third section of the book deals with the institutional arrangements for the pricing of farm products. In Chapter 11, mechanisms for farm price determination such as individual negotiation, auction markets, formula pricing, group bargaining and administrative pricing are discussed. There appears to be insufficient emphasis on the role of vertical integration, co-operatives and marketing boards in the price discovery process. Chapters 12 and 13 deal with the functioning of and controversies about futures markets. Such an emphasis, while important in the U.S., may not be appropriate for courses in price analysis in Australian university undergraduate courses. Chapter 14 deals with government intervention in farm product pricing and is principally oriented toward the U.S. farm programs.

The final section of this book presents an introduction to empirical price analysis. Chapter 15 provides a good basic introduction to price analysis dealing with alternative techniques of analysis, model formulation, data requirements and the identification problem. Chapter 16 discusses the use of results from price analysis. It deals with estimation of regression equations and tests of hypotheses, the problems of data requirements and model specification, the derivation of elasticities from single equation models, and finally with forecasting. This last section of the book does not discuss empirical prices analyses using simultaneous equation or multi-equation models. This is an important omission which could have been included since such models were introduced earlier in the book. In addition such models are used in price analysis, despite the problems of data, estimation procedure and interpretation of results from multiple equation systems.

These two books have useful complementary roles though they are oriented to different readers. Campbell's book is primarily concerned with the general institutional and policy context of agricultural prices and marketing. The Tomek and Robinson book, on the other hand, is a valuable basic text for university courses in agricultural price analysis.

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Agricultural Finance. By A. G. NELSON, W. F. LEE and W. G. MURRAY. (Ames: Iowa State Univ. Press, 1973.) Pp. 413, \$US11.50, ISBN 0 8138 0050 1.

This is the sixth edition of this book published since 1941. Previous editions have been justly criticized because of the concentration on agricultural credit and the agricultural credit institutions of the U.S.A. They barely mentioned other concepts in agricultural finance, or the policy issues involved in financing agriculture. The present edition represents a major revision of the fifth edition. It is now better organized, and has a wider scope than previous editions. This latter improvement has tempered the previous criticisms of the book, though policy issues are still ignored and concepts of credit use are still overstressed.

The book is now organized into three parts instead of the previous two. The first of these, 'Principles of Agricultural Finance', introduces the field. Much of the previous introductory material has been retained, with relatively minor modification. A new chapter entitled 'Theory of Financial Management' has been added, but it is far too brief to adequately cover the field. The major part of the chapter is drawn from Baker and Hopkin's paper on farm firm growth¹, but other important work in financial management has been virtually ignored.

Part Two, the 'Financial Management of the Farm Business' has been greatly reorganized and some worthwhile material has been added. The chapter on 'Farm Financial Management' (essentially elementary farm management) has been reduced considerably, while 'Acquiring the Capital to Farm' has had some of the more recent practices in lease financing added. This chapter could have outlined some of the novel methods of financing that have developed lately.

A series of three chapters on financial analysis using the balance sheet, income and cash flow statements have been included. The work on cash flows is new, reflecting the recent emphasis it has been given in agricultural finance. The three former chapters on risk have been reorganized into two chapters which very briefly describe some of the financial alternatives which might be used to counter risk. Unfortunately no attempt has been made to integrate this work into a theory of decision making under risk.

Two new chapters on the related problems of the conversion of farm assets for retirement purposes and of estate planning have been added. These are useful additions to the book. The other chapters in this section on the calculation of interest rates, loan repayments, legal aspects of borrowing (of limited use under Australian conditions), and the lender's analysis of a loan have been modified in minor respects only.

The final part of this book is called 'Financial Markets and Agricultural Lending Agencies'. This section has been condensed considerably, although two new chapters on financial markets and monetary policy have been added. The rest of this section is concerned with the more common agricultural lenders in the U.S.A. There are single chapters on commercial banks, insurance companies, merchants and dealers, the Federally sponsored Farm Credit System (including the Federal Land

¹ Baker, C. B. and J. A. Hopkin, 'Concepts of Finance Capital for a Capital-Using Agriculture', *Am. J. Agric. Econ.*, 51(5): 1055-64, 1969.

Banks, the Production Credit Association and the Banks for Co-operatives), and the U.S.D.A.-supervised Farmers Home Administration. There were several chapters on some of these topics in the previous edition. The reduction of detail in this section has made the book more useful for the non-American reader.

The appendices have been revised to include higher interest and discount rates for the compound interest, present value and amortization tables. A new table for the present value of an annuity has been added. Brief, and none too clear, explanations of the derivation and use of these tables are given in Chapters 3 and 11. A clear explanation with the appendices would have been better.

In summary, the present edition of this book represents an improvement over the previous edition. It is now a useful elementary text book in agricultural finance and would serve as an introduction to more advanced books in agricultural finance or general finance.

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Productivity Trends in a Sectoral Macro-Economic Model: A Study of American Agriculture and Supporting Industries 1919-1964. By W. F. GOSSLING. (London: Input-Output Publishing Co., 1972.) Pp. 296, £UK7.50.

Since the pioneering work by Leontief, many researchers have developed extensions to the basic input-output system. This book details one such development, the sub-system.

Using an input-output table and economic deduction, a sub-system can be isolated consisting of a given sector and sufficient portions of other sectors such that the given sector is self-sufficient. For some economic problems, analysis using the sub-system is simpler than analysis with the full input-output table.

Input-output economics is not without its critics because of the restrictive assumptions on which it is based. The sub-system depends on some additional very restrictive assumptions including a closed economy and constant commodity mix, so that its application to practical situations is severely limited. For this study the author has chosen American agriculture, which is one case which approximates the restrictive assumptions.

The book begins with a brief exposition of production theory and how the concept of the sub-system relates to it. The theory proceeds to the derivation of the sub-system from an input-output table. All the theory is expounded in matrix algebra, which restricts the book to those with considerable competence in mathematics and familiar with input-output analysis.

The aims of the study are to determine:

(1) whether the substantial shift in the use of factors of production has been worthwhile for agriculture and for the American economy as a whole, and whether such shifts are either essential or desirable for other economies working to increase and diversify their output for final consumption; and

(2) whether such shifts are caused by better farming methods, by industrial progress or by a combination of the two.

Using input-output tables for the years 1919 to 1964 productivity indices are determined. These productivity indices are used as proxies

for variables in a macro-economic model. This model draws heavily on two previously published works, *Production of Commodities by Means of Commodities* by Sraffa and *The Accumulation of Capital* by Robinson.

The results, which are comprehensively tabulated, divulge very little that is not already known in the area of labour productivity in American agriculture, which has risen over the years, particularly since 1930. The increase in farm size, and reduction in the number of farmers have been major factors leading to better returns to entrepreneurs. However, one popular myth is allayed. It has often been asserted that the net migration from the farm population has been moving into those firms or industries directly or indirectly supplying services and inputs to an increasingly technical agriculture. The results from this study do not support this view.

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Problems of Farm Mechanization. By THE INDIAN SOCIETY OF AGRICULTURAL ECONOMICS. (Bombay: Indian Society of Agricultural Economics, 1972.) Pp. 179, Rs. 25.

Farm mechanization has become a particularly contentious issue in Asia in recent years. There is strong pressure for increased mechanization from those farmers who have benefited from the Green Revolution, but there is also widespread concern about the impact of mechanization on agricultural employment and rural income distribution. This book contains fourteen papers presented at a seminar on 'Problems of Farm Mechanization', organized by the Indian Society of Agricultural Economics and held in July, 1971. It also contains an introductory summary of the papers, an inaugural address, and brief summaries of the seminar discussions.

The preliminary sections are among the best parts of the book. The inaugural address by B. Venkatappiah of the Planning Commission is a wide-ranging review of the factual and policy issues relating to farm mechanization in India. Venkatappiah lays appropriate stress on the need to define and distinguish different types of mechanization, e.g. tractors versus improved bullock-powered equipment. He also presents an extensive list of topics for research. The introduction by V. S. Vyas provides a brief but comprehensive summary and critique of each of the seminar papers. More important, together with the discussion summaries at the end of the book, it helps to integrate material from a rather disparate group of studies and to highlight the major conclusions emerging from them.

The papers themselves contain a large amount of interesting descriptive material but will be a disappointment to those looking for policy-oriented analyses of the causes and effects of farm mechanization in Asian agriculture. This is largely due to the paucity of farm machinery statistics and other empirical data. It is also partly due to the wide terms of reference of the seminar, which elicited papers covering a variety of aspects of farm mechanization and a variety of locations within India. And finally it is partly due to the limitations of the analyses in the empirical papers, which are not sufficiently rigorous to identify causal relationships.

The papers are organized in three groups: (1) papers dealing with trends in farm mechanization in India; (2) general discussions of the causes and effects of farm mechanization; and (3) empirical studies of mechanization in specific areas. Most attention is concentrated on factors causing mechanization and on its effect on employment. The possible causal factors discussed include labour availability, wages, product prices, farm size, cropping intensity, power availability and use of other modern inputs. In addition to the effect of mechanization on employment, its impacts on the use of bullock power and on agricultural productivity are also discussed. Since analyses of all these relationships are restricted to cross-tabulations (e.g. comparisons between more-mechanized and less-mechanized farms), the empirical evidence presented in the papers is only suggestive.

One surprising omission in the set of papers presented is a precise specification of possible alternative technologies involving different degrees of mechanization. Harking back to the inaugural address, it is hardly possible to frame sensible mechanization policies without fairly precise definitions and input-output data for alternative technologies. Also none of the papers devotes much time to alternative modes of machinery ownership or the problems of supply and servicing of various types of farm machinery, although these topics were dealt with in the seminar discussions.

The book is easy to read and despite its limitations it will be useful to those wishing to learn about recent trends in farm mechanization in India and about the main issues in the mechanization controversy. One positive result of the diversity of contributions in the book is that it clearly indicates the inappropriateness of general prescriptions on mechanization in a country with a wide variety of environments, crops, technologies and farm structures.

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RASAR: A Resource Allocation System for Agricultural Research. By D. G. RUSSELL. (University of Stirling, Research Monograph in Technological Economics, No. 1, 1973.) Pp. 178, £2.00.

This monograph is taken from the author's Ph.D. thesis completed at the University of Stirling. It presents a methodology, based on scoring and weighting procedures, for the allocation of research resources among proposed agricultural research projects according to a number of goals or criteria. A linear programming model (with a separable programming facility) is used as the framework to assemble all the projects, restraints and goals and to maximize the total score.

This review will take a different slant to the usual, for the book promulgates a methodology, and thus an account of the book's usefulness must necessarily make reference to related methodologies to assess the uniqueness, scope and merits of the particular methodology presented. In a review this cannot be carried out in detail but a few comments are offered in this regard.

The content of the book is summarized using, in part, quotes taken directly from the book's introduction. 'Section 2 reviews the current discussion of issues relevant to the application of quantitative methods in the management of research and development. Section 3 discusses the nature of agricultural research, and its purposes, outputs, inputs, and

activities. Section 4 develops a resource allocation system within which both research project generation and evaluation, and allocation decisions, can be purposefully and effectively performed.' Here the nine goals in their three categories are listed and expanded upon. The categories, with the goals in brackets, are: consumption (quantity, quality, availability), security (human safety, economic defence, food sources security, conservation), and equity (distribution, individual rights). 'Section 5 presents a mathematical model with several levels of complexity that can provide a considerable amount of useful information to aid in research project portfolio selection.' Incorporation of the projects, goals and restraints is discussed, matrices presented, and the information produced in the optimal solution is detailed. Also discussed are post-optimal parametric procedures (including goal weights), non-linear extensions such as separable programming to account for non-linearities in derived utility, matrix and report generators, timeliness, and linked projects. 'In Section 6, a summary of the assessments of four current agricultural research projects precedes a demonstration and evaluation of the mathematical model.' The projects evaluated are high diastase barley, hybrid swedes, triticale for poultry rations, and dairy cow replacement. 'Appendix A contains a review of research related to resource allocation in agricultural research. One of the detailed project assessments is illustrated in Appendix B.'

The initial reaction to the study is that it seems to promise, with its pretentious acronym, RASAR (Resource Allocation System for Agricultural Research), a complete and computer-operational package deal. Instead all one gets is a relatively general methodology, which seems to bear out the view that the allocation procedural requirements for agricultural research institutions will differ so widely that they can never be generalized.

The second comment is that the selection, within a programming framework, of projects scored according to weighted criteria is a questionable step given the large degree of subjectivity involved and that many of the criteria are rather nebulous. Many research organizations, e.g. the Canadian and U.S.A. Departments of Agriculture have used scoring systems as aids to project selection but have not seen fit to formalize selection within a programming model, a fact which could be taken as an implied rejection of such an approach. Accounts of these latter two systems¹ note that they are *aids* only to decision making. Over-regimentation in the conduct of research is likely to be counter-productive in terms of suppressed creativity.

A third comment relates to the goals listed. While they are qualified as being suggestions only, it is clear that the author places considerable faith in the ones he presents. He lists nine goals, albeit in three categories—this being one more than in both the Canadian and U.S.A. schemes which have eight. It is interesting to note that while the Canadian and U.S.A. schemes, derived independently of each other, show surprising similarity in their eight criteria, those presented by Russell bear little resemblance. He does note this difference and states

¹ See for example, Fedkiw, J. and Hjort, H. W., 'The PPB Approach to Research Evaluation', *Amer. Journ. Agric. Econ.*, 49(5): 1426-1434, 1967, and Gilchrist, V., 'Criteria Involved in the Allocation of Agricultural Research Resources', *Canadian Farm Econ.*, 6(2): 1-12, 1971.

it is due to his considering 'ultimate' goals while these other schemes consider only 'immediate' goals. The distinction, however, is not made clearly. In his 'consumption' category, two of the goals, 'quality' and 'availability' of commodities, should be, and would far more easily be, handled through commodity prices. The remaining goals are a tenuous base for firm allocation decisions, especially when the decisions will be influenced by the weights chosen. This is not to say that such goals are unimportant—sometimes they will be crucial.

An approach such as outlined in this book may be no more objective than an allocation based on profit criteria and subsequently modified by the decision maker(s) in the light of non-monetary criteria. There is a good case however, as the author maintains, for the mandatory evaluation of each research proposal in terms of these (or other) criteria to ensure that they are at least considered.

It has been rightly noted that if scoring methods give as good results as the more rigorous but costly cost-benefit analysis, then they should be used. This may well be the case where there is a large portfolio to be chosen from among many proposals for small short-duration projects, but where, as is probably more common in agricultural research, proposals are more substantial in time and cost, a rigorous economic evaluation of the individual proposal is likely to show itself a positive net return. Adequate selection procedures exist if a probability distribution of returns can be elicited. It is here that this reviewer considers most methodological advances will be made in the future.

In summary, the methodology expounded in the book is no panacea to those faced with the problem of allocating research resources in agriculture, but it would serve as a useful reference for those interested in scoring methods for resource allocation.

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