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Book Reviews

MIDAS – Model of an Integrated Dryland Agricultural System

MIDAS, A Bioeconomic Model of a Dryland Farm System. R.S. Kingvell and D.J. Panell (Editors). Pudoc, Wageningen, The Netherlands, 1987. Paperback, 207 pp., Dfl.65.00/US\$32.50. ISBN 90-220-0913-0.

MIDAS – Model of an Integrated Dryland Agricultural System – is a whole-farm programming model. The model represents a typical farm in the dryland farming system of the Merredin region in Western Australia and is the result of interdisciplinary work over a period of years. The main purpose has been to develop a model for maximizing long-run profit. A requirement in this context has been that it shall be possible to apply the model in a wide range of planning situations. Concerning choice of modelling technique different possibilities have been taken into consideration: as dynamic simulation and mathematical programming. The group finally decided to apply a single-year equilibrium model based on mixed integer programming. One reason for this is the high efficiency in algorithms for linear programming. By use of integer programming the model can be adjusted more precisely to farm-specific situations.

The matrix in the basic model has about 280 activities and 150 constraints. Non-linear relationships are approximated by linear segments. Indivisible farm inputs are represented by the integer variables. The objective is to maximize profit after tax. For this purpose also financial relations are included in the model. The set of resources considered include land, labour and capital resources. Arable land has been partitioned into separate soil classes. Shadow costs do not indicate opportunity costs of alternative integer solutions.

The book contains detailed descriptions on applications with regard to alternative lambing times, the profitability of lupin, strategies for deep ribbing of soils, and alkaline treatment of cereal residues. For each one of those examples the matrix from the basic model is adjusted by a special technique included in the algorithm for linear programming.

The first example deals with crop–livestock interactions and rotation selection. In the development, emphasis has been placed on the identification and representation of enterprise interaction. In this respect the de Wit model on competition has been used as a basis for designing MIDAS.

Next example is on alternative lambing times. MIDAS has been used to investigate the implications for whole-farm profit of lambing in April, May, June or August. The results indicate that late lambing would increase the economic profit.

The model has applied in order to estimate the contribution of lupins to farm profit. In this case uncertainty and variability have been taken into consider-

ation by running the model for a wide range of assumptions concerning yields, prices and so on.

The last example is on alkaline treatment of cereal residues. The main purpose has been to investigate the treatment of straw with sodium hydroxide to increase digestibility. In this case the model has been developed with regard to availability of other feeds, the value of those feeds, grazing of pasture or crop residues and the opportunity cost of competitive farm enterprises. As follows from the results the cost of alkaline treatment is higher than that increase in feed value. The investigations have been terminated.

The book gives a fairly straight-forward description of a large model. From a methodologic point of integer programming is of special interest. The authors have shown that this technique increases the possibilities of adjusting a programming model to the real world situation at a farm.

As follows from the examples MIDAS has been applied more as an instrument in research planning than as a tool in advisory service.

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Research Methodology: Philosophy and Practice

Research Methodology for Economists: Philosophy and Practice. Glenn L. Johnson. MacMillan, New York, 1986. 252 pp., US\$27.50. ISBN 0-02-949840-0.

This book was originally designed as a text book for graduate students. In this regard it makes a valuable contribution. However, a secondary agenda running through the book seems to be a crusade against the logical positivist stance of disciplinary research. This aspect is unfortunate because the case is overstated. First, the issues have been with us for some time and many disciplinary researchers have already acknowledged the problems of logical positivism raised by the author. Indeed, as shown in far more elegant manner by McCloskey (1985), the problem is not that disciplinary researchers are logical positivists, but that they would have us believe that they are. Second, the issues are restated on a number of occasions. Once would have been enough.

The first two chapters are introductory, and the third is a summary of the philosophies Johnson regards as important in economics, viz. positivism, normativism and pragmatism. The next six chapters present the underpinnings of these philosophies, together with an exploration of the basic methodologies of economics. A 27-cell matrix is developed in which the three philosophies are related to three types of research (disciplinary, subject-matter and problem-solving) and to three forms of knowledge used and generated by economic research activity (positivistic knowledge, knowledge about values and pre-

scriptive knowledge). Although perhaps an artificial division in that most research work involves many components of the system, as a classification scheme this works quite well. It effectively sharpens up the reader's awareness of what can reasonably be expected from each type of research.

Taken together, these first nine chapters amount to a clear summary of the methodological controversies which economists have been debating for the last two decades. There are two significant points that Johnson brings out. First, there is essentially little difference in the value-laden content of positivistic (disciplinary) research and normative (subject-matter and problem-solving) research. Second, the method which combines theory and experiential data is the appropriate one for all types of research. That is, the positivistic method (not the positivistic philosophy) is appropriate.

Six case studies relating to the three types of research are presented in Chapters 10 to 12. A broad spectrum of economics research is covered ranging from T.W. Schultz' research on human capital to an extremely applied study of the pickle industry in Michigan. Johnson uses this case-study material to good effect as a demonstration of the issues of earlier chapters. Many readers would benefit from reading Chapters 10 to 12 first.

The administration of research and relationships with funding bodies are considered in Chapters 13 and 14. These chapters are particularly relevant to the many agricultural economists who have appropriated funds for problem-solving and subject-matter research, but found themselves in the event to be examining a more important piece of disciplinary research.

The final three chapters are a drawing together of the previous material. Here the author attempts to define an ideal philosophy in terms of an 'operational eclecticism' which synthesizes the work of the various types of economic researchers. This is achieved by rejecting the constraints that the three main philosophies place on each other.

Leaving the various criticisms aside, Johnson provides a good summary of the methodological controversies of economics research. Many economists, no matter what their type of research, need a reminder of these issues in order to be clear of the meaning of the work they are performing. This is useful in itself, but, as Johnson shows, is also crucial information relevant to practical considerations like how to develop appropriate relationships with research funding bodies.

Finally, but by no means least, the guides to additional reading which appear at the end of each chapter are a significant pedagogical contribution.

Reference

McCloskey, D.N. 1985. *The Rhetoric of Economics*. Wheatsheaf, Brighton.

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