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BOOK REVIEWS

World Agriculture Toward 2000. By N. ALEXANDRATOS (ed.). (Belhaven Press, London, for the UN Food and Agriculture Organisation, 1988.) Pp. 338 + xvi, ISBN 1 85293 0578.

This volume is an update of the FAO's 1979 study entitled *Agriculture: Toward 2000*. Like its predecessor, it is an exercise both in stocktaking and in looking forward. It is less dominated by the usual food scarcity theme that one has come to expect from the FAO, presumably because it was written during the mid-1980s period of very low international prices for farm products. Nonetheless, there are still statements like 'In the low-income countries as a group, apart from China and India, per caput food supplies in 1983/85 were no higher than those 15 years earlier.' The fact that China and India contain three-quarters of the people in that group of countries, and that food production in low-income countries *including* India and China has grown quite dramatically since 1970, is hidden away in an appendix table.

After the review in Chapter 2 of world food and agriculture to the mid-1980s, the rest of the book is about prospective developments in agriculture, forestry and fisheries during the 1990s. Chapters are devoted to international trade and adjustment issues, to rural poverty/equity considerations, to future technological developments and to environmental aspects of agricultural developments. The book also contains a useful 45 page appendix with tables showing food production, consumption and trade statistics by country and region for selected years between 1961 and 1985.

The main part of the book that is original, however, is the summary in Chapter 3 of the FAO's projection scenarios to the year 2000. Interestingly, these are produced without the help of a formal model, even though several models of world agricultural markets exist. The justification given for not using one of these models is that it would have involved too many guesstimated parameters and would not have been able to be as detailed as FAO would have liked. Instead, the methodology adopted is as follows (p. 227):

'all analyses are conducted in a great amount of detail . . . ; behavioural relationships are used only rarely . . . ; the more important projections of land use, production and trade depend heavily on 'expert judgement' of different specialists . . . ; links with the rest of the economy are not accounted for except for the influence of income growth on demand; and prices play no explicit role in bringing about demand/supply balance.'

Given this methodology, it is difficult to have much faith in the projections produced, because there is no guarantee of internal consistency in the forecasts. That faith is further undermined by the assumptions made concerning agricultural policy developments. It is simply assumed, for example, that 'developed market economies as a group will moderate their import substitution policies so as to avoid

further declines of their net imports from developing countries of competing commodities' (p. 3).

Not surprisingly, the projections that emerge suggest a continuation of recent trends. That is, developing countries are forecast to increase farm output just enough to keep up with population growth; therefore, their net imports need to grow to satisfy income-induced shifts in per capita demand, and these needs are met by continued production and export expansion in developed market economies. There is only one set of projections presented, representing the summation of each commodity and country specialist's view of the most likely outcome. Only quantity projections are included, as prices are not explicitly incorporated in the exercise.

While recognising that there is value in making use of FAO expert knowledge about small countries and minor commodities in projecting the future for world agriculture, it would be helpful in future to complement this informal approach with a formal modelling approach which aggregated that detail into a manageable number of commodity and country groups and sought a consistent set (or preferably sets) of projections. A multi-commodity market clearing model could then also say something about price trends, both domestic and international, given explicit assumptions about policy choices in each country. It is true that many of the elasticities etc. in such a model will be guesstimates, as the authors of the book pointed out. But at least those guesstimates will be explicitly and consistently represented and therefore able to be debated. The presentation of the methodology used in the study under review, by contrast, involves little more than a black box.

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China's Grain Production and Trade: An Economic Analysis. By C. A. CARTER and F. N. ZHONG. (Westview Press, Boulder, 1988.) Pp. 124 + xiv, ISBN 0 8133 7519 3.

As the authors point out at the beginning of this book, China, with over 20 per cent of the world's population, is the largest grain producing and consuming country in the world and so what happens there can have a major impact on world food markets. Indeed, much *has* happened since 1949 in China's grain markets, especially during the past decade. The first two chapters summarise pre- and post-1978 grain policies of the People's Republic and their impact on production and trade, chapter 3 provides details of the internal grain marketing system and the remaining three chapters are concerned with modelling production and consumption for the purpose of projecting future domestic supply and demand trends and hence the role trade may play during the next decade.

The first three descriptive chapters provide a summary of past developments and policies which, while adding little that is new for those familiar with China's grain economy, serves as useful background material for the subsequent projection exercise.

The projections are quite straightforward, which is both a weakness and a strength of the volume. They will disappoint those looking for an

in-depth detailed modelling of the Chinese economy, but they will be welcomed by those interested in a little more than a back-of-the-envelope calculation yet something that is transparent enough for one to be able to amend readily the projections by altering the assumptions made.

For example, grain acreage is modelled simply as a function of population, with the encroachment of towns, roads, etc. onto arable land reducing available space. The area sown is estimated econometrically for six regions making up China. Yield per hectare is assumed to be a function of the price of grain and is estimated separately for each province and then aggregated to the six regions. The important assumptions made are that the price of grain will increase at 0.9 per cent (± 0.1 per cent) per year and that population will grow at 1.1 per cent (± 0.1). Hence, there are low, medium and high production forecasts.

Grain consumption is a little more complex. Urban and rural consumers are considered separately, as are food, feed and other uses. Income per capita is assumed to increase at 3 per cent in urban areas and 5 per cent in rural areas; the urban:rural population split is assumed to change gradually from 32:68 in 1984 to 40:60 by the year 2000; direct per capita consumption of grain is assumed to plateau at 250 kg per year in urban areas, 260 kg in rural areas; and feed grain demand is assumed to be 4 kg per kg of meat consumed. The authors estimate current consumption as a linear function of current income and the previous year's consumption, from which they derive income elasticities of demand for food grain, meat and spirits. From this they generate low, medium and high consumption forecasts.

Two concerns with the consumption projection should be mentioned. One is that price does not enter the calculation, the assumption being that the consumer price remains unchanged even though the producer price is assumed to rise steadily through the 1990s. The other concern is that the Koyck–Nerlove formulation of the demand equations presumes there is a short-run income elasticity which is lower than the long-run elasticity. In their projections, the authors use just the short-run elasticities. The long-run elasticities, which could have been derived by dividing the short-run elasticity by one minus the regression coefficient for the lagged dependent variable, look more plausible than the short-run ones except for urban meat demand (an unlikely 11.0, compared with 0.93 for rural meat demand; urban and rural grain consumption have long-run income elasticities of 0.14 and 0.23, according to this reviewer's calculations using the authors' estimated equations). Had something closer to these higher values been used, urban demand expansion would have reached the arbitrarily imposed ceiling of 250 kg per person per year even earlier than projected (1998), and rural consumption would have been at its 260 kg ceiling from the latter 1980s.

The three scenarios presented offer a wide range of trade outcomes for the year 2000, from China being a net exporter of 30 million tonnes of grain to its importing 120 million tonnes or one-fifth of consumption. The authors believe, however, that imports are likely to average around 25 million tonnes or 5 per cent of consumption during the 1990s.

The study does not discuss issues such as how these net grain imports

might be divided between the various grains, how they might affect world prices, or which countries might be affected by these developments in China. However, for those looking for a systematic and understandable set of projections of possible developments within China during the next decade, this volume is a useful and very readable starting point.

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Using Surveys to Value Public Goods: The Contingent Valuation Method. By ROBERT CAMERON MITCHELL and RICHARD T. CARSON. (Resources for the Future, Washington, D.C., 1989.) Pp. 463, ISBN 0 915 707 32 2.

The fears of Malthus and the Club of Rome are visiting upon the world once more. The growing momentum of the so-called 'Green Movement' insists that environmental goods are under threat to an extent never before witnessed. Yet, there is a countervailing fear that the economic well-being of society is being endangered by excessive levels of protection afforded the environment. The battle ground for these opposing views is not a market place. The goods in dispute are usually public goods. Rather, it is the political process which largely decides the final level of environmental goods. In that process, it is lobbying strength and electoral support that count. Resource allocation efficiency is not necessarily the outcome.

To introduce efficiency concerns into the political process is clearly a difficult task. The use of benefit-cost analysis to present the efficiency consequences of alternative public goods use options was a step forward. However, without a means of measuring all the benefits and costs involved, including the non-marketed public good effects, the technique was often left high and dry.

Mitchell and Carson seek to convince their readers that a refloatation is possible. They propose the use of the contingent valuation method as a theoretically sound and practically viable way of measuring the full range of public good benefits and costs. The method involves survey respondents being placed in a hypothetical market or referendum situation and asked questions as to their willingness to pay for the provision of public goods or the amelioration of public bads. Of course, there are a number of imponderables about the type of questioning involved in the contingent valuation approach. As the authors suggest, the method comes up against 'economists' fundamental prejudices against subjective survey data' (p. 191). Much of the book is therefore dedicated to the defence of the technique. The defensive style becomes oppressive on occasions but because of the extent of potential pitfalls the practitioner faces in using contingent valuations, it is a necessary factor of the book. For instance, the authors agree that without proper structuring contingent valuations could suffer from the presence of strategic bias, the result of respondents deliberately attempting to 'influence the provision of the amenity by intentionally distorting the amount they say they are willing to pay' (p. 128). Similarly, they suspect that the hypothetical nature of questioning can cause distortions in certain circumstances.

The strategy used to defend the method is to recount the numerous attempts made at implementing it and the various validity tests that have been carried out. An appendix lists all the case studies reviewed. The list is impressive; however, there is a decided leaning toward environmental public goods as the target for valuation. The title of the book suggests a wider range of applications than have apparently been tackled. Despite the somewhat tedious nature of the defensive approach, this does provide a very useful handbook for the potential practitioner. There are complete analyses of both the theoretical problems faced by the methodology and the issues involved in carrying out a sample survey of the type required by the method. For those without the time or the inclination to wade through the details of the case for the defence, there is a very succinct and useful 'Summary and Conclusions' section at the end of each chapter. In addition, the concluding chapter has been structured with the person using the results of a contingent valuation in mind. It sets out an excellent guide to the process of evaluating the findings of a contingent valuation study.

The impression left by the book is that there is a real need for the contingent valuation methodology. However, to use it must be likened to negotiating a mine field. The book acts as an invaluable mine detector, but even with it, the practitioner will remain rather nervous.

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The Transformation of International Agricultural Research and Development. By J. LIN COMPTON (ed.). (Lynne Rienner, Boulder, Colorado.) Pp. 237, ISBN 1 55587 146 1.

This book arose from a symposium organised to celebrate the history of colleges of agriculture and state agricultural experiment stations in the United States, and their contributions to the institutionalisation of agricultural research in developing countries. It forms part of a series of symposia and books commissioned for the centennial of the 1887 Hatch Act.

This book attempts to assess the transformation of the nature and functions of agricultural research and development institutions and their programmes, document major changes and identify important issues. As such, it provides a partial assessment of the impact of US agricultural research, extension and education system on agricultural institutions, policies and programmes in developing countries. One major recurring theme in several of the papers is recognition of the importance of suitable social structures, economic policies and political stability to the successful transfer of technology.

The book is divided into three parts, each introduced by the editor with a useful summary of the issues discussed to set the scene very effectively for the papers that follow. Part 1 consists of two chapters on the historical perspectives on context and change in agricultural development. Flora and Flora examine the development of the US land-grant model and the history of attempts to transfer the land-grant system overseas. While many institutions have been built, a major

problem is that developing countries must accomplish these changes within a shorter time frame and with less stable funding than in the early years of the land-grant system in the US, and often without the national political support to serve the limited-resource farmer. Eastman and Grieshop examine the case of the transfer of institutional structure in Peru in relation to potatoes. While the Peruvian system appeared to be a success in terms of structure and development of potato technology, these enhanced institutions and improved technologies did not lead to increased agricultural production.

In Part 2, five chapters are devoted to examining selected, largely non-technical, problems in the development of agriculture. Colle argues that the communication of scientific information to farmers needs to become more scientific and (implicitly) more economic. Sachs and Caye argue that many agricultural development efforts have overlooked women's contributions to food production, and have thereby made the role of women increasingly marginal and increased the 'feminization of poverty' throughout the world. Some of the lessons learned from the success and failures of past attempts to establish extension programmes in developing countries are discussed by Compton, who argues that the lack of integration of research and extension into an effective team is a major barrier to the achievement of development goals. Rogers examines the historical evolution of the US agricultural extension system and concludes that several of the key elements of the US experience were missing in attempts to transfer it to developing countries. One of the missing elements, Warren suggests, is the need for improved linkages between scientific knowledge and the indigenous agricultural knowledge and practices.

In Part 3, two chapters discuss the future challenges for bringing about improvement in the design and implementation of policies and programmes for agricultural development in the Third World, providing a broader perspective than the earlier focus on the US system. While much of Ruttan's examination of the development of the international agricultural research system and its relations with research systems in developing and developed countries has been presented elsewhere, it provides some perspective for the future role of national and international agricultural research systems. In the final chapter, Waugh, Hildebrand and Andrew suggest that while the farming systems approach to research and extension is becoming firmly established in many parts of the world, changes towards specialisation and basic research make the US system less able to participate in a systems approach.

There is the usual level of unevenness in style and presentation found in a collection of papers such as this. However, it is a very well edited book, with an introduction setting the scene, and introductory comments at the start of each of the three parts summarising the issues and the papers presented. At the same time, it would have benefited from a concluding chapter bringing the various threads of the different authors together. Nevertheless, it is a well-presented book, with a useful index and very few production errors.

The book has, inevitably, a US bias, giving it a somewhat narrow focus that will restrict its usefulness for many potential readers. However, it is worth examination by anyone interested in the transfer of institutions and technology to developing countries. As well, many

of the difficulties and problems of the developing countries seem to exist also in Australia, and research and extension administrators would benefit from reading Compton's chapter. However, the book will be of most benefit to those who are concerned with the transfer of the US system. For most Australian readers, it is likely to be a book for our library rather than our own shelves.

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