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BOOK REVIEWS

Environmental Economics: First Canadian Edition. By BARRY C. FIELD and NANCY D. OLEWILER (McGraw-Hill Ryerson Limited, Toronto, 1995). Pp. iv+511, ISBN 0-07-551716-7.

This is a Canadian adaptation produced concurrently with Field's 1994 US edition of *Environmental Economics*. As indicated on the cover, it 'offers students and practitioners a highly readable and coherent framework for the study of tools, methods, issues and policies, at work in this most dynamic field'. The book is strongly motivated, the authors noting that:

'Environmental interest groups have become vocal at every political level . . . Politicians have taken environmental issues into their agendas . . . Environmental law has burgeoned, becoming a specialty in many law schools. Thousands of environmental agencies have appeared in the public sector, from local conservation commissions to environmental agencies at the United Nations. . . . environmental problems have become a focus for chemists, biologists, engineers . . .'

While noting the serious issues of environmental degradation, the authors do not dwell on these but take a positive attitude towards how economics (mainly in a neoclassical mould) can provide policy-relevant advice for dealing with these problems. There is a continuing theme of the way in which an economic system shapes economic incentives which can lead to either environmental degradation or improvement.

Extensive and highly effective use is made of diagrams to provide insights into analysis and policy issues. Material from current sources such as newspaper extracts provide topical examples to leaven the discussion. Questions for further discussion and lists of selected readings are provided at ends of chapters. Use of algebra is limited, and dynamic economic models are not covered. A conscious decision has been made to restrict the amount of natural resource economics included, to differentiate this book from Hartwick and Olewiler's more mathematical *Natural Resource Economics* (second edition forthcoming). The strong emphasis on policy makes this book particularly useful for people working in the public sector and firms dealing with the public sector.

The book is divided into six sections, with methodology, policy analysis and Canadian applications clearly separated. Sections 1 to 3 would be particularly helpful for readers with limited economics background. The first of these examines what environmental economics is about, and the basic relationships between the economy and the environment. The second section discusses the 'tools' of analysis, the principles of demand and cost, and the elements of economic efficiency both in market and non-market activities.

Sections 3 and 4 cover the core of environmental economics. In section 3 some of the techniques developed by environmental economists to answer fundamental value questions underlying environmental decision making, including cost-effectiveness, cost-benefit and risk analysis, and non-market valuation methods are explored. Section 4 deals with principles of environmental policy design. Chapters are included on criteria for evaluation of environmental policies, decentralised policies (liability laws, property rights, moral suasion, green goods), standards, emission taxes and subsidies, and transferable discharge permits. The strengths and pitfalls of various policy instruments and regulations are explored at depth. This is a highly enlightening presentation, which would be useful reading for any economist concerned with public policy.

The final two sections deal with Canadian and international issues. Section 5 applies analytical tools to examine current developments in environmental policy in Canada, with chapters on the constitutional framework at federal and provincial levels, water pollution control, air pollution control, toxic and hazardous waste substances, and local government issues (water treatment, waste disposal, recycling). In section 6 environmental policy developments in other countries, global environmental issues and the economics of international environmental agreements are covered.

Overall, this book provides an excellent treatment of the various topics, in a highly readable way, and with a coverage and balance which leaves the reader feeling that he or she has gained a sound and coherent overview of environmental economics. For an Australasian audience, it compares favourably with alternatives such as Field's US edition, Tietenberg's 1994 *Environmental Economics and Policy* and Goldstein's 1995 *Economics and the Environment*.

While policy sections draw heavily on Canadian and US examples, this is not necessarily a distraction for Australasian readers. Australia and New Zealand are, like Canada, resource rich and resource-dependent countries. Canada has taken initiatives on a number of environmental issues, including the Toronto Conference on greenhouse gases. Due to the large area of forests, there is tentative evidence that Canada is a 'net carbon sink', though numerous pulp mills pose a threat of water pollution. Economic dependence of many communities on natural resources including forests, fisheries and mineral stocks, has constrained policy options available to government and rates of introduction of new environmental protection measures. Australia has a federal/state system of government in many ways similar to the Canadian federal/provincial system. In Canada, there is probably less tendency for the national government to overrule the provincial governments (through trade and international environmental agreement mechanisms) than in Australia, due to the strong separatist attitudes of Quebec and a more let-well-alone attitude of the national government.

An awareness of developments in environmental management in North America is important because environmental legislation and regulations

in this part of the world tend to follow those of North America. For example, it is noted that the US Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Superfund legislation could impose very large costs on companies faced with the clean-up of contaminated sites, suggestion caution in adopting similar legislation. For teaching purposes, North American examples lend themselves to having students undertake comparative studies of how the same issues are handled in Australasia.

STEVE HARRISON

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Confessions of a Failed Finance Minister. By PETER WALSH (Random House Australia, Sydney, 1995) RRP \$29.95, ISBN 0-09-182999-2.

In *Confessions of a Failed Finance Minister* Peter Walsh regales us with an intelligent and immensely readable review of our economic problems and policies and the politics thereof, over his parliamentary career. His grasp of economics is impressive, I can think of no Australian politician better informed and he leavens his account with many revelations of the behind-the-scenes politics. Many examples are provided of sensible policy becoming the victim of leadership struggles and factional enmities. Not surprisingly as a wheat farmer and a son of a wheat farmer, he gives special attention to agricultural policy issues.

Many agricultural economists will remember the long-running debate on our dairying industry, which commenced in the 1950s. For decades, the government induced a nationally unprofitable expansion of output by paying farmers about double the export price through Treasury subsidy and a home-price ('equalisation') scheme. Walsh comments: 'If the Country Party had any genuine concern for the welfare of dairy farm families, it would have told them to sell their broken down farms and get a job elsewhere — easily done at any time before 1974 — which would return them a higher income and a better life. The equity most of them had in their little non-viable farms would have bought them a house in a big country town or capital city. The Country Party never did tell them that, because it would have meant fewer Country Party votes in existing seats and fewer seats in desirable ends for farmers, had become the end in itself. The real interests of farm families were sacrificed to keep bums on Country Party seats'.

On his economic education, Walsh recounts that soon after he became Finance Minister, he was told to read Ian Castles' Presidential Address to the Economics section of the 1984 ANZUS Conference (which, hopefully, all readers of his journal have read). He describes it as:

... a significant piece of scholarship, a devastating rebuttal to the attacks on the great classical economists, Smith, Malthus, Ricardo and J.S. Mill, launched by Kenneth Clark and by J.K. Galbraith in his later years. Clark and Galbraith had portrayed them as toadies and apologists for the domi-

nant classes. Castles' technique was to quote the Clark/Galbraith simplifications and cheap one liners, followed by actual quotations from the economists and, more lethally, what the dominant classes were in fact saying about the economists in their own time. They were of course regarded (correctly), as dangerous radicals who threatened privilege and the established order. It should be compulsory reading for today's chattering classes who prattle on in ignorance about economic rationalism.

Readers of Walsh's 'Cassandra' columns in *The Australian Financial Review* will already be aware of his acerbic style — no less robust than that of the Prime Minister, Paul Keating. Keating is quoted (p. 121) referring to Walsh (apparently fondly) as the Sid Vicious of the Expenditure Review Committee, on which he must have been invaluable. Walsh would have enjoyed that nickname, since he enjoys nothing more than debunking naive economic interventionism, especially when it is motivated by political opportunism. He is especially severe on greenmailers, a term he uses to describe deep greens who attempt to hold governments to ransom on green issues.

Whilst preoccupied with efficiency, Walsh's comment on the distributional effects of various economic policies, especially taxation and social welfare policies, exposes egalitarian sympathies, but 'hard-nosed' ones. This is well illustrated by this entertaining excerpt from one of his *Australian Financial Review* columns:

During the 1977 election campaign a big public meeting was held in WA's south eastern wheatbelt. The local farmers organised it to complain about probate, the price of petrol and the absence of television. At one stage a farmer directed a comment rather than a question to me, observing as he did so that, of course, everyone knew that the Labor Party cared not a fig for farmers or country people. Indeed all the Labor Party cared about was Aborigines. Knowing that the handful of Labor supporters present would not be deterred by anything I said from voting Labor, I told them if they really believed -- as their comments about probate implied -- in completely unimpeded rights of inheritance, they were all squatting on Aboriginal land. I added that I didn't believe my life would have been easier or more successful if I had been brought up in an Aboriginal camp in the 40s. Nor did I think their lives would have been. However, sympathy for the Aborigines and part-Aborigines who comprise the Australian underclass should not lead us into the uncritical support of every programme Aborigines or white do-gooders say Aborigines want . . . Canberra anthropologist Ron Brunton has been bold enough to suggest that the difficulties most Aborigines have in coping with contemporary Australia are derived from the Aboriginal culture that white do-gooders say must be preserved at all costs.

Farmer, politician and Minister is not a bad trifecta; nemesis of the Country Party fundamentalists, anti-social environmentalists and mindless marxist-lentilists has also been a winner.

A.G. LLOYD

University of Melbourne

Structural Change and Small-Farm Agriculture in Northwest Portugal. By ERIC MONKE and thirteen others (Cornell University Press, Ithaca, 1993) Pp. 223, ISBN 0-8014-2640-5.

This small but solid book incorporates a collection of papers by US and European authors which deal with specific aspects of small-farm agriculture in Portugal and to a lesser extent with some of the wider issues associated with the Common Agricultural Policy (CAP) and agricultural protection in the European Union (EU). Portugal has been a member of the EU since 1986. There was a high rate of emigration in the 1960s and 1970s, with wives and children and elderly parents of emigrant workers often being left behind on farms and villages, eking a living from agriculture but assisted by emigrants' remittances. A consequence of this has been that Portugal is a major food importer, in spite of having one of the highest proportions of employment in agriculture of EU countries.

The volume has three main values: as a key reference work on Portuguese agriculture, especially small farms in the north-west, as a source of information on the small farm sector in the EU; and as a source of estimates of responses to possible price changes. Given the changing nature of CAP support, the last value is probably the least durable one.

The discussion in the book suffers from being dated. The first chapter, by Monke, Avillez and Cory, looks at Portuguese agriculture from the point of view of the anticipated impact of membership of the then European Community (EC). The higher price levels prevalent in key sectors in Portugal are stressed, and a negative impact of CAP membership anticipated. The exclusion of small farms from many of the farm modernisation and restructuring assistance schemes is also stressed. The reality of membership has been less harsh. It has opened up markets for early season vegetables and flowers, and the introduction of a wider range of agricultural environmental protection, pre-pension or early retirement, and income support schemes has made assistance more accessible to the small farm sector than it was when the emphasis was on price support and restructuring into larger farm units.

The second chapter, by Monke, Langworthy and Avillez, provides an interesting discussion of the small farm sector in the then EC, a subject not often covered in detail. Attention is drawn to both the decline and persistence of small farms. In southern Europe these relate mostly to peasant agriculture, but in northern Europe to part-time hobby farming, except where intensive livestock production is involved. A useful description of the EC policies then current in the small farm sector is provided, along with statistics of small farms by country and over time.

An econometric model of household labour supply of farm families is given in the third chapter. This does not appear to have been specifically adapted to the Portuguese situation, where small farm units have often been run by the families of parents of emigrants and remittances have been an important source of income. However, a detailed description is provided of labour use and cultivation opportunities in the Entre Douro e

Minho area of northwest Portugal. Chapter four enlarges on this by presenting the results of a survey of Minho agriculture in 1988. Some very interesting data is presented, showing from example how large farms have tended to be broken up due to the emigration of farm workers, with the resultant smallholdings being purchased mainly with the aid of emigrants' remittances, and how the custom of partible inheritance reduced farm size by dividing the farm between all heirs, with women taking their share as a dowry on marriage. By contrast, in the coastal zone primogeniture prevails, with other heirs receiving cash or other compensation.

Chapter five involves attempts to estimate net returns required to maintain farm numbers and viability, while chapter six includes a detailed model of how farms are expected to respond to specific changes, for example by substituting one crop for another or making farming a purely part-time activity. The problem with such estimates is that they are based on the situation at the time of the survey, and scenarios of changes in the level of price support. While these estimates would have been very useful to Portuguese and EC planners at the time they were undertaken, the policy situation has now changed. Due to the wider availability under the CAP of income support and other non-output based assistance schemes and the impact of these on supply elasticities, earlier estimates have become unreliable as long-term indicators. Later chapters deal with Portuguese and EC policies their impact, covering land markets and policy, public investment and subsidy policies, and strategies for change among small farms in the Minho.

Overall, the book provides a clear and very detailed snapshot of small-farm agriculture in the Minho area of Portugal in the second half of the 1980s, identifying key issues such as labour and off-farm work availability, crop and livestock alternatives, and the determinants of structural changes. The main limitation of the book is that changes in the CAP system of support are likely to have changed the relationships estimated. The widening of the EU policy sphere as a result of the Maastricht Treaty, and EU enlargements northwards and possibly eastwards, will result in further changes to the CAP.

HEATHERFIELD

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Science Under Scarcity: Principles and Practice for Agricultural Research Evaluation and Priority Setting. J.M. ALSTON, G.W. NORTON and P.G. PARDEY (Cornell University Press, Ithaca, London, 1995) Pp. xxxiii + 585, ISBN 0-8014-2937-4.

Alston, Norton and Pardey's book is conspicuous for its breadth. It provides an in-depth coverage of the economics of evaluation of research returns which, with 585 pages and nearly 500 references, leaves very few methodological or theoretical stones unturned.

After the forward, preface and introduction, the book is divided into four parts. The first part deals with the institutional and conceptual

framework; the second part with measurement of the effects of agricultural research; the third part with evaluation techniques and priority setting and the fourth part provides an overview and discussion.

In Part I the assumptions that the rest of the book is based upon are outlined. The different types of research that need to be evaluated and the research policy background is discussed. The authors then describe the basic principles of the influences of research on economic outcomes and provide an exposition of theoretical concepts. These concepts include the knowledge production function, agricultural production function, leads and lags in research, maintenance and depreciation of research capital, net present value and internal rates of return concepts and an overview of the surplus (or welfare) approach.

Part II outlines the major approaches to measurement of research returns. It provides an in-depth coverage of econometric, non-parametric and index number approaches. The discussion of econometric approaches includes primal and dual models and direct estimation of supply functions. The coverage here is comprehensive and detail is provided at an equation-by-equation level. Specification and measurement errors are described and the problems involved in measuring variables to approximate research effort are outlined. The description of non-parametric approaches, based on the Weak Axiom of Profit Maximisation and the Weak Axiom of Cost Minimisation, is particularly interesting and the authors provide some comments on this new area. The treatment of index approaches to measurement of productivity provides a good coverage of the issues associated with the major indexes.

The second half of Part II describes economic surplus methods in the context of the research evaluation problem. The description proceeds both intuitively, by emphasising the central position of opportunity costs in surplus measures, and analytically, by emphasising the algebraic role of elasticities. A feature of this part of the book is the treatment of horizontal and vertical disaggregation of surplus measures. The authors draw upon a wealth of personal experience in this area and refer to a broad range of papers to provide an easy-to-follow treatment. Their coverage uses techniques from displacement analysis as well as standard tools from welfare analysis. A number of allocation scenarios are described, including distortions that arise from government policies and externalities.

Part III deals with evaluation of research in practice and is less technically demanding than Parts I and II. Practical problems in defining issues, compiling data and interpreting results are examined and the authors provide some commonsense suggestions. Here, the authors do a good job of relating their suggestions and observations of research priority setting in practice to relevant theory.

Scoring of research projects is also covered in Part III. Much of the research priority setting in agriculture is actually done by boards of industry representatives and scientists who use scoring procedures. The authors outline some types of errors made by these boards. For example, problems arise when boards rank research projects on the basis of the

importance of research problems without considering the likelihood of research success. The authors make practical suggestions to improve performance. The authors emphasise practical approaches throughout the book without sacrificing theoretical rigour. A computer program for evaluating welfare gains from research is documented in one appendix while another appendix provides excellent technical detail on multiple-objective programming in the context of the research evaluation problem.

I have attempted to provide a reasonable summary of the major topics covered in this important book. However, my list does not provide much insight into the real character of the book. Because of its breadth, the book covers a very diverse range of areas and is likely to make good reading even for economists who are not particularly interested in evaluating research returns. For example, the discussion in Part I of the public good case for government funded research is a terse, no nonsense summary of current thinking in the area. Similarly, the discussion of the strengths and weaknesses of surplus measures provides an interesting and useful overview of the issues. Likewise, discussion of non-parametric approaches to production economics will be both interesting and accessible to people who are not aware of developments in this area. Other topics that are covered in reasonable depth are index numbers, displacement modelling and multi-objective programming.

Two weaknesses in the book are the treatment given to externalities in research evaluation and the authors' dismissal of the importance of political preferences in the research funding process. While some space is allocated to evaluation of research returns when an externality exists in a market, the case of research actually focussed on an externality is ignored. Given that research is often a response to externalities, such as salinity and cotton residue research, this is a surprising omission, especially considering the detail with which other issues are treated. The book also has little to say about political markets and research funding. The authors are dismissive of Gardner-style weighted welfare functions and take the conventional, normative stance that political constraints are best ignored in formal analysis. Anyone who has ever participated in a research funding decision on a board or other such committee will vouch for the political nature of the proceedings and the relevance of self-interest in these situations.

Science Under Scarcity is essential reading for anyone involved in either the allocation of research funds or analysis of such allocations. The book has some demanding chapters, however an elementary understanding of the concepts of consumer and producer surplus would provide access to most of its ideas. While the equations are difficult in places, the text is clearly and sympathetically written. Part III, on practical aspects of research funding, would be accessible to non-economists and make purchase of the book worthwhile to anyone interested in the area.

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