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Book Reviews

THE GREEN REVOLUTION RECONSIDERED

The Green Revolution Reconsidered: The Impact of High Yielding Rice Varieties in South India. Peter B.R. Hazell and C. Ramasamy (Editors). The Johns Hopkins University Press, Baltimore, MD, USA, 1991. xiv + 268 pp., US \$90.00. ISBN 0-8018-4185-2.

The purpose of this book is to document the changes in agricultural production, the changes in rural incomes and the impact on regional economic growth from the introduction of modern high yielding fertilizer-responsive rice varieties in the North Arcot district of Tamil Nadu India. The North Arcot district was the subject of a study by a team from Cambridge and Madras Universities in 1973/74, when only 13% of the paddy area was planted with high yielding varieties (HYV's). It was studied again by a team from the International Food Policy Research Institute (IFPRI) and Tamil Nadu Agricultural University in 1982/83 and 1983/84. Several of the participants in the initial Cambridge-Madras study are authors of chapters in this book.

The chapters are arranged in two parts. The first set includes a chapter on the economy of the North Arcot region and the direct effects of the new technology on rice production and consumption; on population, employment and wages; and on household income and mobility. A second section includes chapters on the direct effects and on the larger regional impacts of the productivity growth. Careful attention is given throughout the book to the methodology used in collecting the household and regional data and on the methods by which the data were analyzed.

The green revolution in North Arcot was much less dramatic than in the Northern Indian states of Punjab and Haryana. In North Arcot, rice (paddy) production increased by 57% between 1963/64–1965/66 and 1977/78–1979/80. What was learned from the study about the impact of this change? The evidence from the Cambridge-Madras university study showed that the early adopters of HYV's were typically the larger farmers. At the time of the IFPRI–TNAU study, over 90% of the area was planted to HYV's. There were no systematic differences by farm-size group. Initially, larger farmers obtained higher yields than small farmers. These differences had largely disappeared by the early 1980's.

– Farmers used 5–10% more labor per hectare in producing the HYV's than for traditional varieties. Total labor use declined by about 4%,

however, due to increased mechanization of irrigation pumping and paddy threshing. Use of family labor rose on both small and large farms. Use of hired labor declined. Yet real wage rates rose modestly. Use of tractors, which had been anticipated in the earlier study, did not increase significantly.

- There was little change in the distribution of land ownership. The average size of farms declined marginally. Most of the decline was concentrated in the villages with better irrigation resources. Over 90% of farms continued to be farmed by owners.
- The smaller paddy farmers and landless laborers experienced the largest relative increases in family income. But all groups – including large paddy farmers, non-paddy farmers and nonagricultural households – also experienced substantial real increases in family incomes. The smallest gains were realized by non-agricultural households.
- The regional analysis indicated that each rupee (Rs.) increase of value-added in agriculture stimulated an increase of Rs.1.87 of additional value-added in the non-farm economy.
- The findings of the IFPRI-TNAU studies are consistent with a large body of other studies conducted in India and other parts of Asia since the mid-1970's. The findings do contrast, however, with the negative findings with respect to adoption and impact in the Cambridge-Madras studies. What accounts for the difference between the studies conducted in the early 1980's and the early 1970's?

Four possible reasons are offered.

- The earlier studies were conducted too soon after the release of the green revolution varieties and before the infrastructure needed to sustain diffusion to small farmers was in place.
- The benefits to poor families – both farming and non-farming – through lower prices for wheat and rice were overlooked.
- Little or no attention was given to the indirect growth linkages of the green revolution within the rural non-farm economy and the resulting positive impact on the incomes of the poor.
- The impact of the green revolution was frequently confused with the impact of population growth, institutional arrangements, agricultural policies, and mechanization, resulting in the incorrect identification of the causes of rural poverty.

In my own view there were two other reasons, usually implicit, that account for the excessively negative initial evaluations of the impact of the green revolution.

- One reason was inter-disciplinary aggression. During the 1950's and 1960's, economic development was primarily the province of economists and other social scientists. But the green revolution was the product of research by a group of people in laboratory coats and rubber boots – plant breeders and agronomists. The search for negative impact in the green revolution was in part an effort to demonstrate the superior insight of social sciences into developmental processes, in order to deal themselves back into the development game.
- A second reason for the negative perception was ideological. Students who viewed development through the spectacles of British agricultural history, particularly the lessons that Marxian analysis drew from that history, viewed the new seed-fertilizer technology as a contemporary manifestation of enclosure and clearances. They failed to understand the distinction between biological technology, which is neutral with respect to scale, and the scale economies associated with introduction of mechanical technology.

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DISARRAY IN WORLD FOOD MARKETS

Disarray in World Food Markets: A Quantitative Assessment. Rod Tyers and Kym Anderson. Cambridge University Press, Cambridge, UK, 1992. 444 pp., US\$ 59.95. ISBN 0-521-35105-7.

The authors have published numerous articles on distortions in world food markets over the last decade. However, the book under review is much more than a collection of earlier writings. It is a coherent treatment of the subject and presents the state of the art.

The objectives of the book are: first, to show the extent to which different countries are affected by current policies and to estimate the effects on trade and on the economic welfare of various groups; second, to clarify the increasing level of protectionism in industrial countries since the 1950s; third, to analyze the likely effects arising from policy reform by centrally planned economies; fourth, to shed light on the political reasons behind the adoption of economically costly farm policies; fifth, to investigate the effects of trade liberation on developing countries.

The book is organized in three parts and four appendices. Part one, 'World Food Markets and their Behaviour', sets the stage. It deals with the changing pattern of world food prices, production and trade in Chapter 1. Chapter 2 addresses 'Discretionary policies affecting food markets', and Chapter 3 is on 'Reasons for the pattern of food price distortions'. All the chapters are well-balanced in the mix of theory, pure facts, and econometric estimates. This feature of the book will make it attractive for students in the field. Even though some of the stylized facts may belong more to economic history than to trade discussions in a few years, the book will still be valuable. Chapter 3 is especially likely to retain long-term interest, assuming that protectionism remains a long-term problem. Concerning part one of the book, slight reservations can be expressed concerning the section on 'The insulation of domestic markets'. The authors state that countries that relate their changes in net trade to internal fluctuations in production 'export' domestic market instability in a way that is 'unfair'. In fact, if every country were to behave in this way, world markets would be quite stable.

Part two on 'Effects of Food Market Distortions' is the core of the book. Chapter 4 deals with 'The theory of market distortions: a graphical approach'. This chapter will be especially appreciated by readers that still have to be convinced of the need for modelling the effects of distortionary policies, and also to young students in the field of international agricultural trade. The authors should be praised for spelling out some of the important assumptions necessary for calculating welfare effects. These are of course known to the profession, but not always to students and politicians. Chapter 5 presents the authors' world food model. It is presented in verbal terms in the text and in mathematical terms in the appendix. It is a partial equilibrium model that includes the major temperate-zone products, namely wheat, coarse grains, rice, meat from ruminants, meat from non-ruminants, dairy products and sugar. The model incorporates responsiveness of governments to international shocks and the production uncertainty characteristic of agricultural markets. Specific government policies – such as land set-asides and binding quotas – are also included in the model.

Model presentation is exceptionally clear, the assumptions which have to be made in such an effort are spelled out openly. Some readers may disagree with the treatment of specific issues such as land set-asides, stockpiling behavior or government behavior. Nevertheless, it must be conceded that the authors succeed in handling problems that have not been treated in the past in such an encompassing way. The model is used for ex post simulation. The verified results of the model runs help build confidence in the predictive power of the model.

Chapter 6 on the 'Effects of existing policies' contains a notable section on 'The effects of existing policies on food price risk'. The authors argue

that world food markets would be very much less volatile if agricultural trade policies were liberalized. This view is certainly not new, but quantification of it is. The difficulties inherent in doing this explain why this has rarely been done. The results certainly cannot be taken as the final word, but they convey an informed guesstimate of the effects.

Commendably, the authors conclude this part of the book with a chapter entitled 'Some qualifications'. The reader is reminded that the calculations are based on assumptions that may not hold in reality. Concerning calculated welfare effects, the authors point out that important costs – such as rent-seeking activities and administrative costs – are not included.

Part three of the book is on 'Food Policy Reform'. The effects of gradual liberalization of OECD food markets are presented in Chapter 7. The unique features of the model allow derivation of effects concerning the level and volatility of prices. The latter is of special importance in investigating the effects of tariffication. Results are in line with what one would expect. However, they should not be taken as the exact state of the world after liberalization. Too many assumptions have to be incorporated in the quantification of the effects of instability.

Readers will appreciate the chapter on 'Economic reform in the centrally planned economies: the great enigma'. These countries account for a high share of world food consumption and production. Hence, the future of the world food economy – whether with or without liberalization in the industrial countries – depends very much on the policies and the reaction of the food sector in the formerly centrally planned economies. What might happen is investigated by the authors for the case of China. Unfortunately, they conclude that: "About all that can be said with reasonable certainty ... is that in the short run the initial impact of any substantial reforms will be a struggle towards new domestic market equilibria which will tend to destabilize international food markets to some extent" (p. 301). The prospects show the importance for policy-makers – even more than in the past – to implement liberalization policies that use market forces to stabilize markets.

The last chapter of the book on 'Policy implications and prospects for reform' starts with a summary of findings and ends with 'Areas for further research'. The authors are quite skeptical concerning the prospects of reducing the disarray in world food markets. "The inclination of politicians and bureaucrats is to 'do something' rather than 'undo something'. So, rather than to reduce domestic-to-border price ratios, the tendency is to introduce a quantitative limit on production which maintains existing farmers' incomes and ensures more bureaucrats are needed" (p. 311). The realism of this statement seems to be confirmed by the present Uruguay Round. Nevertheless, work of the kind offered by Tyers and Anderson can

help to convince policy-makers about what they can do in the interest of the society at large.

The book deserves a place on many shelves. I would recommend it even to a good friend who is poor and can hardly afford buying a book.

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WORLD FOOD PROBLEM

The World Food Problem: Tackling the Causes of Undernutrition in the Third World. Phillips Foster. Lynne Rienner, Boulder, CO, USA, 1992. 372 pp., US\$45.00. ISBN 1-55587-274-3.

For the past six years I have taught a large-enrollment undergraduate course, entitled, 'The World Food Economy', that fulfills one of the general education requirements at the University of Arizona. The students come to the course with a variety of backgrounds and interests. Until Foster's book appeared, I was unable to find a textbook adequate for the course. The collection of articles and chapters assembled for the class covered most of the material, but it was not uniform in quality or presentation, and gaps and duplication caused many students to put the material aside. Foster's book, costing about the same as a collection of articles, promises to fill the void in my course. I expect it will find an enthusiastic audience in similar courses.

Foster's book contains 19 chapters divided into an introduction and three major parts. Part I, 'Malnutrition-What Are The Facts?', contains four chapters and draws heavily from the literature on nutrition, especially as it relates to undernutrition. The chapter on the protein-calorie debate introduces the reader to the difficulty of determining nutritional requirements and the impacts changes in recommendations have on our perceptions of undernutrition (e.g., the large reduction in protein requirements in the 1970s). Understanding the limits to knowledge about nutrition and the difficulty in measuring undernutrition is important for successful analyses of world food issues. Foster is thorough in his presentation of these limitations and other dimensions of nutrition.

The six chapters contained in Part II address the causes of undernutrition. The basic economics of malnutrition are presented along with a

consideration of the demographic and health-related dimensions of undernutrition. Chapter 8, on the distribution of income, wealth, and education, contains an excellent section on the distributional impact of the Green Revolution. Foster covers the development of the new varieties, their adoption under varying agroclimatic conditions, employment impacts, and the benefits to consumers. Throughout, Foster is sensitive to the needs of undergraduates with no background in farming or agronomy. Such students find many agronomic concepts, such as lodging, difficult to understand and therefore have problems understanding the limits to Green Revolution technologies. He includes drawings that depict the causes and consequences of lodging. As is frequently the case, a picture is worth a thousand words.

Part III is a broad review of policy approaches to undernutrition. After an introductory chapter on philosophical approaches to undernutrition, six chapters are devoted to policies aimed at specific sets of problems: health, population, income inequality, poverty, and food prices. A wide range of policy instruments are discussed and analyzed. Theory and a wealth of empirical studies are utilized to illustrate the impacts of alternative policy instruments. Particular attention is given to the distributional impacts of policies such as food aid and credit subsidies. Policies with negative impacts on the poor are clearly identified (e.g., subsidized credit to farmers in situations where the size distribution of farms is highly skewed) as well as policies that have both positive and negative impacts on the poor (e.g., the implications of low food prices for urban consumers and poor farmers). Foster is careful not to prescribe policies, and emphasizes the need for a thorough understanding of a country's economic, social and, policy environment before making such prescriptions. The last chapter discusses how policy is made and implemented in the real world. For the activists interested in having an impact on Third World hunger, a section is devoted to a framework for policy change.

The breadth of topics covered by Foster necessarily means that some issues are treated only briefly. For example, in discussing policies to subsidize consumption, one page is devoted to food-for-work programs and one-half page to food stamps. This reflects the universal problem of depth versus inclusiveness. To Foster's credit, he provides ample references (seventeen pages) for those readers who want to pursue a given topic. The high proportion of publications from the past decade attest to the timeliness of the material presented. Students (and professors!) interested in pursuing topics discussed in the text will find the list of references extremely useful.

A complaint or two could be made about the book's structure. Boxes with definitions, quotes, and examples are used throughout the text.

Readers not enamored with boxes may find their use excessive. Fifty-nine tables, some of them rather large, are used to illustrate concepts and present research results. For example, a three-page table (table 3.2) on India's food balance sheet for 1984–86 contains seventeen columns and nearly 100 individual commodities. This table, however, is cited only once in the text. Most readers will probably pass over it without appreciating the wealth of information that it contains. The lack of summaries at the end of most of the chapters could pose a problem for students, especially for those chapters that cover a large number of topics.

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AGRICULTURAL ECONOMIES AND RURAL SOCIOLOGY

Agricultural Economics and Rural Sociology: The Contemporary Core Literature. Wallace Olsen. The Cornell University Press, Ithaca, NY, USA, 1991. 304 pp., \$45.00. ISBN 8-0142-6774.

The enterprise that led to this book evidently emerged from the Rockefeller Foundation. Because journals, monographs and reports are difficult to obtain in many developing countries, the Foundation sought the "... systematic study of the literature to determine what is of paramount value to developing countries" (page ix). Pursuing that, the project aimed to assist academic institutions in both developed and developing countries. Its goals were (1) to provide better tools for evaluating academic collections, (2) to establish rankings for specific titles for historical preservation, and (3) to produce several scholarly products, including critical reviews of the literature of the disciplines, and listings of 'core' literature. Specific listings for use in developing countries, as well as CD storage of core literature are also to be provided (page x). This volume reports on the project's treatment of the Agricultural Economics and Rural Sociology literature. Presumably others will follow.

What the book provides to the reader is: (1) a brief historical overview of literature on agricultural economics and rural sociology by Bernard F. Stanton, (2) a discussion of the history, development, and current status of indexing and data-base construction in agricultural economics and rural sociology, and (3) listings and ratings of what are regarded to be primary journals, serials and monographs.

The historical overview has serious defects. It is far too casual and brief to be useful. 'The 1940's and World War II' occupy two paragraphs, and no mention is made of any of the key sociological and anthropological research done during that time, research that had a profound influence upon post-war rural sociology. The 1950's and 1960's do better, occupying about three pages. However, there one finds the ludicrous statement that: "Agricultural development in the Third World became an area for serious study with the advent of U.S. Public Law PL-480 which provided the use of U.S. farm surpluses both as a source of humanitarian aid as well as a way to support agricultural development in less developed countries" (page 7).

The discussion of indexing, abstracting, and data-base construction in the agricultural sciences is useful and informative. It is also exasperating for rural sociologists. The author repeatedly overlooks rural sociology. The title of Chapter 2 is: "Characteristics of Agricultural Economics Literature", even though the chapter pretends to discuss rural sociology literature as well. Rural sociologists are reminded again that, among agriculturalists, their entire discipline appears as one sub-specialty among many, on par with "International trade", "Finance and credit", etc. (page 15) and that they regularly lose some of their own areas of special expertise, such as "Survey and Census Methods" to others, presumably economists (page 32). But then, discovering that agricultural "scientometricians" cannot classify the social sciences is hardly something new.

Finally we have the lists – very long lists. One hundred sixty-four pages of lists! Briefly, the goal was to identify those monographs cited most frequently in agricultural economics and rural sociology. Using some 24 overview publications, about 2500 key monographs were identified. These were evaluated by a panel of approximately 24 people. These evaluations were used to create two lists: a first one of all 2500 monographs rated first, second, and third, and a second one of 543 selected titles, rated separately by U.S. and developing country reviewers. It seemed to me that these two separate lists could have been combined to save space.

What readers will find is an informative discussion of indexing and data-base development, and long lists of 'selected' periodicals and monographs. The "critical review of the literature", one of the goals outlined earlier, does not appear in this volume. Such a critical review might have been able to put the lists into some kind of context. The lists are not truly contemporary, and they do not include some very important materials. For example, Lloyd G. Reynolds' *Agriculture in Development Theory* (Yale University Press, New Haven, CT, 1975) is cited, but not his *Economic Growth of the Third World: 1850–1980* (Yale University Press, New Haven, CT, 1985), in many ways a far more important book.

I found none of the excellent monographs published by the Population Reference Bureau listed. Although Lappé and Collins' popular *Food First: Beyond the Myth of Scarcity* (Ballantine, New York, 1977) is listed, nothing by Julian Simon appears. There appears to be nothing on the "joint gains" thesis (Purcell and Morrison, *U.S. Agriculture and Third World Development: The Critical Linkage* (Lynne Rienner Publishers, Boulder, CO, 1987), nor on structural adjustment. If one must build libraries on very limited budgets, perhaps this kind of quantitative treatment of what is basically establishment literature is necessary and useful. I certainly would not use it without considerable additional truly contemporary disciplinary knowledge.

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