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Book reviews

Readings in Development Economics: Volumes I and II

Pranab Bardhan, Christopher Udry, MIT Press, Cambridge, MA, 2000, Vol. I, 366 pp., US\$ 29.95, Softcover, ISBN: 0-262-52282-9; Vol. II, 437 pp., US\$ 29.95, Softcover, ISBN: 0-262-52283-7

Development economics has moved from the margins of the profession and near irrelevance into a more central position in the professional mainstream. This change is evidenced in the wonderful collection of papers on the topics provided in these two edited volumes. The papers' authors include some of the best and brightest minds in economics and the articles convey a sense of enthusiasm about the promise of economics as a science in addressing some of the world's pressing needs. The collection of previously published articles and book chapters are divided into two volumes. Each paper has undergone a far more rigorous review process than I could possibly offer, so I focus more on the content of the volumes than reviews of specific papers. Volume I (micro-economic theory) contains 12 papers published between 1989 and 1999, with all but one, published before 1995. Volume II contains an equal number of empirical papers on the micro-economics of development; all but four, were originally published before 1995. The considerable strength of the collection is its comprehensive coverage of theoretical and applied literature, the articles are classic and the volumes might be used as readings for an advanced graduate course in development economics, or as a series of references.

Volume I begins with an excellent overview of the state of development economics authored by Pranab Bardhan. This article summarises some of the critical challenges to development and shows that how modern economic theory can be used to address these

challenges. Together with Paper 9 in the same volume ("Making a Miracle" by Robert E. Lucas), Bardhan stimulates the reader by communicating the potential of economic theory. Lucas describes how accessible theoretical tools can be used ("in one's office, with a pen and a paper"!!) to model an economic miracle, such as the one that occurred in East Asia prior to the crisis. When reading this piece, one cannot help but be overwhelmed by the potential of economics to raise ships, but one is also struck by the anachronistic example: the East Asian miracle. Similar tools probably could be used to "make" a disaster, like the Asian Crisis—or, better yet, "make" a miracle and a disaster. A publication in the year 2000 ought to at least mention such complications. Lucas makes a convincing case that human capital accumulation was the driving force behind the miracle, what impacts did it have on the crisis?

The volume moves through a number of topics including theories of sharecropping, fragmented markets and agriculture, occupational choice, missing markets and human capital, and credit co-operative design (Chapters 2, 3, 4, 5, and 6, respectively). None of these articles is for the casual reader, the theory is often dense and details are missing and need to be worked out. There are, however, important contributions to the theory of development and represent broad swaths of literature. They provide an excellent sense that how the tools of the trade can be applied to different problems. Often (e.g. in the case of sharecropping), it is impossible to decide between competing theories, but the theories themselves open tantalising empirical possibilities.

As the volume on theory moves through its final six papers, the distinction becomes blurred between the "micro-economic" description of the volume title and other branches of economics. For instance, Chapters 7–11 include important papers on industri-

alisation, cumulative causation, the Lucas paper, and agglomeration and trade, and many of these areas are not quite micro-economic. This blurring may reflect the recent interests in the micro-economic roots of macro behaviour, but the choice of the qualifier in the volume's title falls into question. I think, perhaps, that the volume editors might use the micro-economic defence for their choice of readings on the environment, as the editors say "the distinguishing feature of environmental economics is, of course, the predominance of externalities and the various institutional ways of coping with them...". What about sustainability? How do choices about the environment affect long-run prospects for development? These are also important topics in environmental economics, but are more macro in nature. The editors might also explain their lack of treatment of the Asian Crisis and finance using the micro-economic defence—e.g. we did not include them because they clearly fall outside the purview of micro-economics—although such a defence might appear inconsistent, given the latter-half of the theory volume, which contains macro-type models.

The editors note the difficulty in selecting papers for inclusion, or perhaps exclusion is the more appropriate term. The included articles speak for themselves, they are instant classics, but some discussion of the logic behind each choice might be instructive. Topics that are increasingly at the centre of the policy debate (e.g. poverty and the relationship between risk and poverty) are excluded from the theory volume. The reasons for their exclusion would be illuminating. The second volume (on empirical application) contains studies addressing some topics, missing from Volume I, but the link between the two volumes is never made clear.

In fact, the editors make no mention of how the two volumes are linked, possibly because they are not quite connected. One would expect, for example, the theory articles to be used as citations in the empirical pieces. After all, most empirical work has theoretical underpinnings, and, as the editors themselves state in the introduction to Volume II, "as a consequence, development economists have been able to achieve a tighter integration between the economic theory underlying particular hypotheses and empirical research...". In this context, it is interesting to note that only one article in the theory volume (the Lucas piece) is cited as

a reference in the second volume. There are reasons why state-of-the-art articles on development theory and state-of-the-art articles on empirical applications might be disconnected. Lags in the development of empirical tools or a disconnection between the key issues faced by development theorists and empirical development economists are two possible explanations. In the second case, for example, Paper 4 in the second volume (on gender, written by Udry) relies, to some extent, on game-theoretical contributions to the theory of the agricultural household. This theory has received significant attention in the non-development literature, and the theory itself is not confined to problems faced by the developing country households. The reader would benefit from some discussion by the editors of this disconnection between the contents of the theory and empirical volumes. The link between the editors' recent book on the micro-economics of development and these two volumes is also hinted at in a footnote, more detailed thoughts about such a link would be appreciated.

Volume II shifts gears into empirical work in developing countries. All the articles rely on micro-level data and cover a broad span of topics and geographical areas. Themes include human capital attainment and its relationship to development (Chapters 1 and 2, and in a slightly different context, Chapter 11), intra-household decision-making (Chapters 3 and 4), land tenure and labour (Chapters 5 and 6), risk, insurance, and smoothing (Chapters 7–9 with intertemporal choice addressed in Chapter 10), and how alternative property rights regimes affect investment choices. Obviously, it is trivial to identify omitted topics, but areas of concentration do appear. Risk, insurance, and smoothing receive considerable attention, and this concentration further highlights the absence of this topic in the theory volume. Having noted this concentration, however, it is difficult to identify a paper that should be eliminated. The Paxson paper on weather and savings in Thailand is widely read and cited, and one that invites further empirical work, likewise the Rosenzweig and Wolpin paper (although the data set they use is uniquely suited for such an analysis and there are few alternative data sets to support their empirical procedures). Finally, the paper by Townsend on risk and insurance is brilliant in its use of descriptive techniques, which can be extended to different environments and

different topics. Another notable area of concentration is in authorship, Mark Rosenzweig appears as an author on 4 of the 12 papers in Volume II. It is hard, however, to identify a paper of his that should be eliminated.

The major disappointment, I found, with the collection was the shortness of the introduction. In addition to the shortcomings noted above, a statement of the book's intended audience would be helpful. The papers are clearly beyond the reach of the casual economist, and are most suited as references or supplementary readings for graduate classes. Indeed, a comprehensive collection begs the question of how it could be used to, for example, teach a graduate course in development economics. The distinguished editors might add some value by discussing the readings and how they might be ordered within the context of such a course. The ordering issue is difficult because the logic of the ordering shifts across the two volumes. As noted in the introduction to the second volume, Chapters 1 and 2 serve as an empirical basis for examining the theory laid out in Chapter 5 of the first volume. Likewise, Chapter 5 (the Shaban article on testing models of sharecropping) in Volume II is concerned with testing some of the theories laid out in Chapter 2 of Volume I. Some discussion of this ordering would be appreciated.

The reader cannot help, but be impressed by the "tightness" of both the theoretical and empirical papers. One allure of economics is its mathematical "rigor". However, "rigor" is a two-edged sword, and can leave the impression of focusing on details while missing the big picture. As amply demonstrated in these volumes, we have sophisticated models of asymmetric information and missing markets, but do not explain why roads are not built and schools crumble. These big picture issues explain more about the failures in development and lack of attention to them represents a failure of economics.

None of these weaknesses reduce the usefulness of these volumes either as desk references or as supplementary readings for graduate courses. The papers are all strong in their focus on important issues and in their use of modern economic techniques to address the issues. All serious development economists should be familiar with these papers and they can be used to guide policy and future applied research.

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Agriculture, Trade and the Environment: The Impact of Liberalization on Sustainable Development

John M. Antle, Joseph N. Lekakis, George P. Zanias (Eds.), Edward Elgar, Cheltenham, UK, 1998, US\$ 95, Hardback, ISBN: 1858987830

This book contains papers presented at a 1996 conference held at the University of Crete. The theme of the conference was European agriculture, trade and sustainability. The book is divided into four parts. Theoretical and methodological issues are considered in part I and for some readers this part may be the most useful aspect of the book because the models and ideas developed are not specific to the European Union, but could be applied to almost any country. For example, in Chapter 1, Panos Fousekis presents a trade model with two countries, two factors, a single commodity and process-generated pollution to demonstrate that global pollution might rise or fall as a result of trade liberalization. Factors that might raise or lower the global pollution level are identified. The analysis indicates that free-trade is expected to increase pollution in the exporting country and reduce it in the importing country. Whether aggregate pollution increases or decreases is ambiguous and depends on the relative sizes of the two countries and production technologies. The diagrammatic treatment makes it an ideal chapter to present to upper level under-graduates, while the algebra allows the material to be used by post-graduates.

The second chapter describes an approach to assessing the economic, environmental and human health trade-offs associated with the use of agricultural technologies. The authors—John Antle and Susan Capalbo—present a more disaggregated approach than that typically used by agricultural economists to examine environment–agriculture trade-offs. They note that their analysis is consistent with the way

a soil scientist might approach a problem involving the leaching of a chemical from a soil, since the soil scientist would use regional and not a “national average” soil type. Pesticide use in the Andean potato-pasture production system and dry-land agriculture in the northern plains of the United States are two case-studies used to illustrate their methodology. Briefly, this method involves developing separate models; one for the on-farm production decision, another for modeling the impact of on-farm input use on the environment and a third for modeling the effects of farm inputs on human health. While the approach outlined by Antle and Capalbo provides a valuable framework for considering the trade-offs, they point out that the data requirements to actually complete the analysis are demanding. Therefore, their approach is unlikely to be widely used in empirical research, but their conceptual framework is still relevant.

Abler and Shortle use European agriculture as a case-study in Chapter 3, which is entitled “Decomposing the Effects of Trade on the Environment”. They say that significant shifts in agricultural production patterns among countries are likely with agricultural liberalization. Since agricultural pollutants have effects that can be very site- and time-specific, production changes in response to changes in trade rules will have far-reaching environmental effects. A two-commodity general-equilibrium framework is used to decompose the environmental impact of trade-induced production changes within a country into five mutually exclusive and exhaustive categories: scale (how much is produced); mix (what combinations of commodities are produced); externality (there are production externalities but no consumption externalities in the model); policy (there are changes in environmental and other public policies induced by trade) and technology (the adoption of new production processes and technologies). The chapter does not present empirical results, but the discussion makes it clear that assessing the environmental impact of trade is a difficult task. The authors point out in their conclusions that “the effects about which we know the least, and the effects most commonly left out of trade-environment analyses—externalities, policy and technology—could be the most important” (pp. 67–68).

Part II of the book analyzes the issues discussed in part I in the context of European agriculture. Chapter 4, authored by Floor Brouwer and Siemen van Berkum,

has its title as “Effects of CAP Reform on the Environment in the European Union”. The authors point out that the agricultural sector in the EU is a primary polluter of European waters due to fertilizer and pesticide use. While this pollution has been of concern to the public, government officials and politicians, the authors note that agriculture has also helped to conserve nature. They outline the objectives of the CAP and describe the effects on the environment of reforms carried out in the cereal and beef regimes in the early 1990s.

Carpentier, Guyomard and Le Mouel in Chapter 5 examine the consistency between environmental and competitiveness objectives of agricultural policies. They construct a model of a single-product farm with fixed land stock of heterogeneous quality. The model allows for different production technologies and the problem becomes one of allocating land among these different technologies. Comparative statistics are used to show the effect on land-use intensity in the crop sector when changes occur in key price-support policies, land set-asides and per-hectare compensatory payments. The results indicate that yields and intensity of land-use are likely to decline with reductions in support prices, but that the set-aside program might offset part of this effect.

In Chapter 6, entitled “EU Agriculture and the Economics of Vertically Integrated Markets”, Steve McCorrison and Ian Sheldon present a model consisting of several stages of production/value added, imperfect competition at each stage and product differentiation at the retail stage. The important result from their model is that as the food chain (or any stage in it) becomes less competitive, the greater the increase in firms’ profits and the smaller the change in consumer surplus following price reform. They apply their model to the UK processed-cheese sector. When market structure is assumed to be perfectly competitive, a 30% reduction in the price paid for milk by the processing sector results in an increase in consumer surplus of £142 million. With a monopoly at each stage, the increase in consumer surplus is only £35 million. The authors conclude that analysis of policy change should consider market structure, and try to “more accurately characterize the features of the specific food market under consideration. . .” (p. 129).

The experiences of Austria (Chapter 7), Scotland (Chapter 8), Italy (Chapter 9), Spain (Chapter 10)

and Greece (Chapter 11) are discussed in part III. Sinabell uses an econometric model to investigate the link between pollution and government transfers to farmers in different Austrian regions. The results suggest that regions where the transfers were the greatest also had the most pollution, but because of the complexity of the problem, Sinabell argues that further research is needed on this issue. Hanley, Kirkpatrick, Oglethorpe and Simpson focus on the conservation of Scottish moors. An LP model is developed and applied to data collected from 13 farms to investigate the payments that would need to be made to sheep farmers to reduce stocking rates to maintain the moors as a tourist resource. A farm-specific payment system is explored. Loseby examines the impact of the Uruguay Round on the agro-food sector and the rural environment of Italy. She explains that concerns about the effect of the Uruguay Round on Italian farms center around fears of income losses and the ability of agriculture to compete domestically and internationally. Regional data are used to show that the southern and central parts of Italy are the most vulnerable to reduced government support. Loseby notes that the Italian farm sector is able to produce high quality products and that the home market places importance on quality. Therefore, demand may be insensitive to the price competition associated with reduced trade barriers. Varela-Ortega explains that irrigated agriculture consumes up to 80% of all water resources in Spain, occupies only 15% of agricultural land, but produces 60% of the value of agricultural production and 80% of exports. Using programming models and regional-level data, Varela-Ortega finds that the CAP reform of the early 1990s tends to shift agricultural production to less-intensive systems, producing less nitrate emissions and an improved environmental outcome. According to Lekakis, environmental problems in Greece are related to production inputs, particularly fertilizer that enjoyed subsidies until the late 1980s and to imported pesticides. Productivity indices for fertilizers and pesticides were calculated for 1971–1995 using a translog cost function. The productivity of chemicals was found to have fallen over the study period. Lekakis suggests that farmer demand for chemicals has become less responsive to price, as farmers have become more dependent upon chemicals. The findings of this chapter support the argument that in Greece chemical use in agriculture

has been environmentally damaging and unproductive.

Part IV contains two chapters. The first—chapter 12—examines agriculture and the environment in Estonia, a transition economy. The authors, Tim Phipps and Paavo Eliste, note that Estonia has moved rapidly from a centrally-planned economy to a free-market economy. It also has an extensive area of wetlands used as a waterfowl habitat and as a recreational resource by its citizens. Factors discussed in the chapter that affect agriculture and wetlands include property rights, capital markets, policy uncertainty and trade relations. An important conclusion is that while the opportunity cost of preserving wetlands is currently relatively low, with more efficient land markets, capital markets and more international trading opportunities for agriculture, this opportunity cost will rise, possibly leading to reallocation of wetlands to other activities. The final chapter of the book by George Zanas, considers prospects for European agriculture as well as a retrospective view. Zanas traces the policy developments, pointing out that when the CAP was set up, placing the burden of support on consumers was relatively easy because post-war food shortages and high food prices were fresh in the minds of consumers. The 1992 reforms, the most radical up till then, gave a greater role to the market and tried to satisfy consumer and environmental concerns. Zanas concludes by saying that the CAP of the future will differ sharply from that of the past. Large farmers will derive less of their income from the CAP and new entrants to farming will never be provided with subsidies anything like those given to present-day farmers.

From this summary of the book's contents, it is obvious that a lot of ground is covered. While common threads run through the chapters, different analytical frameworks are presented providing a wealth of ideas for any researcher interested in assessing linkages between agriculture and the environment. The book is excellent and I suggest that others with an interest in the linkages between trade and the environment from a research as well as a policy-making perspective would agree with my assessment. My only criticism is that details of the methods employed in some of the chapters could have been presented in more detail in appendices to the chapters where the models and results were discussed. Each chapter is

an excellent source of references, another attractive feature for those considering purchasing the book.

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Tradeoffs or Synergies? Agricultural Intensification, Economic Development and the Environment

David R. Lee, Christopher B. Barrett (Eds.), CAB International, Wallingford, UK, New York, 2001, 538 pp., US\$ 99.50, Cloth, ISBN: 0-85199-435-0

Over the past three decades significant progress has been made in increasing per-capita food production in many areas of the developing world. Major gains have been brought about through technical progress, facilitated by irrigation development and the introduction of improved varieties of seeds and plant material. Technical progress in agriculture has resulted in higher per-hectare yields and greater per-hectare use of inputs, especially fertilizers and pesticides. During the early years of the Green Revolution, little attention was devoted to environmental considerations associated with intensification of input use in agriculture. But more recently, there has been a growing awareness that Green Revolution technologies are not always environmentally benign. Moreover, the persistence of widespread poverty (particularly in sub-Saharan Africa and South Asia), stagnant yields in some settings (particularly Africa) and recent evidence of a leveling-off in yields, where gains have been dramatic, have combined to underscore the need to increase agricultural production, reduce poverty and simultaneously protect the environment. This is an enormous challenge, made all the more difficult by the presence of weak states, missing markets and declining levels of development aid. A new volume edited by David Lee and Chris Barrett speaks to these issues, providing both a solid synthesis of recent research and guidance for future efforts.

The stated objective for the book is "to review and consider a range of evidence on the 'trade-offs versus synergies' theme as it pertains to the multiple objectives of agricultural intensification in low-income countries". The objective is broad and the

book is encyclopedic in its coverage. In 538 pages, it contains contributions from 66 authors and references to more than 900 works. The reference section alone makes this an excellent source for readers new to the subject. The book is broken into three, approximately equal, sections of eight chapters each. These sections cover methodological and conceptual issues, empirical findings and policy prescriptions. Only two chapters are technical and readers without a solid mathematical foundation can easily bypass these sections. The contributions are authoritative. In most cases the authors of the chapters provide their own mini-syntheses of sub-topics with which they are concerned. CAB International has done an outstanding job with production. The volume is attractively packaged and thoroughly indexed.

The central theme of the book is that agricultural intensification is necessary to promote economic growth, environmental sustainability and poverty reduction, but rarely sufficient. Few readers will disagree with this basic thesis, but it bears repeating. The main strength of the volume rests in the breadth of geographical and topical coverage in the empirical sections. Roughly equal weight is given to Asia, Latin America and sub-Saharan Africa, although some readers may sense an overall emphasis on South Asia and sub-Saharan Africa. Given the critical junctures at which agriculture and the environment stand in these regions, the emphasis is perhaps understandable. Topics covered range from pesticides and human health to human-livestock interactions, genetic diversity of crop-fallow and agroforestry systems. Three chapters are devoted to findings from the global Alternatives to Slash-and-Burn (ASB) program of the CGIAR. Several authors focus special attention on the appropriate scale at which to conduct bio-economic analysis and the challenges associated with shifting analysis from the farm level to the landscape scale and beyond.

Despite the solid contribution this volume makes to our understanding of links between agriculture and the environment, some readers may be disappointed with certain aspects of the book. China is conspicuously absent from the volume, except when noted in passing by a few authors. Similarly, the topic of desertification is largely neglected. Given that potentially more people are acutely affected by desertification at the moment than deforestation, the volume's pre-occupation with the latter is unfortunate. Finally, a

focused discussion of general equilibrium effects and the economy–environment nexus is notably absent. Meaningful contributions exist in this area and the volume would have benefited from a chapter summarizing and highlighting current thinking on the direct and indirect linkages between trade and price policies, economic development, agricultural intensification and the environment.

Shortcomings aside, this volume is a welcome contribution. It deserves to be widely read by practitioners, policy-makers and students interested in agricultural development and the intersection of agriculture and the environment. Combined with the recent CAB International volume, *Agricultural Technologies and Tropical Deforestation* (edited by Arild Angelsen and David Kaimowitz), it provides a solid, state-of-the-science review of current thinking—and knowledge—regarding the connections between agriculture, the environment and human well being.

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Multilateral trade negotiations on agriculture: a resource manual

Food and Agricultural Organization of the United Nations, Rome, 2001, 653 pp., ISBN: 92-5-104439-2 (Available at: <http://www.fao.org>)

The general agreement on tariffs and trade (GATT), the primary multilateral mechanism governing international trade among nations, is the focus of this comprehensive trade manual for developing countries. The 1986–94 Uruguay Round marked the first time in its 45 years history that GATT included extensive negotiations on agriculture. The resulting final act included significant changes in the regulation of agricultural trade and a commitment to continued negotiations. Article 20 of the agreement on agriculture obligated members to begin negotiations anew in 1999, 1 year before the end of the Uruguay Round implementa-

tion period. This Resource Manual, published by the Food and Agricultural Organization of the United Nations (FAO), provides an introductory look at the four Uruguay Round agreements with the most direct impacts on agricultural trade. The book was originally produced for, and used in, a series of workshops to assist developing countries with agricultural trade issues in preparation for the next round of negotiations.

The manual is organized as four separate volumes contained within a plastic holder. Each volume is further divided into a number of modules. Volume I, “Introduction and General Topics”, provides an overview of world agricultural trade, the economic rationale for liberalized trade, and policy instruments most commonly used by nations to limit trade. Modules in Volume I also provide a history of GATT provisions and dispute settlement mechanisms as they relate to agricultural trade.

Volumes II–IV each focus on specific agreements. Volume II covers the agreement on agriculture. Three distinct components of the agreement; domestic support measures, export subsidies, and market access issues (tariffs and tariffication of non-tariff barriers) are discussed in separate modules. The volume provides a description of agreement provisions and useful examples of the calculations made to operationalize commitments. Safeguard measures, special and differential treatment, the decision on measures concerning possible negative effects on least-developed countries (LDCs) and net food importing developing countries (NFIDCs), food security, and trade in fishery products are additional topics contained in Volume II. Volume III covers the agreement on the application of sanitary and phytosanitary measures (SPS) and the agreement on technical barriers to trade (TBT). The basic provisions of each agreement are included, although there is little more than an overview of the TBT agreement. Three international organizations are recognized in the SPS agreement as international standard-setting bodies: Codex Alimentarius Commission, International Plant Protection Convention and the Office International des Epizooties. The structure of each organization is detailed, as well as its approach to risk analysis in setting standards. Volume IV addresses the agreement on trade-related aspects of intellectual property rights (TRIPS). The provisions of the agreement are described as they relate to the protection and use of genetic material and indigenous knowledge.

There is also a discussion of the relationship between TRIPS and other multilateral agreements.

The FAO Resource Manual does a good job in meeting its stated objective of providing background material for government officials, academics, and private sector institutions involved with agricultural trade. The structure of the book contributes to its usefulness; each volume is organized into distinguishable modules each with a designated purpose, contents, and key points. Therefore, it is easy to use the manual as a resource guide to quickly find information. An index would have added additional ease to this function.

The material itself is oriented towards description of agreement provisions and explanation of basic concepts. Although some notable detail is provided for specific topics; for example steps and duration of stages in a dispute settlement process (Volume 1, Module 5) and outlays on export subsidies and reduction rates by country (Volume II, Module 3), some basic information one would anticipate in a reference manual is missing; for example the dates and duration of previous GATT rounds.

In all modules, the amount of analysis and implications for agricultural trade or specific economies is limited, and this is clearly not the focus of the book. Therefore, usefulness to those already familiar with basic provisions of the Uruguay Round agreements may be limited. The strength of this book is its compilation of a relatively comprehensive set of material on the provisions of the agreements as they impact trade in agriculture, and to put that material in a useful, easily accessible format for those needing an introduction to the subject or a handy reference for those already familiar with the details.

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