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Book reviews

A Comprehensive Assessment of the Role of Risk in US Agriculture

Just Richard E., Rulon D. Pope (Eds.), Kluwer Academic Publishers, Norwell, MA, 2001, 600 pp., US$ 99, ISBN 079237567X

This book consists of 25 papers that were presented during a risk conference at Gulf Shores, Alabama, in March 2001. The risk group has been meeting annually for over 25 years under the official banner of various US Department of Agriculture regional risk projects, recently as a Southern Regional Research and Extension project. The meetings typically consist of participants reporting their work in progress. However, for the 2001 meeting, Profs. Just and Pope commissioned a set of papers to review and assess agricultural risk research, with the emphasis not on comprehensive reviews, but rather analysis of critical results and opportunities for the future. The term "comprehensive" is in the book title because of the breadth of topics. Although "US Agriculture" is also in the title, there is limited institutional content. An application to dryland crops in Montana could just as well have applied to dryland crops in Australia.

It is a challenge to review a collection of papers by over 25 authors. Obviously, quality, even if exceptional, will vary among papers, and any reviewer approaching the challenge has his own interests and biases. Given that caveat, I think the book contains many excellent papers. It is comprehensive, and any researcher working on risk will find many useful and informative ideas and approaches to risk research. Each chapter covers a unique topic, and there is surprisingly little duplication across the 25 chapters. The only major omission that I see is no chapter on real options, an important topic in investment analysis, although Profs. Marra and Carlson do mention the topic in their chapter on technology.

Part 1: This part discusses the underlying expected utility (EU) model, its limitations, and alternative models. Jack Meyer describes the development and use of the expected utility decision model. He explores how failure to precisely define the argument of the utility function may be responsible for the perceived shortcomings and limitations of the expected utility approach. David Buschena discusses the various alternatives to the expected utility model that have been proposed in the literature. Since decision makers display various anomalies to the EU model, he suggests modelling those anomalies.

Lindon Robison and Jack Meyer review the tools used to order risky decisions, including stochastic dominance. They discuss how the selection depends upon the assumptions made about knowledge of the decision-makers' preferences and probability distributions. Richard Just and Gordon Rausser then discuss a conceptual approach to modelling risk decision making and demonstrate how the results depend upon the cost of collecting and processing information. David Just concludes this section with a review of major findings in the psychological literature on judgement bias and their implications on decision making under uncertainty. He argues that it is important to recognise the difference between risk perception and risk attitudes in our research on risk.

Part 2: This part discusses how risk models have been adapted to agriculture. Robert Chambers and John Quiggin present a specification of a state-contingent technology for a single-product firm operating under conditions of both price and production uncertainty. They discuss how supply response would be estimated using derived properties of the indirect certainty equivalent. Rulon Pope and Atanu Saha summarise the approaches used to incorporate risk behaviour into indirect and dual functions, including the conditional expected profit, the ex ante cost function, revenue functions, and the indirect expected utility functions. They conclude that although there have only been a few applications, which are

econometrically challenging to complete, the approach is useful and valid.

Jean-Paul Chavas and Zohra Bouamra-Mechemache develop a conceptual model to investigate decisions under incomplete markets with transaction costs. They employ a state-contingent representation of economic agents involved in production, consumption, and exchange. They argue that information costs and bounded rationality help explain the prevalence of incomplete contracts and incomplete risk markets. Brent Hueth and David Hennessy present contracts in agricultural markets, which have recently become popular for commodities and regions where open and public markets were once the norm. They summarise the modelling of contract design and discuss the application of these models to sharecropping and tournaments in poultry production and other relative performance contract evaluators. They conclude that the growing importance of contract relationships in agriculture will prompt increased research in applying contract theory to agriculture.

Part 3: This part covers the empirical approaches used to model and understand risk. C. Robert Taylor and Thomas Zacharias present the mathematical programming methods used to model risk choices. They state that the use of those techniques have waned since the 1980s, and they discuss various reasons, primarily that stochastic dominance and econometric approaches are more time efficient for researchers. They spend part of the chapter discussing issues for the future, including Bayesian approaches and fuzzy set theory. Matthew Holt and Jean-Paul Chavas review the recent literature on the empirical econometric implementation and testing of risk in agricultural production decisions. After presenting the theory, they discuss ways researchers have handled the expectation process and appropriate estimators. They suggest more potential use of the generalised method of moments estimation and combining econometric and programming methods.

John Antle and Susan Capalbo discuss econometric modelling of production risk at the agroecosystem level with both intra-seasonal as well as inter-seasonal dynamics that are also spatial. They demonstrate the use of this model with an application to Montana dryland crops, but acknowledge that a severe limitation to the approach is the detailed data requirements. Brian Roe and Alan Randall review both survey and experimental techniques in eliciting risk behaviour and risk decisions. They present some potential research areas, including understanding barriers to crop and revenue insurance participation, and whether tournament contracts can destabilise markets.

Part 4: This part focuses on modelling risk in agriculture. Barry Goodwin and Alan Ker discuss modelling yield and price risk. With the numerous and varied crop insurance products available, it is important that yield risk be measured accurately to efficiently price insurance products. They therefore review the parametric and nonparametric methods which have been used to estimate yield variability. A similar train of literature is reviewed for price risk, with a focus on market efficiency. Michele Marra and Gerald Carlson cover agricultural technology and risk. They discuss the theory of technology choice in the presence of uncertainty or risk and empirical adoption estimates. They then discuss the long-term decision of many agricultural technologies and the role of asset fixity and irreversibility in those decisions. As examples and discussion they use many of the current new technologies available to farmers.

Ethan Ligon talks about quality and grading risk. This may appear to be a narrow topic, but many believe that the recent growth in agricultural commodity contracting is due to the inability to observe and correctly price commodity quality in the open market. He presents the theory under observable quality and contrasts that under unobservable quality. Peter Barry highlights the key issues and problems associated with finance and risk bearing in agriculture; the role of finance in agricultural risk management from the point of the firm, financial markets and institutions, and public policy. Besides discussing firm valuation, industry structure, and real estate leasing, much of the chapter discusses financial markets and risk bearing.

Michael Roberts and Nigel Key present a model of profit maximisation under uncertainty with a credit constraint. They use empirical data on wheat yields and prices to empirically test their model and find that planted acres are impacted by past yield shocks. Precision agriculture technology and risk management are discussed by James Larson, Burton English, and Roland Roberts. They review this technology and then look at the potential of variable rate technology as a risk management tool. They show that specific area knowledge allows better decisions for

specific areas and increases profit and reduces profit variability.

Part 5: This part looks at policy issues. Keith Coble and Thomas Knight review crop and revenue insurance. They briefly review US history on crop insurance and then present a farm decision model using actual production history yield insurance. That model provides a framework to discuss the literature on crop insurance, covering crop insurance demand, moral hazard, and adverse selection. They then talk about future directions for crop insurance research. Joseph Glauber and Keith Collins discuss the role and impact of the federal government in risk management, including disaster payments and crop insurance. They present the rationale for government intervention and the history of US intervention with a table showing annual costs since 1981.

Bruce Gardner considers the risks stemming from uncertainty about agricultural policies, which have been less investigated than the stabilising role of policies. He first describes some selected historical episodes and then presents a conceptual basis for analysis that includes welfare economics and political economy. He looks at some of the evidence of policy uncertainty on agricultural performance. Mark Metcalfe, David Sunding, and David Zilberman discuss risk management and the environment within two contexts: policy strategies to manage environmental and health risks, and strategies to manage the risks facing farmers. They present methodologies and results related to environmental regulatory policies to limit public exposure to high concentrations of agricultural contaminants. They also present methodological approaches and some results on how management of agricultural risks influences environmental quality.

Part 6: The final part includes two chapters that summarise the book. Wesley Musser and George Patrick investigate whether risks really matter to farmers. I suppose one would expect this to be the lead chapter in the book, since if risks do not really matter to farmers, then the rest of the chapters are moot. Obviously, though, risk does matter to farmers, at least sometimes, as discussed by Musser and Patrick. They discuss the sources and responses to risk. They also discuss when expected profit maximisation is the relevant paradigm as contrasted to including elements of risk into the decision process.

The final chapter of the book by Richard Just and Rulon Pope summarises the work of the various chapter authors. They conclude that much, but obviously not all, of the discussion falls within eight major themes: arguments of the utility function, psychology of risk, risks are often endogenous, long-term is a key, information is important, aggregate data does not work on micro issues, data availability is a key research limitation, and the expected utility paradigm is not dead but can often be improved upon.

Researchers studying agricultural risk and decision making will find this book useful in their research tasks. The book covers a breadth of topics and individual chapters are informative and generally well presented and written.

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Providing Global Public Goods: Managing Globalization

Inge Kaul, Pedro Conceicao, Katell Le Goulven and Ronald U. Mendoza (Eds.); Oxford University Press, New York and Oxford, published for the United Nations Development Program, 2003, US$ 39.95, (646 + xxii) pages, ISBN 0195157419

This is a big book about an important subject. Global public goods (GPGs) are a vital component of an increasingly globalized world. Some of the major problems facing society are global in nature, and yet they are not, despite their relevance and relatively clear nature (at least at first), generally well understood. Consequently, they tend to be overlooked in consideration of world affairs.

To the extent that GPGs are overlooked, it certainly is not the fault of the Development Studies Program of the United Nations Development Program (UNDP). Headed by Inge Kaul, this group has been, since 1999 with the publication of *Global Public Goods: International Cooperation in the 21st Century* (Kaul et al.,

1999), at the forefront of analytical and educational work on global public goods.

The earlier volume led to further questions about the meaning of the three components of the term—public, global and good—and their re-examination provides the structure of this book. This volume also follows the earlier pattern of providing a collection of commissioned essays (24) on concepts and case studies by a group of specialists. The conceptual portion, however, is followed by sections on political aspects ("Bringing the Public Back Into Public Policy Making") and production considerations ("Getting to the Good"). It concludes with seven case studies, which augment those provided in the first volume.

While there are 31 contributors in total, the four editors—one of whom was involved with the first book (Kaul)—also double as authors and appear to be responsible for roughly one-third of the material, much more than in the first volume. This is significant, because they largely set the central themes of the book. Both their chapters and the other papers generally represent a reaching out beyond economics and are multidisciplinary in nature.

Four of the central themes have to do with: (1) refurbishing the GPG tool kit, (2) matching stakeholders and decision makers, (3) systematizing financing, and (4) spanning borders, sectors and groups (p. 5). These themes represent rather substantial expansions of thinking about public goods and, since they represent relatively new territory, should also be regarded as more speculative. They propose, for instance, enlarging the perception of the "publicness" of public goods from the traditional focus on consumption to also include net benefits and decision making.

Neither this book nor its predecessor, however, say much about science, research, or agriculture. The previous Chair of the Consultative Group on International Agricultural Research (CGIAR) was invited to prepare a chapter for the first book, but did not do so. While this volume has a few scattered references to the CGIAR, it does not, curiously, draw from the 30 years of lessons that it might have provided.[1] The book does, however, provide case studies of biodiversity, water, communicable disease control and multilateral trade regimes that may be of interest.

While the book is well organized and written and provides clear introductions at the beginning and to individual sections, the overall effect can be—because of its size and scope—somewhat bewildering. I initially tried, for another purpose, to read/skim it from cover to cover over a weekend and ended up rather numb. For many, it might be advisable to start with "A Historical Perspective" by Desai, then move into the overview chapters by the editors, and then sample the rest.

In any case, the theme chapters should not necessarily be considered widely accepted GPG gospel. The authors are pushing the envelope in some cases—which is a particular value of these chapters—and they inevitably reflect their own experience and perspectives. My experience (with USDA and USAID) and study has led to different views in three instances.

- First, as noted, the authors seek to expand the concept of public goods (pp. 89–94) well beyond the rivalry/excludability construct of economists and essentially shift the focus from market failure to a broad array of social problems. Much still needs to be done in clarifying and defining the current theory, particularly with respect to impure public goods (see Dalrymple, 2003a). In moving further out, they shift to a much more interdisciplinary setting with seemingly limitless bounds.
- Secondly, they tend to look at GPGs as a clearly distinct add-on to foreign assistance programs to be accounted for separately (pp. 329–359), whereas I view them—based on CGIAR experience—as an integral component with important synergies. The key economic question from my perspective is which blend of the two results in the highest marginal return in terms of achieving development goals (Dalrymple, 2003b, pp. 20–21).
- Third, they propose greater involvement of domestic sector agencies in providing GPGs (pp. 379–387). While this might work in some donor nations, I do not think that it would in others, including the United States, because of the preoccupation of these agencies with domestic political issues. I should acknowledge, however, that I might view this issue differently if I were sitting elsewhere. Sweden and

[1] During the period when the book was being prepared, I prepared a paper basically on the CGIAR (Dalrymple, 2003b) which subsequently served as a background document for an electronic discussion forum sponsored by UNDP on "Agricultural R&D: Consequences of the Shifting Balance form Public to Private," 26 May–6 June 2003 (http://www.gpgnet.net).

France have for several years advocated the GPG concept in the international community and, following an intergovernmental agreement signed in April 2003, established an International Task Force on Global Public Goods headquartered in Stockholm. One of the editors/authors of this book (Le Goulven) has joined its Secretariat.

In summary, this new UNDP book is a worthy successor to the original, but in taking on the difficult and important question of how to improve the provision of GPGs, it attempts to crack a tough nut that will take further work and effort to resolve satisfactorily. The UNDP, however, is to be thanked for helping to point the way.

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Agricultural Policy Reform—Politics and Process in the EU and US in the 1990s

Wayne Moyer and Tim Josling (Eds.), Ashgate Publishing Limited, Aldershot, England, 2002, 271 pages, hardback, US$ 74.95/£ 42.50, ISBN 0-7546-3050-1

In 1990 Moyer and Josling published *Agricultural Policy Reform—Politics and Process in the EC and USA* (Iowa State University Press, Ames). The present book uses the same theoretical framework as before to analyse more recent steps in agricultural policy reform, including the 1992 EC CAP reform (MacSharry reform), the 1999 EU Agenda 2000, the 1996 US FAIR Act (Farm Bill), and the 1994 Uruguay Round Agreement on Agriculture (URAA). The book is thus much more than an update or a rewrite—it introduces a substantial amount of new material, much of which draws on personal interviews with key individuals involved with making these reforms turn out the way they did.

The theory used to explain the selected agricultural policy reform initiatives draws on models of rational choice, public choice, organisational process, government politics and partisan mutual adjustment (muddling through). Elements of each theoretical model are used to explain different aspects of the process of reaching the particular decisions embodied in the MacSharry reform, the Farm Bill, and the URAA. The government politics model tends to be used to explain what otherwise cannot be explained. That model highlights the bargains and compromises that make a policy decision possible and "how policy coherence is often sacrificed for political acceptability" (p. 15). The process is described as reaching a delicate balance, with more and more elements tacked onto the original proposal for reform until there is enough to placate the demands of a sufficient number of interest groups. It could be tempting to dismiss the use of the government politics model by saying "of course, that's how politics works, give me some more revealing insights". Its use in this book, however, is valuable because it helps to sort through and clarify what compromises were struck at what stage in the selected policy development processes.

Individual decisions are attributed to the need to resolve crises while faced with critical deadlines. The MacSharry reform became necessary when agriculture was subordinated to broader national interests in the Uruguay Round, combined with the need to control agriculture spending and the looming expiration of fast track negotiating authority in the US. Agenda 2000 is largely seen only as a continuation of the MacSharry reform. The 1996 Farm Bill became law partly because it included provisions that would originally have reduced spending in the face of a budget

crisis, and legislation was needed before spring planting was to start. Reaching the URAA is ascribed to the threat of the whole Uruguay Round foundering if a series of compromises on agriculture had not been agreed between the EC and the US at Blair House in 1992 and 1993. Altogether, these realities are sobering for those who imagine policy change as a neatly evolving process, motivated by solid estimates of increases in the common weal.

The book makes much of what it calls paradigm change. The 'dependent agriculture' paradigm is being replaced by the 'competitive agriculture' or the 'multifunctional agriculture' paradigms. That society's view of agriculture in Europe and North America is changing seems a valid observation. However, it does not amount to shifting agricultural policy to a new paradigm in the Kuhnian sense (*The Structure of Scientific Revolutions*). This is all the more so when one considers the many areas in which agricultural policy has not undergone reform. The book deals with examples of policy change in only a few commodity sectors in the EU and the US, and points at commodity sectors where change has been much smaller (sugar, dairy). The outcome of the 2002 Farm Bill process in the US also helps to undermine the notion of the policy paradigm having shifted away from 'dependent agriculture'. The 2002 Farm Bill would seem to reduce the generality of the findings in this book, unless the bill is projected as a continuation of the 1996 Farm Bill and subsequent laws. After all, one of the themes of the book is that large ongoing payments to farmers in the EU and the US can be explained, whether the generosity dates to 1992, 1993, 1996 or 1999.

A few minor things could have been done differently. The book's focus on budgetary crises leads to a preoccupation with only budgetary outlays in figures and text. This overlooks the other part of the policy effort: the transfers from consumers in the form of a price gap resulting from regulated prices, import barriers and export subsidies. If the paradigm is indeed shifting away from 'dependent agriculture', it would have been useful to see how the shift might have affected such price gaps. The book repeatedly refers to surplus production, apparently meaning any quantity that is not consumed in the producing country at prevailing prices, i.e., a notion that takes self-sufficiency as the norm. The book addresses the increasing interest on the part of producers to meet consumers' demand for food safety and quality attributes only at the very end as an element of future policy pressures. It would have been valuable to see this issue recognised as part of the shift to 'competitive agriculture' or 'multifunctional agriculture' already in the 1990s and what, if any, role it may have played in making possible the selected policy reforms.

Editors have left some spelling and punctuation errors in the text, and some data sources look odd. While the figures (graphs) are prepared with admirable accuracy and completeness—perhaps with limited visual appeal to some—it seems the publisher subsequently decided to reduce them to near illegibility.

Overall this book offers an authoritative and insightful rendition of some key policy developments in international agriculture. It draws judiciously on other research while contributing significantly to the understanding of why EU CAP reforms, US Farm Bills and agricultural trade agreements have taken the shape they have.

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