

## Exploring the frontiers of agricultural economics : a review of volumes 2A and 2B of the *Handbook of Agricultural Economics*

David COLMAN\*

**Résumé** – Ce second tome du *Handbook of Agricultural Economics*, comme le premier, rassemble les contributions de sommités de la profession des économistes agricoles. Il rend un grand service en montrant l'étendue et la profondeur du champ d'investigation des analyses les plus récentes. L'une des caractéristiques marquantes de ce Tome 2 tient à la place accordée aux concepts de la théorie des jeux appliquée à l'économie agricole contemporaine. Les auteurs considèrent, en effet, que toutes les politiques économiques peuvent bénéficier des idées nouvelles apportées par ces concepts, qu'il s'agisse des politiques traditionnelles des produits, des politiques environnementales, des programmes agricoles et alimentaires de développement en faveur des pauvres, ou même de la politique macroéconomique. Cet ensemble impressionnant de contributions de qualité prouve que les économistes agricoles de renom ont leur place dans les grands courants de la théorie économique. Mais, ce faisant, le *Handbook* a plutôt tendance à sous-estimer le point fort des économistes agricoles, qui tient à la façon dont ils combinent des perspectives institutionnelle et empirique avec la théorie microéconomique, pour fournir des solutions opérationnelles aux questions essentielles de politique économique. Il faudrait au minimum un tome supplémentaire, sur l'économie du développement, pour que l'on puisse correctement évaluer ce qu'apporte le *Handbook* à la présentation de l'état de l'art dans notre discipline.

**Mots-clés** : économie agricole, agriculture, économie des ressources naturelles, macroéconomie, politique agricole et alimentaire.

**Summary** – Along with volume 1 of the *Handbook of Agricultural Economics*, the second volume presents the work of some of the most distinguished members of the agricultural economics profession, and it does a service in demonstrating the width and depth of contemporary analysis. One of the key-features of volume 2 of the *Handbook* is the emphasis laid on game theoretic concepts in contemporary agricultural economics, and on the claims that these provide new insights into the whole spectrum of policy-making ranging from traditional commodity policies, environmental policies, pro-poor food and agricultural development programmes, and even to macro-economic policy. This collection of impressive papers makes the statement that leading agricultural economists can hold their own with mainstream economic theorists. But, in so-doing, the *Handbook* as a whole seemingly downplays the peculiar strength of agricultural economics, which lies in fusing together institutional and empirical insights with the micro-theory to provide operational solutions to outstanding policy issues. There is to be at least one further volume, concentrating on Development Economics, and a full evaluation of the *Handbook's* presentation of the state of our discipline must wait until the full set is assembled.

**Key-words** : agricultural economics, agriculture, resource economics, macroeconomics, agricultural and food policy

\* Centre for Agricultural, Food and Resource Economics, University of Manchester, United Kingdom

THIS four-volume handbook may not conform to what might generally be expected of a «handbook». It is most certainly not something, which can be easily carried about as a quick reference source, or be treated as a 'super-textbook'. It is not a comprehensive guide to all that agricultural economists do, and it is not intended at all points to give non-specialists a ready guide to elements of our research practice. First of all, the four volumes are tightly packed into their 2249 pages plus indexes, and some of the individual chapters are so large, that, with simple expansion, they could be books in their own right. As the Editors (Bruce Gardner and Gordon Rausser) state in their introduction, they asked selected (principally USA-based authors) «*to focus on what they saw as the main contributions to the area they covered and to assess the state of knowledge and what remains to be learned. This approach has left some gaps in our coverage, and has given us some chapters that are perhaps more idiosyncratic than is usual for a survey chapter.*» That statement certainly helps the reviewer summarise reactions to the three parts of the overall project, which are contained in volumes 2A and 2B.

The review will proceed in reverse order by considering Volume 2B ahead of 2A. One reason for this is that 2B covers the more conventional policy heartland of the discipline of agricultural economics, whereas (reflecting what might be seen as endogenous structural change) 2A devotes itself to the areas to which academic resources are being increasingly diverted, namely natural resources and agricultural externalities, and also to agriculture in the macroeconomy, where this includes development issues. A second reason is that the new micro-theory, expounded by Chambers and Innes in 2B, is reflected in the theoretical approaches developed and echoed especially in the four chapters by Lopez, Lichtenberg, Ostrom and de Janvry *et al.* in 2A. Indeed, one of the key features of these two volumes of the Handbook to this reviewer is the emphasis laid on game theoretic concepts in contemporary agricultural economics, and on the claims that these provide new insights into the whole spectrum of policy-making, ranging from traditional commodity policies, environmental policies, pro-poor food and agricultural development programmes, and even to macro-economic policy. However substantial or otherwise these claims may be, the handbooks demand a review of course syllabuses to assess whether agricultural economics training is everywhere meeting the challenges of what is here presented as the leading edge of agricultural economics.

## Volume 2B, part 5. Agriculture and food policy

### *Agricultural and trade policy*

Volume 2B contains 10 chapters on agricultural and food policy. Reading these in book form (*i.e.* serially) is at first rather confusing, because of the major differences in style of presentation, difficulty of content, and weight (length) of the chapters. Julian Alston and Jennifer

James open with an excellent, although basically standard, chapter on « *the incidence of agricultural policy* », using largely diagrammatic means of theoretical exposition. They are followed by the two most heavily mathematical chapters in book 2B; Robert Chambers presenting detailed analysis of policy mechanism designs and Robert Innes exploring, in fascinating and challenging detail, the implications of second-best analysis. (The review will return in more detail to these below). These chapters are then followed by three more conventional chapters reviewing the literature on: « *political economy of agricultural trade economics* » (by Harry de Gorter and Johann Swinnen), « *a synthesis of agricultural trade economics* » (by Larry Karp and Jeffrey Perloff), and « *international trade policy and negotiations* » (by Daniel Sumner and Stefan Tangermann). At first the contrast in accessibility and style between these three chapters and those that precede them are puzzling, despite the undoubted merits of each contribution individually. It is not until one reaches the seventh chapter by Gordon Rausser and Rachael Goodhue on « *public policy: its many analytical dimensions* » that the whole comes together, and that the key theoretical arguments which link the chapters come clearly to the fore. For, what emerges as the key which unifies this selection of works is the contributions of new economic theory which have been taken on board by agricultural economics in the last 20 years or so.

What Rausser and Goodhue assert (p. 2058) is that, analytical frameworks for agricultural policy analysis « *typically only focus on one of four dimensions: incidence, mechanism design, political economy and government structures* ». Thus, each of the preceding chapters explores one of these dimensions in its own way (with Innes and Chambers expressly developing economic theory of policy, the others presenting reviews). Rausser and Goodhue do an excellent job of differentiating each of these dimensions of analysis according to which maintained hypotheses are assumed to hold ((a) *perfect implementation*, (b) *no feedback effects from interest group formation*, and (c) *a given governance structure*), and of which classes of policy design problem arise when these are relaxed (*market failure*, *governance failure*, *moral hazard*, *asymmetric information*, *organisational failure*). They provide a summary critique of each dimension in terms of its limitations, but as most of the formal analysis presented is either comparative static or considers two periods, they discuss the general problems, and unresolved difficulty of optimal policy design in a dynamic context in which rent-seeking behaviour and changing levels of power by key actor groups keep changing the nature of the game.

Rausser and Goodhue conclude (p. 2092) by arguing « *that only by formally recognising each of the four dimensions is it possible to design and implement public policies that are sustainable and robust to uncontrollable economic and political forces* ». They themselves identify and discuss six political economy frameworks that have emerged over the last three decades. That, however, underlines the difficulty of achieving this integrating framework across all dimensions, which is their ideal, and it certainly emphasises the limited dimensionality of game theoretic approaches to designing and explaining policy.

It is notable that throughout this and many of the preceding chapters, there is repeated reference to game theoretic settings, incentive compatibility and to principals and agents, something largely absent from the agricultural policy discourse until recently; it is something which marks the steady breakdown of the distinctiveness of agricultural from mainstream economics. Gone from this handbook are chapters on farm management, applied econometrics, and linear programming – the «cookbook» approach to agricultural economics – and instruction on how to undertake agricultural economics in the style of, say, Elizabeth Sadoulet and Alain de Janvry (1995).

The inclusion of the Alston and James chapter on policy incidence, and that by Karp and Perloff synthesising agricultural trade economics highlights what to me has become an artificial division between policy and trade analysis, which first became apparent when James Houck produced his book «*Elements of Agricultural Trade Policies*» in 1986. The graphical illustration of policy impacts in that book were essentially identical to which would have been found at that time in any book on agricultural policy and which are covered here (with more elaboration) in the chapter on policy incidence. It is obvious that all domestic agricultural market intervention policies have international trade impacts, and it thus seems quite artificial to try and separate agricultural trade policy from agricultural policy. This may be a product of university course structures in the US, but it does not appear to be a distinction, which has wide recognition in Europe or Australasia. A consequence of allowing that separation to be represented in volume 2B is to introduce a fair amount of overlap between chapters, despite the fact that Karp and Perloff's is a review chapter without diagrams or formulae. Not only is there overlap with Alston and James, but also inevitably with Sumner and Tangermann (ch. 38) and the latter's review of international trade policy and negotiations

### *Agricultural policy*

The Alston and James chapter is stimulating for highlighting issues which are too frequently overlooked, and for providing ideas about new ways in which an agricultural policy course can be presented and taught. They emphasise (following the classic paper by Floyd, 1965) that the incidence of benefits and costs of redistributive policy interventions is determined by the elasticity of supply of the factors of production, even though graphic analysis typically simplifies this to depend on elasticities of commodity supply and demand: and this is underlined using a simple two-factor model. They emphasise, as do Innes and Chambers, that the costs of policy administration and enforcement need to be properly accounted for. (This issue features centrally in Chambers' analysis, and could usefully have been extended to include the costs of collecting taxes to finance policy).

### *Micro-theory in policy analysis*

The two chapters by Robert Chambers and Robert Innes, respectively titled « *information, incentives, and the design of agricultural policies* » and « *market failure and second-best analysis* », are among the most demanding in these two volumes, and will only be accessible to those with a strong micro-theoretical background. Chambers (p. 1753) specifically departs from the traditional « incidence » approach to comparing alternative instruments to redistribute funds to agriculture, which « *operate exclusively in terms of representative producers and consumers* » and « *carry the silent... implication that if the farm regulator had enough willpower or political savvy, he or she could achieve the first-best and then redistribute resources efficiently through lump-sum transfers* ». This steer towards lump-sum transfers is echoed elsewhere in the handbook, and chimes into the current pressures to switch from market price support to decoupled direct payments to farmers.

Chambers concentrates on two sets of policy design issues. In the first he uses mechanism design theory to consider policies to support low income/efficiency farmers, in the situation of hidden knowledge (adverse selection) where the policy regulator does not know which are the low efficiency farmers. He produces a large body of results, among which is one identifying decoupled lump-sum payments as optimal. The second policy design issue examined in depth is of risk specific and all-risk agricultural insurance policies where there is hidden action (moral hazard) and where production may or may not have polluting externalities. Since the optimal policy varies according to what state of knowledge government is assumed to possess, it is unclear to what extent this analysis can influence actual crop insurance policies, but it certainly provides a challenging stimulus. Chambers argues that his form of analysis has advantages over the more traditional incidence approach using dead-weight cost triangles, most particularly by being free of bias imposed by the *a priori* limits on the policy alternatives considered in the latter, and also (p. 1821) because the traditional approach is « *incapable of accurately evaluating the complex array of existing policies in even the simplest economy imaginable* ».

Innes' chapter, « *market failures and second-best analysis* », is based on a strong premise, namely (p. 1830) « *that second-best analyses, to be persuasive in motivating policy and its design, must begin with primitive economic phenomena and not presumed economic outcomes that are otherwise inconsistent with model foundations* », and that a « *coherent economic foundation for policy requires... the premise of privately rational responses to primitive economic forces* ». This methodological approach is rigorously pursued through three separate cases, (a) food subsidies to the poor where government has costs in detecting fraud, (b) policy intervention to overcome social inefficiencies in credit markets caused by privately optimal behaviour arising from stylised primitive forces in the market, and (c) incomplete contingent claims markets.

As an illustration, Innes's concept of primitive economic phenomena in the case of nutritional policy is embodied in two primitive premises,

(a) that there are general public utility benefits from better nutrition by the poor, and (b) that the government has enforcement costs in confining the nutritional subsidies to the poor. That is to say there are externalities to the policy and asymmetries of information and action. The analysis based on this leads to a number of propositions about balance in the mix of non-targeted food subsidies, and the quantities and price discounts offered via food vouchers to the poor. Thus the design of an optimal second-best policy turns out to be complex, but exactly how the theoretical analysis can be transformed into operational policies remains uncertain. In practice many of the issues of balance between instruments and diverse objectives are ultimately recognised, and policy is characterised by a succession of adjustments to such things as ration amounts, price subsidy and target population. The question remains as to what extent can this body of theory accelerate or shortcut the process of developing optimal policies in a dynamic setting.

These chapters are first-class examples of addressing redistributive policy design with economic theory, but as later chapters question why is it that analysis of this type appears to have had so little impact on actual policy design and implementation. Thus, Bruce Gardner and D. Gale Johnson (in what is the latter's final judgement on agricultural policy analysis after a lifetime of leadership in the field) ask (p. 2245) when this class of « *studies go back 15 years or more ..... why their approach hasn't generated more usable empirically based work or proposals* ».

Indeed, the overall message that comes across from the handbook is slightly discouraging, in that many of the contributors' conclusions state reservations about what agricultural economics has achieved. The negativity seems overdone, and there are many accomplishments to be proud of, and agricultural economics can surely feel confident about its contributions to economics and policy formation. Even if it has not been possible to implement design of optimal policies, or to explain precisely why particular policies have been implemented, the fact remains that there are many instances where agricultural economists have influenced policy makers in ways, which have improved policy making. It is true that in recent years much of this advice is based on the general consensus favouring free trade and liberal markets, even though the existence of market imperfections is generally accepted.

### *Food policy*

Although the term « food policy » appears in the title of volume 2B, it is only represented by a chapter on « *food security and food assistance programs* » by Christopher Barrett and a short one on « *food security and the world food situation* » by R.C. Duncan. Although Barrett does cover issues concerned with US food stamp and other food assistance programs, the emphasis is very much on developing country food security. Duncan's chapter is surprisingly short, given that the topic was selected for the handbook, and it fails to fully expose the debate between the neo-

Malthusian pessimists about food security when the global population exceeds eight billion in the middle of this century (e.g. Brown and his «*Worldwatch*», 2001) and the dominantly positive view of the FAO through Alexandratos (1995) and more guardedly Bruinsma (2003). Barrett's chapter on the other hand is a very full exploration of food security from a micro, individual standpoint.

Barrett resolutely steers away from the aggregate food balance approach, and concentrates on the issue from the perspective of the individual (even down to separate individuals in the household at specific times of the year). He develops a dynamic mathematical model of conditions and decisions determining individual well-being related to nutrition. The way in which this is explored ties up well with the earlier theoretical chapters, since in discussing the desirability of targeted food assistance policies Barrett refers to making them incentive compatible to overcome asymmetric information problems and eliminate the non-needy from obtaining assistance.

### **Volume 2A, part 3. Agriculture, natural resources and the environment**

This is the subject matter of the four chapters in part 3 of the Handbook. The first, by Ramon Lopez, considers the interaction between agriculture and the productive services of the natural resource environment in less-developed countries (LDCs). Erik Lichtenberg then examines, in a rigorously formal way, environmental stewardship and policy issues. Elinor Ostrom then presents new theory of common pool resources based on a game-theoretic assessment of the empirical evidence. The fourth chapter in part 3 by Geoffrey Heal and Arthur Small puts forward some ideas about incorporating environmental services as inputs into production analysis.

#### *Agriculture and the environment in LDCs*

Ramon Lopez explores the dynamic responses of LDC agriculture, where the risks of environmental damage and loss of fertility are high, under different institutional settings. In particular he theoretically explores behaviour under common access resources (principally land and forest), communal property with either strong or weak control over access and use rules, and private property either in subsistence or commercial management. The principal arguments explored concern the impacts on natural resources in these settings arising from population growth, and greater commercial market opportunities arising either from higher output prices or the development of transport infrastructure. The main relationships governing whether responses lead to long-term degradation of the natural resource are seen to reside in (a) the strength of changes in incentives to invest in the fertility-maintaining human-created capital (terracing, fallowing, drainage, etc.) which complement the natural capi-

tal, and (b) the endogenous changes in institutions which may be triggered by the pressures, such as towards increased private control of the resources or (less likely) stronger legislated controls.

The implications of the analysis for public policy are by no means compelling. It is argued that better market opportunities (improvement in the terms of trade) can strengthen the returns from investing in the complementary human-created capital, and lead to adoption of longer-term strategies of resource exploitation. However, whether this happens is seen as depending upon which commodities are in increased demand and precisely which resource mix is needed for production – development of tree crops is likely to have better environmental benefits than cereals or livestock – but contemporary world commodity markets do not provide strong reasons for optimism about halting land degradation. Similarly, it is argued that public agriculture extension programmes, by increasing the productivity of the existing land of subsistence farmers *may* reduce their incentive to deforest more land. Again this does not appear to offer much encouragement for the environment, nor, since the environment Lopez is considering is that of fertility-maintenance, does it portend a rosy picture for long-run agricultural output in LDCs.

In these circumstances the issue of how land rights institutions develop under pressures of globalisation is a key one. Lopez states that initially resource-rich economies with private property will not deplete resources less quickly than those with open resource access. «*The key difference is that the economy with efficient institutions will stop natural resource degradation earlier...*» (p. 1227). «*Unfortunately, the vast case study literature overwhelmingly suggests that institutions that would enable this superior form of co-operation do not spontaneously emerge...*» (p. 1229). Thus, despite the insights which Lopez analysis provides into agriculture (fertility) environment linkages in LDCs, few strong guides for policy emerge.

### *Agriculture and the environment*

Erik Lichtenberg provides an extensive formal review of the North-American literature<sup>1</sup> in mechanism design theory applied to managing agriculture's environmental impacts (both negative and positive), which although dominantly concerned with a developed economy environment, also covers some of the same ground as Lopez in the preceding chapter. He also reviews a large body of literature concerning the environmental impacts of chemical inputs, and also empirical studies estimating the comparative merits of alternative policy designs.

One challenging conclusion from the analysis is that «*promotion of more environment-friendly farming methods does not always enhance environmental quality.*» The point here is that technological innovations, such as

---

<sup>1</sup> There is also an expanding European literature on agri-environmental policy mechanism design which does not get a mention (e.g. Latacz-Lohmann and Van der Hamsvoort, 1997; Moxey *et al.*, 1999; Ozanne *et al.*, 2001; Fraser, 2001).

drip irrigation or precision chemical application, may enable profitable expansion of production onto formerly uncultivated land of high environmental value. Other insights produced are that in an industry of heterogeneous production units (farms), input subsidies or taxes are to be preferred to generalised management contracts or regulatory standards because of the asymmetric information problems and consequent costs of contract enforcement and compliance monitoring. This is also true where secondary markets in inputs can lead to hidden action (moral hazard); as for example where unofficial markets between farmers in fertilisers and pesticides make it virtually impossible to ensure that localised restrictions to control water pollution are enforceable. This latter problem is diagnosed as being a special problem in trying to achieve even second-best policies for achieving environmental best practice in input use.

### *Common pool resource exploitation*

Elinor Ostrom (chapter 24) reports on experiments based in game theory to identify the circumstances which are likely to lead to successful self-regulation of common pool resources, prevent their degradation and possible destruction, and obviate the need for an external regulatory agency. The evidence from the experiments is then compared to observations from empirical field studies which demonstrate a high degree of agreement with the theoretical/experimental conclusions about the determinants of success or failure. This introduction of experimental economics into agricultural economics is of great interest in itself. What is also interesting is the illumination of the way in which economic behaviour is conditioned by particular characteristics of the social, and institutional settings, as well as the characteristics of the resource. In place of relatively uniform behaviour by independent households or firms, what is explored is differing interactive behaviours in group-dynamic settings, and in particular the conditions for this dynamic which are more likely to lead to self-regulating management of the commons.

### *Agriculture and ecosystem services*

It is difficult to assess the contribution of Geoffrey Heal and Arthur Small under this title. They argue that the partial analytical insights of previous contributors into agriculture-environment interactions are so numerous and diverse that there is a need for an overarching analytical framework in which ecosystem services are formally recognised as inputs into the agricultural production processes (to simplify). These may be as absorbers of waste or as fertility enhancing processes. They do, however, shrink from mathematical formalism, saying, *inter alia*, « *advanced mathematics is probably not for everyone, however, and its use carries a risk of sparking fetishistic fads that are long on technique and short on insight. Using more to say less does not constitute progress.* » (p. 1357). They also argue that there is a need for more detail than current analysis pro-

vides (in this Handbook and elsewhere) to enable better institutional design for managing agro-ecosystems, but the research agenda they sketch out to incorporate ecosystem services into policy mechanism design is not a well-defined one, although it is intriguing.

## Volume 2A, part 4. Agriculture in the macroeconomy

Under this heading four chapters are devoted to agriculture's interactions with the macroeconomy and three to agricultural or rural development. The review will just touch on a few of these.

### *Applied general equilibrium analysis*

In the first of the three chapters, Thomas Hertel reviews the strengths and weaknesses (issues still to be addressed) of what he prefers to call «applied general equilibrium analysis» (AGE) of agricultural and resource policies. Most of us are probably still calling this «computable general equilibrium analysis» (CGE).

Hertel first of all makes a general case for AGE analysis, emphasising the importance of the focus of AGE models on «households as the primitive concept», in contrast to traditional agricultural economics' focus on commodities. This is an interesting statement, indicating new developments in this type of modelling away from the earlier GTAP based models which do focus very much on commodities and trade. The GTAP<sup>2</sup> system developed by Hertel and colleagues is widely used by many analysts, and his own recent work does powerfully reflect this extension of GTAP modelling to a household level orientation (Hertel, 2002).

Hertel's chapter is an excellent and accessible review of the properties of AGE or CGE modelling, presented without mathematical formality. He sets his review against the background of a paper by John Whalley (1986) concerning hidden challenges in AGE modelling, and the extent to which these have now been addressed or remain as challenges. The specific challenges discussed include the level of disaggregation, the difficulty of handling land as a substitutable factor of production, the lack of sufficient justification of the behavioural parameters in AGE models (and indeed their, often, hidden 'black box' character), and the difficulty of incorporating the different types of agricultural and environmental policy instruments in ways which reflect their true policy character (*e.g.* coupled *versus* de-coupled, voluntary *versus* statutory). These are all considered in some detail. For example, the discussion on disaggregation goes beyond commodities and raises issues about differentiating farms by size, allowing for various

---

<sup>2</sup> GTAP is the global trade analysis project. It is a general equilibrium analysis, multi-commodity, multi-country system, supported by an updated database accessed at <http://www.gtap.agecon.purdue.edu/>

types of industrial users of agricultural products and input suppliers, differentiating households, and regionalising the analysis.

The question of differing farm sizes links intimately to the perennial question of supply response and the time period of the comparative static analysis undertaken with AGE models. As Buckwell (1984) has underlined, a significant part of supply response is determined by the structural change which takes place over time. The behaviour of the changing composition of units at once determines and interacts with adoption of new technology to determine factor substitutability, which in turn determines supply response. But this, like many of the issues raised by Hertel, is not specific to AGE models. It applies equally to partial equilibrium models used for the same sort of comparative static policy analyses. Indeed if there is a criticism of the chapter, it is that it almost sells AGE models short. By focussing considerable attention on the problems which have been addressed or are inherent in AGE modelling, and rather skipping over the case for such models, Hertel possibly does his large body of analysis some disservice. As many contributions to the Handbook make clear, the macroeconomic linkages and feedback incorporated in AGE models are crucially important, and partial equilibrium analysis which omits them will tend to overstate many types of responses, while suffering from the same methodological difficulties as AGE analysis.

### *Agriculture and the macroeconomy with emphasis on developing countries*

That the macroeconomy has powerful impacts on agriculture, particularly in developing countries is underlined by the chapter by Maurice Schiff and Alberto Valdes. They basically provide a reprise of the research carried out by them over the years, which started with Edward Schuh (1968), and led to work for the World Bank of Schiff and Valdes (1992). The chapter actually concentrates on the impacts of macroeconomic distortion, principally exchange rate overvaluation on the relative price of agricultural products to non-traded goods and goods of other sectors. Such overvaluation leads to relative depression of agricultural prices, and thus becomes a hidden tax and disincentive to agricultural production and development. This body of work is well-known to development economists, but is set out here in a very clear and comprehensive way, which if not new, identifies it firmly as part of the core of agricultural economics, and makes it readily accessible.

Overvalued exchange rates arise from inflexible exchange rate adjustment processes – these are now less common as currency markets have been progressively freed from Central Bank control – in the face of higher than average inflation rates or of ‘Dutch disease’ problems caused by commodity price booms. Little mention is actually made of inflation, but the way an oil or mineral price boom results relatively depressed agricultural prices is well spelled out. This is worth noting, because an issue picked up in a later chapter on agriculture in development by de Janvry

*et al.* underlines that we have insufficient understanding of the pathways, institutions and linkages which are conducive to successful (pro-poor) agricultural development, and of what failures in these are crucial.

In all of this, a central question is how distorted (in practice, over-valued) are exchange rates? What are the real exchange rate and the equilibrium real exchange rate? Measures of these have to be made before agricultural price distortion can be measured, and the issues of measurement are difficult and in the end arguable. Schiff and Valdes set out clearly and usefully what these issues are and how they have been tackled by different economists.

### *Agriculture and economic development*

In a slightly disjointed chapter under this title, Peter Timmer covers several broad areas relating to agricultural development. At the heart of it is the question « is agricultural growth a key requirement for general economic development? » In addressing this, Timmer puts forward some rather unfashionable arguments, to which I personally fully subscribe, to the effect that agriculture is a special and vital sector which is unlike others, and that food price stability is important macroeconomically for successful growth. These points are emphasised throughout the chapter.

Timmer rehearses the general background as to why policy has often been biased against agriculture (*e.g.* export pessimism; declining sector; industrialisation and technological development are the future; urban bias), and he presents in diagrammatic form the 'agricultural exploitation model of development', following from Lewis, Kuznets and Jorgenson. To counter that, he sets out an alternative model in which agricultural growth leads to rapid general economic growth by creating food security, and low stable food prices, which provide a strong basis for rapid economic growth. Intriguingly, the diagrammatic presentation of this model is based on the English Corn Laws of the early 19<sup>th</sup> century. That is buttressed by evidence of econometric studies showing a clear positive relationship between rates of agricultural and more general economic growth. It is accepted that these correlations cannot be said to definitively prove causation, but some of the evidence presented does at least hint at that.

Timmer presents a new theoretical framework in which to develop his arguments. It is that, given a general production function (for the economy as a whole), there are a number of gaps (input shortages), which have to be closed in order to raise levels and rates of economic growth. These gaps he defines as being in (i) technology, (ii) physical capital, (iii) human capital, and (iv) « environment ». He carefully considers the extent to which agricultural growth contributes to close these gaps. For example a stronger agriculture leads to improved nutrition and enhances national human capital, as does rural education. Also improved rural infrastructure and institutions help close the physical

and environmental gaps. In the case of the poorest countries, this leads to a restatement of the need for a pro-active public policy to address such things as agricultural research, extension, rural infrastructure (including irrigation) and agricultural marketing. This has become highly unfashionable, but the case is well put and deserves to have an impact. In fact, the case hinges to some extent on empirical analysis relating economic growth to the relative income of agricultural as compared to non-agricultural workers. Once this drops below 50% growth rates apparently fall, possibly because some rural people have become so poor that they are marginalized out of the economy and make little contribution to, or derive little benefit from it.

### *Rural development*

There are two contributions on rural development. In one of these, Karen Brooks and John Nash provide a comprehensive and instructive review evaluating the experience of the last two decades in the European transition countries following the collapse of the socialist system. In fact they concentrate on agriculture rather than on the «rural sector» trailed in their title.

Attention will focus, however, on the contribution by Alain de Janvry, Elisabeth Sadoulet and Rinku Murgai. There is an important link between this and Timmer's earlier chapter, in that this also calls for a new drive of government policy towards the rural areas of developing countries, accepting that there are households other than agricultural ones in rural areas. Their argument for refocusing more policy attention on rural areas rests on the observations (1) that persistent rural poverty is associated with environmental degradation, and resource use inefficiency because resources are «locked into low-level equilibrium traps, where they are underused» (p. 1600), and (2) that the contraction of agricultural market intervention policies (arising from focusing attention on macroeconomic reform), combined with the process of structural adjustment has led to insufficient replacement of state sector activity by private institutions. Thus public policy needs to step into the vacuum caused by downsizing state involvement from the 1970s onwards, but that this should entail a new policy focus on the rural sector as a whole, with agricultural households as a major component. This agenda is set out in a valuable way, highlighting such things as institutional gaps, property rights and access to land, and the role of civil society.

The framework for the analysis of the rural development agenda is based in the new institutional economics (NIE) which has (p. 1615) «opened a fast-growing field of modelling and empirical analysis of household behaviour, agrarian institutions, community behaviour, and regional determinants of growth.» From this premise, de Janvry *et al.* present a theoretical household decision model (rooted in the Chayanov (1966) and Nakajima (1970) tradition), with which they address some traditional issues of agricultural supply response and price risk, but they extend it

to consider issues such as poverty traps in heterogeneous populations, gender, differences in transaction costs in producing for the market, and liquidity constraints. They then present a simple dynamic model to address some of the key growth issues such as accumulation of financial and production assets, investment in human capital, dissipation of natural capital, and evolution of agrarian structure.

Questions relating to liquidity and finance feature prominently in the chapter by de Janvry *et al.*, and considerable attention is given to credit institutions, both formal and informal. This is developed using NIE relating to situations of asymmetric information regarding safe and risky borrowers. In this situation, there are various ways a lending institution can minimise the risk of default by reducing exposure to risky « non-bankable » borrowers, leaving the development question as to how these marginal economic agents can be drawn into the development process. Nevertheless the outcomes typically (p. 1635) penalise safe borrowers and subsidise the risky ones. In their conclusions, de Janvry *et al.* state that (p. 1649) « *mechanism design can be used in devising contracts to link the local institutions with global institutions that have comparative advantage of diversifying risks and accessing well-functioning markets* ». This might be taken to be a claim about designs resulting specifically from formal new institutional theory. However, the examples presented suggest that the process of trial and error in institutional development has generated success stories (*e.g.* the Grameen Bank, and other microfinance institutions), which can be shown to possess the characteristics that theory suggests are important for success without having been created with any knowledge of the theory. There seem to be few instances of a direct link between a theoretical project and subsequent modification or creation of new policy contracts. There is a need for any such examples to be brought to the fore to strengthen the case for the type of analysis which is so prominent in volumes 2A and 2B of the Handbook.

## CONCLUDING REMARKS

The Handbook will impact in different ways upon different classes of readers. From a student perspective the review chapters (36, 37, 38 and 41) will be readily accessible without lecturer support, and although extensive, represent readily useable material on important debates relating to agricultural policy.

From a lecturing perspective, one's reaction ranges from: 'this is a useful way of presenting things; that seems a fascinating and useful piece of work which had better be read very carefully in the near future; to that is solid stuff which is quite well known, but is well presented'. In volume 2B, the first class of stimulus arises for this reviewer from the agricultural policy chapters by Alston and James, Chambers, Innes, and Rausser and Goodhue, but all for different reasons; and on

food security policy by Christopher Barrett. In volume 2A, it is three of the papers in Part 3, namely those by Lopez, Lichtenberg and Ostrom which do most to push our discipline into new territory.

However, at the end of the day volumes 2A and 2B, and the preceding 1A and 1B reviewed by Michiel Keyzer (2002) and Jean-Marc Boussard (2002), do little to resolve the 'identity crisis' which afflicts agricultural economics. There is widespread concern for the future of our discipline as a separate one. Ministries of Agriculture are renamed as Environmental or Rural ministries. Many university departments of agricultural economics are similarly re-titled or are amalgamated into larger units with loss of specific identity. Associations of agricultural economists regularly revisit debates about whether their narrow disciplinary title should be changed or expanded to attract a new constituency. These handbooks do not help resolve this problem. They present work of some of the very best members of our profession, and do a service in demonstrating the width and depth of what is being done. They make the statement that leading agricultural economists can hold their own with micro-economic theorists. But in so-doing they seemingly downplay the peculiar strength of agricultural economics which lies in fusing together institutional and empirical insights with micro-theory to provide operational solutions to outstanding policy issues.

Possibly these strengths will receive more attention in further volumes of the *Handbook of Agricultural Economics*, for it has emerged that at least one more volume is planned. A third volume on agricultural development will be edited by Robert Evenson and Prabhu Pingali, and is likely to have a more empirical flavour than the work so far reviewed. It certainly means that it would have been premature to have criticised Volume 2 for its limited coverage of agricultural development, and who knows what openings there are for more volumes in, say, price and market analysis, agricultural marketing or even farm management?

## REFERENCES

- Alexandratos N. (ed.) (1995). *World Agriculture Towards 2010: An FAO Study*, Chichester, New York, Brisbane, Toronto and Singapore, FAO and John Wiley & Sons.
- Boussard J.-M. (2002). En lisant le Tome 1 du *Handbook of Agricultural Economics*, *Cahiers d'économie et sociologie rurales*, 65, pp. 50-64.
- Brown L. (ed.) (2001). *State of the World: A Worldwatch Report on Progress Towards a Sustainable Future*, London, Earthscan.

- Bruinsma J. (ed.) (2003). *World Agriculture Towards 2015/3030: An FAO Perspective*, London, FAO and Earthscan.
- Buckwell A. (1984). Herd structure and milk supply response, *Journal of Agricultural Economics*, XXV (3), pp. 341-354.
- Chayanov A.V. (1966). *The Theory of Peasant Agriculture*, Homewood, Illinois, Richard D. Irwin.
- Floyd J.E. (1965). The effects of farm price supports on the returns to land and labour in agriculture, *Journal of Political Economy*, 73, pp. 148-158.
- Fraser R. (2001). Using principal agent theory to deal with output slippage in the European Union set-aside policy, *Journal of Agricultural Economics*, 52(2), pp. 29-41.
- Hertel T. (2002). *Multilateral trade liberalisation and poverty reduction: seven country applications*, paper presented at the Global Forum on Agriculture: Agricultural Trade Reform, Adjustment and Poverty, Paris, OECD.
- Houck J.P. (1986). *Elements of Agricultural Trade Policies*, New York and London, Macmillan.
- Keyzer M. (2002). Review of book 1 of the *Handbook of Agricultural Economics*, *Cahiers d'économie et sociologie rurales*, 65, pp. 40-49.
- Latacz-Lohmann U., Van der Hamsvoort C. (1997). Auctioning conservation contracts: a theoretical analysis and an application, *American Journal of Agricultural Economics*, 79, pp. 407-418.
- Moxey A., White B. and Ozanne A. (1999). Efficient contract design for agri-environmental policy, *Journal of Agricultural Economics*, 50 (2), pp. 187-202.
- Nakajima C. (1970). Subsistence agriculture and commercial family farms, in: *Subsistence Agriculture and Economic Development*, Wharton C. (ed.), London, Frank Cass and Co. Ltd.
- Ozanne A., Hogan T. and Colman D. (2001). Moral hazard, risk aversion and compliance monitoring in agri-environmental policy, *European Review of Agricultural Economics*, 20 (3), pp. 329-348.
- Sadoulet E., de Janvry A. (1995). *Quantitative Development Policy Analysis*, Baltimore and London, The John Hopkins University Press.
- Schiff M., Valdes A. (1992). *The Political Economy of Agricultural Pricing*, vol. 4, Baltimore and London, Johns Hopkins University Press.
- Schuh E. (1968). Effects of some general economic development policies on agricultural development, *American Journal of Agricultural Economics*, 50 (5), pp. 1283-1293.
- Whalley J. (1986). Hidden challenges in applied general equilibrium analysis, in: *New Developments in Applied General Equilibrium Analysis*, Piggott R., Whalley J. (eds), New York and London, Cambridge University Press.