
EDITORIAL NOTE

This issue of OECD *Economic Studies* is devoted entirely to applications of economic analysis to agricultural policy questions. Four inter-related strands of work are reported in eight articles. The Editorial Board believes that the importance of the issues raised by various types of assistance and protection to agriculture in virtually all OECD countries should make this extensive treatment of one sector in *Economic Studies* a matter of interest to its readers. The analysis reviewed here has supported the discussions and decisions concerning agricultural policy in the Organisation and elsewhere. The reasons for presenting this work go beyond the significance attached to agricultural issues in their own right, however. The papers comprise a report on the most extensive effort to date in the OECD to apply economic modelling techniques and other analytical approaches to policy issues in a specific sector. As such, they represent a case study – illustrating the interdependence of various strands of analysis, the power and limitations of various techniques, and the extent to which it has been possible to make progress in quantifying the effects of policies and of policy changes. The experience from this work is relevant to developing approaches for examining microeconomic issues in other areas – for example, industrial subsidies, trade policies, and taxation.

A brief guide through the papers may help to clarify the relationship among the separate papers, and to direct readers to particular ones that may be of most interest to them, should they wish to sample the work selectively. The papers share common foundations in microeconomic analysis of market equilibria, with examples of both partial equilibrium and general equilibrium analysis. But they focus on somewhat different questions, reflecting two particular sets of concerns of policy-makers.

One set of concerns is directly with agriculture and agricultural policy. These have motivated efforts to measure the levels and composition of assistance provided to the agricultural sector, and to quantify the effects of this assistance. Effects of policies on world agricultural markets, and hence on agricultural activity and farm incomes in other countries, have been of special interest.

The second set of concerns is with policies and performance across the whole economy, both nationally and internationally. These have motivated efforts

to quantify the effects of agricultural policies, taking account of interactions between agriculture and other sectors. The focus of this work has been on the overall effects of policies on economic efficiency and consumer welfare. Again, transmission processes through world markets have been of special interest.

An examination of the effects of policies must begin by documenting what those policies are. The first paper, "The Estimation of Agricultural Assistance Using PSEs/CSEs: Theory and Practice", reports on an extensive and ongoing effort by the OECD to produce an objective and comprehensive measurement of the assistance resulting from the broad range of agricultural policies pursued in Member countries – producer and consumer subsidy equivalents. The PSEs/CSEs have the advantage of providing both an aggregate measure of support, and an indication of its main components by commodity and by type of policy. The measurement of assistance through PSEs and CSEs was part of a wider effort to describe and analyse policies which was carried out in response to a mandate given by OECD Ministers in 1982. This work centered on detailed country studies analysing the whole set of agricultural policies and other policies affecting agriculture. By now, almost all OECD countries are covered by a detailed country study. The periodic updating of these studies has become part of an ongoing process of monitoring agricultural policies, markets and trade, as requested by Ministers (see OECD, 1989a). And the PSEs/CSEs have provided the essential foundation for the examination of the effects of policies – the focus of the papers which follow.

The OECD has developed the Ministerial Trade Mandate (MTM) model, which is described in the second paper, in order to respond to the request of governments that the effects of agricultural policies on patterns of production, consumption, international trade and world prices for the the main agricultural commodities be examined. The MTM model provides a relatively disaggregated view of the effects within the agricultural sector of agricultural policies as characterised by the PSEs/CSEs. Trade and intersectoral linkages are treated in considerable detail. This leaves in the background the effects on markets for factors of production and interactions with other sectors, although work has been started on linkages to agricultural inputs. Together with the PSEs and CSEs themselves, the analysis conducted with the MTM model was used in a report to the 1987 OECD Ministerial Council (OECD, 1987a), which called attention to the high costs to consumers and taxpayers of current agricultural policies, and to the extent production supports were depressing world agricultural prices. This led to the adoption of a set of principles and actions for the reform of agricultural policies with the long-term objective of allowing "market signals to influence by way of a progressive and concerted reduction of agricultural support, as well as by all other appropriate means, the orientation of agricultural production" (OECD, 1987b). OECD monitoring of progress in the reform of agricultural policies to this end draws on the MTM model, as well as directly on the PSEs/CSEs.

The interest of governments in examining the economy-wide effects of agricultural policies and in quantifying their effects on economic efficiency and welfare motivated the development of WALRAS. In building this model, the Secretariat undertook for the first time the development of a multi-sector, multi-country applied general equilibrium model. The next five papers are concerned with various aspects of this work.

"WALRAS – a Multi-Sector, Multi-Country Applied General Equilibrium Model for Quantifying the Economy-Wide Effects of Agricultural Policies" presents the basic methodology and structure of the model. WALRAS is less detailed than the MTM model in its treatment of agricultural sectors, a sacrifice which makes it feasible to incorporate a complete and consistent representation of factor and product markets for the six main OECD agricultural trading countries/regions (Australia, Canada, the European Community, Japan, New Zealand and the United States), and a rudimentary treatment of the Rest of the World. The general equilibrium approach, starting from explicit specifications of individual preferences and production functions, also permits the quantification of the effects of a wide range of policy interventions in agricultural markets on economic welfare and its distribution within and across countries.

WALRAS, like the MTM model, draws on the quantification of agricultural policies provided by the PSEs/CSEs, supplemented by other information on supply controls. These data must be translated into a set of wedges between producer and consumer prices for use in WALRAS. This translation is not a straightforward matter, and it necessarily involves some simplification of the representation of agricultural policies. The method used is described in "Quantifying Agricultural Policies in the WALRAS Model".

The main conclusions of the WALRAS work are presented in "Economy-Wide Effects of Agricultural Policies in OECD Countries: Simulation Results with WALRAS". The focus here is on how the world would look different, after the passage of enough time for full adjustment in factor and product markets, if all agricultural support policies in place at a particular time in the six OECD countries/regions were eliminated, compared with a situation where policies were maintained unchanged. The simulations are intended to highlight the broad effects that current policies are having on economies, rather than to predict in detail the effects of a particular policy reform. They point to significant effects on other sectors and high overall net welfare costs of agricultural policies relative to the small size of the sector. In particular, they suggest that levels of agricultural protection in recent years have cost the OECD countries \$72 billion (1988 prices) per year in lost income – an amount equal to the combined GDPs of Ireland and New Zealand.

The results from any applied general equilibrium model can be sensitive to a number of factors – including model specification, how policies are represented in the model, and the values assigned to various elasticities and cross-elasticities in

demand and production relationships. Hence extensive sensitivity testing is an important part of using general equilibrium models. Such work is reported in "How Robust are WALRAS Results?". The broad conclusions drawn from the simulation results in the previous paper – that present policies impose net welfare losses on all countries and regions – are shown to be very robust to changes in model specification and over a wide range of values for various elasticities. So, too, is the qualitative pattern of sectoral output, price and trade effects. However, the specific magnitudes, and sometimes the direction, of effects at a detailed level can be sensitive to parameter values. These findings help to identify areas where firm conclusions depend on a strong empirical basis for assigning parameter values, and where they do not. Hence, they provide a systematic quantitative basis for debate.

The WALRAS model is constructed on the assumption of constant returns to scale and competitive markets. Without these common assumptions of economic analysis, it would have been necessary to choose among a large number of possible alternative specifications, non of which is uncontroversial. Moreover, implementing any one alternative across-the-board would have greatly increased the complexity of the project. Nonetheless, it is recognised that the assumptions of perfect competition and constant returns to scale are, at best, an approximation of the real world. Thus a limited investigation was conducted to see how the results would be altered if economies of scale were allowed for. This required that particular assumptions be made concerning behaviour in the implied non-perfectly-competitive market environment. "Assessing the Role of Scale Economies and Imperfect Competition in the Context of Agricultural Trade Liberalisation: A Canadian Case Study" presents the results of this investigation. The overall result for the case under study, once again, is that there would be significant real income gains from removal of farm support policies. The results at a more detailed level are in some respects strikingly different from those assuming perfect competition, but there is no consistent pattern. Even the direction of differences from the perfect competition case is sensitive in some important respects to the choice of an alternative assumption about how prices are set in an imperfectly competitive environment.

The results of the WALRAS-related research suggest that it is possible to obtain a reasonably robust characterisation of the broad effects of policies with a general equilibrium model that is relatively highly aggregated and incorporates simplifying assumptions. It also suggests that detailed results can be no more reliable than the theoretical and empirical basis for the detailed specification of the model and its policy inputs. At the same time, the MTM model shows the possibilities for going further in the elaboration of disaggregated markets within a framework that does not seek to represent a complete, closed economic system. These two lines of modelling and the work to calculate the PSEs/CSEs illustrate the practical usefulness of developing policy-relevant economic analysis from

several directions. When tractability, incomplete information about quantitative relationships and uncertainty about market structures are taken into account, no one modelling approach dominates others for examining all aspects of the issues involved. These papers also illustrate the progressive nature of policy analysis. They provide a fairly clear indication of key magnitudes, and these have figured prominently in policy discussions. However, further work would be required before great weight could be placed on some other results. None of the lines of work have yet been carried to the limits of their practical refinement.

The contribution of this measurement and modelling work to more informed consideration of agricultural policy issues in the OECD goes beyond the specific results derived from it. The process has led to a deeper understanding of interactions among markets and how they are influenced by policies. In taking on the challenge of developing quantitative models and interpreting the results, the project teams have had to systematically think through questions that would not otherwise have been asked. The government officials who have considered the results have had to do the same. Even where the quantitative results are controversial, they have called attention to previously neglected issues. This process of reflection has strengthened the basis for consideration of questions not directly addressed by the models, or to which the models provide less than satisfactory answers.

Two important issues concerning the effects of agricultural policies are not addressed by the models presented here. The OECD has not yet produced systematic analysis concerning one of these – the dynamic or transitional effects of policy changes. The complexities involved in analysing adjustment paths far transcend those of comparative static analysis. Uncertainty about the details of transitional paths is likely to remain high, although experience provides some general lessons to guide policy.

The last paper in this volume concerns the second issue – "The So-called 'Non-Economic' Objectives of Agricultural Support". Governments have implemented agricultural policies with a view to achieving a range of objectives, which are often thought of as non-economic. Some of these are clearly economic in nature, such as food security and farm-income stabilisation. Others, such as environmental objectives, may not be perceived as economic, but they involve questions about the optimal allocation of resources to provide what society wants collectively as well as individually. These are questions for which economic analysis is appropriate. The review of how well agricultural policies are meeting these objectives, and at what cost, represents an important additional line of analysis, complementary to the modelling work. The paper concludes that present policies are often inefficient in meeting these objectives.

The papers in this issue of Economic Studies, taken together, provide a broad perspective on agricultural policies and their effects. They strongly underscore the need for reform to increase the role of market forces in agriculture. They

do not, however, provide a complete answer to the question of what reforms would be most efficient and balanced in achieving greater market efficiency, giving due weight to other objectives. Ongoing and planned analytical work should further contribute to understanding the effects of present agricultural policies and of alternatives to them, thus strengthening the quantitative basis for policy-making. The PSE/CSE methodology is under continuous improvement, and is being extended to provide a decomposition of factors leading to changes in PSEs. Current work in extending the MTM model is focused on distinguishing the effects of specific policies and on identifying the effects on inputs of policy-induced changes in patterns of agricultural output. Clearly the WALRAS model could be usefully extended and refined in a number of directions, although further development work is not being pursued at the present time.

Analytical work, by itself, will never provide a complete resolution of complex policy issues, however. Partly this is because some analytical questions, such as those concerning details of transitional processes, are unlikely to be fully answered. But beyond this, it is a matter of political choice as to how various tradeoffs among objectives are made. Measurement and model-based analysis provide a clearer picture of what these tradeoffs might be. This is an essential basis for debate and discussion. One point which emerges clearly is that the tradeoffs go beyond national borders. Thus, the debate and discussion on what might be better policies needs to proceed internationally, as it does within the OECD and the GATT.

NOTES

OECD (1987a), *Agricultural Policies, Markets and Trade, Monitoring and Outlook.*

OECD (1989a), *Agricultural Policies, Markets and Trade, Monitoring and Outlook.*

OECD (1987b), *Ministerial Communiqué.*

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