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Challenges in quantitative economic analysis in support of multilateral trade negotiations

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Abstract

A wide range of economic analysis of agricultural trade liberalization was performed prior to and during the Uruguay Round of trade negotiations. Views differ as to the effectiveness of this research, although most would agree that it became less relevant as the negotiations progressed.

This paper reviews the contributions of economists to the trade liberalization debate, with an emphasis on the quantitative assessment of multilateral agricultural trade liberalization. With a new round of agricultural trade negotiations scheduled to begin in 1999 it is crucial that the quantitative work required to support these negotiations begin in the near future.

The authors conclude that the Uruguay Round outcome provides numerous challenges and opportunities in analyzing the traditional agenda of agricultural trade liberalization. In addition, new issues will be added to the agenda of the next round of negotiations. These include: trade and the environment, competition policy and intellectual property rights. It is important that economists begin to develop a research agenda that can address these issues and become activists in addressing these topics in public forums.

1. Introduction

Few would disagree that more quantitative analysis of agricultural trade liberalization was conducted prior to and during the Uruguay Round of trade negotiations than accompanied any previous round. This analysis ranged from the design of alternative summary measures of agricultural support and protection (PSE, SMU, TDE, PAG, AMS, etc.), through analysis of specific modality issues, to the complex simulation of multi-sector, multi-commodity trade liberalization scenarios using computable general equilibrium models.

As economists, we would like to think that this analysis contributed in a positive way to the successful conclusion of the Uruguay Round and to a process that will eventually lead to the 'normalization' of the rules governing agricultural trade (Josling et al., 1994). [1]

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[1] It is sometimes argued that agriculture has, at long last, been brought fully into the GATT. It can be more reasonably argued that substantial progress was made towards this goal during the Uruguay Round. However, given the exceptional treatment still afforded agriculture, the goal itself remains elusive and it is one which will have to be tackled again in future rounds of trade negotiations.

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Was quantitative analysis of trade liberalization helpful in the process of negotiating the Uruguay Round outcome? Views on this topic differ, but two active participants in the process paint a less than flattering portrait. Sumner (1993) has argued that

> The policy models were too aggregated, and dealt with the irrelevant policy options, and contained overly simplified or just incorrect specifications of relevant policies. The many projections of the effects of free trade or elimination of all farm policies available in the academic literature were positively harmful to policy formulation because they did not relate to actual policy options, contained numerous errors or were mistakenly cited by some in political debate.

In a similar vein Gardner (1993, p. 384) has argued that

> General equilibrium models seem a natural approach... but the approach has not been illuminating for analyzing possible GATT agreements because the key elements of the proposals are micro adjustments of non-standard policy instruments...

On a more positive note, Sumner (1993, p. 7) did argue that "academic policy modelling was useful in the very early stages of the Uruguay Round leading up to the beginning of the negotiations".

We will argue that the quantitative analysis of agricultural trade liberalization played an important role in the trade negotiation process. Even so, there is little disagreement that in some respects the analysis was woefully inadequate, and that, as the negotiations progressed, it became increasingly irrelevant. This happened because the negotiations moved into areas, as Gardner (1993) notes, that were difficult to handle in traditional models and because modellers, even those within government, found it difficult to keep up with the current state of play. In some cases (for example, the tariffication of Canada's import quotas which underpin its domestic supply control programs), the topics were considered to be too sensitive politically to be seriously discussed by government economists, let alone analyzed. However, with a few exceptions, even university economists were silent on these topics (Meilke and Larue, 1989b; Moschini and Meilke, 1991).

While hundreds of research papers were written about the Uruguay Round, and many of these contained quantitative analysis, it is our view that the comprehensive 'big model' analyses of multilateral trade liberalization had the most impact. We return to discuss these in a later section.

The remainder of our paper is structured as follows. In the next sections we outline the objectives of the GATT negotiations and the ways in which quantitative trade analysis can contribute. We then catalogue the outputs and the contributions of quantitative analysis to the Uruguay Round achievements. Following this we discuss the likely agenda of the next round of multilateral trade negotiations, which will largely define the demand for traditional and new forms of quantitative information. We conclude by developing a list of analytical challenges facing the profession in providing relevant and useful information, not only to trade negotiators but to the general public.

2. What is the GATT / WTO?

Since 1947, the General Agreement on Tariffs and Trade (GATT) has provided a set of principles and rules to govern the ways in which national governments may interfere with or engage in international trade. Over time, as the number of GATT members has grown, these rules have covered a larger proportion of total international trade in goods. Anticipating the accession of China and Russia, we have the prospect that, soon, all major trading countries of the world will be subscribing to the same rules.

While the GATT strictly refers to a negotiated set of rules, it has also come to mean an institution in Geneva (the GATT Secretariat) which was created to facilitate and service the ongoing business between governments associated with the original agreement, including periodic 'rounds' of negotiations to establish and reduce tariff 'bindings', and to refine and extend the original rules. The Uruguay Round resulted in the transformation of the GATT Secretariat into the World Trade Organization (WTO) a formal multilateral institution, on a par with the World Bank, the IMF, and the United Nations. The WTO will manage the ongoing business not only of the GATT, but also of several new agreements generated

by the Uruguay Round, including the General Agreement on Trade in Services (GATS).

The fundamental goals and principles agreed to in 1947 endure, and are relatively simple. It might be argued that the long-term goal is to liberalize (remove barriers to) international trade, though this is more implicit than explicit. The underlying philosophy is that increased trade benefits all countries.

The more immediate and explicit pre-occupation of the GATT (1947) was with fair trade rather than free trade. While, and to the extent that, barriers remain, they should be non-discriminatory and transparent. The goal of transparency is translated into a tariffs-only principle for remaining barriers. The principle of non-nullification is intended to ensure that governments could not take actions which would effectively nullify the benefits to others of concessions (e.g. tariff bindings) they had already granted. The Uruguay Round succeeded in cleaning up some discrimination inherent in the GATT (agreement) itself by removing many of the country-specific exceptions and waivers, and moving away from supplementary 'codes' to which only subsets of the membership subscribed. All members of the WTO will be obliged to adhere to the whole package of agreements, rather than being able to pick and choose or seek exemptions as they have in the past. Another principle, yet to be given effect in agriculture (only), is a ban on export subsidization.

Krugman (1992), among others, has argued that the thinking underlying the GATT of 1947, and the way countries have conducted their negotiations since, is very mercantilist. He boils down 'GATT-think' to beliefs that (1) exports are good, (2) imports are bad and, importantly, (3) in total the 'good' of exports outweighs the 'bad' of imports. This third belief explains why countries continue to pursue multilateral trade liberalization. The first two explain why individual countries, in negotiations, seek to maximize opportunities (obtained) to increase their exports while minimizing opportunities (given up) to increase their own imports. Most economists have difficulty with the idea that imports are bad, and urge politicians to liberalize unilaterally. In small countries with little negotiating leverage (Hong Kong, Singapore, New Zealand) they sometimes succeed.

Mercantilist, misguided and misinformed or not, the MTN process is moving towards free or freer trade, and that is a goal which most economists can endorse. Even the new trade theorists, who can rationalize strategic unilateral trade interventions from the point of view of national advantage, tend to agree that 'optimal tariffs' are usually relatively low, and free trade is usually preferable when foreign retaliation is taken into account (Krugman, 1992; Bhagwati, 1994). So, endorsing the goals of the GATT/WTO, how do (or can) economists contribute to progress towards them?

3. How economists influence the MTN process

It may not be over-simplifying to say that the UR negotiations on agriculture went through three phases, which might be called a 'conceptual' phase, a 'technical' phase and a 'political' phase.

What we call the conceptual phase preceded the official beginning of the Round in 1986. [2] This phase included, notably, the work by the Organization for Economic Co-operation and Development (OECD, 1987) under the Ministerial Trade Mandate, and the work of the GATT Committee on Agriculture. Its main result was the agreement, in the Punta del Este declaration, that there would have to be reduction commitments in two broad areas: (1) import barriers; and (2) the negative effects on trade of subsidies and other measures acting directly ('export subsidies') or indirectly ('domestic support'). A third area of focus for the agricultural negotiations, agreed to at this time, was the minimization of the adverse effects of sanitary and phytosanitary regulations on agricultural trade.

The technical phase followed the UR 'kick-off' and corresponded approximately to the tenure of Mr. de Zeeuw as chairman of the agricultural negotiations (until late 1990). During this phase, which was largely conducted by trade bureaucrats, the modalities of the agricultural negotiations were largely established. The first two broad areas for commitment defined in 1986 were, by 1991, refined to include disaggregated volume and expenditure reductions on export subsidies from a 1986–1990 base, tariffica-

[2] We are indebted to David Harvey for pointing out the contributions of economists during the conceptual phase.

tion of all non-tariff barriers, binding and simple-average formula reductions of all tariffs from a 1986–1988 base, formula-controlled special agricultural safeguards, formula-determined disaggregated minimum quantitative access at lower tariff rates for tariffied products, a well defined AMS (including what types of support had to be counted, the 'fixed reference price' principle, and the 'de minimus' concept), disaggregated reductions in that AMS, and so on. Economists from several countries, mainly in the roles of government employees or advisors, had considerable input during the technical phase.

The third, political phase, can be thought of as embracing the negotiations proper. Ministers (or Secretaries, in the case of the US) slipped into the driver's seat, and were actually at the table when the important deals were cut-in places like Blair House as much as Geneva. When they were not physically at the table they were in close contact with their subordinates, who were careful not to move without ministerial authority. During this phase, ministers sorted out which modalities they could live with, diluted or scuttled the others, and decided how far they could go (depth of cuts) with those that remained.

In contrast to the first two phases, the influence of economists during the 'real' negotiations (political phase) was relatively small, in our judgement. What there was, was of two sorts: one direct and one indirect. The direct influence involved mainly government economists providing ministers with information helpful to them in conducting the negotiations. Much of this information was in the nature of reassurance that the final agreement, if signed, would not be a political disaster at home—that credible numbers existed showing benefits clearly outweighing costs, that required adjustments to existing programs would be minor and technically feasible, that farm incomes would not suffer, or that the GATT agreement would facilitate domestic reforms. The indirect influence (of non-government economists) came through the information provided actively or passively, to stakeholders. This information affected the balance of pressures being brought on the minister by different groups to act in different ways in the negotiations.

Based on the experience of the UR, economists should be able to do more of the same to influence the next round of multilateral negotiations. By illustrating the size of the potential economic gains from further liberalization, we can help to build momentum. By getting involved in the early technical stages of the negotiations, we can help to ensure that sensible rules and modalities are adopted, that perverse effects are avoided and that loopholes which allow circumvention of commitments are closed. We can work through the details of how changes would be implemented and how existing support could be refocused to maintain benefits while reducing trade distortions and meeting new commitments. Perhaps, only a small portion of this work requires large sophisticated quantitative models, which are likely to be more useful in the early stages than in the later stages of the negotiations.

4. Contributions of economic analysis to the agricultural agreement in the Uruguay Round

4.1. Producer subsidy equivalents and aggregate measures of support

A significant contribution of economic analysis, early on, was the calculation and publication of rates of protection. Although many measures were floated, most were variations on the 'Producer Subsidy Equivalent' (PSE), reported by the Food and Agriculture Organization (FAO) and attributed to the work by Josling [3] (FAO, 1985). The development of the PSE concept to include domestic support was influenced by Corden (1966), who had earlier advanced the nominal rate of protection measure for border measures. As a modified nominal rate of protection, the PSE essentially measures, for each country and commodity, the level of consumer and taxpayer transfers to (or from) farmers. It summarizes, in a convenient form, information that each country is already obliged to furnish to the GATT in the form of a 'subsidies notification' under Article XVI, but it goes one step further by including consumer transfers. The main institutions calculating

[3] Josling's original work was published by the FAO (1975) while some recent reflections are contained in Josling (1993).

this information prior to and during the UR were the OECD (1993) and the USDA (Webb et al., 1990).

Several variations of and alternatives to the PSE were also advanced including Australia's PAG (Haszler and Parsons, 1987), Canada's TDE (de Gorter and McClatchy, 1984), the effective rate of protection (ERP) and the EU's SMU, to mention just a few. The benefits of such accounting procedures were manifold and quickly realized. Everyone was informed as to the nature and degree of government intervention across commodity groups and between countries. Although the methods and measures differed across the various agencies reporting the rates of protection, the degree of transparency of agricultural policies was greatly enhanced (Schwartz and Parker, 1988; Cahill and Legg, 1990; International Agricultural Trade Research Consortium, 1990). Separating taxpayer from consumer transfers, and domestic from border measures (not to mention tariff versus non-tariff border measures), also enhanced the understanding of the situation. This helped in putting agriculture on the top of the agenda for the forthcoming Uruguay Round.

While PSEs do not recognize differences between policies, in the degree of trade distortion and in the effectiveness of government in achieving agricultural policy goals, their measurement did serve to illustrate the extent of intervention and its pervasiveness world-wide (McClatchy, 1987; Hertel, 1989; de Gorter, 1993). There are no lily white countries when it comes to agricultural protectionism. For example, net percentage PSEs for all commodities in 1987 were 40%, 42%, 49% and 76% for the United States, Canada, European Union and Japan, respectively (OECD, 1993). The OECD (1993) analysis also showed that producers in the European Union and Japan received most of their support in the form of market price supports which distorts both consumer and producer prices. Even in Canada and the US, where assistance to the agricultural sector is less biased towards market price supports, this form of protection still comprised more than 50% of the total assistance. Further analysis by the OECD illustrated the difficulty of agricultural policy reform because the benefits of trade liberalization are diffuse while its costs are concentrated. It was estimated that in 1987, total per capita income transfers from consumers and taxpayers to agriculture amounted to about $350 in Canada, the European Union and the United States while transfers per farmer averaged $10 000 in the European Union, $17 000 in Canada and $26 000 in the United States. The PSE estimates also raised the issue of equity across commodities and across countries. It illustrated, in stark terms, the horrendous gross transfers (cost) involved in supporting and protecting the agricultural sector.

4.2. Modelling the effects of agricultural trade liberalization

The PSEs were not designed to measure the gains from trade nor the amount of the gross transfers that actually reached farmers in the form of net income gains. This gap was partially fulfilled by the models analyzing trade liberalization which illustrated the potential changes in the market price, production, consumption and trade resulting from either unilateral or multilateral trade liberalization. These studies were concentrated in the hands of a relatively few researchers and research institutions, and at the risk of slighting someone's work the following contributions seem to have been the most influential:

1. IIASA (Parikh et al., 1986);
2. OECD (1987);
3. Stoeckel et al. (1989);
4. USDA-SWOPSIM (Roningen and Dixit, 1989);
5. Tyers and Anderson (1992);
6. FAPRI (Helmar et al., 1994).

Two of these modelling efforts involved general equilibrium models and the others partial equilibrium models. [4] The works of Parikh et al. (1986), OECD (1987) and Stoeckel et al. (1989) were published early in the Uruguay Round of negotiations. For the most part, they were single research contributions which illustrated the classical gains from trade. The contributions of Roningen and Dixit (1989), Tyers and Anderson (1992) and Helmar et al. (1994) were

[4] These models differ considerably in terms of their country and commodity coverage, for a review of some of the early models see Meilke and Larue (1989a) and Blandford (1990). For some general observations concerning the modelling of trade liberalization see Abbott (1988), Sharples (1987), Tyers (1990) and Romer (1994).

ongoing throughout the negotiations, and encompassed a series of papers and monographs focused on various aspects of the trade negotiations.

These models contributed to the debate in a number of ways. First, the gains from trade from unilateral liberalization were highlighted. These were contrasted with the higher gains from trade from multilateral liberalization and the moderating effect on any producer losses. This analysis was effectively presented by highlighting the fact that in 1986/1987 approximately 40% of the support provided to farmers in industrial market economies was necessary to offset the downward price effects of these countries collective agricultural policies (International Agricultural Trade Research Consortium, 1988; Blandford, 1990). This observation struck a responsive chord, even in farm audiences, because it emphasized that much of the support provided farmers was self-defeating among subsidizing nations and that world price increases would dampen farm losses from liberalization. It thus made a substantial contribution to the general realization that current policies were politically unsustainable, as well as economically irrational, and to the conclusion that 'something had to be done'.

Second, the models allowed one to attribute the blame for the disarray in agricultural markets to particular countries. Not surprisingly, the policies of the European Union and the United States accounted for the lion's share of the distortions in world markets because of their large size. While, collectively, the agricultural policies of the other smaller developed countries were of modest importance, and in certain cases, such as rice in Japan, of considerable importance, the 'agricultural problem' was largely centred in the United States and the European Union.

Third, the models also captured, albeit imperfectly, the cross sector effects of agricultural policies. For example, the negative effects of market price supports in the grain and oilseed sectors on the livestock sector highlighted the self-defeating aspects of the status quo. Likewise, potential gains from trade liberalization for the export and processing sectors of the economy were pitted against the losses to the import competing agricultural sectors within the same country. This emphasized that not only were farmers in one country competing with farmers in other countries, but they were also often in conflict with other farmers and processors of their own products in the same country.

General equilibrium model results complemented the partial equilibrium results by illustrating input adjustments, resource flows between agriculture and the general economy, changes in farm factor returns, food marketing (processing) margins and the effects on food manufacturing, and non-food demand. All of these features generated a more realistic scenario as to the level and distribution of the benefits and costs derived from trade liberalization. For example, delineation of factor returns allowed the analysis of wealth effects and of the capitalization of benefits derived from farm programs. Modelling resource flows between agriculture and the non-agricultural sectors emphasized the tax imposed by farm policy on the rest of the economy and the opportunity cost of labour held in agriculture due to farm policies. Furthermore, potential benefits to agriculture from trade liberalization in the non-agricultural sectors were highlighted, when liberalization in all sectors was simulated. Nevertheless, the level of technical detail as to the true economic structure and the manner in which policies affect agent's behaviour can always be improved upon, either for partial or general equilibrium models.

4.3. Reinstrumentation

The simplistic representation of policies in the early agricultural trade liberalization models led to analysis on how different policies generated substantially different trade distortions (Gardner, 1983; de Gorter and Meilke, 1989). This contributed to a careful assessment of how the PSE could be segmented into various categories and to the policy reversal by the United States, at mid-term, for a green–amber–red light designation rather than a complete elimination of all policy interventions, regardless of their trade distorting effects.

Subsequent analysis focused on transfer efficiency and the various leakages associated with income transfers to farmers. In addition to the world price depressing effects of agricultural policies the analysis showed that farmers shared benefits with upstream (input supplying) and downstream (output using) industries, and in some instances, with consumers. Farmer compliance costs in addition to ad-

ministration costs also showed the inefficacy of current programs. There was even some analysis as to how the remaining benefits, as small as they were, were unevenly distributed between large and small farms.

A closely related line of research involved the realization that progress towards trade liberalization could be made by reinstrumenting domestic agricultural policies away from the most trade distorting forms of support and towards more trade friendly policies. The International Agricultural Trade Research Consortium published two monographs on the subject and this basic idea is embedded in the final form of the Uruguay Round's Agreement on Agriculture (International Agricultural Trade Research Consortium, 1988; Magiera et al., 1990). Calls for infra-marginal production subsidies, of which US-style frozen base yields were highlighted as a potential element, emphasized the importance of providing a politically palatable transition from the status quo to a more liberal trading regime. For example, how much economic analysis contributed to the European Union's shift away from market price supports and towards direct payments is impossible to determine. Nevertheless, it is difficult to believe that the co-existence of the analysis and the reform direction was entirely coincidental.

4.4. Summary assessment

The above seems to be an impressive and long list of activity. But did it all do any good?

It must be recognized that little progress will be achieved by the major players in terms of agricultural trade liberalization, as a direct result of the UR agreement, for the next 6 years with the possible exception of Japan (Hathaway, 1994). Hathaway argues that the EU will contribute little to trade liberalization, while the influence of Canada and the United States will be imperceptible. The assessment of Hathaway (1994) appears to be supported by an analysis of UR impacts published by the Department of Finance Canada (1994). They cite an earlier OECD study as showing full agricultural trade liberalization (alone) to have the potential to increase Canada's GNP by 1.3%. However, the Department of Finance Canada (1994) concluded that the actual Agricultural Agreement in the Uruguay Round will raise Canadian GNP by only 0.03%. It would appear from this that only 2% of the potential benefits to the Canadian economy from agricultural trade liberalization, by Canada as well as other countries, were achieved in the Uruguay Round.

Should economists shoulder part of the blame for the meagre results actually achieved? Did the quantitative information provided on potential losses to farmers impede political progress more than the information on potential benefits to society did to encourage progress? Given this rather modest progress towards agricultural trade liberalization (our principal goal identified in Section 2 above), was economists' net contribution to this positive or negative? It is conceivable that economist's information reached, and fueled the efforts of, the defenders of the status quo more than it influenced the political activism of those who stood to gain from change. The big wild card in determining whether the overall influence of economists will be positive or negative with respect to progress with trade liberalization, is how much they are able to motivate the potential gainers to political action. In this regard, there was very little evidence of success in the UR. The fact is that the main potential winners from agricultural trade liberalization are largely outside the agricultural sector in most industrial countries, and are not the groups which ministers of agriculture are in the habit of listening to. Furthermore, these potential gains tend to be spread thinly across a wide spectrum of society, so few individuals are motivated to organization or action. Non-agricultural interests, though potentially affected in a major way, exerted little influence in the UR in agriculture.

That some, albeit limited, success was achieved in agriculture, in the UR, was largely due to the tactic of some countries of holding agreement in other (non-agricultural) areas hostage to some progress in agriculture. Such leverage may not be possible the next time around. A real danger of little further progress in agriculture exists unless the interests of the potential gainers are translated into significant political pressures in a way which has not happened in the past.

Do economists have a role in this? We think so. They could do a better job of explaining and communicating the potential benefits broadly in society. The Australians did blitz the European non-rural

community in the early 1980s in an attempt to stir up support for agricultural policy reform. But this was a national interest motivation involving government economists. Why have economists in Europe and North America not themselves been more publicly vocal, as individuals? In a nutshell, we feel that agricultural economists are not immune to the criticisms of Ullmann (1994) who, noting the ground swell of opposition to freer trade in the US, concluded:

> ... trade advocates are going to have to find new ways to make their case with a fervor that matches the other side... free trade agreements have to be sold as potential winners for everyone... by explaining that in the long-run expanded global commerce based on liberalized trade will mean more jobs, better pay and greater opportunities for all... unhindered international commerce is the best route to global prosperity... the opinion leaders have to do a better job convincing average Americans that we are on the right path.

5. Negotiating agenda for the next round(s): the issues

The Uruguay Round (UR) Agreement on Agriculture includes provisions for a new set of agricultural negotiations to begin in 1999. Some predict that this will be a 'mini-round' involving only agriculture. There will probably be simultaneous on-going negotiations on trade in services, and perhaps other areas, but it is not clear if there will be any effort to link or synchronize negotiations in different areas. The UR may prove to have been the last 'comprehensive' round; the ever-broadening scope of activity of the WTO may make it impractical to again try to do everything at once. Nevertheless, whether or not the future sees the end of comprehensive rounds, it is difficult to envisage seasoned negotiators being able to reach common agreement to completely compartmentalize future negotiations. Leverage from adjacent or even relatively unrelated areas may still be used to secure progress in agriculture.

Gradually, over time, we expect that the special rules and provisions for agriculture will be whittled away. This, in turn, will mean that what goes on in the more generic areas—subsidies/countervail, intellectual property, trade-related investment, services, and so on—will assume increasing importance for the agricultural sector. Agricultural trade specialists will conceivably have something useful to say about these areas too. In this section, we focus, in particular, on the agenda for the next set of agricultural negotiations, starting in 1999, but also say something about key agricultural-interest agenda items for upcoming negotiations, of as-yet-indefinite timing, in other areas under the general WTO auspices.

5.1. Agricultural agenda

We expect the four-part focus (export competition, market access, domestic support, sanitary-phytosanitary) of the UR to be retained. It is also conceivable that the agenda could be as simple as a negotiation of further cuts, with an agreement not to tinker with the rules or modalities. Smooth dispute-free sailing in the interim would be predisposing to this, but seems unlikely. We therefore expect that there will be some fine-tuning of the modalities and rules in each area, and possibilities for this are laid out below.

5.2. Export competition

Elimination of export subsidies may be possible in some areas like grains (if world prices remain close to EU support prices in 1999, and if the US Farm Bill ushers in changes) but negotiations about further incremental cuts seem inevitable in at least some commodity areas. Tangermann (1994) has suggested combining volumetric and expenditure reductions in a single formula reduction which would provide some flexibility on each. If practical difficulties with the UR commitments eventuate then this proposal may be considered. Another issue which may well arise is whether the next set of commitments should be taken at a more disaggregated level —e.g. on live animals and different beef cuts, on wheat and flour, and on individual feed grains, separately. In addition, there will be the question of choice of base period for reductions (1986–1990 could be retained).

Modalities of reduction commitments aside, export subsidy definitions may have to be revisited to prevent circumvention. The definition may have to be expanded to include some types of government-provided export credit (guarantees) and food aid if monitoring in coming years yields evidence of their use as a vehicle for avoiding export subsidy disciplines. Some countries will be looking closely at price pooling schemes, particularly where the domestic price clearly exceeds the export price, and asking if they are not equivalent to producer-funded export subsidies. Similarly, we know that many in the US want to see GATT disciplines strengthened for national single-desk exporting agencies.

5.3. Market access

Here there are many issues which could be on the agenda. First there are several options for further bound tariff reductions. If formula-based, should the minimum cut required be closer to the average? Should the average be trade-weighted rather than simple? Should within-quota tariff rates be exempted from reduction or treated separately from over-quota tariffs and regular tariffs? Should a 'swiss formula' be used, as suggested by Tangermann (1994), to more quickly whittle down tariff 'peaks' and reduce between-commodity differences in protection? Or should the process revert to the old 'request/offer' approach?

In the non-agricultural market access negotiations during the Uruguay Round there was considerable discussion of tariff peaks, which were generally in the range of 25–50%. The Uruguay Round agreement on agriculture has created tariff 'mountains' ranging between 100 and 500%. These tariffs have been 'sold' to domestic agricultural interests as providing long-term protection to the most sensitive sectors of the domestic agricultural economy. A comparison of these very high tariff rates to the average level of protection in the manufacturing sector is bound to draw the attention of exporters in the next round. This will serve to focus the debate on the most heavily protected and sensitive sectors of the domestic agricultural economy.

There will be the issue of whether quantitative access commitments should be expanded, and options here could include providing for a trade-off between expansion of quantitative access and the rate of over-quota tariff reduction (generalising the option currently granted to Japan and Korea on rice). Experience over the next few years may dictate the desirability of adjustments to the special agricultural safeguard formulae—either to the price trigger or the volume trigger or both—or even consideration of eliminating it, if it has not proven useful. At the least, a decision will be needed about whether to retain the 1986–1988 reference price.

There will probably be some issues to be resolved, and possibly new rules developed, relating to tariff rate quota administration. Large rents are associated with these quotas. The way they are administered largely determines the extent to which the benefits accrue to the exporting country rather than the importing country. Some are allocated to specific countries, others are supposed to be available on an MFN basis. As Hathaway (1994) has discussed, the size of the rents associated with these tariff rate quotas may induce considerable political pressure to resist their expansion, and also to resist the reduction of over-quota tariffs. The level of aggregation of quantitative access commitments will also come under scrutiny.

A further set of access issues are likely to come up with respect to monopoly importing agencies. Mark-ups of some of these agencies have been bound in the UR like tariffs, but within the limits of the tariff and mark-up bindings, the operation of minimum import price schemes will still be possible. Cases like Japanese pork and EU apple import regimes will no doubt be watched carefully in the intervening years.

5.4. Domestic support

Again, the list of items on the potential agenda is long. To begin with, should AMS reductions be continued? Should they be disaggregated? Is a new base period needed? Tangermann (1994) has suggested that the definition of price support needs broadening to include cases where no administered price exists, which are presently excluded from the AMS.

There is the issue of what to do with the 'blue box' (mainly EU compensatory and US deficiency payments)—also currently excluded from the AMS.

Seen as temporary by many countries, its continued existence would make somewhat of a mockery of the whole domestic support commitment concept and the claim that country-specific exceptions have been eliminated. Perhaps the EU can be persuaded to decouple its compensatory payments further, to the point where they would meet the criteria of the 'green box' and thus remain excluded from the AMS. US Farm Bill developments will no doubt also have a bearing on this issue.

When it comes to the 'green box' criteria, there would appear to be considerable scope for further scrutiny, analysis and improvement. Despite their length and detail, the existing criteria represent a fairly early effort which was not debated at any length in the negotiations, for fear of opening up the whole draft agreement to a process of unravelling. A strong case can be made that some of the detail defies common sense, or is at best redundant. At present, programs qualifying as 'green' are free from the threat of countervail as well as being excluded from AMS calculations. These implications of greenness could also be back 'on the table' in the next set of negotiations.

The UR negotiations took place during a period of low agricultural commodity prices and burdensome grain stocks. As a consequence, food security was not a major issue in the discussions outside of a few major food importing countries. Article 12 of the Agreement on Agriculture contains some weak provisions governing export prohibitions, essentially requiring member countries to give advance notification of such actions and to take importing countries food security into consideration. Article 16 refers to the "Decision on Measures Concerning the Possible Negative Effects of the Reform Program on Least-Developed and Net-Importing Developing Countries" which recognizes possible "negative effects in terms of the availability of adequate supplies of basic foodstuffs" for such countries resulting from greater liberalization of trade in agriculture, and records an agreement to monitor the situation more closely and strengthen food aid efforts as needed. The sharp increase in grain prices since the end of the UR has heightened food security concerns. If grain prices remain high, or if the US or EU should embargo grain sales, food security issues will figure much higher in the next round of negotiations. However, we remain unconvinced that the Uruguay Round agricultural provisions will, a priori, result in less rather than more availability of food aid supplies.

6. Analytical challenges for economists in future trade negotiations

Despite extending over 7 years, the UR negotiations occasionally proceeded with such a fury that no economist other than those right next to policymakers was in a position to influence the outcome. Furthermore, good economic analysis at the bureaucrat's or academic's desk often was not absorbed by those making the political decisions, reasons for which are varied and some of which are the economist's own fault. However, we abstract from these considerations for the moment and focus on what would be ideal economic analysis to promote progress in the next multilateral negotiations on agriculture.

6.1. Improving the big models

A top priority for economic research is to improve the structural economic representation of each agricultural sector, and of particular programs and policies, in world trade models. It is not possible nor productive to attempt a detailed critique of applied multi-commodity trade models in this paper. Comprehensive reviews appear elsewhere (Buckwell and Medland, 1991; Hertel, 1993; Peterson et al., 1994). In summary, certain characteristics are common across most large partial equilibrium models. First, their economic structure is simple, with either linear or log-linear relations used to capture supply and demand relationships. Second, to a large extent the effects of domestic and border policies are captured using price wedges rather than explicit policy variables, although as the UR negotiations progressed the popular models tended to evolve by including more explicit policy detail. Third, the models fail to capture the demand side growth effects resulting from (agricultural and non-agricultural) trade liberalization. Fourth, the short-run effects of grain inventories on market prices tended to be overlooked. Fifth, supply, demand and net trade almost without exception is modelled at the primary level while

trade in further processed products is neglected, as is intra-industry trade. Sixth, the selection of commodities and countries included in the models exhibit a developed country bias. Seventh, cross commodity effects are captured to some extent using cross elasticities of supply and demand, but these are typically very small in relation to the direct price effects. Eighth, resource constraints that might apply to land, labour and capital are ignored. Ninth, in many cases key parameter estimates are based on best guesses rather than sound econometric analysis. Finally, the economic understanding of some policies are so limited, or the policies under consideration so new that there is little empirical basis for sound economic analysis.

The general equilibrium models 'improved' on the above by explicitly incorporating resource constraints, static demand side effects, broader coverage of processing activities and generally handled intra-industry trade using an Armington approach. However, these improvements came at the cost of much higher levels of commodity and country aggregation and typically even simpler policy structures (Hertel, 1990; Hertel, 1993).

At a minimum, the issues raised by Peterson et al. (1994) should be addressed including resource flows, input adjustments, processing sector adjustments, imperfect competition and general equilibrium representations. In addition, more careful and detailed representations of how current policies affect agent's behaviour is critical (Sumner, 1993).

6.2. Addressing the agricultural negotiation modality issues

To address the question "Are both expenditure and volume constraints required on export subsidies and what is the most appropriate level of commodity aggregation?" analysts will have to confront the linkage between export subsidy reduction commitments and internal policy reform. During the Uruguay Round, it was primarily the European Union that faced the dilemma of how to reform its domestic policies so as to meet the export subsidy disciplines implied in the agreement. If the cuts in export subsidies in the next round are significant, many countries will face the task of modifying their domestic policies. There will be several options—to cut support completely, to embrace green policies, to adopt blue policies or supply management, etc. In exploring export subsidy reduction commitment options, modellers will have to make their internal policy assumptions explicit.

There will probably be attempts by member countries to circumvent the spirit or the letter of the export subsidy constraints contained in the Uruguay Round Agreement. This may occur in the shipment of products under the food aid and export credit provisions of the Agreement as well as price pooling schemes and the issuing of production quotas explicitly for product destined for export, under domestic supply management programs. Each of these schemes will require economic analysis, and in some cases such analysis may feed into GATT panel investigations.

An evaluation of conditions under which export credit subsidies can be viewed as correcting for imperfect capital markets versus being an indirect export subsidy would be helpful. Food aid is also a potential export subsidy in disguise, depending upon the conditions under which the product is obtained and disbursed. Such a determination, or the derivation of the appropriate criteria, is a priority for further research in preparation for future agricultural trade negotiations.

Tariff reductions will remain an important focus in future agricultural negotiations as trade in agricultural products is normalized and tariffs become the primary instrument for border protection. In fact, with the Uruguay Round Agreement to tariffy all non-tariff measures, the binding of virtually all agricultural tariffs and the creation of tariff-rate quotas there is a significant analytical task to be undertaken to better understand the Uruguay Round outcome. At the most basic level is the calculation of the trade weighted reductions in bound and applied tariffs. While we know that the simple average of tariff cuts is 36%, the average trade weighted cut is different, and no doubt varies across countries and commodity groups. The 'effective' size of these cuts have implications for the model determined gains from trade. The World Bank has made a useful start at this (Ingco, 1994). Also, the work of Martin and Francois (1994), in attempting to measure the economic value of a tariff binding, when the applied rate is lower,

needs to be extended. Modellers need to take more care with their assumptions about what reductions in bound rates imply for reductions in applied rates; by first researching the actual levels of both.

Tariff escalation, as products move from the raw to the further processed state is also a problem in agriculture. With all developed countries attempting to capture more value added processing at home, the relationship of raw to processed agricultural tariffs needs to be made explicit in our modelling frameworks.

The widespread use of tariff rate quotas will significantly complicate the modelling task, particularly as over quota tariffs are reduced to allow some imports at these levels. The trade-offs, in terms of the welfare and trade effects, between expanding the minimum access amount (within quota), lowering the within quota tariff rate and/or lowering the over quota tariff rates will need to be explored and better understood.

The analysis of tariff reform will be complicated by tariff rate quota administration. The details of tariff rate quota administration will determine who gets the quota rents and the distribution of economic welfare. Effectively, the creation of new export/import opportunities has created a golden opportunity for rent seeking as the holders of import rights will reap substantial rewards. Also, the fact that many within quota allocations have been earmarked for particular countries or firms, on a preferential basis, may result in odd coalitions forming to protect the newly created status quo, although this again depends on the details of quota administration. Much remains to be done to better understand this outcome of the Uruguay Round.

Again, the level of commodity aggregation is important because the Uruguay Round countries were given considerable leeway in how to allocate minimum access commitments within broad commodity aggregates. If this same process is followed in the next round, a complete understanding of the trade implications of expanded minimum access commitments will require analysis at a far more disaggregated commodity level than was the case for the Uruguay Round analyses.

Perhaps of even more pressing concern is the level of trade distortion implicit in the green and blue box programs. Little quantitative analysis of green programs has been conducted although the trade distortions implicit in such programs may be significant.

Some comprehensive studies on transfer efficiency argue that the presumed beneficiaries of farm programs (farmers) receive only a small amount of the support program expenditures, and static welfare analysis assumes all costs of programs are captured in deadweight loss triangles. The burgeoning literature on rent-seeking emphasizes that the dynamic effects of policy on agent's behaviour generates additional costs such that part (or sometimes most) of the rectangles typically viewed as transfers are also deadweight costs. In our view, the deadweight loss triangles represent only a small portion of the true economic costs of current farm programs (Romer, 1994; Tullock, 1995). Furthermore, economic costs of farm programs must be separated from the benefits. For example, stabilization programs, under certain assumptions, can reduce risk and hence increase social welfare (and output) independent of the subsidy element from the government. More careful research is required to distinguish that part of policy that corrects for market failures from that which provides a pure subsidy to farmers.

Blue box programs, which represented a political necessity to get the Uruguay Round Agreement accepted, are at best an incentive for countries to adopt supply management programs and at worst significantly trade distorting (Meilke and van Duren, 1995). Reform of the European Union's grain sector regime is sufficiently recent that quantitative attempts at the analysis of the supply implications of the new compensatory payments and set aside requirements are rudimentary. In the United States, where supply control has a long history, quantitative analysis of the trade distortion implicit in these programs ranges from that of Gardner (1990), which suggests the programs are essentially trade neutral to the analysis of de Gorter and Fisher (1993) which suggests that these programs have had major supply inducing effects since their inception. Which of these views of the world is correct, and what should be done, if anything, in the GATT to remove these trade distortions? Future quantitative analysis of trade liberalization will hinge crucially on the analysis of direct payment programs encompassing some form of supply control. At the very least, it would appear that

the criteria for blue box programs will need to be sharpened and better defined.

Finally, two other issues encompassed in the Uruguay Round Agreement will require new quantitative analysis. The Uruguay Round Agreement includes a number of safeguard mechanisms which can be used to restrict imports. After a few years, and particularly if their use has been frequent, analysis of whether these have been significant barriers to trade, and, if so, how they could be modified to remove their most trade distorting aspects in the next round of negotiations will be needed. In addition, little quantitative analysis of the sanitary and phytosanitary accord of the Uruguay Round Agreement has been undertaken. However, most commentators would agree that as traditional non-tariff barriers are eliminated and tariffs are reduced, sanitary and phytosanitary and other regulatory measures will be increasingly used as a form of disguised protectionism (Kozloff and Runge, 1991). There is little doubt that many sanitary and phytosanitary policies will be brought to GATT panels in an attempt to resolve these issues. What are the implications for the future of agrifood trade?

6.3. Addressing generic issues important for agriculture

There are several key issues to be dealt with in future non-agricultural deliberations that have the potential to influence agricultural trade. Trade and the environment is one such area. Agriculture may be at the center of this debate, since much agricultural production is environmentally intense and also heavily protected. The key issue will be the potential use of trade measures where national environmental standards or regulations raise production costs in the home country relative to those in other countries, thus affecting international competitiveness. Protectionist forces are sure to join with environmentalists to argue for trade barriers against 'unfair' foreign competition, even when this reflects a comparative advantage in the provision of environmental resources.

Economic theory suggests that efficient solutions to purely domestic pollution problems are unlikely to include border policies focused against foreign trading partners. The 'proper' solution is to internalize the production externality using the least trade distorting environmental policy. Ideally, trade models would account for the welfare effects of environmental externalities, but this is a tall order. The loss functions necessary to evaluate the environmental consequences of agricultural policies are unknown and even the linkages between trade/growth and environmental degradation remain controversial (Anderson and Strutt, 1994). Similar issues need to be analyzed for possible governmental responses to regulations for animal welfare and in labour codes.

In the area of contingency protection, agriculture tends to be a heavy user of countervail provisions. There is scope for more economics to be built into these rules (van Duren, 1989), or for a wholesale overhaul of the rules (Meilke and Sarker, 1995). The results of the UR on anti-dumping are widely seen as disappointing and weak, and as providing an easy avenue for protectionist interests to exploit. Considerable thought is being given to the possibility that international harmonization of competition policy could ultimately replace the need for anti-dumping actions.

A related issue is how the GATT should treat single-agent buying and selling desks (marketing boards and state trading agencies) in international trade. Many of these trading organizations are exempt from anti-trust law and are sanctioned by the government. There is considerable dissatisfaction in some quarters (particularly in the US) about the adequacy of the current GATT Article XVII in disciplining state trading enterprises which have monopoly importing or exporting powers. More empirical analysis is needed on the economic effects of actual cases. For example, the issue of whether imperfectly competitive behaviour on the part of particular state trading agencies is significantly different from that of large multinational trading corporations bears addressing.

A significant increase in the growth of regional integration agreements developed during the UR negotiations (Schott, 1989). To some extent these agreements reflected dissatisfaction with the slow progress of the UR negotiations and a desire to secure the benefits of liberalized trade on a regional basis. The momentum towards regional trading agreements seems to have gained steam since the conclusion of the UR with the Free Trade for the

America's initiative and renewed interest in an Asian Pacific agreement. Economic theory suggests that free trade areas can either increase or decrease global welfare and the WTO contains rules regarding the establishment of such areas in an effort to ensure they are trade creating rather than trade diverting. Modelling of future multilateral trade liberalization will require taking into account the effects of preferential trading arrangements on global trade and welfare changes. However, of potentially more importance is the fact that regional integration agreements can create conflicting incentives for multilateral trade liberalization and these forces require additional study and analysis.

6.4. Communicating results

Over the course of the Uruguay Round, economists talked to each other a lot, in journal papers and in professional meetings, about the potential gains from agricultural trade liberalization. They did not, with some exceptions, make much effort to communicate to the potential beneficiaries of trade liberalization information about the size of the stake they have in the outcome. If economists want to see more progress next time around this is one area in which they could concentrate. This could include the provision of more information and transparency generally about the income and wealth redistribution effects of current policies. To the extent that the direction of transfers is from poor to rich, then opposition to them will be induced, which will make it easier for them to be changed.

7. Conclusions

It is difficult to document the exact contribution of quantitative analysis to the outcome of the Uruguay Round of trade negotiations. It is our assessment that it did contribute in a positive way to trade liberalization, particularly during the early technical stage of the discussions: (1) by exposing the horrendous costs and limited benefits of current agricultural policies; (2) by attributing the blame and exposing the irrationality of competitive subsidization; (3) by helping to set the modalities of the negotiations; and (4) by making a strong case for the reinstrumentation of domestic agricultural policies in trade friendly ways. However, it may have also fueled the fires of resistance to change, by identifying the potential losers and the sizes of their potential losses. The net effect of economic analysis on trade liberalization in agriculture in the UR is open to question.

Either way, much remains to be done in analyzing and understanding the traditional agenda of agricultural trade liberalization. Even more remains to be done in finding new and better ways of presenting these results to the general public. In addition, an agenda reflecting new concerns with trade liberalization is forthcoming which deals with issues that are less well developed theoretically and analytically. These include trade and the environment, dispute settlement mechanisms, safeguards, competition policy, trade related aspects of intellectual property, and labour policy.

It is difficult to avoid the conclusion that the future analyses of multilateral trade deals will involve even larger economic models involving ever greater policy, commodity and country detail. If so, this analysis is likely to become even more concentrated in the hands of a few large, mostly governmental or international organizations. In our view, this is not a healthy situation. However, even if it is true, these models will have to be backed up with sound qualitative, theoretical and empirical analysis of 'smaller issues.' The sound assessment of market structures and key economic parameters will continue to be the basic building blocks of all economic analysis.

Finally, the value at the margin (in terms of trade liberalization impact) of economists' efforts to better and more widely communicate their analytic results may far exceed the marginal value of efforts to crank through more (or more accurate) analyses. The most important contribution of agricultural economists is likely to be in the extension of all types of economic analysis, quantitative as well as qualitative, to key decision makers and the general public. Only in this way can the public interest hope to compete with the enshrined special interest groups that have the ear of politicians.

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