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Domestic support and the WTO negotiations†

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In their attempt to maximise trade benefits, agricultural trade negotiators must allocate scarce resources and consider trade-offs across issues such as liberalising foreign border measures or reducing foreign domestic subsidies. Analysis and examples support the notion that more liberalisation will be achieved in the new WTO round by emphasis on lowering border barriers and export subsidies rather than attempting to discipline domestic farm subsidies directly. Analyses of EU grain policy, Korean rice policy and US sugar policy show how reduced export subsidy or more import access have substantial trade benefits, even if farmers are compensated with payments or price supports.

1. Introduction

What should be the focus of upcoming negotiations over agricultural trade? I consider only one part of this broad question from the viewpoint of net agricultural exporters who have little in the way of trade-distorting policies of their own and want to improve access and reduce competition from subsidised exports.

This article investigates the trade-offs surrounding the inclusion of explicit domestic support provisions in World Trade Organization (WTO) agriculture negotiations. I consider this issue from a practical viewpoint and, while my purpose is not historical, the negotiating process and outcomes of the Uruguay Round Agreement on Agriculture (URAA) will be considered where relevant. For analysis of some of the earlier history see Johnson (1950 and 1991). Some of these issues have also been raised in Tangermann *et al.* (1997); Sumner and Tangermann (forthcoming, 2000); and Sumner and Hallstrom (1997).

The premise of the General Agreement on Tariffs and Trade (GATT) and the WTO is to achieve multilateral agreement among sovereign nations

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on international trade rules with the objective of liberalisation. As the WTO states:

> The WTO is the only international body dealing with the rules of trade between nations. At its heart are the WTO agreements, the legal ground-rules for international commerce and for trade policy. The agreements have three main objectives: to help trade flow as freely as possible, to achieve further liberalization gradually through negotiation, and to set up an impartial means of settling disputes.
>
> (WTO http://www.wto.org/wto/about/)

One premise of my discussion here is that we take as given the basic character of the WTO. That is, we assume that the basic framework of trade negotiations under the WTO is exogenous to the agricultural provisions, and the agricultural negotiations fit within this framework. In particular, the WTO focus is on trade among sovereign nations and not a world agency charged with improving economic policy in each of the member states.

One may presume that by now everyone who is interested is already familiar with the outlines of the URAA. But, just so we are on the same page, let me list a few basics (for fuller treatments, see Sumner (1995); Josling, Tangermann, and Warley (1996); or Sumner and Tangermann, (forthcoming, 2000); among many other sources).

There were three major parts to the URAA. On market access, members agreed to convert non-tariff barriers to tariffs, undertake gradual tariff reductions, create small minimum access quantities, and not reduce access that existed at the time of the agreement. On exports, members agreed to gradual reductions in both the value of export subsidies and quantities of goods exported. Finally, on domestic support, members agreed to reductions in an aggregate measure of support (AMS) which aggregated programs that were considered more than minimally trade-distorting (amber box policies). The least trade-distorting policies (green box policies) were exempt from reduction commitments. An intermediate group of policies that provided support, but also included some supply control elements (blue box) were not included in the AMS, but were not declared green. The provisions on border measures apply to individual tariff lines or to individual commodities or commodity groups. The domestic support provisions apply to an aggregate of policies across all agricultural commodities.

The overall package of Uruguay Round agreements included rules for trade barriers associated with sanitary and phytosanitary regulations, more effective dispute resolution procedures and other non-agricultural provisions, each of which have important implications for agriculture.

Observers have generally agreed that setting a framework for further liberalisation was among the significant accomplishments of the URAA.

A major limitation was failure to set a concrete timetable for further quantitative steps or a 'default' set of further liberalising measures that would take place during negotiations over a new agreement. With no strong provisions for continuation built into the agreement, those countries that want less agricultural liberalisation have every incentive to delay negotiations.

This article makes two related points. First, standard economic reasoning can be applied usefully to considering trade-offs within the negotiation efforts of nations (or within nation lobby groups). Using such reasoning one may look at trade-offs between benefits from negotiating effort placed on reforming one set of foreign policies relative to the benefits of reforming other foreign nation policies. Second, applying this idea to trade-offs across policy disciplines in agricultural negotiations, analysis and evidence suggest a focus of negotiation effort on reforming border measures rather than domestic support measures.

2. The logic of domestic support in a trade agreement

A properly configured regime of domestic support policies can mimic any set of border measures. One can formulate domestic taxes and subsidies that have very similar trade effects as import tariffs and quotas or explicit export subsidies (see, for example, Alston, Carter and Smith 1993). Thus, as a matter of economic logic one might think that direct disciplines on domestic subsidies and taxes would be included routinely in trade agreements. This does not seem to be the case.

Of course, the GATT and individual country trade laws have long recognised the potential trade effects of domestic subsidy policy. Provisions related to nullification and impairment (for example, of tariff bindings) limited a country's use of indirect measures that reduce the trade benefits anticipated from a change in border measures. In the GATT, a Subsidies Code was agreed upon during the Tokyo Round, and countervail law applies to trade effects of government production subsidies. The link between border measures and domestic policies was explicit in waivers and exceptions from broad GATT principles before such special treatment was eliminated by the URAA. For example, the famous Section 22 waiver explicitly allowed the United States to apply quantitative import restrictions in cases in which imports threatened the effective operation of internal farm support programs. And GATT Article XI:2(c) allowed members to use import quotas if domestic production was effectively restricted through internal programs.

In the run-up to the Uruguay Round, trade analysis and government rhetoric included not only explicit trade policy and trade effects, but also statements about the whole scheme of farm subsidy policy pursued by developed countries (Miller 1986). Comparisons of subsidy rates across

countries (not just trade-distorting effects of policies) became standard fare for economists and politicians who supported liberalisation. Thus, as the Round began, there was a growing acceptance of the proposition that the agricultural agreement would include explicit disciplines on domestic support.

The result of the URAA has not been encouraging for those advocating serious disciplines for domestic support. Reduction commitments for internal support have been largely irrelevant for the major agricultural nations of Europe, North America and even Japan; for documentation see the USDA/ERS, website; and Bohman *et al.* (1999). Consistent with the findings for developed countries, Konandreas and Greenfield (1996) find that the domestic support disciplines of the URAA had little impact in developing countries. They argue that although the URAA provisions constrain developing countries not to exceed the low amounts of trade-distorting domestic support that they have provided in the past, these limits are unlikely to be binding. Their basic argument is that budget pressure, and an effort to meet economic efficiency goals, would temper trade-distorting domestic support for agriculture even without the URAA. Silvis and van der Hamsvoort (1996) also argue that the AMS plays a relatively minor role in any trade effects attributed to the URAA.

Despite these URAA results, one may consider at least five reasons to include explicit provisions on domestic support in trade agreements. First is simple subsidy envy. Farmers and their representatives look across national borders and see specific policies that they might want applied to themselves. This envy applies to looser pesticide regulations, or better roads, as well as to direct farm payments from the government. In response to this envy, governments may attempt to use the WTO to limit benefits provided by other governments in order to mitigate demands for matching subsidies. Comparisons with EU subsidies have been a staple in the diet of US food politics and comparisons with US subsidies have recently become a staple in Western Canada.

A second reason for including domestic subsidy explicitly in the trade agreements is to use the WTO to encourage internal reforms, which are not politically feasible otherwise. I have often heard this with respect to various EU reforms of the Common Agricultural Program (CAP), but I have not yet seen the point demonstrated conclusively. That is, I have not seen evidence that the *domestic* support provisions of a trade agreement caused reductions in domestic supports. There is evidence that the prospective export subsidy provisions of the URAA (implemented in 1995) affected the 1992 reform of the CAP, and vice versa. But, this evidence does not apply to the domestic support provisions. (The Agenda 2000 reforms of the CAP were also driven by export subsidy provisions, not domestic support rules.) From a US

perspective, this strategy of attempting to impose changes in domestic subsidy through international agreements seems more likely to cause a negative political reaction than a positive one. In any case, this argument does not apply to Australia or New Zealand agricultural policy, which has already been substantially reformed.

The third argument is that by including explicit provisions on domestic support, programs are protected from challenge under domestic countervail law or WTO nullification and impairment provisions. I associate this argument with the EU and Canada. A WTO member may have a domestic subsidy program that may reduce imports or stimulate exports. These policies may be vulnerable to legal challenge if they are not shielded. Here, I only note the irony of including provisions under the guise of liberalisation in order that domestic support programs may be allowed to continue to distort trade.

Fourth, some scholars note that conflict between border measures and internal support had minimised the accomplishments of previous GATT rounds (Josling *et al.* 1996). The reasoning was that one way to open borders and reduce export subsidies was to deal with the domestic support programs explicitly. It now seems odd that proponents of this view thought it would be easier to discipline domestic support in trade agreements explicitly when it had not been feasible to discipline border measures. Nonetheless, given the failures to achieve meaningful disciplines on agriculture in earlier rounds, this argument seemed more plausible before the URAA.

The fifth reason for including domestic support policies in a trade agreement is that these policies obviously affect trade, and if there were no explicit and binding commitments on them, trade benefits from the resultant agreements would be smaller. This is the argument that I will address from here forward.

This issue has regained considerable attention after the recent collapse in commodity prices and the jump in direct farm payments in the United States. Recent literature has been exploring whether direct payments or other programs meeting URAA green box criteria have sufficiently small trade effects to continue to use this criteria for the next WTO round. See, for example, Tielu and Roberts (1998); Burfisher, Robinson and Thiefelder (forthcoming, 2000); Young and Westcott (forthcoming, 2000). One issue explored in these papers is whether, in order to accomplish trade liberalisation, the WTO should discipline domestic farm support even if the connections to some specific farm output are indirect and secondary (Roberts *et al.* 1999).

As a conceptual point, there is little disagreement that income transfers or other benefits to farmers, or even farmland owners, may have some production stimulus. Tielu and Roberts (1998) provide a list that includes

such potential effects as reducing income variability for risk-adverse farmers and lowering the cost of capital for farm investments. The issue addressed here is not the existence of a trade effect of such policies, but (1) the degree of trade effects; (2) the likelihood that a trade agreement will successfully limit these trade effects; and, if so, (3) at what cost in terms of other features of the agreement. Hennessy (1998) helps make the point that the production impact of lump sum payments under uncertainty is conceptually clear, but is likely to be empirically trivial. Simulation results of Burfisher *et al.* (forthcoming, 2000) and calculations of Young and Westcott (forthcoming, 2000) reinforce the expectation that, at least for programs in North America, the production stimulus of the almost decoupled payments are very small.

3. Trade-offs across disciplines in trade negotiations

In order to provide additional structure to the argument and clarify the key ideas, this section sets out a simple characterisation of the negotiation objectives and trade-offs. Consider an exporting-country trade negotiator who attempts to achieve benefits for his country in a multilateral negotiation. To simplify the discussion, assume that the exporting country has no local interests that demand trade protection. Moreover, let us discuss the negotiation in agriculture in isolation — cross-topic trade-offs are not explicitly considered here. Trade benefit for the exporting country is an aggregate of producer and consumer surplus or related welfare measures. Further, we will assume the exporting country gains from liberalisation, and is trying to achieve further agricultural liberalisation as a part of the negotiation.

Exporting country benefit, B, is a function of the import barriers, I, export subsidies, E, and domestic production support, D, that are in place in foreign countries:

$$B = B(I, E, D). \tag{1}$$

First partial derivatives for I, E, and D are all negative, meaning that the exporting country gains from reduced barriers, reduced subsidies and reduced support in the foreign countries. Second derivatives and cross-partials may be of either sign. For example, tariff cuts may become more or less beneficial, the larger the cut. And, the benefit associated with reducing a domestic subsidy may depend on the level of the tariff and vice versa. We may expect that reducing border measures and production subsidies would be substitutes in producing trade benefits over some range for exporting countries, but if there are prohibitive import barriers, no level of subsidy reduction can improve exporting country welfare. The signs and magnitudes

of these various effects are crucial empirical information for the allocation of negotiation resources.

Foreign agricultural policies I, E, and D, may be affected by particular disciplines negotiated in a trade agreement. In the following three expressions, we express each of the foreign policies as a function of the full set of negotiated disciplines and other factors:

$$I = I(Id, Ed, Dd, Od; \text{non-negotiation fixed factors}), \tag{2}$$

$$E = E(Id, Ed, Dd, Od; \text{non-negotiation fixed factors}), \tag{3}$$

$$D = D(Id, Ed, Dd, Od; \text{non-negotiation fixed factors}) \tag{4}$$

where Id refers to negotiated disciplines on import barriers, Ed refers to negotiated disciplines on export subsidy, Dd refers to negotiated disciplines on domestic support and Od refers to other negotiated provisions. We expect the policy level, say I, in each area to be negatively related to the discipline, say Id, in that area. So, for example, a more severe discipline on import barriers reduces import tariffs in the foreign countries. Notice that the amount of policy change in each policy area depends also on the disciplines in other policy areas. Further, the amount of foreign country policy change also depends on other provisions included in an agreement. Finally, the fixed, non-negotiation factors also affect policy change accomplished through the negotiated disciplines and vice versa.

Finally, consider the production relationships within the negotiation:

$$Id = ID(R_I; NegC, PolC), \tag{5}$$

$$Ed = ED(R_E; NegC, PolC), \tag{6}$$

$$Dd = DD(R_D; NegC, PolC), \tag{7}$$

$$Od = OD(R_O; NegC, PolC). \tag{8}$$

Where:

$$R = R_I + R_E + R_D + R_O. \tag{9}$$

Each of the four types of negotiated disciplines depends on the allocation of negotiation resources, R, a set of negotiation constraints, $NegC$, and the political constraints and costs, $PolC$, in the foreign country. Negotiation resources include the time and effort of negotiators and support staff as well as the value of offers that a country is willing to put on the negotiating table to achieve a foreign policy change. The constraints and costs affect the disciplines that can be achieved with a certain set of negotiation resources. The negotiation constraints and political costs in the foreign country affect the trade-off in terms of the resources devoted to each discipline type. For example, political constraints in the foreign country may affect the

negotiation resources required to achieve certain tariff cuts relative to disciplines on domestic subsidies. The frontier of the relationship among the disciplines shows the trade-off in terms of the amount of discipline of each type that can be achieved from alternative allocations of resources R.

These relationships make more explicit the links between negotiation resources and the ultimate trade benefit. The reduced form objective function in equation 1 becomes:

$$B = B(R_I, R_E, R_D, R_O; NegC, PolC, \text{non-negotiation factors}), \qquad (1')$$

subject to the constraint in equation 9. Given the constraint on negotiation resources, for an interior solution $\partial B/\partial R_i = \partial B/\partial R_j$, where $i, j = I, E, D, O$. However, in this case we may not expect an interior solution. For example, we may find in some cases that $\partial B/\partial R_I > \partial B/\partial R_D$ for all values of R_D. That is, we may not find it beneficial to devote any resources to negotiating disciplines on domestic support.

Trade-offs embedded in the objective function 1′ are, of course, those shown more explicitly in equations 1, 2 to 4 and 5 to 8. Thus, to investigate this more fully one must ask questions such as, how much do reductions in foreign import barriers affect benefits (in our hypothetical exporting country) relative to reductions in foreign domestic subsidies? Further, moving a step closer to negotiations, how do negotiated disciplines on import barriers contribute to actual domestic subsidy reduction or export subsidy reduction relative to direct disciplines on these items? In equations 5 to 8 we ask, how much discipline can be achieved for a unit of negotiation resources devoted to each of these discipline areas, given the relative effect on political costs and constraints in the foreign country?

Let us now examine a list of issues surrounding how negotiations on disciplines on domestic supports in foreign countries, Dd, may affect benefits, B, from a trade agreement in an exporting country. In each case, I will raise explicit considerations that apply to agriculture in the next WTO round.

First, it is difficult to develop effective international commitments for domestic support. Thus, even when disciplines are devised in an agreement they are unlikely to be effective in affecting trade flows. In other words, the link between Dd and D in equation 4 is likely to be weak, that is $\partial D/\partial Dd$ is small. The URAA provides an example of disciplines on domestic support that were weak despite considerable attention. Of course, this does not prove the point, but it is suggestive. One of the problems is that although they may follow a few broad patterns, domestic programs are inordinately varied and complex as they have been applied around the world. It is impossible to list every existing or potential program in a trade agreement and no aggregate measure seems adequate to summarise trade effects and still be amenable to use in negotiations. The AMS was used in the URAA instead

of alternatives such as a Producer Subsidy Equivalent (PSE) or Trade Restrictiveness Index (TRI) because it was more tied to actual policies and was relatively simple to calculate. However, the AMS is far from a perfect or effective indicator of trade impacts.

Second, treatment of domestic support in trade agreements is costly in terms of negotiator time and effort, in part because the programs themselves are so complex, but also because domestic support policies are difficult to fit neatly into trade agreements. Thus, I would argue that in equation 7, $\partial Dd/\partial R_D$ is likely to be small.

Third, naturally, domestic price support programs are very popular politically in the foreign countries that use them and payment programs are also popular relative to no support at all. Thus, reducing domestic subsidy through trade negotiation is costly politically. In equation 7, the effect of *PolC* is to drive $\partial Dd/\partial R_D$ further toward zero. If we turn to the objective function written as 1′, this says that the nature of *PolC* means that $\partial B/\partial R_D$ is likely to be small. On this point, I observe that US farm politicians make regular claims that they will never allow US domestic farm subsidy programs to be 'determined in Geneva'. These assertions have occurred during the same periods that the trade-distorting elements in US domestic subsidy programs have declined. There have been no similar claims that it is unacceptable to have border measures 'determined in Geneva'. Further, at the Seattle WTO ministerial in December 1999, it was clear that disciplines on internal programs and regulations would be resisted both by developing countries for one set of policies and by environmentalists for another set of policies.

Fourth, a potentially effective argument to build political support for border measures is to suggest compensation for domestic interests in the form of domestic support policies that are less trade-distorting than the border measures that they replace. That is, it may be possible to achieve more tariff reduction if there are *fewer* explicit WTO disciplines on domestic support. Consider, substituting equations 5 to 8 into equations 2 to 4. In the resulting equations we may examine trade-offs among R_I, R_E, R_D and R_O to achieve some amount of tariff reduction. I would expect $\partial I/\partial R_I < 0$, because $\partial I/\partial Id < 0$ and $\partial Id/\partial R_I > 0$. Further, I would argue that $\partial I/\partial R_D > 0$, and $\partial^2 I/\partial R_I \partial R_D > 0$. This second cross-partial derivative says that devoting negotiating resources to domestic support disciplines means less will be achieved by negotiation resources used to achieve tariff cuts.

Fifth, GATT rules on nullification and impairment and the national application of countervailing duties to offset trade effects of domestic support programs are substitutes for explicit domestic support provisions in trade agreements. Further, the effectiveness of these provisions to limit domestic subsidy programs is strengthened by tariff reductions and the ban on non-

tariff barriers. There are now more trade concessions that actually have been nullified or impaired. In equation 4, I expect that $\partial^2 D/\partial Od\partial Id < 0$, meaning that having more disciplines on tariffs increases the effectiveness of the nullification and other disciplines, Od, to lower the trade-distorting impact of domestic support. Use of nullification and impairment was limited in agriculture in the past because there were fewer binding border measures. Also, the Uruguay Round greatly strengthened the dispute settlement provisions in the WTO, so now the prospects of gaining benefits from a nullification and impairment or countervail case are much improved.

These provisions are weakened by inclusion of domestic support programs explicitly in the agreements. That is, I expect that $\partial D/\partial Od < 0$ and $\partial^2 D/\partial Od\partial Dd > 0$. Inclusion of domestic support provisions in the URAA reduced the effectiveness of nullification and impairment and countervail to limit the use of domestic subsidies that affect trade. The inclusion of the Peace Clause in the URAA is an explicit representation of this later effect.

The Peace Clause in the URAA says, in effect, that, if domestic support programs conform with the URAA, and if the amount of support for a specific commodity remains below the 1992 level, then these programs are exempt from GATT actions against subsidies (Article XVI) or nullification and impairment. Direct payments exempt from reduction (blue box payments) and other domestic supports that are subject to reduction are not exempt from countervailing duty actions. However, one could expect a more difficult time successfully pursuing such a case and no such case has been forthcoming in the five years since the URAA began to be implemented. The green box policies are exempt from both countervailing duty actions and other GATT challenges.

Sixth, reductions in border barriers make it harder for countries to operate effective domestic subsidy programs that distort trade. In other words, in equation 4, I expect $\partial D/\partial Id < 0$. Most domestic subsidies rely on protection (or export subsidy) in order to operate at manageable budget cost (Sumner and Hallstrom 1997). I illustrate this interaction between domestic support policy and border measures below in a couple of explicit simulation illustrations.

4. European grain policy

A stylised characterisation of EU policy for grain comprises four essential instruments. First, with exceptions for some special categories (such as some high quality wheat and some corn), almost all imports are blocked by a prohibitive tariff that retains features of the variable levy that applied before the URAA. Even after the URAA-scheduled reductions, the border barrier will remain prohibitive. Second, an internal minimum price for buyers is

above the world price. Third, the EU makes direct payments to grain producers based on an historical yield and actual area planted. The payment is not a direct per unit production subsidy, but it is not fully decoupled. Fourth, all except the smallest producers must idle some portion of their grain area. The set-aside offsets some of the production stimulus provided by the payment and the internal minimum price. Fifth, there is a willingness to subsidise exports at the per unit difference between the government minimum price to buyers and the prevailing external market price. The per unit export subsidy varies with external prices to keep the internal prices relatively invariable.

Let me illustrate this set of policies in a very approximate way using numbers that are at most suggestive of the orders of magnitudes for the prices and quantities in recent years. These numbers are useful to fix ideas. The government minimum price for buyers, P_{EU}, is set at \$120 per ton. For simplicity of the illustration, the external price P_w is invariant to EU trade and is set at \$100 per ton. The direct payment of about \$55 per ton implies an effective domestic producer supply price of \$175 per ton. The import price after the duty is applied is well above the EU domestic price of \$120, so no imports enter the EU. The quantity consumed in the EU is 175 million tons (mmt) and quantity produced is 210 mmt. The budget cost of the direct payment is \$11.55 billion. The quantity exported is 35 mmt, with an export subsidy outlay of \$700 million (35 mmt $\times$ (\$120 $-$ 100)).

Let us now explore how opening the border might affect EU grain policy and markets, and how EU policy changes affect trade. If the minimum price, tariff and export subsidy policies were removed, say, because of an agreement in the WTO, the market price in Europe would equal P_w. In this case, using a demand elasticity of -0.5, the quantity demanded in the EU would rise by 9 per cent or to about 190 mmt. The effective price to producers would decline to \$155 per ton. Using our supply elasticity of 1.0, output would fall to about 190 mmt, leaving the EU with no exports or imports. The payment and set-aside policy would remain in place, but the border would be open. Clearly, EU consumers and taxpayers would benefit and grain producers in Europe would lose from this move. Grain exporters in the rest of the world would gain from reduced EU exports by 35 mmt.

In order to compensate producers for the lost income, the EU could raise the effective price back to \$175 per ton by raising the per unit payment to \$75 per ton. This policy increases the EU budget to \$15.75 billion. This is a payment increase of \$3.5 billion over the previous total at a time when the CAP budget is under pressure. Further, because the internal price is lower, the EU now exports 20 mmt of grain rather than 35 mmt so exporters benefit despite the fully coupled compensation scheme.

Finally, the policy change described would provide a perfect situation for a nullification and impairment case against the EU. The new production subsidy explicitly nullifies the trade benefits of the tariff cut for all potential exporters to Europe. Unless the peace clause were renewed, the scenario I have described would clearly be vulnerable to a challenge in the WTO. In the language of section 3, $\partial D/\partial Od$ may be large.

With a fully coupled deficiency payment, the EU could replace income to farmers generated by the tariff and export subsidy, but only at a huge budget cost. Even then, the exporters would gain more than one-third of the trade benefits of free trade and have a perfect nullification and impairment case. Of course, recent policy history, and a look toward enlargement, suggest that the EU would not use a fully coupled subsidy scheme to replace lost producer income. Therefore, the production-effect of using domestic subsidy as compensation would actually be smaller than this extreme example and Europe would likely return to importing from the rest of the world. This example suggests that substantial benefits to grain exporters may be available from devoting resources to discipline border measures, even if there were no disciplines on domestic support at all.

5. South Korean rice policy

South Korean rice policy provides another instructive case for examining the interaction between border measures and domestic support. Other than Korea, I know of no other major agricultural trader that was required to respond to the URAA domestic support provisions by changing its policies. Moreover, Korea has long maintained an import ban on rice, and there is potential for a significant increase in imports, if the next WTO round is able to change Korean border policy. Thus the case of Korean rice is important (Sumner and Lee, forthcoming, 2000).

South Korea does not export rice and, like Japan, took advantage of the special URAA Annex 5 provision to establish an absolute quota rather than a tariff rate quota for rice (Cramer, Hansen and Wailes 1999; Dyck *et al.* 1999). Therefore, whatever their other effects, domestic support policy changes for rice imposed by the URAA have had and could have had no impact on international trade. The URAA-imposed expansion of imports was in fact quite small (currently about 2 per cent of domestic consumption) and, through government controls, imported rice is not allowed to enter the table rice market to compete with domestic supplies. Thus, for all practical purposes, the Korean rice market is still operating under autarky.

Although the URAA internal support provisions apply only to agriculture in aggregate, they affected rice policy in Korea, in part, because there was little else to discipline. Indeed, rice has accounted for more than 90 per cent

of the total AMS in Korea (USDA/ERS, website, December 1999). In addition, given rapid economic growth and some inflation, domestic support in Korea increased after the 1989 to 1991 base period, rather than declining as in the United States and Europe.

The major part of the South Korean rice program (illustrated in figure 1) works roughly as follows. Each year the government sets a purchase price and a quantity. The government price, P_G, has been about 20 per cent above the market price for which commercial rice sells in Korea, P_K. This internal market price of about \$2000 per ton is about four times the border price, P_w, of about \$500 per ton. The right to sell to the government is allocated to provinces, counties, villages and finally, to individual farmers through a kind of quota system. The amount of rice covered by the government purchase typically accounts for about 20 per cent of the total crop. This quota is not set as a share of output for each farmer, but is determined each year and allocated roughly, but not strictly, in proportion to the historical production of each region, each village, and each farm within a village. The government uses the procured rice for military and other government requirements, or sells the rice back into the market at prevailing prices. The contribution of

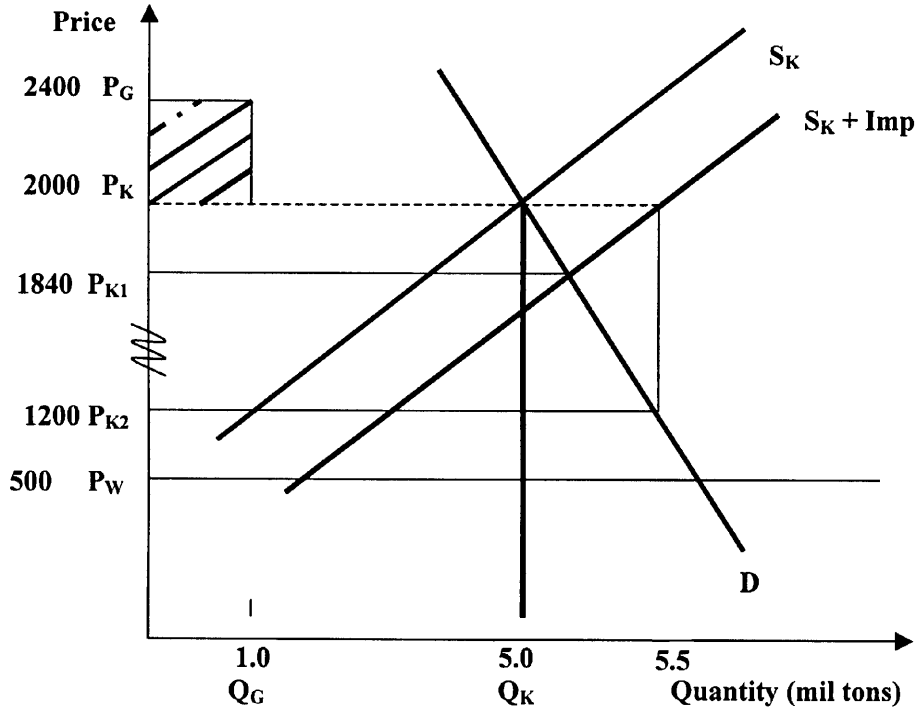

Figure 1 Korean rice policy and market

this policy to the Korean AMS is calculated each year not as a budget cost, but as the amount of government purchases, Q_{Gt}, times the difference between the government purchase price and the fixed international reference price, P_r (which approximates the P_w that applied in 1989–91). The price-support component of the AMS may be decomposed as:

$$\text{AMS}_{\text{support}} = Q_{Gt}(P_{Gt} - P_{Kt}) + Q_{Gt}(P_{Kt} - P_r).$$

The bulk of the AMS comprises the second term, where the price difference depends on the import quota, not on the domestic support policy at all. Thus, it turns out the bulk of the domestic support AMS was determined by the border measure, not the domestic support policy.

In the Korean case, quantity Q_G is infra-marginal. Therefore, $dQ/dQ_G \approx 0$, and $dQ/dP_G \approx 0$. This means that the supply effects of the Korean internal support policy are probably close to zero. For example, the risk-reducing features of this payment scheme are small, given the small share of total revenue accounted for by the payment, and that credit is arranged through quasi-governmental cooperative banks. Figure 1 represented the decoupled nature of the policy by showing that the internal supply and demand situation is essentially unaffected by the government program. The government purchase program is like an infra-marginal payment $(P_G - P_K)Q_G$, accounting for about 4 per cent of market revenue P_kQ. But, to comply with the AMS provisions of the URAA, Korea cut both P_G and Q_G.

Let us consider the effects of a WTO round that successfully opened the Korean rice market to imports. Consider the effects of a new negotiated import quota equal to 10 per cent of domestic consumption. Figure 1 illustrates this policy as a parallel shift out in supply of rice available in the Korean market. Table 1 provides some simulation results based on a supply elasticity of 1.0 and the quite inelastic domestic demand for rice of −0.25. The 10 per cent shift in available supply (from S_K to $S_k + Imp$) reduces quantity supplied by domestic producers by 8 per cent and causes the domestic market price to fall by 8 per cent (to $P_{K1} = 1840$). Consumers gain some surplus and producer surplus falls substantially. As table 1 shows, a welfare benefit of $670 million derives from the annual rent on import quota of $1,340 per ton for 0.5 million tons.

Next, consider the compensation scheme under which farmers receive a deficiency payment such that the effective price to farmers remains unaffected by the imports. So now Korean production does not fall and total supply rises to 5.5 million tons. Because of the very inelastic demand function, price to consumers now falls by 40 per cent from $2000/ton to $P_{K2} = 1200$, and consumers gain substantially — a consumer surplus gain of $4200 million. Table 1 shows that now quota rent has fallen by almost half to $350 million

Table 1 Border measures and domestic subsidy adjustments for Korean rice

Description	Increase in import quota	Quota increase plus payments
Initial quantities under autarky	5.0	5.0
Imports, new policy (mil. tons)	0.5	0.5
Change in price due to increased imports (%)	−8	−40
Market price, new policy ($/ton)	1840	1200
Total quantity, new policy (mil. tons)	5.1	5.5
Domestic supply, new policy (mil. tons)	4.6	5.0
Total tax cost, new policy (mil. $)	0	4,000
Import quota rent (mil. $)	670	350
DWL of taxation @ 20% (mil. $)	134	730
Domestic producer surplus loss, new policy (mil. $)	768	0
Consumer surplus gain, new policy (mil. $)	808	4,200
Net domestic welfare (mil. $)	844	3,720

Notes: The supply elasticity is 1.0, the demand elasticity is −0.25, the initial autarky price is $2000/ton, the autarky quantity is 5 million tons, and the world price is $500/ton. The first policy allows 0.5 million tons of rice into Korea. I assume quota rent generates a reduced DWL of other taxation in this case. A deficiency payment in the second policy provides farmers with the initial price of $2000/ton, but allows the consumer price to decline. Quota rent is supplied to producers to offset some of the tax cost of the payment scheme so DWL of taxation is reduced from $800 million to $730 million.

and the deadweight loss of taxation associated with the deficiency payment ($0.2 \times (\$4000 - \$350)$ million) is also large ($730 million). The net gain to the nation, however, is $3720 million. This is a sizable gain for a crop with a market value of about $10 billion, even at Korean prices.

This Korean rice example dramatically illustrates an important point. Under current URAA rules Korea would not be able to use a production subsidy to compensate rice farmers. In fact, they would not even be allowed to use their virtually decoupled scheme. This is true even though for the foreseeable future Korea will manage imports with a quota or TRQ under which the imports are strictly limited. Notice that in this example the deficiency payment scheme reduced market price by 40 per cent and improved Korean consumer welfare by more than $4 billion.

Obviously, in the simple framework I am using here, there are welfare gains from an open border and no compensation. But, for the border opening that is likely to occur in the next decade or so, it may be reasonable to allow countries to use policies that improve domestic welfare with no cost to foreigners. Korea has been on the front line recently in the charge for acknowledging the 'multifunctionality' of agriculture (Bohman *et al.* 1999; Anderson 2000). To continue to block the use of welfare-improving compensation schemes is likely to reduce the amount of market opening that could be achieved in a trade negotiation and reduce trade benefits to exporters.

6. US sugar policy

Consider next the idea of replacing US sugar import barriers with a direct payment scheme as compensation. Currently the US produces most of the sugar it consumes and imports the rest under a TRQ with a prohibitive over-quota tariff. The internal price in the United States has been between roughly double and about four times the variable world price. This is the most protectionist of major US farm policies. The domestic industry argues that this program is successful because most consumers in the US do not know or care whether they pay a high price for sugar. Furthermore, there are only small taxpayer outlays for the program.

Now consider eliminating the import barrier. What would be the budget cost to institute a production subsidy that provided the same price and quantity for the domestic industry as the current import quota? The United States produces about 15 billion pounds of sugar, worth about 1.5 per cent of the farm value of US agriculture, roughly $3.2 billion at domestic prices. The US price averages from $0.10/pound to $0.15/pound above the world price. Maintaining the domestic industry benefit provided by the TRQ using fully coupled deficiency payments would require per unit payments of a similar magnitude. Budget cost would be between $1.5 billion and $2.5 billion per year. To put these budget numbers in perspective, they amount to about 20 per cent to 30 per cent of average annual direct payments for total US payment programs for the 1990s. Outlays of this magnitude are feasible in some broad budget sense, but it is hard to imagine this kind of program being taken seriously as a sustained policy in the United States. Indeed, this is why the sugar industry fights so vigorously to maintain the current form of the program. No other US agricultural industry has maintained such a large share of revenue from government programs, and certainly tax-based programs have faced much tougher domestic political pressure than has the sugar program. If the sugar tariff were eliminated or the quota quantity were expanded substantially, imports would expand and there is no realistic potential for massive domestic production subsidies to offset these trade effects. In fact I would argue that compensatory payments would allow more rapid tariff reductions and substantial trade benefits if they were allowed by the WTO.

Of course, even under the deficiency payment scenario, US domestic consumer prices would fall to roughly half of the tariff-protected level. Given potential substitution for corn syrup, the demand response is likely to be significant for price declines of this magnitude. The net result would likely be a doubling of imports, or more, from an already significant base of about 25 per cent of domestic consumption. Thus, even with a production subsidy that kept US production at the tariff-protected levels, imports into the United States would rise substantially.

7. Conclusion

In presentations last year before the US International Trade Commission during the remedy phase of the lamb import dispute, Australia and New Zealand sympathised publicly with the economic downturn of the US industry. At issue was what to do about the low incomes in the US lamb industry. In that forum, Australia and New Zealand urged the US government to provide direct assistance and even cash subsidies to improve lamb production rather than respond with trade barriers. Few economists would make the case that government subsidies for the US lamb industry are welfare-improving for the United States. Nonetheless, a relevant choice for subsidy will continue to be trade barriers versus domestic support. In that context, it seems an easy choice for exporting nations and we should use care before such remedies are precluded by WTO agreement, especially while provisions such as special-safeguard tariffs remain.

This article has discussed the potential trade-off between policy instruments in trade negotiation rather than trade disputes. The three examples show that substantial gains to exporters are achieved when borders are opened even though fully coupled, domestic subsidies are used as compensation to producer interests. These examples suggest that negotiation resources devoted to trying to reduce or eliminate domestic subsidies may be misplaced if the aim of a negotiator is to maximise trade gains for exporters. I argue that, even for those of us who urge a move toward more open markets and fewer subsidies, there are real costs to using the WTO to attempt to preclude domestic support for agriculture.

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