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IATRC

INTERNATIONAL AGRICULTURAL TRADE RESEARCH CONSORTIUM

Bringing Agriculture into the GATT:

POTENTIAL USE OF AN AGGREGATE MEASURE OF SUPPORT

Commissioned Paper No. 5

Bringing Agriculture into the GATT

Potential Use of an Aggregate Measure of Support

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The International Agricultural
Trade Research Consortium

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Background Papers Prepared[1]

Ballenger, Nicole and Stephanie Mercier. "Incorporating the Export Enhancement Program in the PSE".

De Filippis, Fabrizio and Luca Salvatici. "Selling CAP Reform in Trade Negotiations".

Hertel, Thomas W. and Marinos E. Tsigas. "Supply Controls in U.S. Agriculture".

_____. "The U.S. Wheat Program".

Johnson, Martin, Louis Mahe, and Terry Roe, "Political Economy of Policy Reform in the United States and the European Community".

Mahe, Louis and Herve Guyomard, "PSE, Decoupled PSE and Credit for Supply Management Policies".

McClatchy, Don, "Applying the AMS to Support Programs Incorporating Supply Controls".

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Preface

The IATRC is a group of more than 100 economists interested in agricultural trade, drawn from the academic community, government, and private institutions in North America and seven other countries. Founded in 1980, the Consortium has the following objectives:

(1) to facilitate and stimulate improvement in the quality and relevance of international agricultural trade research and policy analysis;
(2) to facilitate collaborative research among its members;
(3) to facilitate interaction among researchers and analysts in different countries engaged in trade research; and
(4) to improve the general understanding of international trade and trade policy issues among the public at large.

To further these objectives, the Consortium has analyzed a number of trade issues and problems associated with the current round of international negotiations under the General Agreement on Tariffs and Trade. The first efforts were presented at the Symposium held in August 1988 and published as a series of Commissioned Papers:

(1) Assessing the Benefits of Trade Liberalization
(2) Designing Acceptable Agricultural Policies
(3) Negotiating a Framework for Action.

The IATRC, together with members of the International Policy Council on Agriculture and Trade (IPC), subsequently identified additional issues. The IPC, founded in 1987, is comprised of 31 agricultural leaders from twenty countries with the goal of developing economically and politically realistic policy options to problems facing global agriculture.

This analysis has been published as a continuation of the IATRC Commissioned Paper series:

(4) Tariffication and Rebalancing
(5) Potential Use of an Aggregate Measure of Support
(6) Reinstrumentation of Agricultural Policies.

This summary report was prepared by Nicole Ballenger, Praveen Dixit, Bill Miner, Ed Rossmiller and Jerry Sharples, and edited by Maury E. Bredahl. For further copies of these reports or information on this IATRC activity, contact:

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Potential Use of An Aggregate Measure of Support

In the Mid-Term Review Agreement on Agriculture, reached in Geneva in April 1989, GATT Ministers agreed to pursue long-term policy reform through "...substantial progressive reductions in agricultural support and protection sustained over an agreed period of time". Reform is to be achieved "...through negotiations on specific policies and measures, through the negotiation of commitments on an aggregate measure of support, the terms of which will be negotiated, or through a combination of these approaches". The Ministers also agreed that "...credit will be given for measures implemented since the Punta del Este Declaration, which contribute positively to the reform programme."[2]

This paper examines the use of an aggregate measure of support (AMS) in the negotiating context. It identifies and distinguishes among alternative forms of an AMS, and explores a number of conceptual issues that must be resolved if the AMS is to work. A number of explicit examples of country policy instruments illustrate measurement issues related to supply controls, fixed reference prices, and the granting of credit for past policy actions. The examples highlight problems in the AMS approach, but also suggest ways it can be made workable with negotiator support.

Why is there so much interest in an AMS?

The Uruguay Round differs from past Rounds in its recognition that trade problems have their roots in a wide range of domestic as well as trade policy instruments. This recognition signalled the need for a measurement device that would give us considerably more information about government intervention in agriculture than we learn from tariffs (which are relatively unimportant in agriculture) or simple nominal protection coefficients (which capture only the effects of border measures). At the same time, negotiators would need something simpler than the detailed models currently used for much economic analysis of policy effects.

Extensive work at the Organization for Economic Cooperation and Development (OECD) on the producer subsidy equivalent (PSE) encouraged negotiators to find a formal role in the negotiations for an aggregate index of this type. Subsequent criticisms of the PSE, as we know it, produced suggestions that there might be an alternative AMS more suitable as an instrument of negotiation. As the Round has progressed, considerable agreement has been reached on the need for some AMS (the majority of proposals have alluded to one), but there is relatively little agreement on its explicit role or key characteristics.

The use of an AMS as a negotiating device suggests a package approach to policy reform or at least some aspects of policy reform. Negotiators would be concerned with moderating the net effects of a particular policy regime (as indicated by all the policy components of the AMS), rather than with curtailing the use of any individual policy *per se*. This would be a marked addition to past approaches such as "request and offer" and drafting rules to regulate the use of particular policy instruments.

The AMS offers an approach to broad-based, across-the-board reform that avoids the special interest group domination of the "request and offer" process, and allows negotiators to focus on a broader perspective rather than on the policy details that in the past have swamped the rules approach. At the same time, the AMS approach offers countries flexibility in their options for meeting their policy reform obligations. However, the flexibility offered by the AMS approach, in the minds of some negotiators and observers, presents problems: a) particularly

egregious policy instruments may remain in place, and b) "policy switching" could, in theory, produce greater trade disruptions than we currently face. As several of our examples make clear, two equal AMS's can be associated with very different trade effects unless a methodology is devised to correct for these differences. Furthermore, the commodity/country matrix, to which the AMS approach might be applied, may be limited for methodological, data, or institutional reasons.

What are the alternative forms of the AMS?

Three alternative forms of the AMS have been proposed in the context of the current agricultural negotiations. The most familiar is the measure used in the OECD's trade mandate study: the PSE. *The PSE represents the payment required to compensate producers of a particular commodity for the loss of income resulting from the removal of a given package of policy measures*[3]. In other words, the PSE is an estimate of how large a cash subsidy--paid in place of current policies--would stabilize producer income. It is typically expressed in one or more of three ways, although other expressions are possible: 1) the total value of assistance associated with the production of a particular commodity, 2) the total value of assistance per unit of production of the commodity, and 3) the total value of assistance as a percentage of the adjusted value of commodity output where the adjusted value includes any net direct payments from the government to the producer (percent PSE).

PSE calculations typically rely on budget data and reference prices.[4] Budget data are used to estimate the subsidy equivalent of many types of transfers from taxpayers to producers, such as deficiency payments, input subsidies, marketing assistance, research, and extension programs. Reference price data are typically needed to estimate transfers from consumers to producers, such as through price support programs and border measures. These latter transfers appear as gaps between internal (or producer) prices and external (or reference) prices. The dependence of PSE's--and other AMS's--on these price wedges underlies much of the discussion of reference price issues found below.

As a price-based indicator, the usefulness of the familiar percent PSE has been questioned when policy instruments are both prices and quantities. For example, when supply controls are coupled with price or income support programs, the percent PSE captures the price and income enhancement effects of the program (through the price wedge) but not the income losses associated with restraints on production. In such cases the measured income transfer can be quite large, but simultaneously, the effect of the programs on production and, consequently, trade, can be much smaller.

The other two measures proposed for use in the negotiations are basically variations of the PSE. *The trade distortion equivalent (TDE), as defined by the Canadian proposal, is basically a PSE applied only to those policy measures agreed to be significantly trade distorting.*[5] Policy measures such as research, extension, education, infrastructure development, and some marketing regulations are often mentioned as candidates for exclusion from the TDE and, possibly, from negotiation altogether. The Canadian position is that an AMS should also reflect distortion-reducing aspects of supply controls used in conjunction with supply-inducing measures.

The support measurement unit (SMU), proposed by the EC, would further modify the PSE to, again, focus on policies that significantly affect farm production

Credits for Supply Control: Conceptual Issues

McClatchy makes the point that it is possible to have a high measured PSE and little or no production, consumption, or trade distortion. (See "Applying the AMS to Support Programs Incorporating Supply Controls.") Supply controls can significantly reduce the level of production and trade distortion which would otherwise occur if the effects of the price or income support program were not constrained. He argues that, in principle, AMS reduction obligations should be proportional to the level of production distortion generated by the support package. McClatchy demonstrates straightforward, pragmatic approaches to determine "approximately" the effect of supply controls on reducing the level of production distortion. Once this effect has been ascertained, credit for the distortion-reducing effects of supply controls could be granted in the form of downward adjustments in AMS reduction commitments. McClatchy suggests an adjustment factor for use in the conversion of PSE's to TDE's. It's a simple concept that relies on negotiations over what countries' production would have been in the absence of the supply controls.

Mahe and Guyomard examined the supply control problem from a somewhat different perspective than McClatchy. (See "PSE, Decoupled PSE and Credit for Supply Management Controls.") Like McClatchy, they argue that when policy instruments are both quantities and prices, rather than prices only, the familiar PSE is not useful for measuring credits. When production quotas are in place, the total income transfer, or PSE, can be decomposed into a "decoupled transfer" and a "supply-distorting transfer". The supply-distorting transfer is responsible for supply increases above free trade levels. This part must be measured to credit countries for reform. Unlike McClatchy, these authors would rely on calculations of shadow prices associated with the quota rights rather than on estimates of what production would have been. If a market for quota rights exists, these shadow prices might be observed; otherwise, they must be estimated with economic models. The authors estimate credits for EC policy measures taken between 1986 and 1988.

and account for the effects of supply control measures, but also to remove the effects of fluctuations in world price and currency values.[6] Thus, the SMU would be smaller than the PSE when the supply-increasing or trade-distorting effects of support policies are offset wholly or partly by supply controls. In addition, its calculation would be based on world reference prices (and/or their corresponding exchange rates) frozen at levels agreed upon as a base year or multi-year period. The use of a sliding average for the base, or periodic updates of the base, would also be considered.

An important point is that these three measures are not totally different concepts. Each relies on the notion that there is a subsidy equivalent associated with each policy instrument; and each measure aggregates these subsidy equivalent components to a total level of support. Each relies on many of the same calculation techniques. Nonetheless, each measure tells a somewhat different story about the effects of government intervention. In some instances, the three alternatives can yield quite different sums and are, therefore, a matter for negotiation.

The selection of an AMS should be determined by the use to which it is put. For example:

As a measure of:	The appropriate measure is:
the level of total support	PSE
trade-distorting support	TDE
trade-distorting support and changes in that support due to policy changes	SMU

What are the possible roles for an AMS?

An AMS could perform any of four functions. It could be used to (1) monitor levels of support, (2) assess credit for past policy actions, (3) trigger corrective actions or review procedures, or (4) take on the role of a bindable instrument of negotiation.

Monitoring is at one end of the spectrum of possible uses. *Monitoring means that an AMS is used to keep track of countries' progress during the policy reform process.* Monitoring with an AMS may be one means of checking to see that countries are meeting specific commitments made via whatever negotiating framework is eventually chosen. Or, monitoring might merely keep watch on the agricultural policy picture in relation to trends and events in world markets. If commitments are accepted in terms of certain specific policy actions (e.g., the gradual elimination of an administered price program), monitoring with an AMS might be needed only during a phase-in period. Other specific commitments (e.g., full conversion of a quota to tariff) might not call for a monitoring device. Still others (e.g., a long-term commitment to make domestic policies responsive to international market conditions) might require long-term monitoring.

At the opposite end of the spectrum of possible roles, the AMS becomes a legally-bound instrument of negotiation. For this purpose, the AMS takes the part of a tariff schedule for agriculture. With no additional restrictions on policy instruments, such a role would give countries considerable latitude in choosing the path to lower support levels. Accompanying rules could be necessary to ensure that AMS reductions coincide with reductions in trade distortions. The level of aggregation of the AMS must also be decided. Are commitments negotiated on a commodity-by-commodity basis, or across the board? (Actual tariff schedules contain much more commodity disaggregation than is currently reflected in calculations of AMS's. In an AMS, beef is beef regardless of how it is packaged or sliced.) Further, negotiators would have to decide if commitments are to be made in terms of percent reductions in the AMS, value reductions, or target levels to be reached over some negotiated period of time.

Intermediate roles include the AMS as a "triggering" or "crediting" device. *Triggering suggests a more formal role for the AMS in the monitoring process.* In other words, parties might agree (or be legally bound) to take some corrective or consultative action signalled by a predesignated change in the AMS. PSE's are used in this manner in the U.S.-Canada Free Trade Agreement.

A likely use for the AMS would be measurement of "credits" or "debits" extended to countries for policy changes made since the negotiations began or since some negotiated base period. The mid-term review agreement endorses the concept of giving credit for positive policy changes implemented since the Round began. This implies the need for some means of quantifying such changes.

The above roles need not be mutually exclusive. For example, a comprehensive AMS (one including the broadest possible policy set) might be an informal monitoring device; while a more carefully limited AMS (one including only policies agreed to be trade distorting) might be bound. Similarly, credit might be given for certain policy changes (agreed upon through negotiation), thus calling for a partial AMS to be used for this particular purpose. The most recent U.S. proposal appears to assign the AMS a formal role only in "disciplining" (it's not clear whether this means monitoring or binding) a limited set of domestic policies designated neither strictly acceptable or unacceptable.

The selection of an AMS should be determined by its role in the negotiations. For example:

Role:	Appropriate Measure:
Monitoring	PSE, TDE, SMU, or Other (The more information to understand what is happening, the better.)
Triggering	TDE or SMU.
Credit/Binding	SMU. (No country will bind a commitment on a basis that it cannot control.)

The PSE, or one of its variants, benefits from significant definition of calculation methodology, economic assumptions and agreement on concepts. Agreements required for use of the PSE-type AMS is much less than for use of other measures, such as tariff equivalents or effective rates of protection, where agreement on elasticities and value-added coefficients may be needed.

Assessing credit should be a simple matter, or is it?

Within the mid-term review lies the implication that a measurement tool is needed to assess credit for policy actions taken since the inception of the Uruguay Round. The EC originally pushed to take into account such actions--arguing that its own actions taken since 1986 had reduced the trade-distorting effects of its Common Agricultural Policy--and the concept, at least, appears to have been formally adopted. The notion is that when a GATT agreement on the reduction of trade-distorting support (or on the trade-distortion effects of support) is reached, credit for past actions will somehow be applied against the commitments embodied in the agreement. The April 1989 GATT agreement specifies that credit will be granted for actions taken since 1986. But many issues related to assessing credit remain unclear.

If credit is to be measured, the definition of 1986 must be clarified. In other words, from which date will credit be given. Several other questions arise: should support levels at the time of an agreement be compared with those observed during the 1986/87 crop year, the 1986 calendar year, or the 1986 fiscal

year? What if reference prices or exchange rates were somehow unusual or atypical in that base period? Should appropriate adjustments be made, and how? Two base periods may well have to be decided upon for determining credits: 1) the starting point against which subsequent policy actions are measured, and 2) the base which fixes the world market environment against which any policy actions, past or future, are judged.

On the basis of the April accord, credit is to be given for policy actions which make a positive contribution to long-term agricultural reform. There is general agreement on the broad objectives of long term reform, but these objectives do not describe specific policy actions for which credit should be granted.[7] Thus, before credits can be measured, negotiating parties must decide which past policy actions qualify for credit. These may well be the same negotiations which would determine which trade-distorting policies to be reduced or removed in the future!

To qualify for credit, should a policy action represent a basic policy change that cannot be reversed through administrative action, budget adjustments, or other means? The answer to this question may well depend on the negotiating framework. If commitments are made based on an AMS, it may be the overall level of the AMS used that is bound--rather than specific policy actions. If commitments are made on specific policy actions, those for which credit is given would, presumably, be bound in the final agreement. In sum, issues related to credit are very similar to those which must be faced in reaching a general agricultural agreement.

Is there a measuring device available which will adequately capture the effects of policy changes for which credit will be granted? The EC, for example, would like credit for recently implemented supply control schemes. The EC's SMU would build-in credit for supply controls, but the methodology for doing so has not yet been revealed.

Finally, some policy actions taken since 1986 may have contributed negatively to the reform program. No mention of assigning debits appears in the mid-term agreement, but presumably countries having increased trade-distorting support since the Round began would be expected to make larger steps toward reform than those receiving credit.

What can we learn from a simple, numerical example of an AMS?

When discussing an AMS it is helpful to take a look at a simple example. This example can illustrate some issues discussed above and examined in more detail below.

Consider the following example of one type of AMS for a specific commodity such as wheat:

$$PSE = M + D + O.$$

Expressed as percent:

$$PSE\% = ((M + D + O) \backslash (Pw + D + M)) * 100$$

Credits for Supply Control: U.S. Case Study

Hertel and Tsigas evaluated alternative supply controls in U.S. agriculture to examine their effects on trade. (See "Supply Controls in U.S. Agriculture.") They argue that alternative forms of supply control affect productive capacity and trade differently. They warn that supply controls may not provide the incentives necessary to move resources into alternative uses and, as a consequence, may only temporarily curtail supply. U.S. acreage controls, for example, have historically tended to increase productive capacity by promoting higher-yield agriculture; but U.S. output quota schemes (e.g., that now used in the tobacco program) tend to reduce productive capacity (provided the quotas are tradeable) because they encourage lower-input agriculture and a slower rate of growth in yields. Domestic marketing quotas (used, for example, in the U.S. peanut program) are the most trade-distorting form of supply control they considered. Such programs encourage surplus disposal because sales to export markets are not restricted. Negotiators must fully understand the implications of any particular supply control program before granting credit for it. Even if supply-control adjustment factors are derived, AMS's are still likely to tell incomplete stories about the effects of policy reform on the movement of agricultural resources into more productive uses.

Hertel and Tsigas also discussed a key aspect of the U.S. wheat program: the freezing of program yields. (See "The U.S. Wheat Program.") This U.S. policy change, implemented after 1985, began the process of "decoupling" deficiency payments from farm production decisions because farmers no longer have the incentive to increase yields to qualify for higher payments. In fact, Hertel and Tsigas argue that the freeze on yields reduces input use by program participants, thereby lowering output and export levels. They conclude that an AMS which counts all deficiency payments would be misleading as a trade distortion index, and that a TDE or SMU should be adjusted to credit the United States for having frozen program yields. They warn, however, that the permanency of this policy action is still uncertain and that if credit is to be given it should be accompanied by a bound commitment to the freeze.

where: PSE is the per unit producer subsidy equivalent,
M is a per unit subsidy generated by border measures such as tariffs or quotas, that drive a wedge between domestic and world price,
D is per unit direct payment to producers,
O is per unit non-production subsidies for inputs, marketing, etc,
P_w is the world or external reference price.

A simple example illustrates how an AMS such as the PSE shown above might be used to monitor or give credit for policy actions taken in a given year. For simplicity, let us assume that our sample country provides support to producers through an agency that purchases all domestically-grown grain at an administered price (P_s) and sells that grain on the world market at the world market price (P_w). Assume no marketing margin. Then the difference between P_s and P_w equals (M). In this example there are no direct payments (D) or other subsidies (O).

Consider now a case where our sample country reduces its administered purchase price of grain from $50 in Year 1 to $48 in Year 2 in order to get

Credits for Supply Control: EC Case Study

De Filippis and Salvatici discussed key EC policy changes, including supply control measures such as quotas for dairy and sugar, and optional set-aside, extensification and pre-retirement, and budget measures such as co-responsibility levies and financial stabilizers. (See "Selling CAP Reform in Trade Negotiations.") The effects of these measures show up differently in the PSE as currently calculated. The authors argue that the PSE is more sensitive to the effects of the financial stabilizers than to those of quotas.

De Filippis and Salvatici show that the effects of production quotas are not captured in the EC's percent PSE. However, if only the numerator of the PSE (that is, the total PSE) is used, the quota effects do register. Noting that total PSE's are not good bases for comparisons across countries, the authors return to the notion that percent PSE's might be adjusted to account for distortion-reducing effects of supply control. PSE's are much better, these authors showed, at crediting the EC for its financial stabilizers--programs that reduce the price paid to farmers and impose co-responsibility levies when predesignated production quantities are overshot--than for its production controls. They also conclude, using estimates of changes in the total PSE for cereals, that the EC set-aside program does little, at least currently, to control EC oversupply.

domestic prices more in line with world prices. It would prefer GATT rules that would allow it to receive credit for the price reduction. Data and computations are as follows:

	Year 1	Year 2	Year 2'
P_s =	\$50	\$48	\$48
P_w =	\$40	\$44	\$40
M =	\$10	\$4	\$8
PSE =	\$10	\$4	\$8
PSE% =	20%	8%	17%

This example shows that in Year 2 the world price increased \$4 and the subsidy per unit decreased \$6 (column 2). Part of the decrease was due to a decrease in price support policies as shown in the \$2 reduction in P_s, and part of the decrease (\$4) was due to a rise in the world price. Thus using the simple formula given above, the percent PSE fell from 20 percent in Year 1 to 8 percent in Year 2.

Should this country get "credit" for policy changes as measured by the reduction of the PSE from 20 to 8 percent? This question raises a number of conceptual issues associated with measuring and monitoring policy changes with an AMS.

Credits for Other Policy Actions

Ballenger and Mercier considered a contentious policy instrument--the U.S. export enhancement program (EEP)--in the context of an AMS. (See "Incorporating the Export Enhancement Program in the PSE.") They demonstrated the lack of independence among the numerous components of the U.S. PSE. For example, when the EEP is changed it affects U.S. deficiency payments, storage payments, and CCC loan forfeitures through its effect on market prices. This makes it difficult to isolate the effect of any particular policy change and, for example, to measure with precision the credit (or debit) associated with the EEP.

Ballenger and Mercier also pointed out problems with the fixed reference price, or SMU, approach in the presence of the EEP. The EEP, unlike an administered price program, lacks established program provisions, aside from occasional budget caps. The subsidy equivalent calculation for the EEP relies on knowing the *ex post* subsidy rate. But this subsidy rate appears to depend, in some way, on world reference prices. If reference prices are to be fixed, then some rule relating the EEP subsidy rate to the reference price must be devised in order to calculate the EEP component of the AMS. There may not be many programs like the EEP with its wandering parameters, but this particular one would be likely to be important in the credit discussion.

Should changes in market conditions be omitted?

Over time an AMS for a given commodity can change due to (a) a change in policy, or (b) a change in market conditions. It could be argued that the "credit" issue only relates to changes in policy and so the AMS should be restricted to measuring the effects of (a). But separating (a) from (b) is difficult. For example, government support of agriculture in the United States and the European Community dropped in 1988 relative to 1987. Although there were some policy changes, the main reason for the decrease was the rise in world market prices for grain. Support policies in the United States and EC are designed to automatically reduce support when prices rise, and increase support when prices fall. Separating out the drop in support due only to the basic policy changes would be difficult and likely quite arbitrary.

It may not be important to separate the two. Governments could decide that over a specified period of time support levels need to be reduced to a specified level, regardless of year-to-year world market conditions. In the above example, the percent PSE value of 8% for Year 2 captures changes in market conditions as well as changes in policy. If, however, country negotiators in GATT agree that it is important to separate (a) from (b), then one must define a base period set of market conditions that can be held constant over time so that any change in the AMS is entirely due to changes in policy.

For example, assume for our simple example that negotiators decide to define the world or external reference price in Year 1 as the base price for calculating the Year 2 PSE (see data for Year 2'). Then a calculated M -- the difference between the price support of $48 and the base (Year 1) world price of

$40 --is used to calculate the PSE for Year 2', rather than an observed M. The calculated percent PSE is 17% for Year 2' rather than 8% (Year 2, above). Under these conditions, the PSE declines from 20 percent in Year 1 to 17 percent in Year 2', implying much less "credit" should be given for the policy action than implied by the previous computation. Is this a better representation of the "credit" that should be granted this country for changes in policies? If so, then this introduces major questions of how to define market or "reference" prices.

What reference price should be used?

Closely related to the above discussion is the selection of the appropriate reference prices (P_w) to use in the calculation of any AMS. A problem arises here. Should those prices in the AMS equation be the observed world prices, prices from a specified year, an average of several years, a moving average, etc.? One option would be to use observed reference prices for the year under consideration, as shown for the first calculation of the PSE for Year 2, above. An AMS based on actual reference prices would, however, include influences of factors outside domestic agricultural policy measures, for instance, those generated by fluctuations in international prices and exchange rates. Hence, a decrease in external price or an appreciation of the home currency could cause an increase in support to producers without any changes in domestic policy.

Should such external influences be included or excluded from the definition of AMS's? If one of the goals of trade liberalization is to make domestic policy more responsive to international market conditions, then the use of actual reference prices appears reasonable. However, in order for a country to stay within negotiated AMS upper limits, such a scheme could require continual adjustments in the domestic prices in response to market changes. The problems associated with this alternative could be numerous. Should a fixed reference price, kept constant in domestic currency of a particular country, be adopted to alleviate this problem? AMS's based on fixed reference prices would highlight changes in domestic policy but would also insulate domestic markets from world market conditions. Is this consistent with the market-oriented goals of trade liberalization established for the Uruguay Round?

One possible solution is a moving average of reference prices that smooth out exchange rate and market fluctuations. This option would allow domestic prices at least some responsiveness to international prices and exchange rates. But, how many years does one include in such a scheme? Does one use a large number of years such that the average would tend to be stable, or do we only take into account a limited number of recent years?

Can there be a middle ground? Could AMS's be calculated using an external price that is fixed for a given period of time, and then recalculated based on new external prices for another period of time? Such a process could conceivably be sustained until the targeted reductions in AMS's are achieved.

Is there an ideal base period?

The issue of "base period" is different than the issue of dating policy changes to be monitored and credited. The base period defines a set of market conditions that will be used in the computation of an AMS which, in turn, will be used to monitor policy changes. That period can be a selected year or an average of several years. The choice of a base or reference period is important because it defines the levels of policy interventions that are initially permissible. For example, a base period with very low market prices would likely lead to

calculations of a high AMS for the initial period. A high initial AMS could be advantageous to countries which prefer to protect and support agriculture. A high AMS allows countries greater latitude in negotiations, especially if the aggregate measures are used as a base for binding commitments. But, what are the chances that any one period would be mutually agreeable to all parties? An aggregate AMS is likely to peak in different years for different countries. Moreover, the likelihood that any one period is advantageous to all commodity sectors even within countries is small. Calculations made by the OECD for the EC and the United States indicate that PSE's peak in different years for different commodities.

How do we resolve these issues? One solution may be to formulate a "representative" base year that is an average of a number of years rather than a fixed year. Such an average could smooth out wide annual fluctuations in policy interventions. For example, an average of annual data for 1984 through 1986 could capture years of high and low intervention, commodity stock build-ups and declines, and other such unusual variations. But even here, can there be an agreement on the years to be included in the base period?

Should equilibrium prices and exchange rates be used?

Just identifying the nature of reference prices does not solve all problems regarding the reference prices. Three additional issues concern the choice of reference price (P_w).

First, would AMS's based on existing international market prices be biased against those countries that distort trade minimally? The argument is that a country's AMS may look large, not because it has high levels of domestic support, but because other countries, most notably the United States and the EC, pursue policies that depress international prices. Should AMS's, therefore, be based on estimated world market equilibrium prices derived from a non-distorted market? If so, where do we get such prices?

Second, if fixed reference prices were chosen, how do we determine what exchange rates to use to translate external prices into domestic currency? Do we use an actual exchange rate prevailing at the time, or do we establish some sort of a "shadow" rate? This could be especially important to developing countries that tend to have misaligned exchange rates.

Third, could there be difficulties in picking the actual reference prices to calculate the AMS's? Substantial differences could exist in the reference prices used to calculate the price gaps for different countries' PSE's because of quality differences, transportation margins, and processing costs. Would AMS reductions under such conditions favor one country or another depending upon the reduction approach pursued?

Should changes in production make a difference?

Should a country receive credit for changes in agricultural support as measured by per unit of production or by its total impact? This is an issue for commodities experiencing either substantial year-to-year production variability or a strong trend in production -- either up or down.

In our example, the PSE is expressed as a per-unit measure. A derivative measure of total support (T) would be: T = PSE * Q, where Q is quantity produced. Suppose in the above example that production was 10,000 units in Year 1 and 26,000 units in Year 2. The computed value of T would be $100,000 in Year

1 (10,000 * $10) and $104,000 in Year 2 (26,000 * $4). If T were used to measure support, our example country would receive negative credit in year 2 because the value of T went up.

What should be included in the AMS?

The PSE, as defined by the OECD and the Economic Research Service, is primarily a measure of policy-generated support of producer (and input supplier and marketer) income. There are problems with using this AMS to measure and monitor changes in agricultural policy. GATT negotiators would be more interested in an AMS that only measured policy-generated distortions of a country's trade of agricultural commodities.

Should the AMS, therefore, only measure various forms of direct support for production of agricultural commodities, or should it also include other forms of government intervention that distort trade? Examples of "other forms" of subsidies are those along the marketing chain beyond the farm gate, such as transportation and port facility subsidies. One might want to differentiate between marketing subsidies tied to specific quantities going through the marketing chain, and infrastructure subsidies for constructing and maintaining facilities. The former might be considered more trade distorting than the latter.

Similarly, should the AMS be limited to measuring changes in direct producer support or should it also measure changes in support for structural adjustment? Should subsidization of structural adjustment of the farm sector be considered the same as production support? Trading partners likely would want to encourage true long-run structural adjustment at home and abroad. If so, government expenditures to facilitate structural adjustment should not be in the AMS. Similar arguments could be made for omitting producer taxes or subsidies put in place to achieve environmental objectives. On the other hand, the more policies that are omitted from the calculation of the AMS, the more opportunities there are to enact policies to escape the discipline of a reduced AMS.

Should the AMS be able to distinguish between coupled and decoupled (or less coupled) support of production? Decoupled support, by definition, would be less trade distorting per dollar of government expenditure. Thus it would appear than an AMS should reflect the degree to which support was coupled. But adjusting the AMS to accurately reflect the degree of decoupling would be very difficult, and likely appear somewhat arbitrary.

Should the AMS include credit for production control? It would be possible to have a production control program that just offsets the supply-distorting effects of production supports. The net effect of the two policy instruments would not cause trade distortion. An AMS that ignored production control would overstate the degree of production and trade distortion of the combined policy instruments. Including production in the AMS raises two problems. First, measuring production control in AMS units would be very difficult. It would require--as our real-world examples portray--measures of shadow prices or supply elasticities. Getting multilateral agreement on a method of measurement likely would be even more difficult. Second, there is the conceptual issue of to what extent the AMS should measure the degree of market intervention. A grains policy that offsets production subsidies with production control might yield a low AMS value, but it would not be a policy that reflected reduced market intervention.

Should the AMS include longer run subsidies such as public support of research or support for marketing infrastructure -- e.g., construction of

transportation and port facilities? Can such subsidies be considered trade distorting in the long run?

Is there an ideal AMS?

The choice of AMS depends on the use to which it is put. If the interest is the total level of government support to agriculture, regardless of its effect on trade, the measure of choice is likely to be the PSE. If users are more interested in the level of trade-distorting support, they will find the TDE concept more appealing. If users want to isolate the effects of policy changes from world market changes, they will want to investigate the use of the SMU.

The AMS's explicit role in the negotiations will influence the choice. The PSE, TDE, or SMU could be acceptable choices for a monitoring device, depending on the purpose of monitoring. Some would argue for the PSE on the basis that the more information we have about the policy environment and its relation to the market environment, the better, and PSE's contain more information of this sort than TDE's or SMU's. For triggering, crediting, or binding, negotiating parties might be expected to prefer the more narrowly focused TDE, which would isolate their nondistorting policies from international discipline, or from the SMU, which would absolve them of responsibility for world market changes beyond their control. We would expect that as a bindable instrument of negotiation the SMU would generate the most support.

But even if there is general agreement that the TDE or SMU is preferred as a formal negotiating device to the PSE, many of the same issues crop up: What is a trade-distorting subsidy? How would we quantify credit for production restraints? How do we determine the reference price and the base period?

In sum, what have we learned?

If an AMS is to play an important role in GATT rules, then the most important of these concepts and problems must be agreed upon by the negotiating parties. The most important issues include:

- An AMS can change for two reasons: (1) a change in "specified" policies or (2) a change in other policies or market conditions. Shall changes in (2) be included in the measure of AMS or held constant? What are "specified" policies?

- If the "other policies and market conditions" are to be held constant, a key issue is what reference price and base period should be used?

- The choice of reference prices becomes a critical issue if the objective of the AMS is to measure trade distortion and the role is more than informal monitoring.

- Shall governments be allowed to increase any specific policy intervention -- i.e., would policy switching be allowed within a negotiated overall AMS level?

- How should production control be measured?

All the serious technical problems raised above can be solved to some degree, but not completely. The information requirements are also substantial. Meeting the data needs in a timely way would be very difficult, even in the industrial

countries. Still, we have some evidence that an AMS has a place in trade negotiations -- the United States and Canada included an AMS in their free trade agreement. In concept, the AMS approach would seem to simplify the negotiating process by allowing negotiators to focus on a single aggregate indicator and avoid the morass of specific policy instruments. However, many complex problems are associated with the use of an AMS. Negotiators need to understand that in order for an AMS to accurately serve the purpose for which it was intended, key concepts and methods for computation would need to be spelled out and agreed upon by all parties.

These questions are really both political and technical. If negotiators can agree on what they want the AMS to do, technical solutions can be left up to technical staffs; but even the technical solutions will generate considerable debate. Measurement of supply controls, for example, depends on underlying economic parameters such as supply elasticities. Are these readily available and widely accepted? If not, can credit for such actions be arrived at through negotiation rather than through a precise technical exercise? Political will may well underlie the success of such efforts.

A solution to the reference price problem might not be terribly elusive. One position is that countries cannot be held accountable for AMS changes that stem from exogenous changes in world market conditions. The other is that policy changes should reflect changes in the market environment--that this is what the Round is all about. Maybe the compromise lies in initially fixing the reference price--with relatively little thought given to whether the period chosen is ideal--and then updating the reference price every couple of years. Initial commitments would be based on the fixed reference price PSE (SMU), but ex ante PSE's would be calculated periodically to indicate whether the situation had changed enough to warrant a review of the reference prices and, thereby, countries' commitments. The more formal the role for the AMS, the more necessary the resolution of this issue. Resolving the reference price (or SMU v. PSE) issue might be easier than striking a substantive agricultural agreement without the help of an AMS.

The problems with the traditional negotiating framework are emphasized in a paper by Martin Johnson, Louis Mahe and Terry Roe which looks at the political economy of policy reform in the United States and the EC. These authors find that in the absence of compensatory payments, mutually advantageous agreement between these two parties seems to exist only for marginal changes in agricultural policies. The possibility of obtaining GATT agreement on more substantial reform is greatly increased, they contend, if budget savings are used to compensate the politically powerful losers. Their results suggest that AMS's, at a very minimum, constitute a crucial information base. They can help negotiators identify gainers and losers from liberalization and the relative gains and losses, information critical to compensatory schemes and negotiation strategies. But, maybe even more importantly, their results underscore the difficulty of the request and offer approach, and lead us to ask once again if the AMS might be the key to a successful Uruguay Round.

End Notes

[1] These background papers may be obtained from Ed Rossmiller, National Center for Food and Agricultural Policy, Resources for the Future, 1616 P Street, NW, Washington, DC 20036.

[2] General Agreement on Tariffs and Trade. "Mid-Term Review: Final Agreement at Geneva." *Focus* (GATT Newsletter) No. 61, May 1989.

[3] The PSE has a sister measure called the consumer subsidy equivalent (CSE). The CSE is defined as the cash subsidy that would maintain current levels of consumer expenditure on a particular commodity in the absence of agriculture and food programs directly affecting consumption. In industrial market economies, CSE's usually indicate that agricultural programs tax consumers, that is, they are negative. This paper doesn't discuss CSE's because the focus, for negotiating purposes, has been on the PSE. Nonetheless, the CSE can provide useful insight in the trade effects associated with PSE's.

[4] USDA, Economic Research Service, Agriculture and Trade Analysis Division, **GATT and Agriculture: The Concepts of PSE's and CSE's**. Miscellaneous Publication No. 1468, April 1989.

[5] General Agreement on Tariffs and Trade. "Proposal by Canada Regarding the Multilateral Trade Negotiations in Agriculture." MTN.GNG/NG5/W/19, December 1987.

[6] General Agreement on Tariffs and Trade. "The EC Approach on Aggregate Measures of Support." MTN.GNG/NG5/W/96 July 1989.

[7] General Agreement on Tariffs and Trade. "Ministerial Declaration on the Uruguay Round," GATT Information Service Press Release, September 1986.